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A DECADE OF TEACHING EVIDENCE-BASED MANAGEMENT: INITIATIVES AND FUTURE DIRECTIONS

Practitioners who apply insights from organizational research to managerial decision-making can make better decisions, yet there remains a disconnect between research, teaching, and practice in management. This paper describes initiatives in the University of Prince Edward Island's Faculty of Business to teach evidence-based management in our undergraduate and Executive MBA programs to help bridge those gaps.

Introduction

Managers make decisions that affect the performance and well-being of organizations and the people who work within them. Systematic research can improve managerial decision-making, but significant gaps exist between management research and practice (Burke & Rau, 2010; Rousseau, 2012; Rynes, Rousseau, & Barends, 2014). According to Rousseau and McCarthy (2007, p. 99), "the absence of a critical mass of evidence-based managers today translates into both poorer outcomes for organizations and into pressures to conform to more ad hoc approaches. An entire generation of evidence-based managers may be needed before organizations make wide use of scientific evidence in their decisions."

Evidence-based management (EBMgt) is "a way of thinking" (Briner, Denyer, & Rousseau, 2009, p. 24; Pfeffer, 2007, p. 12) about organizational decisions systematically, combined with a focus on using knowledge of human behaviour to inform the design of management practices (Pfeffer, 2007). EBMgt has the potential to improve the productivity and effectiveness of organizations along with the well-being of organizations' members (Pfeffer & Sutton, 2007; Rousseau, 2006), yet there exist numerous barriers to its widespread adoption in practice (Briner & Rousseau, 2011). One key barrier, and the focus of the present paper, is an acute dearth of evidence-based management education (e.g., Charlier, Brown, & Rynes, 2011). Increasingly, there have been calls for a profound shift in management education to help support a movement toward a more evidence-based approach to the management of organizations (e.g., Rousseau, 2012; Rousseau & McCarthy, 2007; Rynes et al., 2014). Greater links between research and teaching may help narrow the research-practice gap (Burke & Rau, 2010; Rousseau, 2012; Rousseau & McCarthy, 2007). Some institutions (e.g., Cranfield, Carnegie Mellon, Case Western Reserve, University of Lausanne) have started offering courses that advance management students' skills in accessing, producing, and using research findings as part of the managerial decision-

making process (Briner et al., 2009; Briner & Walshe, 2014; Dietz et al., 2014; Jelley, Carroll, & Rousseau, 2012), but these efforts are in their infancy compared to, for example, the teaching of concepts advocated by famous “gurus” (Graen, 2009). Consequently, there is a need for EBMgt educators to reflect on and share their teaching methods and encourage others to adopt, refine, test, and debate ideas for fostering EBMgt.

In this paper, we describe initiatives in the University of Prince Edward Island’s (UPEI) Faculty of Business that are intended to promote an EBMgt “mind- and skill-set that can transfer to an applied setting” (Gamble & Jelley, 2014, p. 437) in our undergraduate and Executive MBA (EMBA) students. We first provide a general overview of the practice and teaching of evidence-based management, followed by a detailed description of the EBMgt education efforts spearheaded by the authors of this paper and others at the UPEI Faculty of Business. We conclude with reflections on our experience with teaching EBMgt and a discussion of future directions.

Evidence-Based Management

An evidence-based approach to managing organizations involves considering critically the principles derived through formal research, local data, ethics and stakeholder concerns, and practitioner judgment to enhance the quality of organizational decisions and practices (Barends, Rousseau, & Briner, 2014; Briner et al., 2009; Rousseau, 2012). This approach to managerial decision-making is not yet common in organizations (Briner & Rousseau, 2011; Pfeffer & Sutton, 2006). According to Pfeffer and Sutton (2006), most practitioners instead rely on “obsolete knowledge, personal experience, specialist skills, hype, dogma, and mindless mimicry of top performers” (p. 67) to make decisions – methods at odds with an evidence-based approach to managerial practice.

The benefits of applying principles derived from organizational research to managerial practice have been espoused for decades (Briner et al., 2009) and demonstrated empirically through, for example, specific interventions designed to improve productivity (Pritchard, Harrell, DiazGranados, & Guzman, 2008). Nevertheless, there remains a profound disconnect between research, teaching, and practice in management (Burke & Rau, 2010; Rousseau, 2012; Rynes, Rousseau, & Barends, 2014). In recent years, there has been a concerted effort among some of the world’s most influential management scholars to promote EBMgt as a concept (e.g., Briner et al., 2009; Pfeffer & Sutton, 2006; Rousseau, 2006, 2012; Rynes et al., 2014) and “translate” academic knowledge for managers (e.g., Latham, 2009; Locke, 2009). Based on the increased volume of literature using EBMgt terminology (Reay, Berta, & Kohn, 2009), it appears the EBMgt movement is gaining strength among academics. However, managers and future managers must be the focus for implementing EBMgt, as the movement’s ultimate success lies with them (Briner et al., 2009; Rousseau, 2012).

