The International Journal of Management Education 15 (2017) 501–512

Contents lists available at ScienceDirect

The International Journal of Management Education

journal homepage: www.elsevier.com/locate/ijme

Factors perpetuating the research-teaching gap in management: A review and propositions

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ARTICLE INFO

Article history:
Received 14 January 2017
Received in revised form 3 August 2017
Accepted 28 August 2017
Available online 4 September 2017

Keywords:
Management education
Research-teaching gap
Research propositions
Policy making

ABSTRACT

Various authors have lamented the fact that faculty members' research and teaching efforts remain disconnected, referred to as the research-teaching gap. Systematic scientific inquiry is needed to advance understanding of its causes and mitigations. In this paper, we review relevant management and higher education literature to develop research propositions regarding the micro- and macro-factors that inhibit the integration of research and teaching, particularly in management. These factors include the nature of academic work, individual faculty member characteristics, institutional factors, the culture of the profession, and societal influences. We offer specific research propositions, grounded in management research as well as the broader higher education context, to guide researchers' future inquiry. Practical considerations for administrators and policymakers are also discussed.

In most institutions of higher education, teaching and research are essential functions of the professorate. Yet prior research has found that teaching and research performance in higher education are unrelated and not reciprocal (Hattie & Marsh, 1996; Marsh & Hattie, 2002; Olsen & Simmons, 1996), thus, remaining disparate work activities for most faculty members. Various authors have lamented this "research-teaching gap" (Brew, 2003; Burke & Rau, 2010; Cohen, 2007 [1]; Jenkins & Zetter, 2003; Kaplan, 1989) as faculty members' research and teaching efforts often remain disconnected, with either function rarely informing or enlightening the other. It is not that the two functions cannot be performed well in isolation; rather, it is the missed opportunities of a synergistic relationship between the two that leave us contemplating "what if." If there is to be progress in lessening the size of this gap, inquiry is essential to identify those factors that erode the ties between teaching and research oriented activities. We surmise that there is significant untapped potential for greater integration between these functions. One step toward tapping that potential entails examining the distinctive nature of being a professor. The position of "professor" provides academics ample autonomy in carrying out their duties while embedded in powerful multi-layered social structures.

We are not alone in our interest in this topic, although the integration of teaching and research seems to have received more attention outside the U.S. (e.g., Canada; Jones et al., 2014; China; Zhang & Shin, 2015; Spain; García-Gallego, Georgantzís, Martín-Montaner, & Pérez-Amaral, 2015; see Tight, 2016 for an overview). For example, New Zealand's

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[1] Our use of the term research-teaching "gap" stems from the initial 2007 *Academy of Management Journal* issue that was devoted to the discussion of the research-practice "gap".

http://dx.doi.org/10.1016/j.ijme.2017.08.004
1472-8117/

national legislation includes integration of teaching and research as one of five criteria defining "a University" (Jenkins & Healey, 2005). In response to a government-issued white paper on higher education in the U.K. that recommended separating the teaching and research functions, Jenkins and Healey (2005) wrote an extensive report about linking teaching and research and focused primarily on institutional strategies for doing so.

Burke and Rau (2010) offered practical ways to address the research-teaching gap by examining the linkages between teaching, research and practice. More recently, Tight (2016) provided an overview of the teaching-research nexus (i.e., the push-pull interrelationship of teaching and research). Recent works by Duff and colleagues (Duff & Marriott, 2016; Hancock, Marriott, & Duff, 2017) focused on the research-teaching nexus in the disciplines of finance and accounting, including an initial scale to examine variables such as student expectancies, vocational demands, and reward systems. Other recent research-teaching literature emphasizes societal and institutional changes (Arimoto, 2014), the research productivity and teaching quality relationship (Cadez, Dimovski, & Groff, 2015; Galbraith & Merrill, 2012; Hajdarpasic, Brew, & Popenici, 2015), and specific techniques for integrating research with teaching (Blomster, Venn, & Virtanen, 2014; Malcolm, 2014; Spronken-Smith & Walker, 2010; Xia, Caulfield, & Ferns, 2015).

