From Passively Received Wisdom to Actively Constructed Knowledge: Teaching Systematic Review Skills As a Foundation of Evidence-Based Management

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One of the four sources of evidence used in evidence-based management (EBMgt) is academic research. However, rather than taking evidence from single studies or arbitrarily selected studies, EBMgt uses findings from systematic reviews that methodically summarize the body of evidence relevant to a specific question. This allows for conclusions to be drawn about the quantity, quality, relevance, and meaning of the available evidence. Although conducting such reviews is important for EBMgt and academically, the skills required are rarely taught. Drawing on our experiences of teaching courses on conducting rapid systematic reviews to a range of students, we include four goals here. First, we describe the nature and purposes of systematic reviews and consider the multiple benefits of teaching students how to perform them. Second, we describe a course on rapid systematic reviews delivered to a group of master's students. Third, we report students' reactions to different aspects of the course and the outcomes for students and teachers. Last, we discuss the implications of these experiences for teaching systematic review skills across business school curricula and how they may in the future play a more prominent role in developing EBMgt skills in students and in management education more generally.

Evidence-based management is about making decisions through the conscientious, explicit, and judicious use of four sources of information: practitioner expertise and judgment, evidence from the local context, a critical evaluation of the best available research evidence, and the perspectives of those people who might be affected by the decision (Briner, Denyer, & Rousseau, 2009: 19).

What does teaching evidence-based management (EBMgt) entail? Given this definition, it would appear to involve teaching quite a range of different skills, areas of knowledge, and practices. EBMgt is not, therefore, a recipe or formulaic approach to management. Although it is fundamentally about the practice of management, parts of it can be taught or at least introduced in the classroom.

As described in the above definition and in Figure 1, EBMgt involves making decisions using the best available, critically appraised evidence from four sources: (1) Is evidence derived from managers' expertise and experience; (2) Are organizational values and evidence derived from stakeholders' views and concerns; (3) Are internal organizational evidence and data or metrics from the local context; and (4) Is evidence derived from scientific research? In each case, the evidence obtained is critically appraised for its relevance and quality.

Of these four sources of information used in EBMgt, the most relevant and accessible to business school students who generally have little managerial experience is the research evidence found in academic publications. The expertise of business school faculty members is mostly related to academic research, and thus, they are well positioned to develop students' skills in gathering, critically appraising, and summarizing this type of evidence—in other words, developing systematic review skills. There is, therefore, a good match between the scientific research evidence aspect of EBMgt, business school students' background and business school faculty expertise. We also believe, as discussed below, that teaching systematic literature review methods develops many of the other skills and perspectives required for practicing EBMgt.

There has been considerable discussion of systematic review methods in social sciences (e.g., Gough, Oliver, & Thomas, 2012; Petticrew & Roberts, 2006); medicine (e.g., Cochrane Collaboration, 2008; Mulrow, 1994; Mulrow, Cook, & Davidoff, 1997); and management (e.g., Briner & Denyer, 2012; Denyer & Tranfield, 2006, 2009; Mays, Pope, & Popay, 2005; Rojon, McDowall, & Saunders, 2011; Rousseau, Manning, & Denyer, 2008; Tranfield, Denyer, & Smart, 2003; Tranfield, Denyer, Marcos, & Burr, 2004; Tranfield, Denyer, & Smart, 2003). There has also been some discussion of the principles and approaches that can be used to teach EBMgt (e.g., Jelley, Carroll, & Rousseau, 2012; Rousseau & McCarthy, 2007); however, we believe ours to be the first attempt to describe in detail the *teaching of systematic review skills to business school students*, and in doing so, this paper makes several contributions. First, we provide a rationale for teaching systematic review skills and argue that doing so across business school courses is important both for students' general education and for developing other skills and perspectives vital to the practice of EBMgt. Second, we describe in some detail a course that aimed to teach master's-level students how to conduct a rapid systematic review on a management question of their choosing. Third, we outline the implications of these experiences for further developing the teaching of systematic review skills in business schools. Our experiences to date have convinced us that teaching students such skills, although challenging, represents a radical and welcome departure from traditional ways in which we as management educators use and communicate research evidence. In short, such courses are transformative in that they begin to move students from being relatively passive recipients of received management wisdom to becoming active and critical users of research evidence.

We start with a description of and rationale for using systematic review techniques to critically evaluate the best available research evidence. Next we provide an overview of our experiences developing and delivering courses on EBMgt and systematic review skills. The main stages involved in the process along with students' reactions and teaching techniques are considered. Last, we discuss the implications of such courses and consider the future prospects for teaching systematic review techniques in all business school programs as a core skill necessary to practice EBMgt.

FIGURE 1
The Four Sources of Evidence in Evidence-Based Management.[i] Taken from the Center for Evidence-Based Management (http://www.cebma.org/)

WHAT ARE SYSTEMATIC REVIEW TECHNIQUES AND WHY SHOULD WE TEACH THEM?

From an EBMgt perspective, reviewing the best available external evidence means identifying a

specific review question relevant to practice and conducting a systematic review of the body of research relevant to answering that question. This approach is in sharp contrast to the traditional literature reviews (with the exception of meta-analysis) typically conducted in management (Briner & Denyer, 2012; Rousseau et al., 2008). Traditional or narrative literature reviews, while useful in many ways, have rather different and often unclear aims, do not adopt an explicit or systematic method, cherry-pick research, may adopt a stance, and include only evidence that tends to support that position. Systematic reviews, on the other hand, adopt "a replicable, scientific and transparent process, in other words, a detailed technology that aims to minimize bias through exhaustive literature searches ... and by providing an audit trail of the reviewers' decisions, procedures and conclusions." (Tranfield et al., 2003: 209). Systematic literature reviews apply a range of methods in order to conduct research on existing research.

But what exactly are the differences between traditional and systematic reviews? Table 1 shows some main differences in terms of the approaches typically adopted in conducting each type of review and some consequences of these different approaches.

Systematic review techniques have been developed by researchers working in many fields, including social science, social policy, and medicine, to overcome some of the weaknesses, limitations, and biases of traditional literature reviews. An important and commonly made observation is that when researchers conduct traditional reviews, they do not adopt anything approaching the same level of methodological rigor they use to conduct primary research. This double standard (Chalmers, Enkin, & Keirse, 1993: 411) serves to "undermine their status and usefulness as research" (Gough, Oliver, & Thomas, 2012: 15), as outlined below.

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Literature reviews, even those written by experts, can be made to tell any story one wants them to, and failure by literature reviewers to apply scientific principles to the process of reviewing the evidence, just as one would to primary research, can lead to biased conclusions, harm, and wasted resources. Yet traditional literature reviews frequently summarize highly unrepresentative samples of studies in an unsystematic and uncritical fashion (Petticrew & Roberts, 2006: 5).