Helping managers adopt an EBMgt perspective and narrowing the research-practice gap will not be easy. Management is not a profession with a well-defined body of knowledge or entry-to-practice standards. Even among managers with a relevant graduate degree, management education may be an acute obstacle. Management students, including MBAs, are usually not taught

how to access, interpret, or use research evidence to inform decision-making and practice (Briner & Walshe, 2014; Charlier et al., 2011; Graen, 2009; Rousseau, 2006, 2012; Rousseau & McCarthy, 2007). For instance, a review of over 800 course syllabi from 333 MBA programs found that research evidence in general, and EBMgt in particular, were not featured prominently: only a few courses directly mentioned EBMgt, while a more liberal operationalization of EBMgt, which included EBMgt-related terms like “research” or “evidence,” was featured in about 25% of core MBA courses (Charlier et al., 2011). Even when EBMgt is covered, educators who adopt an evidence-based approach can encounter resistance from students, particularly when their beliefs and assumptions are challenged (Jelley et al., 2012).

Instilling an appreciation for principles derived from formal research and developing students’ critical thinking skills are crucial to effective EBMgt education. We have been involved with such an EBMgt approach to management education in the UPEI undergraduate business program and EMBA program. Our initiatives include courses in research methods and EBMgt, EBMgt-themed case competitions, (appropriately scaled) systematic literature reviews, skill-building library workshops, and more. These efforts are described in more detail in the sections that follow.

EBMgt Education at UPEI

At the UPEI Faculty of Business, we have worked over the past decade to integrate EBMgt education into our undergraduate and graduate programs. This process has occurred in three stages. EBMgt was first incorporated into our EMBA program, which launched in 2008. Inspired by Denise Rousseau’s 2005 Presidential Address to the Academy of Management, where she advocated for EBMgt and called on educators to help bridge the research-practice gap (Rousseau, 2006), two faculty members with extensive training in the scientist-practitioner model spearheaded this EBMgt initiative. Since the program’s early days, EBMgt has been explicitly and extensively integrated into the EMBA orientation session and two core courses (described in more detail below), though students have certainly had additional opportunities to hone and apply their EBMgt knowledge and skills in other EMBA courses.

The second stage of incorporating EBMgt into our business education occurred as part of curriculum changes to our Bachelor of Business Administration (BBA) program that came into effect in 2014. In the fall of 2012, the UPEI Faculty of Business began a review of its undergraduate curriculum driven by desires to offer students opportunities to pursue different interest streams and more closely match the core curriculum with competencies required of managers in practice. In their study assessing the alignment of MBA curricula from 373 business schools with competencies required for managerial work, Rubin and Dierdorff (2009) used a competency model derived from data provided by 8,633 managers across 52 occupations. They found that competencies deemed most important by incumbent managers were given the least coverage in MBA programs. Specifically, *managing human capital* and *managing decision-making processes* competencies were rated highest in relevance by practitioners, yet were the most underrepresented in MBA curricula. The UPEI curriculum review team determined that Rubin and Dierdorff’s findings applied to our BBA program. Of particular note here is the decision-making dimension, which

includes one's ability to access and appraise the quality of information and which may be covered by courses on decision-making models, statistics, or research methods (Rubin & Dierdorff, 2009). The curriculum review team found some relevant courses in the old BBA curriculum (e.g., statistics, a research project course) but also uncovered deficiencies, particularly with regard to research methods and managerial decision-making. This gap, coupled with favourable experience with EBMgt education in the EMBA program, resulted in the addition of a required second-year course in research methods and EBMgt in the new undergraduate curriculum.

Most recently, we have bolstered our EBMgt educational efforts in the EMBA program by adding an EMBA Capstone Course as an alternative to the existing Signature Project. Offered for the first time in the winter of 2017, the new Capstone Course explicitly incorporates EBMgt into all components of the course, including EBMgt case competitions and a scaled-down version of a systematic literature review. With this newest addition, EBMgt has truly become the central theme of our EMBA program. In the sections that follow, we provide detailed descriptions of the Capstone Course and our other undergraduate and graduate EBMgt course offerings.