In the current paper, we provide a holistic view of both the management and higher education literature pertaining to the research-teaching gap. Our paper integrates and synthesizes existing work, and, in doing so, makes two primary contributions: (1) we identify a comprehensive list of macro and micro factors that explain why the complex research-teaching gap persists, and (2) we provide specific testable research propositions synthesized from the broad literature on the research-teaching gap. Our focus is the perspective of faculty since professors are central actors in the research-teaching gap, yet they are subject to a multitude of influential forces. Personal characteristics and the nature of academic tasks are proximal micro-level features that influence behavior, faculty are embedded in larger social structures that operate at distal, though still instrumental, levels (e.g., "the Academy"). These macro-level factors include the employing institutions, the profession itself, and society. Synthesizing findings from across various incremental studies allows us to offer research propositions and policymaker implications from a holistic perspective (e.g., Torraco, 2005) and consequently, a clearer sense of what we know and what remains to be learned.

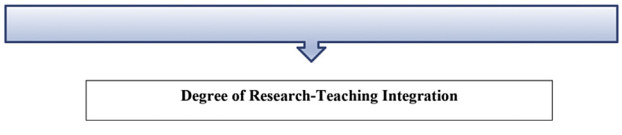
1. Factors perpetuating the research-teaching gap

Publications across diverse disciplines were sought including higher education, management education (the authors' home discipline), and education in general. Systematic searches of online databases such as ABI/Inform Research, Business Source Premier, and Business Full Text, were conducted. To initiate our research, we used relevant key words and phrases (such as research-teaching nexus, research-teaching gap, integration of research and teaching, relationship between research and teaching) to identify published empirical and theoretical articles. Once the primary factors advancing the gap were identified, we followed up with more refined database searches (e.g., personality variables, etc.).

Discrete factors influencing the research-teaching gap were identified in the extant literature and then these factors (e.g., faculty personality, self-efficacy, skills, and expectations) were combined into major thematic headings (e.g., individual characteristics). Five thematic categories emerged from our review that were organized into the micro and macro umbrella categories. The nature of the work itself and individual characteristics represent micro-level factors. Institutional factors, culture of the profession, and societal influences represent macro-level factors. A snapshot of these categories, along with specific attributes in each major category, is summarized in Table 1. To demonstrate the testability of our propositions, we also

Table 1
Factors influencing the research-teaching gap.

Micro Influences		*Macro Influences*		
The Nature of Academic Work	**Individual Characteristics**	**Institutional Factors**	**Culture of the Profession**	**Societal Influences**
• Competing demands on time • Conflicting activities and skills • Complexity of knowledge	• Research and teaching self-efficacy • Role expectations • Applied experience • Personality	• Type of university • Administrative policies • Resource allocation • Departmental ethos	• Value of teaching versus research • Doctoral curricula and mentoring	• Short-term focus • Student expectations



include existing measures and sample items for future scale development efforts in this area (Table 2). Next, each proposition is discussed, along with various practical considerations.

1.1. The nature of academic work

1.1.1. Competing demands on time

Perhaps the most significant feature of academic work is simply the time it takes to create as well as disseminate new knowledge (Marsh & Hattie, 2002). Given the reality of time constraints, faculty members can easily view taking time for research as taking time away from teaching and vice versa (Duff & Marriott, 2012; 2016). The resulting perception is that an emphasis on research will necessarily reduce teaching quality (e.g., Boyer, 1990). The existence of a negative relationship between time spent on research and teaching activities has been found in the literature (e.g., Marsh & Hattie, 2002; Olsen & Simmons, 1996). In addition, if research is not taking away from teaching, studies show that it can come at the cost of family and leisure time (e.g., Harry & Goldner, 1972; Hattie & Marsh, 1996). Interestingly, while time spent on research appears to result in an increase in research productivity, time spent on teaching does not necessarily result in a similar effect on teaching performance (Marsh & Hattie, 2002). Marsh and Hattie (2002) posit that either (a) productive researchers are more organized, or (b) teaching may be a more time intensive endeavor than research. Given this finding, along with the common view of research and teaching as competing demands, it would be rational for researchers to reduce time spent on teaching responsibilities to focus on research. Yet this response does not address the need for improved teaching or other synergistic activities.