A prerequisite of evidence-based practice in any field is that practitioners have access to systematic reviews that pull together in a relatively objective, explicit, and systematic fashion all the available

TABLE 1
The Main Differences Between Traditional and Systematic Literature Reviews

Traditional or narrative literature reviews	Systematic literature reviews
Do not usually focus on specific or practice-relevant questions	Always focus on specific, usually practice-relevant questions
Have diverse aims, purposes	Have similar aims, purposes: all focus on answering specific questions
Adopt wide variety of approaches, structure	Adopt similar approaches, structure based on set of broad principles
Do not use particular methods or do not explicitly state methods used to conduct review	Use particular, explicitly stated methods to: • Search for, identify relevant literature • Make decisions about what research to include, exclude • Judge the quality and relevance of the research • Integrate or synthesize findings
Are more prone to bias because, e.g., authors can select studies that support their views, ignore those that do not	Are less prone to bias, because, e.g., decisions about what to include, exclude are made explicitly
Are less likely to identify best available evidence	Are more likely to identify best available evidence
Do not aim to be comprehensive by including all relevant, available research	Aim to be comprehensive by including all relevant, available research within explicitly stated boundaries or constraints
Are not replicable or easy to update	Are replicable and easy to update

evidence relevant to a specific practice question. Such reviews enable practitioners to relatively quickly appreciate what is known and, equally important, what is not known from research and apply it, along with other sources of information, to their practice. Libraries of reviews accessible to practitioners have been developed in several areas, such as medicine (Cochrane Collaboration—http://www.cochrane.org); social policy (Campbell Collaboration—http://www.campbellcollaboration.org); international development (UK Government Department for International Development, 2013); mental health and substance abuse (National Registry of Evidence-Based Programs and Practices,—http://www.nrepp.samhsa.gov); and business sustainability (Network for Business Sustainability—http://www.nbs.net).

All systematic reviews adopt similar methodological principles and aims, but they also vary in several ways, including the quantity of resources used to conduct the review. A full-blown systematic review might take a team of highly skilled researchers many months or years to complete and result in a substantial and definitive report. Somewhat quicker versions, such as rapid evidence assessments (REAs), critically appraised topics (CATs), and scoping reviews can be done over much shorter periods. The term "rapid evidence assessment" has a specific meaning (the British Civil Service Rapid Evidence Assessment Toolkit, 2013), and was chosen to describe the student assignment. Although the student assignments do not have the same depth or breadth as REAs, other existing terms for systematic reviews were no more accurate, and we felt that the term rapid evidence assessment provided a good general description of these assignments.

The aim of the course, given the resources available, was to provide some training in the *skills* and *principles* used to conduct systematic reviews rather than teaching students how to conduct a specific type of systematic review. It was made clear to students that these principles can usefully be applied to any review, although, naturally, the fewer the resources available, the more limitations there will be on the review's breadth, depth, and rigor (Gough et al., 2012).

Systematic reviews can also be of great scientific value, as they more effectively identify gaps, contradictions, and consistencies in research findings and can suggest where new research is required. The findings of systematic reviews, therefore, "provide a basis for planning and interpreting new primary research. It may not be a sensible use of resources and in some cases it may be unethical to undertake research without being properly informed about previous research" (Gough et al., 2012: 3).

Although systematic reviews have become quite common in some fields, they are still relatively rare in management as described below:

> . . . Bodies of evidence in [management] are seldom assembled or interpreted in the systematic fashion needed to permit their confident use. A systematic review of the full body of evidence is the key first step in formulating a science-based conclusion. As a consequence at present, neither the [management] scholar nor the practitioner can readily claim to be well-informed (Rousseau et al., 2008: 476).

However, more are being published every year (for examples, see those listed in Briner & Denyer, 2012, and on the Center for Evidence-Based Management website), and at least one journal, *International Journal of Management Reviews*, actively encourages the submission of systematic reviews. We have found that many management academics remain uncertain about their purposes, how they differ from standard literature reviews, and, as a consequence, appear to be unconvinced about their practical or academic value. This is partly due simply to low familiarity but also, we would argue, because collecting new primary data is seen as more important and of higher status than taking stock of the quantity, quality, and nature of existing research findings through conducting systematic reviews (Briner & Denyer, 2012). Although literature reviews are relatively well cited, and meta-analyses are even more so, they represent quite a small proportion of all management publications. For example, of the 3,613 articles published in 2012 in the journals listed in the 2012 *Financial Times* Research Rank, 8.7% were review articles.

This limited interest in reviewing literature is also reflected in the methods of training provided for future academics in doctoral programs, which almost exclusively focuses on techniques required to collect and analyze new data rather than the methods needed to collect and analyze evidence from published research.

It is not only doctoral students who receive little or no training in systematic or indeed any type of literature reviewing. From our experience, it ap-

pears that business schools do not incorporate such skills into any of their programs. We do not encourage students to *find out for themselves* what is already known and not known. Rather, students are directed toward textbooks which, with some exceptions (e.g., Latham, 2009; Locke, 2009; Pearce, 2009; Rousseau, 2012) have the same type of limitations as the traditional literature reviews discussed above and are unreliable in other ways such as reporting so-called facts which have little empirical support and including obsolete theories (Pearce, 2012). Students may believe that the best sources of information about the collective body of knowledge are the business school professors who teach them, but again, similar biases and limitations apply.

How Does Teaching Systematic Review Techniques Help Develop EBMgt?

Although systematic reviews are not yet well-known in management, we believe that teaching these methods to students provides them with, among other things, some of the skills essential for managers to practice in an evidence-based way—as well as providing them with the results of a review. We have identified five ways in which teaching systematic review skills develops other skills relevant to the practice of EBMgt. While some of these may to some extent also be developed though standard primary research methods training, teaching systematic review skills can play a particularly powerful role.

First, as with any research, conducting a systematic review helps students focus on specific problems and questions that are, in principle, answerable. EBMgt involves collecting evidence of difference types to help inform decisions; a vital part of this process is actively identifying *as precisely as possible* the question or problem that needs to be addressed. Standard research methods training does this to some extent, but the questions addressed in primary research are usually derived by making slight refinements or tweaks to existing research questions in the literature. For systematic review questions, the process is more active and challenging, as it involves identifying a specific practical problem and working out how to convert that problem into a question that can be answered through collecting and synthesizing existing research evidence.