EBMgt Education for Undergraduates

With the BBA curriculum change, the authors of this paper were tasked with developing an undergraduate course that would provide business students with a comprehensive introduction to EBMgt and research methods. This required second-year course, titled Research and Evidence-Based Management (henceforth U-RM), was first offered in the fall of 2015. In addition to exposing students to the fundamentals of the research process, the course also equips them with basic EBMgt knowledge and skills. This latter component sets our course apart from most introductory research methods courses, with our course expressly linking research methods knowledge to improved managerial decision-making.

The U-RM course advances students' EBMgt knowledge and skills in several ways. First, we introduce students to the three elements of the research trinity: research design, measurement, and analysis (Kline, 2009; Pedzahur & Schmelkin, 1991). We cover both quantitative and qualitative approaches to research as well as specific design options, data collection methods, and analytic procedures in a conceptual (vs. computational) manner. Literature searching and question formulation are also featured. Such methodological knowledge supports the "pull" approach to EBMgt (Barends, 2012), which is focused on teaching students how to search for, appraise, and apply research evidence. This is distinct from yet complementary to the "push" approach to teaching EBMgt (Jelley & Carroll, 2012), where students learn about core management theories and principles derived from formal research. In line with the pull approach, our research methods course teaches students how to conduct, consume, and use research, thereby equipping them with skills that are essential to becoming an EBMgt practitioner. Linking research methods content to the EBMgt framework and managerial decision-making is designed to foster students' perceptions that research methods knowledge is relevant to their business education (Jelley et al., 2012). In turn, knowledge of research methods should help students think more deeply about and better articulate concerns (and complements) pertaining to research findings they encounter in organizations and life in general.

Second, we employ an innovative approach that promotes our students' understanding of EBMgt and its four components (i.e., formal research, local data, ethics and stakeholder concerns, and practitioner judgment) and allows them to practice applying their EBMgt knowledge to real-world scenarios using business cases. Specifically, we have adapted and integrated ideas from Dietz et al. (2014) and Gamble and Jelley (2014) to design a course-based EBMgt case competition. In preparation for the case competition at the end of the course, we use the *Rocket Cycles* case by Dietz and colleagues (used with permission from case authors; see Dietz et al., 2014) as a "running" case that we return to periodically throughout the course. The primary objective of using this case is to teach the students about the importance of collecting local (organizational) data to inform managerial decision-making. We use the case most heavily during our lectures on research design, measurement, and data collection. Typically, students are asked to form groups and spend 15-20 minutes applying a particular research methods topic to the *Rocket Cycles* case, followed by an instructor-led plenary session. We have found this to be an effective way to advance our students' critical thinking skills by challenging their assumptions and asking them to consider alternatives.

The culmination of our U-RM course is the EBMgt case competition, which is structured as follows. We assign students into groups of 4-5 members and ask them to analyze a short case written by the authors of this paper and inspired by published field research. All groups have to prepare a written report using the same case. The case competition instructions and grading rubric clearly outline how the case analysis requires the students to critically reflect on the four elements of EBMgt put forth by Briner et al. (2009). The top three teams, based on the instructor's evaluation of the written reports, are then invited to present their analyses and recommendations to a panel of judges in the final round of the competition. For their additional efforts to prepare for and participate in the presentation session, finalists receive extra marks on their group project. While different from how cases are used in conventional business case competitions (see Gamble & Jelley, 2014, for a brief description), we argue that having students start with a practical problem conveyed through a case and asking them to apply EBMgt's versatile framework to examine the issues can better prepare them for evidence-based practice. We further elaborate on this point below.

The case method, which is a discussion-based teaching method where students analyze concrete situations and provide business solutions and recommendations, has been used in business schools for over 100 years and has become a nearly ubiquitous approach to management education (Mesny, 2013). With its focus on the particular over the general, the case method may at first glance appear incompatible with an EBMgt approach to business education. However, Gamble and Jelley (2014) proposed that cases can be used to promote an appreciation for EBMgt, arguing that "evidence-based general principles can inform (not dictate) complex, contextualized management decisions" (p. 435). Proponents of EBMgt have suggested learning interventions where (adapted) business cases can be used to support the development of an EBMgt mind- and skill-set in students (Gamble & Jelley, 2014; Goodman & O'Brien, 2012; Rousseau & McCarthy, 2007). We also recognize that most students enrolled in an introductory methods course would find it intimidating, if not daunting, to identify a topic and adequately refine a research question to examine in the time available to them. The case approach helps focus student learning on methodological issues without placing upon them excessive cognitive demands that can impede learning among novices (see Goodman & O'Brien, 2012). An existing fourth-year research course required in the BBA program

provides a venue for students to explore their research interests and engage more fully in the research process (e.g., data collection and analysis).

