

3-1-2010

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Recommended Citation

Arbaugh, JB; Desai, Ashay; Rau, Barbara; and Sridhar, Balakuntalam S. (2010) "A review of research on online and blended learning in the management disciplines: 1994–2009," *Organization Management Journal*: Vol. 7: Iss. 1, Article 7.

Available at: <https://scholarship.shu.edu/omj/vol7/iss1/7>



Teaching & Learning

A review of research on online and blended learning in the management disciplines: 1994–2009

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Abstract

This paper reviews studies of online and blended learning in management-oriented disciplines and management-related topics. The review shows that over the last decade, this emerging field has seen dramatic conceptual, methodological, and analytical advances. However, these advances have progressed within the particular disciplines at uneven rates. Studies examining courses in Organizational Behavior and Strategic Management have seen the most progress, with courses in Human Resources, Operations Management, and International Management receiving lesser attention. To date, studies of courses in Entrepreneurship are next to non-existent. Our review suggests that although several multi-course studies have been published, there is ample opportunity for research within the respective management disciplines. We also suggest topics and methodological issues requiring further study, including stronger delineations between online and blended management education; further examination of participant characteristics, particularly for instructors; and the influence of institutions located outside North America.

Organization Management Journal (2010) 7, 39–55. doi:10.1057/omj.2010.5

Keywords: e-learning; integrating management education across content areas; tracking the quality of learning



Organization
Management
Journal

Introduction

The first decade of the 21st century has seen an explosion of research on online and blended learning in management education. Since 1999, leading management education journals such as *Academy of Management Learning & Education* (AMLE), *Decision Sciences Journal of Innovative Education* (DSJIE), *Journal of Management Education* (JME), and *Management Learning* (ML) collectively have published over 45 research articles on technology-mediated learning, and scores of articles on the subject in the context of management education have appeared in other journals. During the past 10–15 years, this research has progressed from reports of possible uses of online technologies and narratives of instructors' initial experiences with online teaching to multi-course studies of increasing conceptual and methodological rigor.

In addition to advancing research in purely online learning environments, management education researchers also have contributed substantially, albeit perhaps not intentionally or explicitly, to the study of blended learning environments. The concept of

Table 1 Organizing framework for the literature review

| <i>Subject area advances</i> | <i>Conceptual advances</i> | <i>Methodological advances</i> |
|--|--|---|
| Organizational Behavior Business Policy and Strategy Human Resources Operations Management International Management Other subject areas | Learning environment characteristics Influences on learning effectiveness | Narrative accounts Multi-course studies Improved use of control variables Multi-level analysis |

blended learning is receiving increasing attention among education scholars (Bonk and Graham, 2006; Garrison and Vaughn, 2007; Picciano and Dziuban, 2007). Although defining what exactly constitutes a blended learning environment has been something of a challenge, consensus is beginning to emerge around the concepts that a blended course integrates online learning with traditional face-to-face class activities in an intentional pedagogically valuable manner and in a manner where between 20 and 79% of course content and activities are delivered online (Garrison and Kanuka, 2004; Allen *et al.*, 2007; Picciano, 2007). Although publications devoted to the phenomenon suggest that research in blended learning is a recent phenomenon, a closer examination of the management education literature suggests that studies of blended learning actually have been taking place for some time. Initial research in management education suggests encouraging results for the use of blended learning environments. Introducing online elements or exercises has been positively associated with course outcomes in numerous studies (Clouse and Evans, 2003; Balotsky and Christensen, 2004; Webb *et al.*, 2005; Hwang and Arbaugh, 2006, 2009), and blended courses have fared well in studies comparing them with classroom and online courses (Webb *et al.*, 2005; Klein *et al.*, 2006; Terry, 2007). Other benefits of blending in management education include increased confidence in working in virtual project teams (Dineen, 2005), increased learner control of the educational experience (Klein *et al.*, 2006), and enhanced dialog skill development (Eveleth and Baker-Eveleth, 2003).

Therefore, as we end the first decade of the 21st century, it seems particularly appropriate to review the content knowledge and methodological advances of this research to help researchers better frame and design future studies. This literature review compares findings of studies of courses in the management disciplines in technology-mediated learning environments. In doing so, we

seek to build upon previous reviews published in this area that were forced to be highly dependent upon literatures from other disciplines to help us frame specific research questions for future study (Salas *et al.*, 2002; Arbaugh and Stelzer, 2003; Wan *et al.*, 2007) and to address concerns that the management education literature currently is limited in its ability to guide the development of hypotheses for appropriate uses of technology-mediated learning (Lemak *et al.*, 2005). Unlike these previous reviews, this review focuses exclusively on studies that examined courses in management subdisciplines or management-related topics. Table 1 presents the framework for our review. After a brief discussion of the protocol for selecting articles for the review, we review key findings by management discipline, identify themes for both celebration and concern, and then use these conclusions to frame potential future directions for this research stream.