Second, conducting systematic reviews helps students develop other skills, such as critical

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thinking, which are needed to appraise the evidence they find. Many of these skills are exactly those required to critically appraise information gathered from *any* of the other three sources used in EBMgt. Primary research methods training can certainly help to some extent develop critical thinking. However, in such training, students are typically taught how to match the most appropriate method to the research question, rather than to actively consider the ways in which, given the question, different types of data and study designs provide different levels or quality of evidence.

Third, conducting systematic reviews requires students to pull together a *body* of evidence and try to weigh what it is suggesting overall in relation to their review question. It is not unusual and is perhaps typical that the collective findings from a body of evidence will be equivocal and open to interpretation. Practicing EBMgt also requires managers to consider a wide range of sometimes contradictory and ambiguous evidence and decide, on balance, what it means for the decision they need to take. Although the results of a single piece of primary research do of course also need to be interpreted, doing this is rather different from the skills and knowledge developed through interpreting a body of findings.

Fourth, the process of systematic reviewing requires processing a lot of information to determine whether it is relevant to the question or problem and, if it is, making a judgment about the quality of that evidence. Such judgments of quality are always made in relation to the question and determine how much weight should be placed on that piece of evidence. Managers are similarly confronted by potentially huge quantities of information from many sources, including their experience and organization which, from an EBMgt perspective, needs to be carefully evaluated to distinguish between what is irrelevant and unreliable in relation to the problem at hand and what is relevant and relatively reliable.

Fifth and last, teaching systematic review skills helps make students *active and critical consumers of knowledge* rather than passive recipients of received wisdom found in textbooks, business school curricula, consulting firms, and ideas such as "best practice" and "benchmarking." Evidence-based practice seeks to encourage practitioners to find, question, critique, and then use evidence of different kinds in their work rather than simply following received wisdom (Briner & Rousseau, 2011a; Rousseau & McCarthy, 2007).

A COURSE IN CONDUCTING RAPID SYSTEMATIC REVIEWS

The first author has experience teaching and introducing systematic reviewing skills to different groups, including organizational development (OD) practitioners working in a large airline, I–O psychology practitioners, early-career management researchers, doctoral students, and I–O psychology master's students. The second author also has experience teaching systematic review skills to master's students, principally within OD and MBA populations. For the sake of clarity, we will focus here on just one course (for other examples see the Center for Evidence-Based Management website) developed by the first author specifically for students with little work experience studying a 1-year full-time master's program in HRM and consultancy. The course consisted of 11 3-hour weekly sessions which included some lecturing but mostly practical hands-on literature searching and reviewing workshops with the lecturer present throughout to take questions and offer guidance. The students were assessed mainly through their coursework, which was a short systematic review on a question of their choice relevant to HRM practice.

Although the course developed here was for students studying HRM, the same principles and approach can be adopted for students in any and every area of management. Systematic reviews have been published about many management topics including innovation (Länsisalmi, Kivimäki, Aalto, & Ruoranen, 2006; Pittaway, Robertson, Munir, Denyer, & Neely, 2004); the effectiveness of marketing (Hemsley-Brown & Oplatka, 2006; Stead, Gordon, Angus, & McDermott, 2007); the management of information systems (Edmunds & Morris, 2000; Weightman & Williamson, 2005); and the strategic management of organizations (Segev, 1989; Thorpe, Holt, Macpherson, & Pittaway, 2005).

Course Aims

Given that the content and goals of the course are somewhat different from typical master's program courses, we discussed its aims and objectives in detail to make it clear to students that it was only partly about gaining knowledge of a particular field (in this case, EBMgt) and rather more about taking an active approach to developing skills relevant to both academic and management work. The learning outcomes stated that by the end of the course students should be able to perform the following:

1. Demonstrate a good understanding of evidence-based practice in other fields;
2. Assess the strengths and weaknesses and costs and benefits of both evidence-based practice and typical HRM and consultancy practice;
3. Describe how judgments of the quality and relevance of different forms of evidence can be made;
4. Assess the extent to which claims made about HRM and consultancy practices are supported by evidence;
5. Identify the barriers to and facilitators of evidence-based practice;
6. Conduct a rapid systematic review.

Related to this, the four main types of skills the course aims to develop were described as (1) Critical thinking and reasoning; (2) Identifying and gathering the best available evidence; (3) Performing critical appraisal of different forms of evidence; and (4) Applying evidence of different forms to decision making. The aims, learning outcomes, and skills were discussed several times in some detail in early sessions.

Structure and Content

As is apparent from the course aims described above, the course structure and content cover more than the teaching of systematic review techniques. In our previous experience, we found it important to provide an overview of the broader logic of EBMgt so the value and purpose of conducting systematic reviews of research evidence become clear. Before teaching systematic review methods, we introduce evidence-based practice and EBMgt and consider why such approaches might be important.

Below are the main points of each session, as they are likely to be unfamiliar to most readers, along with some of the classroom exercises used in the course.

Sessions 1–4: Evidence-Based Management

An essential part of teaching systematic review methods involves explaining in some detail why such reviews are needed and how they relate to EBMgt. However, given our purposes here, only a very brief overview of the first four sessions is provided, (more information is available from the authors). Session 1 introduces the concept of EBMgt through discussing definitions, what evidence means, the history of evidence-based practice, and an example of what EBMgt looks like. Practical exercises are also used to show that we use evidence routinely in our everyday decision making and that EBMgt is taking a more formal, explicit, and structured approach to using evidence. Session 2 discusses the need for EBMgt. Using a set of criteria (Briner & Rousseau, 2011a,b), the extent to which HR is evidence-based is discussed. Any area of management could be considered in the same way. Session 3 addresses the question, "what shapes management and organizational decisions apart from critically appraised evidence?" Some factors considered include cognitive biases, management fads, and power in organizations. Although the course here is focusing on one source of evidence—scientific research—Session 4 introduces and discusses the other three sources of evidence also listed in Figure 1: experiential, organizational, and stakeholder concerns. This is to reinforce, again, that EBMgt is not about just using one source of evidence but also to demonstrate that, in order to apply the findings from systematic reviews of research, evidence from each of these other sources is essential.

In session 4 we have found it useful to provide detailed examples of these three other sources of evidence. In a classroom setting it is not usually possible to directly and actively gather and critically appraise evidence from the organization or stakeholder concerns, as this requires a real and live organizational setting and problem. However, it is possible and we have found it useful to ask students to reflect actively on and gather evidence from their experiences. Even those who have never worked are still likely to have views, hunches, or intuitions formed through experience and through analogous situations. Students can usually identify what may be causes of and solutions to a perceived management problem of, say, poor performance or low customer satisfaction. Critically appraising the quality of the evidence on which their judgments are based helps demonstrate that we sometimes form strong and confident opinions on the basis of very little or no good evidence. It also enables students to compare their initial hunches with the findings of their reviews.