We have modeled our competition after Gamble and Jelley's (2014) recommendations for an EBMgt case competition and Dietz et al.'s (2014) approach to EBMgt education that focuses on producing local evidence. Gamble and Jelley (2014) advocated for an EBMgt competition that explicitly incorporates the four elements of EBMgt by featuring cases where "protagonists explicitly considered evidence – both local data and formal research – along with ethical considerations, stakeholder concerns, and reflections on their own expertise" (p. 437), but this information is "deliberately incomplete" (p. 438) to encourage students to conduct further research and reflect on the quality of the evidence. We have combined this approach with Dietz et al.'s (2014) suggestions by requiring our students to include a research proposal for producing local evidence as part of their case recommendations. Dietz et al. (2014) approach EBMgt teaching with a narrower focus on local experimentation in order to instill in their students an appreciation for the complexity of EBMgt, make EBMgt more tangible through practice, and help students develop causal reasoning skills. We hope to do the same by adapting their approach.

Our EBMgt case competition takes our students through a similar problem-solving cycle as the one described by Dietz et al. (2014) and modeled after problem-based learning in medicine (Barrows, 1996). First, our students are asked to define the problem in the case and formulate an answerable research question. Second, they are required to search for and identify quality research evidence relevant to the case. To promote our students' skills in this domain, we typically situate the assigned case within a mature body of literature that contains ample high quality but sometimes conflicting or nuanced evidence (e.g., goal setting). In addition, earlier in the semester, U-RM students spend one full class with a resident librarian who teaches them how to search for relevant academic literature. Third, as part of their recommendations, our students need to propose a study to produce local evidence intended to inform the case protagonist's decision-making. Dietz et al. (2014) include further steps in their problem-solving cycle where students actually get to implement their study, collect and analyze data, and propose solutions to the case problem(s).

The structure, pacing, and introductory nature of our semester-long U-RM course prevent us from incorporating local evidence as fully into our course curriculum. Nevertheless, by having students develop a short research proposal as part of their recommendations, including the details of their study design and measurement, we are able to convey the importance of and challenges inherent in gathering local (organizational) evidence using methods that produce causally interpretable data. Students practice articulating problems and research questions while considering whether and how to apply methodological options they learned throughout the term to the case at hand. Through the top-teams' presentations, the class comes to realize that the research process involves both rigour and creativity since no two proposals are identical. Incidentally, we deliberately restrict the presentations and panel interrogations to relatively high-performing groups on the written submission. This is partly to differentiate this research methods course from others wherein all student groups present. It also permits our judges to ask more challenging questions without seeming to be unreasonable and gives stronger student teams a better development opportunity (that generally seems to be appreciated) while serving as an eye-opener for audience members.

EBMgt Education for Working Professionals

In a recent EMBA orientation session for the incoming cohort, an EMBA alumna said about her experience in the program, “I would regularly take the material learned on Friday and apply it at work on Monday.” This ability to immediately transfer newly acquired knowledge into the workplace is perhaps the major difference between our undergraduate and EMBA students, making EBMgt a more obvious fit for the latter group. Our EMBA students are mid-level career managers, entrepreneurs, or high-potential future leaders from varied educational and work backgrounds. On average, students have approximately 14 years of work experience. While the range of different backgrounds can create challenges for educators, it also presents us with a unique opportunity to have a widespread positive impact on managerial decision-making in a multitude of industries locally and beyond. It also provides students with a range of insights based on their colleagues’ diverse experiences.

Orientation. Incoming students begin the program with an EMBA orientation. One of its core sessions, typically delivered by the authors of this paper, provides an introduction to EBMgt, including coverage of the basic principles outlined by Barends et al. (2014) and an in-class activity adapted from Briner and Rousseau (2011) where students use the four elements of EBMgt to identify questions pertinent to “diagnosing” an absenteeism problem. We also use an abbreviated version of the human resource management (HRM) content quiz from Rynes, Colbert, and Brown (2002) to highlight the disconnect between management research and practice. Our students tend to struggle with the quiz, but by framing their lack of evidence-based HRM knowledge as a dissemination failure by academics and within the context of Rynes et al.’s (2002) findings of widespread knowledge deficiencies among practicing professionals, we are able to demonstrate gaps in knowledge about practice-related management principles in a non-threatening way that mitigates potential reactions of defensiveness (Jelley et al., 2012). In addition, as part of orientation, students attend a library workshop where a resident librarian exposes them to UPEI’s library resources, academic literature searching, citation practices (with a particular focus on APA style), and the writing-enhancement platform Grammarly.