This perception of competing demands on time would likely benefit from a reframing of teaching and research as two integrated and synergistic activities. This need for synergy may require work redesign and other creative efforts to better integrate academic roles so that research reaches further into the classroom (Brew, 2003). For example, Brew (2003) and Palmer (1997) advocate creating a learning community of inquiry by engaging more students (not just honors students, for example) in faculty research so that all students better understand research processes and findings. In addition, Balkin and

Table 2
Existing measures and sample items for major constructs.

Construct	Existing Measure Example	Sample Item [if a measure is not established]
Integration of research and teaching	Not available	• I identify new research questions while teaching my classes. • I incorporate research findings in class discussions.
Competing demands on time (faculty perception)	Not available	• When I work on my research, it takes time from my teaching. • When I work on my teaching, it takes time away from my research.
Conflicting skills (faculty perception)	Not available	• My research skills and teaching skills are incompatible. • My research skills do not reinforce my teaching skills.
Complexity of knowledge	Not available	• My field regularly seeks novel approaches to old problems. • My field regularly seeks to examine new problems.
Research and teaching integration self-efficacy (faculty perception)	Adapt "General Self-Efficacy Scale" (Chen, Gully, & Eden, 2001)	• I am confident in my ability to effectively integrate research findings into my teaching. (Rewording existing scale to reflect specific activity of integrating teaching and research.)
Role expectations (faculty perception)	Not available	• I believe my role in the classroom is primarily to "know the answers."
Applied experience	Number of years of applied practice (in business)	–
Personality	Mini International Personality Item Pool (Donnellan, Oswald, Baird, & Lucas, 2006)	–
Type of university	The Carnegie Classification (2016)	–
Administrative policies (faculty perception)	Not available	• Research and teaching are evaluated separately at my institution. • At my institution, high research productivity is often linked to a teaching load reduction.
Resource allocation (faculty perception)	Not available	• Research and teaching monies (e.g., grants) are allocated separately at my institution.
Departmental ethos (faculty perception)	Not available	• My department views research and teaching as independent activities.
Research culture of the profession (faculty perception)	Not available	• The culture of my profession emphasizes research more than teaching.
Doctoral mentoring	Existence of formal mentoring program (yes/no)	–
Doctoral pedagogy	Number of credit hours in doctoral program devoted to "learning to teach"	–
Societal focus (short/long run)	Long-Term Orientation Scale (Bearden, Money, & Nevins, 2006)	–
Student expectations (faculty perception)	Not available	• College students value education that prepares them for a specific job.

Mello (2012) suggest the use of academic administrators to help in aligning the courses faculty teach with their research allowing faculty to "bring their research into their courses" making the courses more current, relevant, and stimulating to students (p. 479).

Such activities work to blur the distinct traditional separate roles of teaching and research.

Proposition 1. *Faculty members who perceive research and teaching to be distinct activities that compete for their time are less likely to integrate research and teaching.*

1.1.2. Conflicting skills

Marsh and Hattie (2002) speculated that not only are there competing demands on an academic's time, but the actual activities and skills required of teaching and research can conflict. In fact, some scholars have argued these conflicts generate an 'incompatibility hypothesis' (Clark, 1997) such that there is a strain between academics' research and teaching (Fox, 1992; Malcolm, 2014). As stated by (Vroom 2007, p. 372), a renowned scholar, "Research and teaching are two very different kinds of activities, each requiring its own set of skills, not all of which are compatible with one another."