Session 5: Introduction to Rapid Evidence Assessments and Systematic Reviews

The previous sessions provide vital context to the main activity and learning involved in the course. This session introduces the main principles and logic behind systematic reviews and gives practical guidance regarding the methods as well as techniques involved at various stages. It also provides examples that students can use as models for their own REAs. In other words, this session provides to the class the main formal input about how they should conduct their REAs. Subsequent sessions are not lectures as such, but are tailored to the students' activities and their learning needs, although in areas in which there was widely requested guidance on a specific topic, a minilecture was prepared and presented.

Students are again reminded that systematic reviews and their quicker and shorter versions, such as REAs, are among the cornerstones of EBMgt. They are essentially works of research on existing research, and although they vary somewhat in their approach, they tend to follow the same fundamental steps or stages (see Briner & Denyer, 2012).

Students are also reminded repeatedly about the purposes and nature of such reviews and what sorts of answers they can reasonably expect from theirs. We emphasize that "systematic reviews never provide 'answers.' What they do is report as accurately as possible what is known and not known about the questions addressed in the review" (Briner et al., 2009: 27). They are therefore unlikely to give a definitive, single, and unequivocal answer to the question. The consistency of findings will vary depending on the question, bearing in mind that inconsistency is neither a good nor bad thing—it reflects what is known and can be useful because it suggests the contexts or settings in which research findings may or may not apply.

The basic underlying principles and characteristics of systematic reviews are clearly spelled out. They tend to exhibit four basic characteristics (Briner & Denyer, 2012; Rousseau et al., 2008). First they are *systematic and organized* in that they are conducted using a system or method which is de-

signed in relation to and specifically to address the question the review sets out to answer. Second, they are *transparent* and *explicit* and clearly state the method and its rationale. Third, they are *replicable and updatable*, given that the method is made explicit. And, fourth, they *synthesize and summarize* through pulling together in a structured and organized way the results of the review in order to answer the question.

Sessions 6–10: Individual Work and Minitutorials on Students' Rapid Evidence Assessments

In all sessions, students worked on their REAs in three ways: (1) Searching for and downloading research articles on their laptops; (2) Working individually with faculty on their REA question, search strategy, interpretation of the articles they found, and so on; and (3) Participating in minitutorials, minilectures, or workshops designed to teach the necessary skills.

Session 11: Students' Presentations of Rapid Evidence Assessment Design and Initial Results

To conclude the teaching element of the course and enable students to share expertise and have a clear deadline for making progress with their REA, they were asked to prepare a 5-minute presentation covering the following topics:

- What is the background to the review question? How was it chosen? Why?
- What is the review question (or questions)?
- What types of study were considered relevant and why?
- What search strategy was used and why?
- What, if any, are the preliminary results?
- What problems or pleasant surprises have you encountered so far?

The deadline for the assignment was 10 days after the final session, and therefore, students had just over 6 weeks from the start of the assignment to submission. The structure of the assignment and the assessment criteria are presented in the Appendix. Students are also formally required to submit their REA question and the outline of their REA report a few weeks before the deadline to ensure that they are on the right track.

Teaching Style and Student Support

The instructor's role (first author) in the course was more like that of an adviser, providing guidance and support, than a lecturer or teacher (although there were some lecturing elements as discussed). Its focus—students completing an REA assignment—was made very clear from the start as was the support the instructor would provide, which included answering questions in class, either with the whole group or during one-on-one surgery-type sessions within the classes, which proved particularly popular. Students were informed that they could e-mail any time with any specific questions about conducting their REAs, and many used this opportunity to ask whether their review questions were appropriate.

Also emphasized was the purpose of the course: to help them learn a skill or craft which would take time and was challenging but one which would have both academic and practical value. Students were strongly encouraged to think for themselves in a critical way and to make their own judgments, based on various kinds of input, about the strengths and weaknesses of the various research studies they encountered. Also acknowledged from the start was that academic articles can be difficult to read and understand, that there are reasons this is so, and that reading of articles could, like any other skill, be developed through practice.

Various analogies were used to help students understand the relevance and importance of the skills they were developing, for example, a consumer analogy in which students were positioned as consumers or users of both HR research and practices. The skills they were learning would help them to become critical consumers, and therefore, make better and more informed choices. Another analogy was based on the old proverb that giving a person a fish allows them to eat for a day, but teaching them to fish enables them to eat for the rest of their life. Traditional courses give students knowledge "fish;" this course was aiming to teach them how to "fish" for knowledge themselves.

WORKING THROUGH THE MAIN REVIEW STEPS

The general structure, contents, and approach of the course are described above. We now consider how we work with students through some key stages of conducting their reviews. As with conducting any research, progress is not quite as linear or straightforward as implied by the numbered steps in Table 2. Typically the process is a more iterative one, involving taking several steps forward and then coming back one or two steps to reconsider the wisdom of previous decisions. For

TABLE 2
Typical Steps in Conducting a Systematic Review and Examples of Questions to Aid Students in the Review Process

1. Identify and clearly define the question the review will address.
   - Is your question about the effectiveness of a technique? What do you mean by effectiveness? What precisely is the technique? Will you compare?
   - Is your question about the relationship between two phenomena? Are you interested in associations or causality? Are the phenomena qualitative or quantitative? What do you mean by "relationship"?
   - Is your question about a process? What sort of process? What time scales? What are the key inputs and outputs and events?
2. Determine the types of studies and data that will answer the question.
   - Will you include, for example, meta-analyses, experimental research, action research, and case studies? Why some and not others?
   - Will you include quantitative and qualitative data? Why?
3. Search the literature to locate relevant studies.
   - Where will you search for relevant studies? Google Scholar? Web of science? Business Source Premier? PsychInfo? Why?
   - Where will you *not* search? Which databases or sources will you not use and why?
4. Sift through all of the retrieved studies in order to identify those that meet the inclusion criteria (and need to be examined further) and those that do not and should be excluded.
   - What characteristics does the study have to have in order to be included? Which study characteristics would lead you to exclude the study?
   - Might you modify the criteria depending on what you find?
   - Is the date of publication or sector or country relevant?
5. Extract the relevant data or information from the studies.
   - Which parts of the results will you extract? What information will you gather from each study you find? Why?
   - Will you use the author's interpretation and conclusions, or will you make your own?
   - What other information about the study (e.g., sample size, analytic method, design) will you need to extract and why?
6. Critically appraise the studies by assessing the study quality determined in relation to the review question.
   - How can you devise a system or scoring method to rate study quality? How is it relevant to your review question?
   - How can you describe the range and profile of the study quality you have found across your included studies?
   - Would you consider revising the criteria depending on the number and quality of studies you find?
7. Synthesize the findings from the studies.
   - How can you pull the results from the studies together? Why did you choose this method? Does it accurately represent what was found?
   - Overall, what is this body of research suggesting in relation to the question? How can you best describe and represent what the research is saying?
   - How clearly or confidently can the review question be answered?
8. Consider potential effects of publication or other biases.
   - Are there reasons to believe that the available research may be biased in relation to the direction of the results?
   - Was the research conducted in a particular and limited number of contexts which may have affected the results?
   - Are there other contextual variables which question the overall trustworthiness of the results found?