Starting the program. Within weeks of the EMBA orientation, students are again introduced to EBMgt in their first course in the program – Managing People and Organizations (henceforth EMBA-MPO). While this course focuses primarily on the push approach to EBMgt by advancing students’ knowledge of HRM and organizational behaviour topics, it also provides valuable opportunities for students to develop skills associated with the pull approach to EBMgt. Specifically, two course assignments involve a Critically Appraised Topic (CAT), which is a “quick and succinct assessment of what is known (and not known) in the scientific literature about an intervention or practical issue by using a systematic methodology to search and critically appraise primary studies” (Barends, Rousseau, & Briner, 2017a, p. 3). Compared to a systematic literature review, a CAT requires a less comprehensive literature search and is more limited in overall breadth and depth (Barends et al., 2017a), making it a better fit for our students at this stage of the program. In EMBA-MPO, students first produce an individual “mini-CAT,” focusing on only one academic article, and later conduct a more comprehensive CAT as a group project. This work promotes their skills in formulating answerable research questions, searching for relevant literature, appraising the quality of evidence, and synthesizing findings and their practical implications, which are

considered essential to becoming an evidence-based manager (Barends et al., 2014). Therefore, while principally a management-content course, this course is instrumental in laying the foundation for students to find research relevant to their practice-related challenges and interests.

Research methods. The EMBA-MPO course described above is immediately followed by Business Research Methods (henceforth EMBA-RM), an introductory research methods course where students learn how to design and interpret research. By extensively incorporating EBMgt into several components of the course, we hope to instill in our students an appreciation for the complexity of research and the essential role it plays in evidence-based practice. As Jelley et al. (2012, p. 342) noted previously, “the EBMgt perspective seems to make research-methods content (reasonably) palatable to pragmatic students, and the research-methods content provides more of the knowledge and skill required to move students beyond a basic awareness of EBMgt.” While the structure and short (six-week) duration of the course do not permit our students to see a research project through from start to finish, the course nevertheless provides ample practice opportunities to help them further hone their EBMgt skills toward becoming proficient consumers and producers of research. For instance, students attend an advanced literature search workshop at the UPEI library as part of this course. We elaborate on other notable course components below.

For one of the course assignments, students are required to conduct a scaled-down Rapid Evidence Assessment (REA), building on the skills acquired through the two CAT assignments in EMBA-MPO. Like a CAT, an REA includes an assessment of the current state of the literature on a particular topic by employing systematic methods to search for and appraise evidence (Barends, Rousseau, & Briner, 2017b). In order to be quick and manageable (or “rapid”), an REA also makes concessions with regard to the thoroughness of the search. However, unlike a CAT, an REA is more involved, as it requires that the search for relevant literature is conducted by two individuals independently of each other, the search process is clearly documented in the form of a flow chart, and the included studies are evaluated for their methodological quality (Barends et al., 2017b). In EMBA-RM, students are put into pairs and tasked with conducting an REA on a topic of their choice using only meta-analyses or systematic literature reviews. With this limit on the type of studies included and our students’ emerging familiarity with research methods, this assignment is only an approximation of what an REA should be. However, similar to Briner and Walshe’s (2014) approach, it meets our goal of providing training in general skills required to conduct systematic reviews. The EMBA-RM course accomplishes this by allowing students to further hone their literature search and evidence appraisal skills and, more broadly, highlighting the importance of a systematic approach to literature reviews for evidence-based practice (Briner et al., 2009; Briner & Walshe, 2014).

Another course component that is intended to promote EBMgt skills is the online questionnaire assignment. Utilizing a widely-used online survey development tool (SurveyMonkey), the course instructor first guides the students through the process of developing an online questionnaire step-by-step. For their assignment, students then have to come up with a research question on a management topic of their choice, find validated scales tapping into the relevant constructs, and develop a short online questionnaire consisting of an informed consent page, main research questions, demographic questions, and a concluding (thank-you) page. While fairly limited in scope, this exercise includes important lessons on research ethics and measurement

and promotes students' ability to produce local evidence using a tool that is readily available for use in applied settings.

Like the U-RM course, EMBA-RM also concludes with an EBMgt case competition. The competition is structured similarly to the one in the undergraduate program, except that the case itself provides fewer details on the relevant body of academic research, requiring EMBA students to conduct more extensive literature searches. Due to the smaller class size, all groups present in the in-class competition, regardless of their performance on the written component of the assignment. Moreover, EMBA students have more advanced mental models about management (Jelley et al., 2012), so we hold them to a higher standard both in terms of their performance on the written report and presentation and the difficulty of the questions posed by the competition judging panel. This course serves two main functions. First, drawing on Gamble and Jelley (2014) and Dietz et al. (2014), it helps students develop their evidence search and appraisal, local experimentation, and critical thinking skills by requiring them to apply the EBMgt perspective to practical problems. Second, it serves as a preliminary look at what students can expect in the EMBA Capstone Course at the end of the program.