Literature review protocol

This paper is developed from a subset of a literature review that focused on articles in business education that examined virtual learning environments where the course content and participant interaction are conducted at least partially online. A comprehensive search for peer-reviewed articles pertaining to “online learning” in business courses that were published after January 1, 2000, was conducted between September 2006 and September 2009. Databases examined in the review included ABI/Inform, Business Full Text, Business Source Elite, and Lexis/Nexis Business. To supplement this review, articles on technology-mediated business and management education published before this time period cited in Arbaugh and Stelzer’s (2003) and Salas *et al.*’s (2002) reviews also were included in this review. Finally, the *Journal of Management Education* and *Management Learning* were examined to identify articles that addressed the topic but were not already included in the review. This protocol identified over 170 articles that examined

technology-mediated learning in business and management education, of which 75 that were specific to the management discipline were selected for this review. A breakdown of the articles by subject area used for this review is presented in Table 2. An article breakdown by journal is presented in Table 3. As Table 3 suggests, there appears to be a clear hierarchy of preferred publication outlets for online management education research. *JME*, *DSJIE*, and *AMLE* each published at least six articles on the topic during the review period. These totals do not reflect articles on online teaching and learning in disciplines other than management (which lowers *DSJIE*'s and (*Journal of Education for Business*) *JEB*'s totals), or which are not discipline or course specific. Therefore, articles in *ML* that considered instructor reactions to online teaching from a program-level perspective (Salmon, 2000) or debated appropriate research methods for studying online learning (Arbaugh and Benbunan-Fich, 2004; Hodgson and Watland, 2004a, b) were not included in the review. Such evidence corroborates recent declarations that *AMLE*, *DSJIE*, *JME*, and *ML* constitute management learning and education research's "Big 4" journals (Arbaugh, 2008a).

Table 2 Article breakdown by subject area, 1994–2009

| Subject area/Discipline | Number of articles |
|--|--------------------|
| Multi-disciplinary/not discipline specific | 29 |
| Organizational Behavior | 14 |
| Business Policy and Strategy | 6 |
| Human Resources | 7 |
| Operations/Project Management | 7 |
| Business Communication | 4 |
| International Management | 3 |
| Entrepreneurship | 3 |
| Ethics | 2 |

Table 3 Article breakdown by journal of publication, 1994–2009

| | |
|--|----|
| <i>Journal of Management Education</i> | 17 |
| <i>Decision Sciences Journal of Innovative Education</i> | 7 |
| <i>Academy of Management Learning & Education</i> | 6 |
| <i>Business Communication Quarterly</i> | 4 |
| <i>Journal of Education for Business</i> | 4 |
| <i>Management Learning</i> | 3 |
| <i>Journal of Behavioral and Applied Management</i> | 2 |
| <i>Journal of Business Ethics</i> | 2 |
| <i>Management Research News</i> | 2 |
| <i>Education+Training</i> | 2 |
| Journals with one article | 26 |

Review of research in the management disciplines

As mentioned previously, the theoretical and methodological rigor of studies of online learning in the management disciplines has increased dramatically over the last decade. Articles published on the topic in management education-related journals in the late 1990s tended to be either narrative accounts of instructors' initial experiences with teaching online (Taylor, 1996; Berger, 1999; Salmon, 2000) or reports of emerging uses of online technologies for management education (e.g., Bailey and Cotlar, 1994; Treadwell et al., 1998; Bigelow, 1999; Fornaciari et al., 1999; Human et al., 1999; Shrivastava, 1999). Recent work has begun to examine the influence of disciplinary effects of management subjects relative to both each other and other business disciplines. In a seven-course, multi-disciplinary study of online MBA courses, Arbaugh and Duray (2002) found few significant differences in student perceived learning and course satisfaction between courses in management topics such as Leadership, Organization Theory, and Operations Management (OM), but found significant differences in outcomes between these courses and a finance class. Arbaugh (2005a) found comparable differences between the management disciplines and finance in a subsequent study with a larger sample, with OM being associated with lower student satisfaction with the delivery medium. Arbaugh and Rau (2007) recently found that disciplinary effects explained 67% of the variance in student satisfaction with the educational delivery medium in a sample of 40 online MBA courses, with courses in disciplines such as Human Resources (HR) and project management scoring particularly well in perceived participant interaction.

Such encouraging findings to date for the disciplines in the management area in online learning environments warrant additional query into the results of research on these topics. Therefore, the following section reviews findings of research to date by discipline. We organized our selection of disciplines based upon the divisional structure of the Academy of Management. Although most of the studies published to date use a discipline as a research setting instead of a research question, the results, nonetheless, yield interesting conclusions regarding online teaching and learning of management and those who study it. This section is followed by a discussion of general observations regarding the field's conceptual and methodological development.

Organizational Behavior (OB)

Initial studies made compelling arguments for why OB is quite amenable to online delivery. These authors argued that although the quality of communication between participants and experiential exercises may be difficult to replicate in an online environment, the implications for team dynamics, access to information for assignments, and opportunities for self-managed learning and computer-based assessments and feedback would be largely positive (Bigelow, 1999). These early studies also suggested that medium may well be better suited for interactive cases, media-based organizational skills, and the conduct of self-assessments than are classroom-based settings (Bigelow, 1999; Meisel and Marx, 1999). Although these assertions to date have received limited testing, perhaps given this history, we should not be surprised that studies that have examined courses in OB have focused on individual and group level behaviors.

Studies of individual behaviors in online OB courses have considered characteristics such as learning goal orientation, peer vs instructor influence, and instructor leadership behaviors. In a relatively methodologically rigorous study for this body of research, Klein *et al.* (2006) found that blended learning environments gave undergraduate-level learners more control and required them to take more control of their learning relative to classroom instruction. Although their study included courses in disciplines such as finance, marketing, and international business in addition to organization behavior, they did not find any discipline-related effects. Regarding influence behaviors, Martins and Kellermanns (2004) found that although instructor encouragement influenced student perceptions of system usefulness, peer influence, and encouragement was the strongest driver of whether students actively used a course management system. Peer influence also may explain Driver's (2000, 2002) findings of large differences in social interaction and content knowledge between the beginning and the ending in an MBA course on organizational change. Students liked discussion board and power points more than audio/video. Although faculty may not be the lead influencers on whether students decide to actively engage in online learning, research in faculty behaviors in OB courses suggests that they can play an active role in shaping that behavior after students decide to do so. Based upon her experiences with an executive MBA course, Brower (2003) advised instructors to resist the temptation to

dispense wisdom, but rather to promote student discovery by staying out of the online discussion unless it needed redirecting. She argued that instructors also can encourage student engagement by creating course structures and grading approaches that encourage interaction.