Table 2 adapted from Petticrew and Roberts (2006) and Briner and Denyer (2012).

this reason, conducting systematic reviews is particularly suited to class and group discussions, as many students experience similar problems. We also encourage students to support each other and discuss common problems or newly discovered solutions.

As described above, the first four sessions of this course were critical in explaining the need for systematic reviews by describing the core ideas involved in EBMgt. Now, it is worth considering some of their responses to these initial introductory sessions. Early in these sessions we direct students to the Centre for Evidence Based Management's website (www.cebma.org) as a key resource where they can find videos, presentations, articles, and resources for conducting systematic reviews.

The concept of EBMgt produces a fairly common set of reactions. The first is surprise and disbelief that it isn't already happening, as students assume that management practice is strongly evidence-based and that managers regularly use research evidence produced by business schools. The idea introduced that some management practices may be fads not supported by a body of evidence can cause discomfort and challenge students' views about the rationality of management decision making. Deploying reverse logic, some students also believe that if a well-known or "blue

chip" organization adopts a management practice, then it must therefore be an effective practice, or, similarly, that management gurus only become famous because their ideas are sound and evidence-based.

A second reaction to EBMgt, particularly among more experienced students, is to agree strongly with the principles of EBMgt but to doubt its usefulness. Those with experience of organizational decision making think it's naive to expect managers in the real world to work using EBMgt. Pressures of time and politics, they suggest, will get in the way. The expression "doomed to success" is sometimes used by such experienced students to describe a political process through which new practices and initiatives will inevitably come to be judged as effective, regardless of their actual effects.

As students develop a better understanding of EBMgt, they also develop more elaborate views of what evidence is and why the quantity, quality, and relevance of evidence matter. Perspectives such as "not everything that can be measured matters and not everything that matters can be measured" usually surface, along with reflections on the difficulties of gathering evidence of the impacts of management practices. On one hand, these effects can seem intangible and hard to observe or measure, yet on the other, strong and concrete claims are made about what they will achieve.

The idea of systematic reviews and why they are needed can be puzzling, as many students assume that the textbooks and traditional reviews they read do provide fair, balanced, and methodical summaries of research evidence, although this is not usually the case (Pearce, 2012; Stambaugh & Trank, 2010). Being encouraged to question the authority of a textbook, to question what a professor says in class, or to reflect on whether we can trust the academic literature can also be disquieting for those who believe that what academics say and write is objective, neutral, and well-founded. In another example of reverse logic, some students also assume that well-known academics and those in top business schools must produce the best research and have the best-supported ideas; otherwise, they would not be in such positions. Some students are initially puzzled by the idea that the name of the author, their institution, or the status of the journal are not good indicators of research quality and that the quality of any research needs to be judged on its own merits and in relation to the review question.

Once students see the value of systematic reviews, they start to ask whose responsibility it is to produce such summaries of the findings of management research. Why should mangers have to learn systematic review skills when academics already have them? Why aren't universities producing such summaries? Our usual response is to point out that the main role of universities is the production rather than the application of research and that intermediaries of various kinds, including students, could play an important knowledge-bridging role.

By the end of these introductory sessions, it appears that most students are aware of the purposes of systematic reviews, why they are needed, how they relate to EBMgt, and why knowing something about the skills required is important.

Identifying the Review Question

One of the most important and challenging parts of conducting an REA, as in conducting any research, is identifying a question that is clear, focused, and, in principle, answerable, while at the same time being sufficiently embedded in existing published theory and evidence such that the need for the review is well justified. The process of devising a review question can be time consuming and is always quite iterative, requiring some understanding of the existing literature to ensure that the question actually makes sense. There are, however, some techniques that can be used to help focus the question, including critical thinking and analysis.

This exercise can be used to introduce students to some techniques to focus initial questions that are too broad (which they usually are). Students are presented with the question: "Does team building work?" We then discuss the ways in which this question has both academic and practical relevance. Students are then asked to come up with other questions to help narrow down the question in some way. After discussing the questions they have devised, the following is presented to facilitate further discussion, although students often have already identified many of these:

- What is meant by "team"?
- Is any work group a team? Which are and are not teams?
- What types of teams are there?

- Which particular contexts or settings are relevant?
- What exactly is "team building"? What is not team building?
- What does "work" mean? Work compared to any other team intervention? Compared to no intervention?
- What outcomes are relevant?
- What are the mechanisms, processes, and theory which might account for possible effects of team building on outcomes?
- What time periods are relevant for observing any possible effects? What are possible negative effects or harms?
- What types of data from what sorts of designs would in principle provide good-quality, medium-quality, and poor-quality evidence?

The purposes of this exercise are to show that initial questions that might seem reasonable are usually just not precise or specific enough to be useful; that questions can be broken down using further questioning (and that this activity itself provides insight); and that doing so helps identify clearer and more answerable questions.

Similar to the above activity, another way of narrowing down and focusing the review question is to define or pinpoint more precisely the key characteristics of the phenomena of interest. For questions about the effects of interventions (which, as discussed below, are the most common type of review questions chosen by students), the acronym PICOC (e.g., Petticrew & Roberts, 2006) can be used to help focus the question. So, in the case of team building, the following are considered:

- *Population*: What is the population? Managers? All workers? New teams? What size of team?
- *Intervention*: What is a team-building intervention? What will count? Any type of intervention aimed at improving team function?
- *Comparison*: Is there a comparison between team building and some other intervention? Is it something compared before and after team building?
- *Outcomes*: Which outcomes are important and relevant? Is it about performance, attitudes, affect or all of these things? Are the outcomes short- or long-term?
- *Context*: What is the context in which the intervention takes place? Is it in large or small organizations? Particular sectors? Teams with identified problems or difficulties? Does country or time period matter?

In all these courses, asking students to choose their own review questions and topics is important for several reasons. First, it puts them in the position of becoming active users of academic evi-

dence rather than passive recipients. What do *they* want to know? Second, given the challenges of producing REAs, it is more likely that students will stay motivated if they have chosen a topic that interests them. Third, as discussed earlier, identifying a clear problem and answerable question is both a difficult and crucial aspect of EBMgt. If students are given preformulated questions, they do not go through this process.