Completing the program. Our EMBA students now have the option to finish the program either by completing the traditional Signature Project or the new EMBA Capstone Course, first offered in the winter of 2017. Both options are designed to have students apply and further refine the knowledge and EBMgt skills acquired in the program's core courses. Most students now opt for the Capstone Course, but the Signature Project remains a good choice for those who have a keen interest in a particular topic and wish to work on a sizeable project independently, under the supervision of a faculty advisor. The Signature Project can take three forms: academic business research, business plan, or consulting-type project. Of the three, academic business research requires students to draw most heavily on their research and EBMgt skills. While some students have conducted primary research for their projects, a single-coder variant of the systematic literature review, which is a more exhaustive and methodologically rigorous approach to locating, appraising, and synthesizing evidence than a CAT or an REA (Barends et al., 2017a; Briner & Walshe, 2014), has been a particularly popular choice. This is encouraging for two reasons. First, by requiring comprehensive literature searches, careful synthesis and appraisal of evidence, and thoughtful consideration of practical implications, systematic reviews are excellent tools for students to demonstrate their EBMgt skills. Second, systematic reviews are an essential (but often missing) part of a practitioner's ability to engage in evidence-based practice. As Briner et al. (2009, p. 20) pointed out, "As few of these [systematic reviews] currently exist in management or organization studies, even practitioners who wanted to could not fully practice EBMgt." Our students' efforts in this regard thus contribute to the advancement of EBMgt as a field.

The EMBA Capstone Course is a course-based alternative to the Signature Project. It builds on our experience with EBMgt case competitions and variants of the systematic literature review (i.e., CAT and REA) in other EMBA courses, resulting in an intensive and challenging course that explicitly integrates EBMgt into all course components. Students are required to complete three EBMgt projects, spaced out evenly over the semester. One project is a CAT where students need to narrow down a broad management topic to an answerable question and critically appraise relevant findings from formal research. The remaining two projects are EBMgt case competitions.

Like in U-RM and EMBA-RM, the Capstone Course case competitions follow Gamble and Jelley (2014) by requiring students to critically reflect on the four elements of EBMgt (i.e., formal research, local data, ethics and stakeholder concerns, and practitioner judgment) as part of their case analysis and make evidence-based recommendations. Moreover, for one of the competitions, the case recommendations need to include a research proposal for producing local evidence, in line with Dietz et al.'s (2014) approach to teaching EBMgt. However, the Capstone Course case competitions differ from previous competitions in that students compete individually, the projects are more involved and cover a wider range of business topics, and the cases used are existing business cases which are longer and more complex than the ones used in U-RM and EMBA-RM. In the first offering of the course, the cases were drawn primarily from the fields of management, finance, and strategy, to align with the two course instructors' areas of expertise and provide good coverage of core business areas.

We decided to offer the Capstone Course as an alternative to the Signature Project to facilitate timely completion of the program in a way that is well-aligned with our program's learning objectives, particularly the development of an EBMgt mind- and skill-set in our students. Based on preliminary feedback and our observations, we have been successful in advancing the major objectives of this course, which include proficiency in searching for and appraising evidence and in developing persuasive, evidence-based recommendations, while also making the new Capstone Course an engaging and enjoyable highlight of the program.

Reflections on Teaching EBMgt

In this section, we synthesize our EBMgt educational initiatives by reflecting on how the courses described above appear to facilitate our students' knowledge of and appreciation for the four elements of EBMgt put forth by Briner et al. (2009).

Formal Research

Our efforts centre heavily on this component of EBMgt. All of the initiatives described in the preceding section, but particularly EMBA-MPO, EMBA-RM, and the Capstone Course, strongly emphasize the importance of evidence search and appraisal skills. We go to great lengths to help our students develop these skills through library literature search workshops, course assignments (e.g., CAT, REA, EBMgt case competitions), and research methods knowledge required to evaluate the methodological quality of studies. As Rousseau (2012, p. 5) stated previously, "Knowing how to obtain and use scientific evidence and reliable business knowledge helps practitioners respond effectively to the uncertainty they face everyday in organizations." Accordingly, by teaching our students how to access and apply research evidence, we hope to equip them with the skills they will need to make informed decisions in the workplace.