Another discipline-related stream of research involving OB courses has addressed team perceptions and behaviors. Counter to Bigelow's (1999) early concerns, much of this research to date has found that the online learning environment has increased student confidence about working in virtual teams (Dineen, 2005; Olson-Buchanan *et al.*, 2007). Several studies have found that student familiarity and comfort level with using the technology increased over the duration of the course, resulting in course discussions of increasing complexity and quality as the course progressed (Yoo *et al.*, 2002; Eveleth and Baker-Eveleth, 2003; Dineen, 2005; Silberg and Lennon, 2006; Allan, 2007). Also, group cohesiveness and trust appear to influence student perceptions of their groups and the groups' learning outcomes (Williams *et al.*, 2006).

A third major theme of studies of online OB and management courses pertains to student performance relative to classroom-based courses and other disciplines. Friday *et al.* (2006) found no significant difference in examination scores across delivery mediums or disciplines in a study of both classroom-based and online courses of undergraduate courses in strategy and OB. In their study of seven undergraduate courses, Daymont and Blau (2008) not only found no difference in quiz or final grade performance between online and classroom courses, but also found that semester grade point average (GPA) was the only consistently significant predictor of student performance. Conversely, Nemanich *et al.* (2009) recently found that taking an undergraduate-level principles of management course in a classroom relative to taking it online was a moderately significant positive predictor of learning performance using multiple choice examinations. They did find, however, that in concert with confidence in the instructor's expertise and their perceptions of the relevance of the course content, taking the course in a classroom was a highly significant predictor of student enjoyment of the learning experience.

Business policy and strategy

Reflective of Academy of Management membership composition and submission practices, strategy



courses comprise the second most common research setting for online education in the management discipline. Technology-mediated strategy and/or capstone courses were among the first in the business curriculum to be examined by management education scholars (Mundell and Pennarola, 1999; Arbaugh, 2000b, d). Online courses in strategy have fared moderately well on course outcomes relative to other business disciplines (Friday *et al.*, 2006; Arbaugh and Rau, 2007), and comparatively resistant to attrition (Terry, 2001). Even those experiences that were less than optimal had reasons other than the subject matter for explaining those outcomes (Crow *et al.*, 2003). However, most of the studies reviewed have examined course outcomes and/or the relative effectiveness of generalized pedagogical practices instead of identifying or addressing potential nuances of teaching strategy online.

Studies to date suggest that strategy may be a relatively female-friendly discipline. Although there were no differences in performance outcomes, early studies of participant behaviors in strategy courses found that women participated significantly more in online class discussions than did men (Arbaugh, 2000b, d). A subsequent study of undergraduates found that women outperformed men in online strategy courses (Friday *et al.*, 2006).

Recent studies of strategy courses also have provided a useful context for examining student group behaviors and processes. As was the case in studies of OB/theory courses, studies of strategy courses suggest that the experience substantially enhances students' confidence with working in virtual teams and communicating electronically (Clark and Gibb, 2006). Group cohesiveness and trust also have been found to be significant predictors of team dynamics in strategy courses (Williams *et al.*, 2006; Liu *et al.*, 2007). However, findings on the group dynamics-learning outcomes relationship have been equivocal. Williams *et al.* (2006) found that group cohesiveness mediated the teamwork-learning relationship, but neither Clark and Gibb (2006) nor Liu *et al.* (2007) found any significant relationships to learning outcomes.

Human Resources

Although cross-disciplinary studies to date have shown that HR courses score relatively well when comparing learning outcomes (Arbaugh and Duray, 2002; Arbaugh and Rau, 2007), research on teaching HR online lags relative to studies of courses in strategy and OB. Beyond the cross-disciplinary

studies and Budd's (2002) coverage of examples and identification of potential challenges in teaching labor studies online, other articles on the HR discipline are largely anecdotal recollections of instructors' initial experiences teaching online. In what appears to be the first such study on a HR-related course, Taylor's (1996) account of an initial online offering of a labor studies course focused on characteristics of the conferencing system used, course structure, students' general reactions, and the instructor's moderating style. This was followed by Berger's (1999) account of her experience as a first-time online instructor of a contemporary HR course of 54 students. Much of her account was devoted to issues related to managing communication with and between students and transferring documents. Avoiding information overload was a primary theme. One positive result of Berger's experience was that she found it easier to have more personal interactions with students and to link them together for course assignments based on areas of common interest. An advance on this approach can be found in Brower's (2003) work where she reported on her experience with an Executive MBA level OB/HR course in light of designing the course based upon principles from the learning community creation literature. As a result of drawing from this literature, she was able to identify potential issues (such as, managing over-participation and the need to determine an optimal class size for an online learning environment) that have yet to be fully addressed by subsequent online learning researchers. Recent research in online HR education compares student experiences and outcomes to those of classroom-based courses. Lapsley *et al.* (2008) recently examined online and classroom-based sections of an undergraduate course in HR through the lens of equivalency theory (Simonson *et al.*, 1999). They found that when equal experiences (assignments, lectures, and activities) were provided in both learning environments, students in the online course performed better than the classroom-based students.

Although accounts of instructor experiences have been the primary focus of studies on the HR discipline, some studies housed within the discipline have examined student behaviors. In addition to the previously mentioned study by Williams *et al.*, (2006) on the effects of group cohesiveness on group performance and course outcomes, Hwang and Arbaugh (2006, 2009) examined student feedback-seeking behaviors in a study of seven blended undergraduate HR and management topics courses.