The topic areas students most commonly choose across our courses include retention, absence, engagement, flexible work, motivation, commitment, performance management, talent management, corporate social responsibility (CSR), and coaching. Given that either already do or plan to work as managers, it is perhaps not surprising that questions were usually quite practice-oriented rather than descriptive, or academic, or process-oriented. Most focused on the causal relationship between an HR or management technique and employee or organizational performance. Most students seem to be interested in whether the chosen management practice works.

Almost all students need to go through several iterations of the process to develop an appropriate question. Initial questions are usually too broad in the same way as the team-building question discussed above. There are many ways of focusing the question, most of which (such as PICOC above) focus on interrogating the terms in the initial question in order to make the terms of the question much more specific. Reading relevant research in order to focus the question can also help, as many commonly used terms such as "performance management," "talent management," or "engagement" have no precise or agreed upon definition, so they are usually not appropriate. Students were sometimes surprised and often frustrated that these popular and current terms did not have more precise meaning in the literature, that different researchers (and practitioners) use them in different ways, and that closer inspection revealed them to be quite vague ideas.

The following are some examples of students' initial REA questions and (in italics) how they were refined to be more specific and answerable:

- Does employee engagement result in lower absenteeism and result in a retention-rich organization? *Do changes in levels of employee engagement change levels of absence and turnover?*
- Do codes of conduct have an impact on employees and affect their behavior? *Does the intro-*

duction of codes of conduct change conduct-relevant behaviors? *Do organizations with codes of conduct report less unethical behavior than organizations without codes?*

- What factors influence firms' HR outsourcing decisions? *Do organizations that outsource HR functions have different characteristics from those that do not?*
- Do CSR activities increase the quantity or quality of potential employees? *Are job applicants more likely to apply to organizations who engage in more CSR activities?*
- Is there a positive correlation between an organization's support of learning and development and employee retention? *Do tuition reimbursement programs offered by firms increase retention 3 years after the course ends?*
- The impact of flexible working on employee productivity in developed countries. *Does the introduction of flexible working in organizations in developed countries increase employee performance?*
- Does implementing employee stock options improve company performance and profits? *Do employee share option plans (ESOPs) increase organizational commitment?*
- Are exit interview data reliable? *To what extent do exit interviews gather accurate information about the reasons employees leave?*
- Do companies that offer promotions to their employees experience lower turnover rates? *To what extent do actual promotions, in terms of change in status or grade, affect employees' intentions to quit?*
- What is the impact of mentoring programs in the organization? *Do women who receive mentoring report increased work effectiveness?*

As is apparent from these examples, even the refined and more specific questions still require further refinement to conduct a search for relevant research and to extract relevant information from the studies found. For example, constructs such as commitment, absence, and work effectiveness can be operationalized in different and multiple ways, and some students were, again, quite surprised that what for them seems like a single and simple idea (e.g., commitment, absence) can actually mean so many different things.

Most students appear to find the process of identifying a usable review question challenging and more difficult than they expected: "I really underestimated the difficulty of asking the right question ahead of formulating a search strategy. Going through this process has changed how I look at the questions I ask and the expectations I hold around what research can actually answer."

For some, it also highlighted the benefits of investing time in asking the right question: "At the time, asking the right questions seemed like a huge waste of time. It served only to highlight how much actual time I have wasted in my job and in my degree in sourcing and using research evidence."

Determining Types of Studies and Data That Will Answer the Question

Once the students decide on a review question that they think is reasonably well focused, they start the stage of considering what types of studies and data will *in principle* provide reasonable quality evidence with which to answer the question. Two complementary approaches are useful here.

First, some basic concepts around research methods and design need to be discussed. So, for example, if their review question is about cause and effect, discussing what causality means is important, and the conditions under which it is possible to infer causality, as well as the types of studies that meet such conditions. One useful exercise here is to take one of the student's review questions (examples provided above) and ask the others to consider what types of research would in principle given the question provide more or less relevant and better or *poorer* quality information. Different types of research and data typically found in management research (e.g., in-depth interviews, cross-sectional survey, case study, longitudinal survey, behavioral measures, financial data) are described, and students are asked to rate the likely relevance and quality of the findings of each type to the review question. In our experience, students vary somewhat in how much they know about or understand research methods. In some cases, additional remedial minilectures may be required.

A second exercise involves asking students to do a very quick initial search on their question and obtain copies of around 7–10 studies that may be relevant. Students are asked to read each study, judge the extent to which it provides relevant and good-quality evidence in relation to their question, and explain how they made that judgment.

Both exercises are intended to develop students' awareness of the ways in which both the quality and relevance of studies can vary considerably and that judgments about this must be made in relation to the specific review questions they are addressing.

Such awareness is illustrated in this comment: "Just knowing that 'research' is not a standard unit

was an eye-opener for me." Another student stated, "I don't think anyone in my work knows what a meta-analysis is. I can't believe that when we use external research services, we've never been directed towards these types of articles. Instead, we get a raft of HBR pieces."

Searching the Literature

Perhaps the second most challenging aspect of conducting the review (after identifying a good review question) is how to search effectively for relevant research articles. We have found that almost all groups and all students have found this difficult unless they have, unusually, had some form of training in bibliographic searches and databases. Many are surprised that simply typing apparently relevant terms into a search engine or bibliographic database does not immediately produce a definitive list of relevant articles. Our hunch is that students are accustomed to using Google and other search engines to instantly find out straightforward facts and information and do not at first understand why searching for academic information is so much more complicated. We have found that explaining search techniques, emphasizing that it is a skill, encouraging students to experiment, and asking librarians to provide some skills training all seem to help in dealing with this challenge (for a review of search training methods see Goodman, Gary, & Wood, this issue).

All students appeared to find searching for relevant studies challenging and, even though they were instructed that it would be time consuming, many were still somewhat taken aback about just how long the process could take. For some REA questions, for either methodological or topic reasons, no papers directly answered the question. In this case, students were asked to find the best available evidence, which meant including methodologically weak studies if they were the best available evidence (and discussing these limitations) or modifying or slightly expanding the question without losing sight of the its main purpose.

Designing and Applying Inclusion and Exclusion Criteria

Students should already have some sense of inclusion and exclusion criteria (the characteristics a study needs to have to be included and to be excluded) as a consequence of going through the

steps above to determine relevant types of studies and data. At this stage, however, these criteria can and usually do need to be further developed through making decisions about the studies that are already found. For each study already found on the basis of its title and abstract, students are asked to decide by looking at the full text whether they will include it in their review and why. Though this iterative process, the criteria are refined and made more explicit.