Indeed, Ramsden and Moses (1992) found that specific activities of research (e.g., conference papers, grant writing, refereed articles) had a negative relationship with teaching effectiveness. Research generally benefits from blocks of uninterrupted time while teaching must be responsive to impromptu demands (e.g., calls for and visits from students for help, prescheduled class time, spontaneous opportunities for teachable moments). Teaching requires scholars to take a broad perspective on their topic while research requires them to specialize and hedge to avoid over-generalizing their findings (Sample, 1972). In reflecting on his academic career, Vroom (2007) noted that he was only able to develop synergy between his teaching and research after realizing the complex models of his research training needed to be boiled down into simple, useable theories for his business students.

Academics who are successful at integrating research and teaching should be skillful at smoothly and seamlessly navigating between the activities of the teaching and research roles to reduce the likelihood of negative outcomes associated with role conflict (Ashforth, Kreiner, & Fugate, 2000). For example, finding ways to make conference attendance, grant writing and authorship reinforce the teaching function could help reduce such conflict. Moreover, academics must be able to flexibly narrow and broaden their focus and manner of dialogue depending upon their audience and their purpose; students appreciate parsimony and actionable implications while broad generalizations are less accepted in research endeavors (Vroom, 2007).

Other scholars have suggested faculty members achieve this synergy via specific teaching methods, such as "work-integrated learning" (Xia et al., 2015). Work-integrated learning provides students the opportunity to learn to do research through inquiry-based learning to generate new knowledge, learn to learn by developing problem solving and critical thinking skills, and learn to be a professional by working with professionals. As one example, Xia et al. (2015) discussed a project in which students worked with Mainroads Western Australia, which is responsible for Western Australia's roads and highways, to alleviate highway and accident issues. Mainroads was pleased with the students' research results, and the students performed applied research, dealt with real-world problems, and developed their professional networks.

Proposition 2. *Faculty members with synergistic research and teaching skills are more likely to integrate research and teaching.*

1.1.3. Complexity of knowledge

The complexity of the literature in a specific discipline (Lemak, 2004) lends itself to an increasingly narrow focus of research and a tendency toward new and interesting findings (norms of novelty) rather than summary or cumulative work (Rousseau & McCarthy, 2007). This complexity can make it challenging for scholars to translate research findings into applicable teaching content. Moreover, empirical research is published more quickly than instructors can process it and integrate it into their classrooms (Lemak, 2004).

For example, the professional norms of novelty suggest researchers push new boundaries to (a) discover novel approaches to old problems, or (b) examine novel problems. When a discipline is focused on norms of novelty, such as business management (Rousseau & McCarthy, 2007), the result may be interesting insights but they may not necessarily be directly applicable for students and practitioners without the context of other related literature. Norms of novelty encourage incremental and fresh approaches, which make it more difficult for instructors to synthesize and integrate research into teaching. While these new approaches provide fruitful ground for future research, they do not readily facilitate the transfer of existing knowledge.

However, norms of cumulativeness emphasize the culmination of the entire literature stream (e.g., literature reviews, meta-analyses) to discuss the significant findings of an entire stream of research. These types of reviews assist instructors with distilling the most important and impactful aspects of a literature stream, which aids instructors in integrating research from their respective discipline into their teaching (e.g., education, medicine; Rousseau & McCarthy, 2007). Reading one literature review or meta-analysis is more feasible than reading all papers written on a specific topic to compile action items. Therefore, norms of cumulativeness are more favorable than are norms of novelty for the integration of research into teaching.

Push technologies (Kendall & Kendall, 1999; Sands, 2003), similar to Google alerts, can aid in managing complex knowledge by "pushing" field-relevant research syntheses and updates to academics. For example, some professional associations, publishers, and web-based resources allow for weekly or even daily digests of news articles, cases and publications that can help keep faculty members updated on current trends, thereby making it easier to share current events and research

with students. Nonetheless, this does not fully address the difficulty of translating intricate knowledge to applicable teaching content.

