Re-imagining PhD:
Doctoral Comprehensive Exam

Consultation Document
(September 2017)

The Comprehensive Examination – Rooted in History

This was written by a working group of the Canadian Association for Graduate Studies and is intended to promote discussion among students, faculty and administrators involved in graduate education. The outcome of the online survey and consultations will frame recommendations by the working group in the final report.

Working Group Composition:

Patti Weir (Chair), Dean of Graduate Studies; Professor, Department of Kinesiology, University of Windsor

Michael Thompson, Associate Dean – Graduate Studies, Engineering; Professor, Department of Chemical Engineering, McMaster University

Sean Markey, Professor, School of Resource and Environmental Management, Simon Fraser University
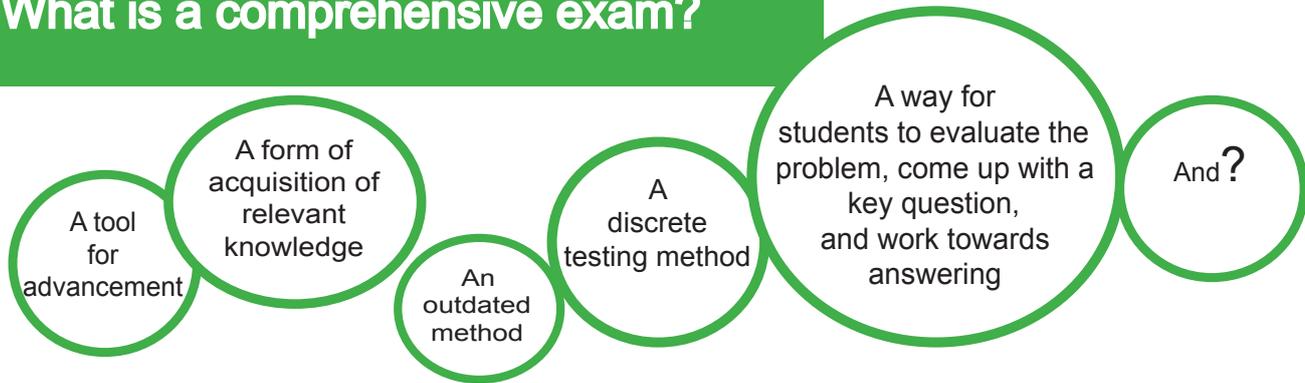
David Wagner, Associate Dean Graduate Programs in Education; Professor, Faculty of Education, University of New Brunswick

Josephine Nalbantoglu, Dean of Graduate and Postdoctoral Studies; Professor, Department of Neurology and Neurosurgery, McGill University

Alison Crump, Academic Projects Manager, Graduate and Postdoctoral Studies, McGill University

Anna Ryoo, PhD Student, Department of Curriculum and Pedagogy, University of British Columbia

What is a comprehensive exam?

A tool for advancement

A form of acquisition of relevant knowledge

An outdated method

A discrete testing method

A way for students to evaluate the problem, come up with a key question, and work towards answering

And?

Overview

Comprehensive Examinations (CE) have been ingrained in doctoral programs in North America since the 1930's when they were introduced as a method of dealing with increasing enrolments through standardized assessment of doctoral students (Estrem & Lucas, 2003; Geiger, 1993). Despite their 80-year history, little has changed in how CE are administered and evaluated. Doctoral programs are educating students to be innovators and problem solvers to meet current and future societal challenges (Nerad, 2014), and yet the question remains as to how the CE contributes to this outcome.

Background, Purpose, and Structure

Comprehensive exams have been described as a "rite of passage" (Estrem & Lucas, 2003; Hadjioannou, Shelton, & Dhanarattigannon, 2007) that proves graduate students are worthy of the discipline (Di Pietro et al., 2009). North (2000) contends that the exam itself does not comprise the full rite of passage; the examination must be validated by a faculty sponsor who will attest to the candidate's acceptability. Brady, Milkie, Hostetter, and Pescosolido (2001) suggest that qualifying exams "reflect the contours and content of professional socialization" (p. 265), however, with their "do or die" consequences it is perhaps the most feared aspect of socialization for graduate students (p. 267). The overall purpose of the CE according to a review by Estrem and Lucas (2003) is to establish a student's critical thinking, expert knowledge and research/teaching ability.