One very common and sometimes painful challenge at this stage for students who are mostly used to reading textbooks is how difficult and time consuming it can be, at least initially, to read journal articles. Explaining the structure of these articles, their logic, why they are written in this way, and the importance of active reading helps make them more accessible. As part of this effort, we also usually explain how and why academics write journal articles, the peer-review process, what rejection rates and impact factors mean, and the differences between popular and academic management writing. Nonetheless, many students find the sheer *quantity* of reading required quite daunting, although in many cases, the articles they start to read can be abandoned as they will not upon closer inspection turn out to meet the inclusion criteria.

Initially we encourage students to read as many articles as quickly as they can with some questions in mind (e.g., "what types of data were collected in this study?") so they develop a feel for their structure, become familiar with where relevant information is likely to be found, and begin to find them less intimidating. We often describe them as technical documents or communications between researchers that cannot and should not be read like novels or stories.

The initial pool of studies initially identified from the title and abstract usually reduces considerably when the full text is obtained and the inclusion and exclusion criteria are applied. For example, one student examining the question, "Is incremental reward an effective strategy for employee motivation," started with an initial pool of 155 potentially relevant articles but included only 17 studies in the final review. Typically, the final number of studies included represents around 10–40% of the number in the initial pool.

One useful technique at this stage is to pair students and ask them to examine each other's inclusion and exclusion criteria and, using a subsample of their partner's articles, apply the same

criteria. This gives students insight into their own use of criteria and also serves as a crude form of interrater reliability or external scrutiny. As mentioned, students are required to present their review method and design to the rest of the class. This seems to be particularly useful, as it focuses the students' attention on the logic and rationale for their choices and can also generate useful feedback and further insights.

Going through the process of deciding which studies to include or exclude helps students to more actively consume research: "Having to make decisions about what I would include and exclude from my review was rather arduous. It made me engage with the literature with a greater sense of purpose." It also helps them to develop a stronger awareness of the strengths and weaknesses of research and what it capable of revealing:

> EBMgt as a process has given me a great deal of confidence in my own interpretative and analytic abilities. As we discussed in class, the assumption often is that research can provide an answer and that, when it does, it is the right answer. Knowing what I know, I'm a lot more aware of the need for me to be quality control for the research I use in the course of decision making.

Extract the Relevant Data or Information From the Studies

Once students are more comfortable with the general content of articles, they are faced with the challenge of identifying, extracting, and interpreting relevant material. At this stage, depending on the experience and level of the group, students may need support in understanding methods, data analysis, and the interpretation of results. What helps is that the articles they have included tend to use quite similar methods, because the review questions have already become very focused. Here, and throughout the course, students are encouraged to look at published systematic reviews to find models that demonstrate the type of information that needs to be extracted and how it is used and presented in these reviews.

Students are encouraged to design tables that can be used to present the evidence and their findings in a structured way. The review question(s) can be used to help determine which information needs to be extracted from each study and how it

can be presented in a table to show clearly how each finding answers the question(s).

It is not uncommon for the process to continue to be iterative, even at this relatively late stage. If students feel they are not getting the right information, then we encourage them to revisit their review question and inclusion and exclusion criteria to determine how these can be refined.

Critically Appraising Study Quality

Next is the challenge of judging the quality of the research reported in each article. If students have developed a well-focused question, judging the quality of the research in simple terms is relatively straightforward. For example, if the question is mostly about actual employer behavior (rather than self-reported behavior), then studies that have more objective measures of behavior are judged as higher quality. Likewise, if the question is essentially about cause–effect relationships, then longitudinal studies will be rated as of higher quality than cross-section alones.

If students have chosen very narrow inclusion criteria, then all of the studies they include are likely to be of high quality. Less tight criteria are likely to result in a wider quality range. For example, one review about the long-term effects of forced performance ranking identified a total of eight relevant studies. Three were judged to be of high quality, four of medium quality, and one low quality.

Synthesizing Findings

There are many forms of synthesis (see Gough et al., 2012; Petticrew & Roberts, 2006); however, the relatively short and rapid systematic reviews undertaken with our students do not often identify a very large number of research findings. Synthesis usually therefore takes the form of tabulating the findings from each study found (see the Conclusion column of Table 3).

Completed Assignments

Most students were able to closely follow the format and structure of the REA report, and this was facilitated by the many examples that can be found of short systematic reviews—although many of these are outside management. In some cases, it was difficult to answer the REA question with a clear answer because of the poor quality or small number of studies or because the studies had quite

TABLE 3
Outlines of Examples of Students' Rapid Evidence Assessment (REA)

REA question	Number of studies after inclusion and exclusion criteria	Conclusions
What is the effect of occupational pension schemes (OPSs) on employee retention?	14 studies—10 demonstrated positive relationships	• Methodological limitations of all studies found • No intervention studies or studies examining mechanisms • No studies comparing different types of OPSs • No studies comparing relative strength of effect of OPSs compared to other retention factors • Employers believe OPSs have an effect on retention • Employees also say OPSs affect their decision to stay
Can ethical corporate social responsibility (CSR) through diversity, community work, or sustainable environmental practices increase attractiveness of employer to potential employees in terms of quality, quantity of applicants?	Six studies identified—all found positive relationships	• Strong methodological limitations • All studies perceptual rather than about actual behavior—not possible to answer review question • Many samples included students who may or may not have been looking for employment • Not clear which particular, if any, CSR activities might influence job applicants' behavior
Does implementation of any employee fitness program result in lowered absenteeism within group of participants, before, after its implementation?	17 longitudinal studies—14 showed positive relationships	• Some methodological limitations (e.g., self-report absence) • Inconsistency of measurement across studies • Lack of control of other variables • Some studies include very short follow-up periods • Effects may only be for employees who make regular use of the program

mixed results. Students were encouraged to see this not as a problem but simply as the results of their review.

Table 3 below shows some outlines of the REAs completed by three students. It should be noted that the final number of studies included in the review, which may appear small to those unfamiliar with systematic reviews, was determined through applying inclusion and exclusion criteria to all papers found in the initial searches.

CONCLUSIONS AND IMPLICATIONS

We have suggested here that teaching students how to conduct systematic reviews is a core part of teaching evidence-based management. In part, this is because it allows students to learn review-specific skills, but also because the process of con-

ducting a review develops many other skills and perspectives directly relevant to the practice of EBMgt. However, it also places somewhat new demands on teachers, has some costs as well as benefits for students, and forces more careful consideration of its place within and implications for management school teaching. To conclude, we reflect on each of these.