They found that students who tended to engage in positive feedback-seeking behaviors tended to participate more intensely in discussion forums and seek feedback both inside and outside of class meetings. Students engaging in negative feedback-seeking behaviors tended to seek instructors outside of classroom activities and participate in more discussion forums but with less intensity.

Operations Management

Although OM is one of the Academy of Management's smallest divisions, it has a disproportionate influence on online learning research due to its grounding in the decision sciences and its theoretical contributions. Principles and concepts from operations-related frameworks such as Total Quality Management (TQM) and the Technology Acceptance Model have been used extensively to frame studies of online learning (Martins and Kellermanns, 2004; Arbaugh, 2000c, 2005b; Aggarwal and Adlakha, 2006; Landry *et al.*, 2006; Davis and Wong, 2007). Recently published work suggests that sustainability also may become an operations-related topic that will draw increasing interest for online and blended delivery (Walker *et al.*, 2009).

In spite of this discipline's conceptual and foundational contributions, studies of courses in OM to date have focused on examining student attitudes toward taking such courses online, which generally have been positive (Wild and Griggs, 2002; Greasley *et al.*, 2004). Conversely, comparative studies have shown that OM courses generally do not fare well on outcomes or attrition rates relative to courses in other management disciplines when taught online (Terry, 2001; Arbaugh and Duray, 2002; Arbaugh, 2005a). Also, although some articles have reported that there were no differences in course outcomes, students in online operations courses may be more likely to disengage from the course than students in classroom-based courses (Dellana *et al.*, 2000; Terry, 2001; McLaren, 2004). However, other evidence suggests that these differences may be conduct related rather than content related. For example, Brower (2003) contrasted her highly participant interaction-oriented OB/HR management course with a quantitative methods course offered concurrently where the instructor used the course discussion board as a help desk instead of a vehicle for facilitating discussion and encouraging higher-order thinking. Also, although the OM course received relatively lower student ratings in Arbaugh and Duray's (2002) multi-course study, that course also had the largest enrollment,

which was negatively associated with course outcomes. Such results suggest the need for additional studies to assess the causal effects of outcomes in OM courses.

International Management (IM)

In one of the first articles to discuss online management education, Bailey and Cotlar (1994) noted that studies of approaches for delivering IM online were essentially non-existent. Unfortunately, after 15 years there still has not been much progress in this area. Studies to date examining the teaching of IM online generally are not as methodologically or analytically sophisticated as those of other management disciplines. These studies typically examine pedagogical tools or course design issues. Rusinko (2003) discussed her use of the "stone soup" folktale as a first day tool for helping either undergraduate or graduate students understand cultural differences and enhance intercultural communication skills. Regarding course design, Barger (2005) presented a framework for conducting a needs assessment for designing an undergraduate level course in IM. However, this framework focused more on issues pertaining to needs assessment than on providing specific guidance on designing IM courses for online delivery, in part because guidance for such design generally is lacking.

In spite of this relative lack of research attention, there is evidence suggesting that courses in IM are quite amenable to online delivery. In comparative studies, IM has performed favorably relative to other management disciplines in student perceived learning (Terry, 2001; Arbaugh, 2005a; Arbaugh and Rau, 2007). Therefore, we are particularly interested in seeing those who are contributing to the burgeoning field of IM apply more energy to studying the delivery of this course content online.

Other management topics

Although not considered management disciplines, or holding division or interest group status in the Academy of Management, several management-related topics have been research settings for studies of online learning. One topic subject to particular attention has been business communication. Studies of this topic area have examined issues such as strategies for managing online discussions, comparisons to classroom-based course offerings, and student failure rates. Research on managing online discussions has examined both addressing student concerns regarding course structure and content and strategies for managing online discussions.



Regarding course management issues, a study of student–instructor email exchanges in response to an MBA-level management communication course by Hartman *et al.* (2002) suggested that technology proficiency, topic interests, and need for interpersonal communication were the primary reasons that students engaged in offline communication with the instructor. The authors concluded that instructors should over-communicate about course assignments and expectations and provide prompt feedback to address these issues. Walker (2004) discussed effective practice in managing conflict in an online professional communication course. She particularly noted the use of discourse normalizing approaches such as being complimentary to fellow posters, generalizing issues, and agreeing with part of controversial statements as discussion management strategies.

Comparison studies of business communications yield similar conclusions as other topic areas. Sauers and Walker (2004) found that students in a blended course perceived a course management system to be more useful than their classroom-based counterparts, but these students didn't see their writing skills improve as strongly. Conclusions to date regarding failure rates in online business communication courses suggest similar causes as those that are associated with failure in classroom-based courses. Cheung and Kan (2002) found that male students, new students, less accomplished students, and those who didn't attend tutorials were more likely to fail a business communication course at the Open University of Hong Kong.

Although generally at a lower level of conceptual and methodological sophistication, studies of other management-related topics report generally favorable reactions to online delivery. To date, such reports exist for courses in ethics (Painter-Morland *et al.*, 2003; Walker and Jeurissen, 2003), technology management (Liyanage and Poon, 2003), and project management (Hannigan and Browne, 2000; Arbaugh, 2005a). These favorable findings suggest that additional research should be conducted to determine whether content, curricular, and/or conduct factors are most influential in influencing participant attitudes toward these courses.