In the research literature to date, CE have been framed within the context of Bloom's Taxonomy of educational objectives (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956). CE have been viewed through the lens of the cognitive domain which is sub-divided into six categories: knowledge ("recognition or recall, or ideas, material, or phenomena") (p. 62), comprehension (knowledge of "what is being communicated") (p. 89), application (appropriate use of information to solve a problem), analysis ("the breakdown of the material into its constituent parts and detection of the relationships of the parts and of the way they are organized") (p. 144), synthesis ("putting together of elements and parts so as to form a whole) (p. 162), and evaluation ("the making of judgments about the value, for some purpose, of ideas, works, solutions, methods, materials, etc.") (p. 185).

Bloom proposed that these six categories of cognition were hierarchical such that you move from knowledge through to evaluation in subsequent steps or stages. The traditional structure of CE is designed to test breadth and depth of knowledge in theory and research relevant to the student's discipline. Given the often times constrained format of the exam, it is often difficult to assess anything beyond knowledge, comprehension and application.

Implicitly or explicitly CE serve a variety of purposes: assessing a student's basic skills and abilities; the opportunity to demonstrate mastery of literature and research techniques in a discipline; and the ability to synthesize research literature (Schafer & Giblin, 2008). These purposes are fully aligned with the belief that the CE should demonstrate whether a student is ready to conduct independent research.

Despite CE having been used for the last 80 years, they continue to take on a very traditional and time honoured structure. Students are typically given a set of questions and have a fixed amount of time to respond (Schafer & Gib-

lin, 2008), essentially mimicking an undergraduate "in-course" examination. This format may be repeated over multiple time periods with a day, or over multiple days; and many programs restrict the opportunity to complete CE to a specific time in an academic year. This is often followed later by an oral examination (see Table 1 for disciplinary examples).

Standardized exams may ensure that students are up-to-date on developments in their discipline, they may foster a sense of cohort among the group of students preparing and writing at any given time, alternatively, without careful consideration being given to content they may become stagnant and outdated and may not contribute to a knowledge of growing developments within a discipline. Traditional exams have historically referred to either closed book or open book exams that may, or may not involve choice on the questions answered.

Customized exams are typically tailored to the student's research interests and are thought to act as an interface between the CE and the dissertation; while papers can be tailored to the student's research or be broader in scope. The goal of the paper is typically to produce something of publishable quality. Both the customized and paper exams lend themselves to being part of the dissertation proposal which is another avenue within which CE knowledge is assessed.

CE structure	Criminal Justice[1]	Marketing[2]	Sociology[3]	Nursing[4]	Social Work[5]
Standardized Exam	x		x		
Traditional		x		x	x
Take Home*		x	x	x	
Article Critique		x			
Customized*	x	x			
Hybrid	x	x	x		
Oral Exam			x	x	x
Paper*		x		x	x
Dissertation Proposal				x	

Table 1: *Some of the identified disciplinary differences in CE format in the following bodies of literature*

[1]Schafer & Giblin (2008); [2]Ponder et al. (2004); [3]Brady et al. (2007); [4]Mawn & Goldberg (2012); [5]Furstenberg & Nichols-Casebolt (2001)

* Considered improvements over traditional, time sensitive exam

Significance of preparation & varied CE practices

One aspect of the CE process that is not fully addressed in the literature is the extent to which students receive assistance in preparing for the CE experience. There is virtually no mention of providing students with reading or preparatory materials. Giblin and Schafer (2008) indicated that at times students were provided with resources (e.g., suggested or required readings, access to old exams) to assist in preparing; but cautioned that reading lists can be viewed as "cultural literacy" (p. 82), demonstrations of influential scholars in the discipline. While each institution independently decides on the content of the reading list, there is often not agreement as to what the most influential disciplinary literature is (Brady et al., 2007).