Our EBMgt courses provide our students with the skills needed to acquire and critically assess information. Beyond these skills linked to the pull approach to EBMgt, evidence-based practitioners should possess basic knowledge of research in their area of practice (Rousseau, 2012). This is where our undergraduate and EMBA offerings as a whole play a key role. While we cannot

claim that all our colleagues share our interest in evidence-based education, we can say with some degree of confidence that the majority of our undergraduate and EMBA courses effectively employ the push approach to education to advance students' knowledge of relevant theories and research findings in a particular business domain. We further posit that our EBMgt efforts in the BBA and EMBA courses described herein create a demand for evidence-based content among our students. After taking our course(s), it is not uncommon for us to hear that students actively challenge assumptions and look for evidence derived from formal research in their other courses.

Local Data

This EBMgt component refers to the local context within which managerial decision-making takes place. Local data can refer to various organizational metrics for assessing the financial health of the organization or other factors, including employee perceptions and attitudes, that impact organizational performance (Barends et al., 2014; Rousseau, 2012). While other core business courses in our undergraduate and EMBA programs equip students with the skills to identify relevant organizational data and transform them into useful business information (Rousseau, 2012), our efforts in this area focus primarily on our students' ability to produce local evidence or partner with researchers in that endeavour. Our research methods courses, in particular, introduce our students to the basics of research design, measurement, and analysis and help them develop causal reasoning skills. They are then asked to apply this knowledge in our EBMgt case competitions in U-RM, EMBA-RM, and the EMBA Capstone Course. Following Dietz et al. (2014), we believe that requiring our students to propose studies intended to produce local data is a meaningful endeavour, as "producing local evidence is a managerially useful complement to existing evidence when the latter is not sufficiently relevant to the problem at hand, lacks causal interpretability, or cannot be locally applied" (p. 400). Our approach to teaching EBMgt thus encourages students to become savvy consumers *and* producers of research (Dietz et al., 2014; Jelley et al., 2012).

Ethics and Stakeholder Concerns

Practicing ethical decision-making involves paying attention to the interests of stakeholders impacted by the decision or organizational action (Rousseau, 2012). The EMBA-MPO course includes content relevant to moral reasoning and action planning. In addition to discussing the importance of exploring the ethical implications of managerial decisions in-class, we explicitly incorporate this element of EBMgt into our case competitions. As part of their case analysis in U-RM, EMBA-RM, and the EMBA Capstone Course, our students are required to consider the perspectives of all stakeholders affected by the decision and critically reflect on any moral, legal, or values-based concerns related to the case.

We complement the above lessons on ethical decision-making with a discussion of research ethics. Specifically, in U-RM and EMBA-RM, we introduce our students to the basic principles of research ethics, drawing on the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans* (TCPS 2; Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, & Social Sciences and Humanities Research Council of Canada, 2014) and other relevant materials. Students are expected to apply these principles when

proposing a study to produce local evidence as part of their EBMgt case competition and when developing their online questionnaire assignment in EMBA-RM. Moreover, we require students whose Signature Projects involve data collection from human participants to complete the *TCPS 2 Tutorial Course on Research Ethics*, regardless of whether they intend to publish their research or not, as a pre-requisite to the submission of their ethics protocol. Taken together, our intent is to emphasize practitioners' professional obligation to engage in fair, ethical, and responsible decision-making (Rousseau, 2012).

Practitioner Judgment

Management is about making organizational decisions. An evidence-based approach to management requires developing one's ability to make reflective, thoughtful judgments (Rousseau, 2012). There is no one component of our educational efforts that exclusively focuses on this element of EBMgt. Instead, all our EBMgt offerings are intended to develop our students' judgment to be more conscious, thoughtful, and reflective. Through lectures, activities, class discussions, and assignments, we teach our students to be aware of their decision-making processes and biases and to carefully reflect on but not overvalue their own experience. We are particularly focused on developing our students' critical thinking, which refers to "the ability to engage in purposeful, self-regulatory judgment" (Abrami et al., 2008, p. 1102). In essence, EBMgt combines critical thinking with using the best available research evidence and business knowledge (Rousseau & Barends, 2011), which highlights how central critical thinking is to evidence-based practice. Our EBMgt courses, particularly U-RM and EMBA-RM, promote critical thinking by encouraging students to actively devote attention to their thinking, question and test assumptions, explore alternatives, and be thorough in their analysis of practical matters (Rousseau, 2012).

Future Directions

Based on student feedback and our classroom observations, our EBMgt educational efforts seem promising. For instance, we regularly observe students in our U-RM course asking more thoughtful and informed questions and exhibit better critical thinking skills during classroom exercises and discussions as the course progresses. Moreover, in exit surveys, our EMBA graduates repeatedly cite their newly acquired knowledge of EBMgt principles as the highlight of the program. However, the quality of this evidence is limited, and we have not yet studied the effectiveness of our approach in a systematic manner. It was in reflecting upon ways to assess the "impact" of our EBMgt approach to management education that the need for appropriate measures became clear.