Conceptual and methodological advances in online management education research

Emerging conceptual/theoretical frameworks

A particularly encouraging finding of this review is the emergence of conceptual and theoretical

frameworks unique to management education. May and Short (2003) used a gardening metaphor to characterize online undergraduate management education. They presented a framework where faculty were analogous to gardeners and students were seen as the by-product of the garden. Online course design and teaching strategies were likened to the feeding and watering activities of the gardener. May and Short also reconceptualized the faculty–administration relationship to one between the gardener and the garden supply store, thus deeming faculty as customers. Models for developing and maintaining effective dialog in online courses is an emergent theme of the conceptually oriented literature. Building upon work on online dialog and course structure from the educational literature, Millson and Wilemon (2008) argued that graduate management education that requires a high dialog/low structure framework is most conducive to a positive student online experience.

Other frameworks address characteristics of learning effectiveness more explicitly. Arbaugh and Benbunan-Fich (2006) grounded their model of epistemological teaching (objectivist vs constructivist) and social learning (individual vs group) dimensions directly upon Leidner and Jarvenpaa's (1995) seminal conceptual framework. Their empirical test of this model found that online MBA courses designed in a mode of what they called group-based objectivism, where group-oriented learning activities were incorporated with instructor-centered content delivery, were found to have the highest perceived learning. Individually based objectivist courses scored lowest in delivery medium satisfaction. Rungtusanatham *et al.* (2004) developed a general model of learning effectiveness as a function of content factors, delivery-related factors, and learning factors. These factors, in turn, generate four models of online education delivery: two types of content overview models, a technical skills model, and a managerial learning model. Recently, Ivancevich *et al.* (2009) used this model to help build a model of dialog resources and effectiveness for knowledge acquisition and use-type courses such as principles of management, HR, and OB. Their model contends that dialog is a significant predictor of student goal accomplishment and satisfaction with the course, and that an environment that encourages dialog is a function of the interaction of instructor, student, and technological and organizational characteristics. Specifically, these environments can be found where motivated students with positive prior experiences with online

learning, who are confident in their use of technology and perceive dialog to be useful, encounter trained online instructors who use trust and meaningful collaboration in their instructional approach. Although Proserpio and Gioia's (2007) framework primarily addressed future uses of technology in undergraduate classroom-based environments, their conclusions regarding potential instructor roles are generalizable to online and blended learning. The primary instructor roles they identified were guiding students to accurate sources of information online as a "search bot," facilitating students' ability to make interpersonal connections on a discussion board or groupware, and helping students make complex interdomain connections through simulations and games, where instructors help make connections to practice, facilitate role plays or design simulations.

Improved methodological and analytical rigor

During the past 15 years, research in online management education has progressed from narrative accounts of single-course experiences (e.g., Dumont, 1996; Taylor, 1996; Berger, 1999; Ellram and Easton, 1999) and reports of emerging uses of online technologies for management education (e.g., Rahm and Reed, 1997; Treadwell *et al.*, 1998; Bigelow, 1999; Shrivastava, 1999; Budd, 2002) to studies of increasing methodological and analytical rigor. Multi-course studies now are commonplace (Drago and Peltier, 2004; Drago *et al.*, 2005; Marks *et al.*, 2005; Friday *et al.*, 2006; Williams *et al.*, 2006; Nemanich *et al.*, 2009). During the decade, these studies also have progressed from purely survey-based single-level studies of direct effects (e.g. Mundell and Pennarola, 1999; Arbaugh, 2000a, c) to studies of triangulated quantitative and qualitative (Allan, 2007) or archival (Arbaugh, 2005b; Williams *et al.*, 2006) data. Control variables beyond age, gender, and GPA, such as participants' prior experience, major area of study, skill levels, and time effects are incorporated into research designs more regularly (Arbaugh, 2005b; Friday *et al.*, 2006; Klein *et al.*, 2006; Olson-Buchanan *et al.*, 2007; Nemanich *et al.*, 2009). Controls for common method variance and non-response bias also are being incorporated into studies (Dellana *et al.*, 2000; Martins and Kellermanns, 2004; Arbaugh, 2005b; Klein *et al.*, 2006; Nemanich *et al.*, 2009). Recently, multi-course studies that account for nesting effects through the use of hierarchical modeling have begun to appear in

print (Arbaugh and Benbunan-Fich, 2006, 2007; Benbunan-Fich and Arbaugh, 2006).

Questions and recommendations for future research

Although the pace of research on online management education has accelerated dramatically this decade, there still are abundant research opportunities for new scholars to enter this field. In fact, some of the questions that we have identified can be addressed only by those not presently involved in this research stream. In our concluding paragraphs, we present a summary of the research findings and several questions that we hope future scholars will address during the 21st century's second decade. Consistent with the structure of our review, we present these first as discipline-related questions, then as conceptual, topical, and methodological questions, respectively. Finally, we present some heretofore unexplored questions in the management education literature regarding the potential "dark side" of online teaching.

Summary of research findings: is online learning effective for management education?

Based on the evidence provided in this review, we can conclude that online learning certainly can be an effective medium for the delivery of management education, particularly relative to other business disciplines (Arbaugh *et al.*, 2009). However, even in the management disciplines there appear to be variation in student perceptions of learning outcomes and satisfaction. Strategy, OB, HR, and IM appear to be particularly amenable to the medium, whereas OM appears to be less so. Therefore, research that explains whether such differences are based on characteristics inherent to the subject matter characteristics, participant characteristics, and/or other factors seems particularly warranted.