I. Study group – Use of Wiki and photo-voice

Another important aspect of preparation is whether students are prepared as a cohort, or individually as their time for CE emerges. When programs provide standardized exams, they are typically conducted once or twice a year, thereby allowing a cohort of students to prepare simultaneously. Bartle and Brodwin (2006) support the idea of study groups suggesting that they provide an opportunity to share notes and ideas, to minimize procrastination, and to support a variety of learning styles. Study groups are most effective when they are based on clear objectives and goals.   DiPietro and colleagues (2010) explored a more contemporary idea using Wikis for a cohort of students to collaboratively prepare for their CE. Students participated in pairs of two, participating in semester long seminar courses, under the direction of program faculty. They selected the wiki as the most effective and efficient tool to collect, synthesize and share key knowledge. This allowed the group to create multiple pages for better organization, and it was viewed as a living document, providing an open forum for collaboration. Koltz et al. (2010) used photo-voice as a way of documenting the journey of four researcher-participant experiences while undertaking CE. The design of the CE was very traditional, covering 3-days of written exams, three questions per day over six hours. Photo-voice was used as a reflection process that involved: 1) selecting photographs; 2) contextualizing photographs; and 3) codifying photo-graphs. Several themes emerged: self-doubt; tension; industry; and, motivation, each represented in a unique picto-rial fashion by the participants. This journey of self-exploration introduced that peer mentorship occurred despite the individual nature of the photo-voice activity.

II. Take-home and customized exams

There is little in the research literature to suggest there has been wide sweeping change. As reflected in Table 1, the two most frequently observed variations are the take-home and customized exam. Take home exams reduce the time pressure allowing students time to revise their responses (Pelfrey & Hague, 2000). They may also be preferable in situations where data analysis is required, to conduct literature reviews or produce research paper of publishable quality (Schafer & Giblin, 2008, p. 278). With the importance of publishing while in graduate school, a structure that supports this opportunity through the CE process will be advantageous professionally to the student. Customized exams reflecting the student's research interest can be assessed as either an in-class or take-home exam.

III. Portfolio

One type of CE that stands out from the rest is the use of a portfolio. The advantage generally of a portfolio is that it allows an assessment of a student's development: a) over time; b) in the context of actual practice; and, c) in relation to the student's own understanding of their growth (Wolf, 1991).

In disciplines where self-reflection is important, programs often use a portfolio approach to the CE (Lewis et al., 2011; Lombardi, 2008). A portfolio is a comprehensive collection of exhibits outlining the student's journey through the doctoral program to date. The student includes exhibits such as published work, term papers, grant proposals, literature reviews, agency reports etc. that show how the student is achieving the program objectives (Thyer, 2003; See also, Appendix A). The student then distributes the portfolio to the committee so that they may review it. Initial discussions ensue and any revisions requested are made. In this way, a portfolio becomes a fluid process until its completion allow students and committee members to work closely together. When the portfolio is completed and has the approval of the committee, an oral defense takes place. All material in the portfolio may be examined.