Inventories for assessing evidence-based approaches to education exist in other fields, such as medicine (see Shaneyfelt et al., 2006) and social work (e.g., Rubin & Parrish, 2010), but not, to our knowledge, in management. With no validated measure of the EBMgt mindset currently in existence, we are limited in our ability to conduct formative and summative evaluations of our EBMgt educational efforts. Nevertheless, drawing from evidence-based practice inventories in social work and mental health (i.e., Aarons et al., 2010; Rubin & Parrish, 2010), preliminary consideration suggests that the EBMgt mindset may consist of a constellation of mental concepts

like awareness of, attitudes toward, confidence in using, and intentions to apply an EBMgt perspective. Some of these concepts have strong theoretical and measurement foundations, which would potentially allow us to use existing scales to assess students' improvement in skills or cognitive beliefs that contribute to an EBMgt mindset.

One example would be to adapt a validated self-efficacy scale (see Bandura, 1986, 1997, 2006; Lee & Bobko, 1994) to measure students' confidence in using EBMgt. Perceived self-efficacy refers to "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3) and is considered to be a major mechanism of human agency (Bandura, 2001). It relates positively to various aspects of work-related performance in numerous contexts (Stajkovic & Luthans, 1998), including managerial performance (e.g., Wood, Bandura, & Bailey, 1990). Assessing our students' confidence in using EBMgt in an applied setting (i.e., their EBMgt self-efficacy) would be a meaningful way to gauge the effectiveness of our approach to EBMgt education. This is further supported by meta-analytic findings by Sitzmann, Brown, Casper, Ely, and Zimmerman (2008) who recommended that post-training self-efficacy be assessed in end-of-training surveys because it is the best affective predictor of cognitive learning outcomes, both immediate and delayed.

Another potentially fruitful approach would be to assess our students' improvement in their critical thinking skills as a result of taking our course(s). As outlined earlier, critical thinking is essential to EBMgt (Rousseau, 2012). Instructional interventions intended to promote students' critical thinking skills have shown promising results in the past, especially when critical thinking objectives are explicitly incorporated into the course curriculum (Abrami et al., 2008). One way in which researchers have assessed critical thinking is by having study participants evaluate claims or scenarios that suffer from a lack of scientific evidence or overreliance on anecdotal evidence, causal claims derived from correlational data, biased samples, and other methodological flaws (Lawson, 1999). The authors of this paper conduct a pre- and post-test assessment of our students' critical thinking skills, employing an adapted version of an existing "evaluating claims" critical thinking measure (see Adam & Manson, 2014; Lawson, 1999), as a teaching tool in our U-RM course. Obtaining ethics approval to also use that strategy for research purposes is a promising future direction.

Measuring students' EBMgt self-efficacy and critical thinking are two examples of how educators could potentially evaluate the effectiveness of their EBMgt efforts. This approach is incomplete, however, as the objective should be the development of a measurement tool that meets rigorous psychometric standards and fully taps into the EBMgt mind- and skill-set. We anticipate that such an inventory would be used widely by educators to evaluate and refine their EBMgt efforts, and by academics to examine how an EBMgt mindset impacts (or relates to) organizational performance and other outcomes. Ultimately, though, the success of the EBMgt movement lies with practitioners (Rousseau, 2012). We expect that the development of an EBMgt inventory would support efforts to further the effective management of organizations by encouraging managers to make use of systematic organizational research processes and findings.

Conclusion

The present paper described the authors' and our colleagues' efforts to advance EBMgt education in the UPEI Faculty of Business. The courses described herein are intended to equip students with a thorough understanding of EBMgt principles and critical thinking and research skills that should translate to better decision-making in the workplace. We hope that our experience encourages other management educators to develop EBMgt curricula and thereby contribute to the narrowing of the research-practice gap. We note, however, that while our approach to EBMgt education has received positive feedback from students and colleagues, our efforts to systematically study its effectiveness have been hindered by a lack of validated measurement tools tapping into the EBMgt mindset. We thus hope to further inspire academics to engage in scholarly activity that addresses this gap. A psychometrically sound EBMgt inventory would answer the call for more rigorous evaluation of EBMgt education (e.g., Jelley et al., 2012) and could ultimately have significant benefits for EBMgt's three critical constituencies: academics, educators, and practitioners (Rousseau, 2012).

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