The review also suggests that management instructors play particularly important roles in online learning environments. These roles include that of a course designer (Hartman *et al.*, 2002; Arbaugh and Benbunan-Fich, 2006), discussion facilitator and moderator (Brower, 2003; Walker, 2004; Arbaugh, 2005b; Ivancevich *et al.*, 2009) and content expert (Nemanich *et al.*, 2009). Interestingly, these roles are consistent with the element of teaching presence in Garrison and colleagues' (2000) Community of Inquiry framework for effective online learning. Subsequent research on this framework suggests that teaching presence is



more important than either social or cognitive presence in producing effective online learning environments (Garrison and Cleveland-Innes, 2005; Shea and Bidjerano, 2009), and that teaching presence may be particularly important in management education (Arbaugh and Hwang, 2006).

Although the evidence in this review strongly supports the importance of instructor roles, the importance of students interacting with fellow students is somewhat less clear. There certainly is evidence that students can learn in virtual groups (Dineen, 2005; Clark and Gibb, 2006), but the extent to which the medium uniquely contributes to learning is unclear. Collectively, the literature appears to suggest that student–student interactions may enhance student perceptions of the online learning experience, but may not influence learning outcomes to the extent of learner–instructor interactions (Marks *et al.*, 2005; Williams *et al.*, 2006; Arbaugh and Benbunan-Fich, 2007). Such conclusions provide credence to recent calls for questioning the priority that student–student interaction is given in course design prescriptions for online MBA programs (Kellogg and Smith, 2009).

Finally, the evidence suggests that online delivery has been at least as effective a delivery mode as traditional classrooms, particularly as learners become more experienced with the medium (Friday *et al.*, 2006; Kock *et al.*, 2007; Daymont and Blau, 2008; Lapsley *et al.*, 2008). Such conclusions suggest that recent calls for a cessation of comparative studies of online and classroom-based courses in general can be extended to management education (Bernard *et al.*, 2009).

Discipline-based questions

Our review suggests that although there has been substantial progress in our understanding of online and blended learning in management education, this progress has been uneven across the disciplines. One of the potential unintended consequences of calls for more multi-course and multi-discipline studies (Arbaugh, 2005a; Peltier *et al.*, 2007) is that focused, within-discipline studies have lagged. Courses in Strategic Management and OB have received the most attention, in part because scholars studying those courses have framed their research questions through the lenses by which they examine the questions of their respective disciplines. This approach to examining management education also should be generalizable to other management disciplines.

Where is entrepreneurship? One of the most surprising findings of this review is the nearly complete lack of studies on online or blended entrepreneurship education. We found no studies published prior to 2006, and the three articles published since then primarily are narrative accounts of initial experiences of designing and/or teaching online modules of classroom-based entrepreneurship courses. Considering that innovation, risk-taking, and proactiveness constitute the three legs of this field's epistemological tripod (Miller, 1983; Covin and Slevin, 1991) the nearly complete absence of entrepreneurship education scholars from this stream of research is indeed striking. To these authors' credit, their articles did address course design and technical support issues (Mendenhall *et al.*, 2006; Mennecke *et al.*, 2008). Although the samples used to develop these studies were quite small, results of pilot studies reported in these articles suggest that students do learn course material reasonably well and were favorably disposed toward entrepreneurship course content delivered virtually (Hegarty, 2006; Mendenhall *et al.*, 2006). However, such a state of affairs relative to other management disciplines amidst the overall progress of entrepreneurship education (Kuratko, 2005) raises the question of whether entrepreneurship education scholars should spend less time asking whether entrepreneurship can be taught and more time asking whether entrepreneurship can be taught online.

Why aren't training and development scholars studying online HR courses? Another surprising finding from this review is the comparative lack of studies on HR education relative to other management-oriented topics. Although entrepreneurship education researchers might be excused for a relative lack of scholars interested in the topic, the same cannot be said for HR. Issues pertaining to e-learning effectiveness in organizations have attracted the interests of training and development researchers since, at least, the beginning of this decade (Salas *et al.*, 2002; DeRouin *et al.*, 2005; Sitzmann *et al.*, 2006; Kraiger, 2008). However, to date, these interests in how training is delivered online generally have not been extended to educational research. Considering that the only differences between these organizational and educational settings may be the sponsors of the course delivery mediums and the developers of the content, such an oversight by

this community of scholars might strike outsiders as shocking. However, two related factors may have created a barrier to such research. One is the relatively low perceived status of educational research (Arbaugh, 2008a); the other is that rigorous academic study in the area of training and development generally lags other areas of HR that are more developed (e.g., staffing and compensation). We hope that works such as those by Klein *et al.* (2006) will legitimize the use of business school settings for training and development researchers, and, more generally, increase the perceived status of educational research in the broader HR field. Topics such as developing training programs on navigating online for students and instructors and developing class cultures conducive to learning clearly are salient for HR scholars. They might even weigh in on approaches for teaching other HR-related topics. The field certainly would benefit from the methodological and analytical rigor these scholars bring to their organization-based research.

Conceptual and topical questions

Are there differences between blended management education and online management education?

Although management education scholars have contributed to the literature on blended learning, management education research generally has failed to be explicit regarding whether a course is purely online or blended until very recently (Klein *et al.*, 2006; Hwang and Arbaugh, 2009; Hwang and Francesco, forthcoming). This lack of specificity in denoting the degree of blending within courses clearly has limited the management education literature's ability to determine the conditions under which online or blended learning is most appropriate (Kellogg and Smith, 2009). Distinguishing these courses would allow researchers to address questions of optimal blends through comparison studies, much in the manner that fully online and fully classroom courses have been studied (Arbaugh, 2000b; Sitzmann *et al.*, 2006; Kock *et al.*, 2007).

Are there differences in online management education delivered outside North America?