While working with committee members along the way is clearly an advantage, other advantages include that the portfolio contains all forms of intellectual products of the student's attainment of the program objectives. This accom-modates quite nicely the perspective of "many forms of knowing" and accommodates the many different learning styles among students. The clarity of expectations and standards, the transparency of the process and outcomes, also mitigates apprehension and confusion.
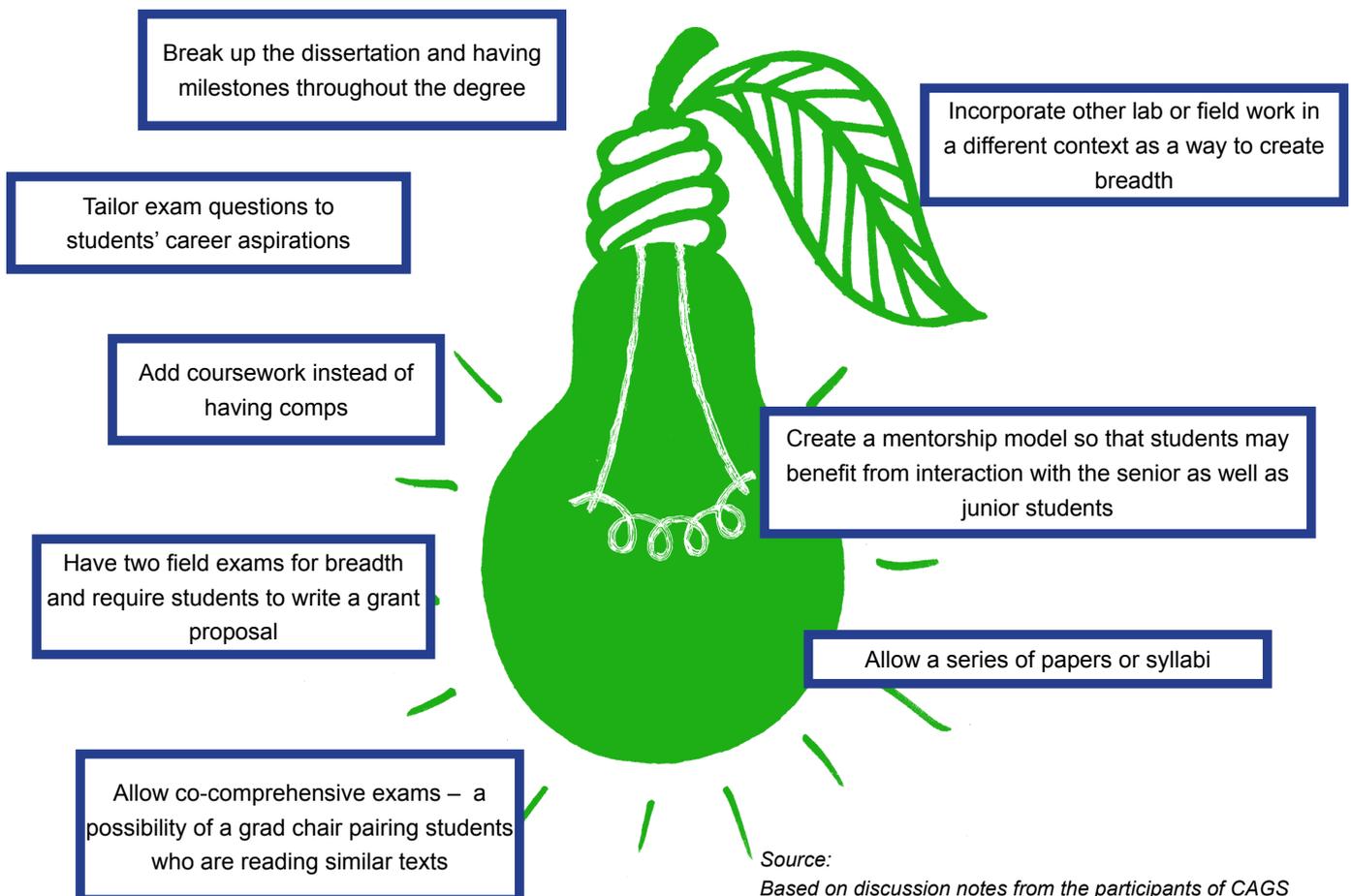
While overall, portfolios are viewed positively, a potential disadvantage is the growing quantity and quality of exhib-

its being included, potentially setting a situation where each new portfolio sets the bar for the next. Additionally, the consistent application of standards given the different committees made up of different individuals may be problematic. It is important that the main objective of the student demonstrating achievement of program outcomes remain at the forefront.