We are both more accustomed to teaching content-based courses in which we provide an overview of a particular field with which we already quite familiar, such as motivation or organizational change. The material we use is taken from the usual types of sources, textbooks and journal articles, in addition to our own understanding and views of that field. In contrast, teaching courses on REAs is not about providing an overview of a particular field but, rather, it is about teaching stu-

dents techniques for finding research evidence relevant to a specific question of *their own* devising and helping them to reach *their own* conclusions about what that research evidence means. This requires those teaching such courses to be more neutral than is perhaps more typically the case and to resist the temptation to offer opinions or suggest reading but, rather, to help students to learn to do this for themselves. Another somewhat different teaching requirement is to be much more humble and have greater humility about what we know and do not know on the basis of existing management research. In content-based courses, we more typically emphasize how much management researchers know and communicate narratives of unstoppable scientific progress and steady knowledge accumulation. When, as is quite often the case, students are surprised by the limited quantity, quality, and relevance of the research they find, it is easy to become somewhat defensive rather than acknowledge that, in many instances, we do not have particularly good evidence to answer their questions and a lot of published research may be of poor quality.

We have both found these new challenges exciting and ones that, in our view, can make teaching extremely rewarding. In particular, there are many instances of students' "eureka" moments when they, for example, realize the logic of systematic reviews, begin to understand how to find evidence, develop their own understanding of the strengths and weaknesses of empirical studies, take ownership of the review, and—perhaps most exciting of all—feel they have not only found, but also understand the evidence relevant to their question.

As indicated above, these courses produce a range of reactions in students, and most of the potential benefits seem to bring with them potential costs or disadvantages. A clear benefit is that students do start to learn some of the skills needed to conduct systematic reviews and to better understand how to judge academic research. At the same time, some students develop a strong and overwhelming awareness of how much they *do not* know as well as discomfort about whether they can trust the management research findings. Of course, it can also be argued that one of the purposes of education is to increase awareness of such knowledge gaps and to develop healthy skepticism. Some students do indeed seem to feel empowered by this process. Another mixed reaction, as already mentioned, is that although the idea of using systematic reviews of evidence to inform

practice makes sense to students and is viewed positively, it is also, particularly among more experienced students, seen as something that is not doable in the real world of organizations. A more clearly positive benefit is one we did not anticipate: Quite a number of the students use their REA and the knowledge they gained through it as the basis for their research dissertation, and we now in some cases cite this potential benefit as a way of motivating students to complete their REAs. Another benefit reported by many students is that they feel their ability to identify precise questions and problems has been enhanced by going through the process of conducting a REA.

One implication for teaching in management schools more broadly is that students begin to ask questions about the nature of the content presented to them in other courses. We have both had students ask us whether the material they are taught in other courses is an accurate reflection of the range of evidence available and whether other faculty take an evidence-based approach. Our response to these students is that this is in generally unlikely, given the current level of development of EBMgt, but that they might benefit from asking the course teacher how they chose the content. We have both also experienced some puzzlement from colleagues about what EBMgt is and why students are learning systematic review skills. Some believe this to be methods training—which, in a way, it is—while others wonder if it's worth teaching students these skills given that, in their view, plenty of good textbooks and reviews are already available.

A further implication based on our experience is that some or all of the skills of conducting systematic reviews can and in our view *should* be taught at all levels of management education. These skills can be developed to different points, and while the training provided to undergraduates may be very different from that provided in specialist master's or doctoral programs, the basic principles can be conveyed to and understood by any management school student. In other words, *all* management school students should graduate with at least *some* understanding of what management research is, how and why it is conducted, what it can and cannot tell us, how the quality and relevance of research can be critically appraised, and how specific practice questions and problems can be formulated and evidence gathered and then used to address them. Indeed, it could be argued that helping management students learn how to learn in this way is far more important than ensur-

ing that they develop what is usually a fleeting and very partial knowledge of numerous management content areas they may never use or a fleeting and partial knowledge about how to conduct their own primary research.

Conducting a systematic review takes students behind the scenes of management research, from the "front stage," or reassuring and orderly views of management knowledge gleaned from the relatively superficial, sketchy, selective, and heavily processed accounts usually presented in textbooks or traditional reviews to expose the messier and disordered "back stage," where the raw materials which eventually end up in textbooks are produced. Through this process, they move a bit further away from being an outside observer of management research and a little nearer to becoming an insider.

Some months after the completion of one of these courses, a master's student sent the first author a quote from stand-up comic and social commentator George Carlin, saying that it reminded her of what she had learned: "It's not important to get children to read. It's much more important to teach children to question what they read. They should be taught to question everything" (Carlin & Urbisci, 2008). Teaching systematic review skills is not only a crucial part of teaching EBMgt, but also an essential part of learning to think critically, as it develops both the skills of asking and formulating good questions and the skills needed to use evidence to answer those questions, which in turn is a fundamental purpose of all education. Such courses are capable of transforming students from relatively passive recipients of received management wisdom to active and critical users of management knowledge. At the same time, the approaches taken in such courses also promise to transform business school teachers from agents whose role is simply to deliver this received wisdom to working in partnership with students to help them find, interpret, critically evaluate, and apply research findings.

APPENDIX

Assignment Structure and Assessment Criteria

The course was assessed mainly through an evaluation of an REA (4,000 words maximum). Students were instructed to follow the structure below in presenting their REA reports:

- **Background to review.** A problem statement, which describes succinctly the problem or issue that stimulated the review and the problem's importance and relevance. Rationale for the review. Previous reviews; where they exist and their findings and limitations.

- **Review objectives.** Precise statement of the review's primary objective. Statement of main review questions and subquestions.
- **Criteria for considering studies for this review.** Types of contexts (where), interventions, mechanisms (how), outcomes, studies (qualitative, quantitative, both), designs (e.g., longitudinal).
- **Search strategy for identification of studies.** Which databases and sources will be searched? Over which time period (e.g., the last 20 years)? What search terms and key words will be used? Will unpublished data be sought?
- **Eligibility.** What are the inclusion and exclusion criteria for studies? How will the criteria be operationalized?
- **Data collection.** What data will be extracted from each study found? What other study data will be collected (e.g., methods, citations)?
- **Assessment of methodological quality.** What instrument or scale or criteria will be used to assess quality? How will the data about study quality be used?
- **Synthesis.** What sort of synthesis (e.g., aggregation, integration, interpretation, or explanation) will be used and why? How will the data quality assessment be incorporated? How can the data most clearly be represented to address review questions?
- **Results and conclusion.** Based on the evidence reviewed, what is the answer to the review question? How much confidence can we have in the answer? What do we know in relation to the review question? What do we not know? What gaps in knowledge has the review identified?

The criteria for assessing the REA report included having a clear and answerable review question, a sound justification for conducting the review, an explicit search strategy, ways of judging the quality of the research found, and conclusions that accurately reflected what the review found.

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