We believe more research needs to study international and global perspectives of online management education. Paralleling the historical development of graduate management education (Liang and Wang, 2004; Tiratsoo, 2004; Mazza *et al.*, 2005), research to date

suggests that online management education is primarily a North American phenomenon (Popovich and Neel, 2005). As management education becomes globally dispersed, the generalizability of research findings to other regions of the world should receive increasing scrutiny. As more schools seek to deliver education via the Internet to a global audience, develop indigenous online courses and degree programs, and collaborate with schools in other countries, opportunities for studies of online learning in cross-cultural or multi-national contexts should increase (Painter-Morland *et al.*, 2003, Yukselturk and Top, 2005–2006).

What other participant characteristics should we be studying?

One of the clear findings from online management education research is that participants greatly influence the results of the educational process. Collectively, this research suggests that what people bring to their educational experiences and how they use the technology have far greater impact than does the technology, itself. However, to date, this research has focused more upon behavioral characteristics than it has on dispositional or demographic ones. Although study of participant characteristics has expanded extensively during the last decade, other characteristics have not been subject to extensive study, including ethnicity, cultural influences, and learning styles (Hawk and Shah, 2007). Initial studies suggest that these are not significant predictors in online graduate management education settings (Arbaugh, 2001; Marks and Sibley, 2006), but studies of these characteristics in more diverse educational environments than those studied to date are needed.

Methodological questions

How should we identify discipline-specific differences in online teaching and learning?

Although empirical research on the “what” of online management education has accelerated dramatically during this decade, it appears that research on the “how” has not kept pace, particularly when identifying discipline-related nuances for effective online teaching. This can be attributed partially to North America being the dominant location for the delivery of online management education (Popovich and Neel, 2005) and researchers in those settings bringing their training in predominantly quantitative research methods from their disciplines with them to study management education (Arbaugh



and Benbunan-Fich, 2004). However, Hodgson and Watland (2004a,b) recently argued that management learning and education scholars should be studying collaborative learning in an ethnographic or a phenomenological manner instead of an objectivist/empirical manner. Whether this should be “the” approach for studying online and blended management education certainly is debatable, but using qualitative methodologies as advocated by these authors likely would be helpful for identifying unique characteristics of topics in the management discipline that require distinctive instructional approaches, particularly in comparative studies between management disciplines.

Research into discipline-specific approaches to online management education also likely would benefit from collaborations between “macro-” and “micro-” level researchers. A clear finding from our review is that researchers in the areas of strategy and OB tend to bring their disciplinary perspectives to the study of online learning. Why should we be surprised that OB scholars examine the behaviors of individual actors and student teams in online environments, whereas strategy scholars conduct macro-level studies that examine multiple disciplines? A fully triangulated approach to research in this area suggests the need for scholars in these respective areas and other management disciplines to collaborate to fully capture the elements that allow for effective teaching and learning in these disciplines. Recent calls for increased multi-level research in the management discipline suggest that the traditional boundaries between “micro” and “macro” levels of management research are blurring (Hitt *et al.*, 2007). This provides opportunities for learning and education scholars to wrestle with these issues at the same time and pace as discipline-based scholars, thereby allowing discipline-based scholars to engage this topic more readily and thus helping to further accelerate the development of this body of research.

Can we develop cross-disciplinary objective outcome measures? Perceptual measures of course outcomes such as Alavi’s (1994) measure of perceived learning and Arbaugh’s (2000a) measure of delivery medium satisfaction have allowed management education researchers to design multi-course, multi-instructor, and multi-discipline studies, thereby increasing the external validity of research findings. However, such measures do not allow for objective assessment of student performance. Even the use of course grades in multi-course studies needs to be

adjusted to reflect differences across instructors (Arbaugh, 2005a). Perhaps it is time to seek cross-disciplinary objective outcome measures to supplement the perceptual measures that this field has relied upon to date.

Moderation anyone? To date, empirical studies of online management education almost exclusively examined direct effects, typically the relationship between potential influencers of course outcomes. With the exceptions of Klein and colleagues’ (2006) examination of the extent to which course delivery mediums moderate perceptual factors and student motivation to learn and Benbunan-Fich and Arbaugh’s (2006) study of the interaction of knowledge construction and group collaboration on learning perception, moderating relationships between variables have been almost completely ignored in online management education research. Characteristics such as gender and subject matter likely influence the nature of the relationship between commonly associated predictors of online learning effectiveness such as participant interaction and course design. In addition to helping to address the relative uniqueness of management education, the study of potential moderating effects would lay a foundation for the development of mid-range and discipline-specific theories of online learning.

Questions exploring the dark side of online learning

What is lost in online learning? Although such voices have diminished in management education during the period of our review, online courses and programs are not without critics. Ironically, however, there is little research exploring what is lost in moving to an online learning setting. One clear example may be the development and assessment of oral communication skills, both interpersonal and presentation skills (Olson-Buchanan *et al.*, 2007; Morgan and Adams, 2009). In-class discussions and debates are a key tool used to develop student ability to “think on one’s feet” (i.e., the ability to respond to oral arguments and engage in spontaneous debate). Although online environments can encourage higher order learning by allowing students time to think and reflect on their answers (Garrison *et al.*, 2000; Arbaugh, 2008b; Ivancevich *et al.*, 2009), and can enhance virtual communication skills (Wan *et al.*, 2008), a consequence of this approach is the loss of the

spontaneity of the classroom discussion. While not impossible, it is certainly more challenging to address these skills in an online environment. It might be tempting for instructors to avoid teaching and assessing these skills altogether. Therefore, we need to know more about the extent to which online learning “stunts” growth of oral communication skills, if at all, (Hansen, 2008), what instructors and programs are doing to address oral communication skills, and whether any of these attempts are successful.