Cobia et al. (2005) report on a case study of the counselor education program at Auburn University that replaced their written and oral CE with a portfolio. Not only did the traditional written and oral exam not meet the needs of the students in terms of monitoring their development as a counselor, it did not align with the theoretical foundation of the program making it difficult to use student performance on the CE to make meaningful program changes. They highlighted that a portfolio allows early identification of strengths and weaknesses – faculty become better acquainted with student's perceptions, experiences, goals and ambitions – and, it provides opportunity to engage in reflection and discussion about goals, progress toward goals and mutual responsibility for reaching goals.
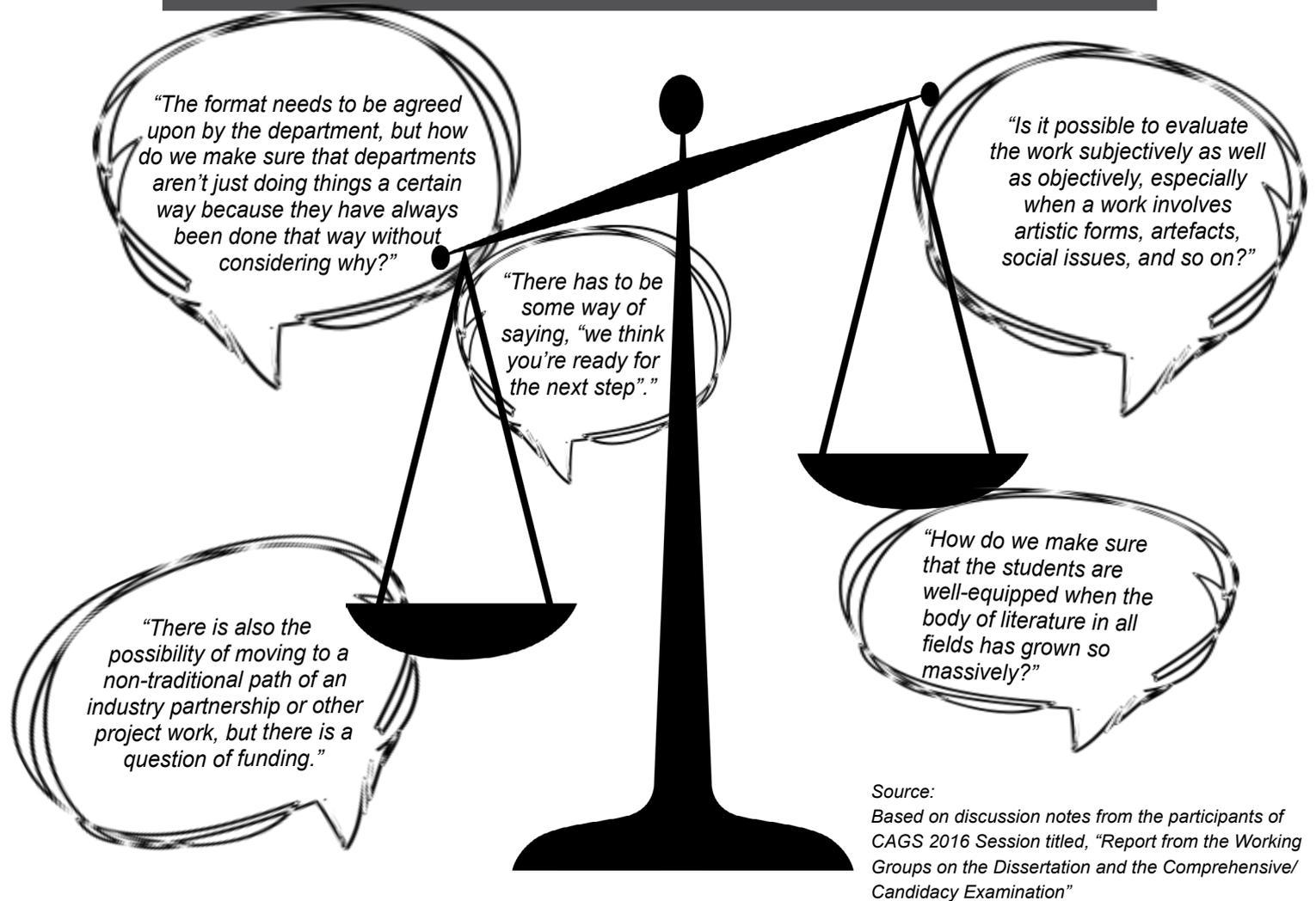
Cobia et al. (2005) also provide some compelling reasons why portfolios are beneficial. Students made meaning of their progress and experiences throughout their program; students were given the opportunity to choose the method by which they would demonstrate mastery of 75% of the program competencies, and the portfolio provided both a formative and a summative experience. Most importantly the portfolio required faculty to engage students in process oriented activities that encouraged reflection and critical thinking. Their final recommendations were that students: 1) need time to reflect in an environment where it is safe to consider personal and interpersonal relationships; 2) need to link research efforts to the goals of assessment and expected outcomes, and to demonstrate the roles for which they are preparing? and, 3) spend the appropriate time planning the portfolio to ensure the goals of assessment are fully articulated.

In what ways can the exam change in terms of its format and/or content?

- Break up the dissertation and having milestones throughout the degree
- Incorporate other lab or field work in a different context as a way to create breadth
- Tailor exam questions to students' career aspirations
- Add coursework instead of having comps
- Create a mentorship model so that students may benefit from interaction with the senior as well as junior students
- Have two field exams for breadth and require students to write a grant proposal
- Allow a series of papers or syllabi
- Allow co-comprehensive exams – a possibility of a grad chair pairing students who are reading similar texts

Source:
Based on discussion notes from the participants of CAGS 2016 Session titled, "Report from the Working Groups on the Dissertation and the Comprehensive/Candidacy Examination"

What might be some concerns regarding
assessment and **evaluation** of **alternative formats?**

"The format needs to be agreed upon by the department, but how do we make sure that departments aren't just doing things a certain way because they have always been done that way without considering why?"

"There has to be some way of saying, "we think you're ready for the next step"."

"Is it possible to evaluate the work subjectively as well as objectively, especially when a work involves artistic forms, artefacts, social issues, and so on?"

"There is also the possibility of moving to a non-traditional path of an industry partnership or other project work, but there is a question of funding."

"How do we make sure that the students are well-equipped when the body of literature in all fields has grown so massively?"

Source:
Based on discussion notes from the participants of CAGS 2016 Session titled, "Report from the Working Groups on the Dissertation and the Comprehensive/ Candidacy Examination"

Further questions regarding current practices

An ongoing question is whether the exams are meeting their goals. Pressey, Pressey and Barnes (1932) suggest that oral examinations and final comprehensive written examinations have a useful "educational police function, for they threaten the candidate into review which he might not otherwise under-take" (p. 264). And, "they are thought of as trustworthy bases for decision making. Albeit the evidence suggests that written exams are often not well balanced and appraised in untrustworthy fashion. The oral exam is often trial by combat" (p. 264, emphasis added).

In contrast, Beck and Becker (1969) offer that while programs want to produce students with "sophistication" in their discipline, there is not agreement on whether a formal examination is required to examine if this has been achieved, or whether a conventional exam provides a "reliable enough estimate given their educational cost" (p. 230). The balance between the time commitment required to prepare and our ability to determine the impact of the exam process on the "post-school" variables such as the quality and quantity of published work or the quality of teaching is unknown. Along these lines, Jako (1974) states that oral comprehensive exams are "an inexcusably costly waste of time, money, and talent" (p. 9). There is the cost of both faculty member and student time, and, the cost of taking time away from the other aspects of the program. For the last 30 years, the question has been hanging open as to whether there are alternatives.

Despite a lack of real innovation in the published literature, the variation among programs "may in fact, be a "healthy indicator" that different doctoral programs have different foci and objectives within their respective disciplines" (Schafer & Giblin, 2008, p. 284).

While many doctoral programs remain committed to the concept of CE, it is important to determine whether they are in fact related positively to program outcomes. Straub (2014) in a review of computer science doctoral programs, for example, correlated performance on National Research Council metrics with different assessment techniques. They found that use of the traditional exam had the poorest correlation with program performance; while a research based approach had the highest correlation. There was no difference between coursework and a portfolio. Despite a lack of formal research on the link between CE and doctoral program outcomes, the ultimate test remains successful completion of the dissertation.

Within the current published literature, innovation has not been at the forefront of CE reform. Is there room in the PhD of the 21st century to address the intersection between academic knowledge and research with future vocation? Are CE adequately preparing or assessing readiness for dissertation research and future employment? These and many other questions remain largely unanswered in the current literature. To continue to make progress in addressing these issues academic leaders need to invest in ongoing conversations as to how these outcomes can be achieved.

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