Similarly, we know little about the value of signaling and behavior role modeling that occurs in on-site learning settings. If, for example, students learn subtle behaviors such as professional dress and demeanor from observing student/professor interactions, these learning opportunities may be lost in the transition to online learning. Therefore, it is important to identify the kinds of learning (i.e., not content related) that may be occurring in the higher education experience and ensure that they are addressed in the online setting (Klimoski, 2007). This may include learning outside the classroom such as social learning, leadership development, and maturity that develops through involvement in student organizations and other interactions with peers, professors, and university administrators. It may also include the ability to tie learning to events and places that are familiar to students.

Finally in this area, the impact of online learning on the development of student ethics and honesty should be investigated further. While the issue of academic dishonesty in online environments has been examined (Chiesel, 2007; Zabriskie and McNabb, 2007), there are other aspects to student ethics and integrity that should be explored. For example, one might explore whether there a greater (lesser) likelihood for students in online learning settings to shirk responsibility in group projects, lie about absences, or make bogus excuses for substandard work or missed assignments (Dineen, 2005; Clark and Gibb, 2006; Olson-Buchanan *et al.*, 2007).

What is the impact on student/faculty relationships?

One criticism that is made of online learning has to do with the development of relationships between faculty and students (Liu *et al.*, 2007). Some instructors, however, claim that they know their students better after an online course than a traditional classroom (Coppola *et al.*, 2002; Drago *et al.*, 2005). Tinto (1987, 1993) identified student

social and intellectual integration into the college experience as key factors predicting college retention rates. Later research has supported the conclusion that student involvement on campus and development of relationships with peers and with professors has a positive effect on retention (e.g., Milem and Berger, 1997; Berger and Milem, 1999). If online learning inhibits the development of close ties between student and instructor or between student and institution, other important aspects to higher education may be lost such as mentoring, counseling, collaboration and student loyalty to the program (including alumni gifting). These are outcomes that extend beyond graduation and have implications for student placement, career progression, and “giving back” to the institution. Thus, understanding the impact of online learning on the faculty–student relationship has important implications for the student, faculty (in terms of job satisfaction), and the institution. Greater knowledge of the factors that might encourage or discourage meaningful relationships to develop in online courses would be instructive (e.g., instructor personality, college events).

What is the impact on faculty? Online learning does not just change the culture of the classroom; it changes the culture of the faculty work environment. Unfortunately, faculty issues continue to be a neglected research topic in online management education (Arbaugh *et al.*, 2009; Liu *et al.*, 2005). There is no research to date exploring the impact of online learning on faculty job satisfaction, organizational commitment, psychological and physical well-being. One question that could be explored is whether increased online learning influences the frequency and quality of interactions among faculty members. One might expect that faculty members would have less interaction and, consequently, less opportunity to share experiences, discuss problems, and brainstorm solutions. Similarly, one might expect that certain aspects of online learning might decrease faculty commitment to the institution. Reduced interactions among faculty members may decrease a sense of mutual obligations to each other and the institution, affecting their service activities. The ease of hiring instructors from outside a particular geographical region to teach online may further decrease faculty interactions, commitment, and rewards. An expanding labor market (one that is not constrained by geographical location) may



increase the likelihood that universities purchase instruction “by the course” rather than creating full-time, tenure track positions. In addition, an expanding labor market may create downward pressure on faculty salaries and corresponding decrease in academic qualifications of instructors. The result could be a “class division” between instructors who teach online and those that teach onsite, similar to the one that exists between tenured and *ad hoc* instructors today (i.e., online instructors are paid less, belong to no particular university, do not receive benefits, and try to eke out a living teaching six or seven online courses for multiple universities across the country). Pressure to develop “canned” courses that can be used by virtually any instructor may decrease satisfaction derived from teaching.

Finally, with regard to faculty outcomes, we know little about the impact on psychological and physical well-being. As faculty begin to spend more time at the computer one might expect higher rates of computer-related physical problems such as carpal tunnel, neck and back strain, and eye strain. To the extent that more time at the computer translates into less time interacting with each other and with students, faculty job and life satisfaction may be reduced, creating more stress and stress-related health problems such as depression and heart disease. Similarly, to the extent that online teaching changes (increases?) the workload for faculty, one can expect increased symptoms associated with physical and psychological stress. Conversely, the opportunity to further arrange one’s work provided by the “anytime, anywhere” nature of online teaching may result in benefits such as flexibility to manage family commitments, schedule other work-related activities, and interject experiences from concurrent travel into their online classrooms. Clearly, the implications of

online teaching for faculty extends beyond the training and skills needed to be an effective online instructor, and much work is left undone in addressing these questions.

Conclusion – toward a management education-unique theory of online teaching and learning?

Although research in online management education has progressed substantially during the last decade, our review shows that it is clear that there are abundant opportunities for future research, particularly in the development of discipline-specific approaches to online teaching. With emerging interest in discipline-specific approaches to both management education (Burke and Moore, 2003; Arbaugh, 2005a) and online education (Hornik et al., 2008; Smith et al., 2008), we hope the organization of our review is a catalyst for management education researchers to play a leading role in this area of study.

Given the increasingly pervasive use of the Internet to deliver management education, it is likely that research opportunities will increase in the future. Therefore, we hope that this review motivates more management and education scholars to examine topics that interest them in the context of online teaching and learning environments.

Acknowledgements

An earlier version of this paper was presented at the 2009 meetings of the Academy of Management, where it received the MED Global Forum Best Paper Award. The paper’s first author was generously supported in this research by the 2009 Faculty Fellowship from the Graduate Management Admissions Council’s Management Education Research Institute.

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