Proposition 3. *Faculty members working in disciplines with norms of novelty are less likely to integrate research and teaching than those working in disciplines with norms of cumulativeness.*

1.2. Individual characteristics

1.2.1. Self-efficacy

There are also individual characteristics of faculty members likely to either narrow or widen the research-teaching gap. The assumption has been that for professors to be adept in teaching and research, they must display high levels of teaching and research self-efficacy, respectively. Indeed, teaching self-efficacy has been shown to have some effect on student evaluations of teaching (e.g., Klassen & Tze, 2014; Marsh & Hattie, 2002), and research self-efficacy is positively associated with publications produced (e.g., Bailey, 1999; Hemmings & Kay, 2010; Kahn & Scott, 1997; Marsh & Hattie, 2002).

However, research self-efficacy has been found to have a negative effect on time spent on teaching (Marsh & Hattie, 2002). In their qualitative results, Hancock et al. (2017) found that individuals who are more likely to see the connection between research and teaching were those who were less research active and maintained a higher teaching load. These findings support the critical notion that academics have viewed teaching and research roles as substitutes rather than complements. What could be explored is the degree to which faculty display high levels of self-efficacy related to the ability to integrate the teaching and research functions, an idea that has received little consideration but that is commensurate with our central theme.

In terms of practical implications, integrative research-teaching self-efficacy could be assessed in the selection phase when hiring faculty members and among faculty groups (e.g., professors, lecturers). In addition, researchers and university administrators could identify factors that create (or diminish) self-efficacy of teaching-research integration and utilize those findings to guide policy-making and training.

Proposition 4. *Integrative research-teaching self-efficacy is positively related to a faculty member's integration of research and teaching.*

1.2.2. Role expectations

In the classroom, there are differing role expectations for the instructor as a moderator of the relationship between research and teaching, one as information-giver and another as facilitator. One, a traditional lecture role reinforces the response of students as passive learners and the instructor as "all knowing." As such, the role of transmittal conduit does not easily lend itself to exploration and discovery. Second, due to both the increased amount of knowledge available and the easy access to this knowledge, the inevitable ignorance of the lecturer is now more apparent. Thus, "being knowledgeable" in a particular discipline is less useful than it once was (McWilliam, 2008).

In contrast, a facilitator role lends itself more readily to capitalizing on research and teaching synergies. This is because the interpersonal skills necessary to be an effective coach arguably better facilitate mentoring students, enabling inquiry, and working collaboratively. More importantly, expectations of oneself in the guide role, particularly if reinforced by hiring and reward structures in a university, may more likely foster a mindset that views the classroom as an extension of the research environment (Brew, 2003), and vice versa.

McWilliam (2008) took these arguments one step further, suggesting that the role of educator in the 21st century should be that of a "meddler in the middle." This requires that educators proceed from an assumption that they are not all-knowing, but rather a "usefully ignorant" co-explorer with one's student. The role requires the combination of expertise with recognition that there is more to be learned through exploration. McWilliam argued that such a role allows educators to understand the "pedagogical exchange as a form of value creation rather than knowledge transmission" with both teacher and student mutually involved in "assembling and dis-assembling cultural products" (p. 266). From this non-traditional view, teachers allow opportunities for dialogue and co-creation of knowledge rather than executing a carefully constructed environment and teaching plan (Mägi & Beerkens, 2016). In this role, educators are experimenting and learning alongside the students, rather than simply providing feedback on whether they are "right" or "wrong" in a particular analysis.

Proposition 5. *Faculty members who perceive their role as both an expert and guide are more likely to integrate research and teaching than those who view themselves as either an expert or a guide.*

1.2.3. Applied experience

Lack of faculty experience with applied practice in their field (e.g., business management) can make it difficult to translate research into real-world implications. Even those academics who worked in the real world over time may become isolated (Lantos, 1994) and lose touch with what is happening in that realm of hands-on experience (Hendricks, 1993). This situation increases the difficulty of making connections between research and teaching – particularly in applied disciplines such as

business or engineering – and inhibits a key condition for adult learning, namely, connecting what individuals learn with their experiences (Dewey, 1938). As such, there are various implications for professional development of faculty particularly in the applied disciplines in the form of sabbaticals, corporate internships (Lantos, 1994) and consulting activities to bolster their experiential dataset and help them relate their research to current organizational issues (Hendricks, 1993) discussed in the classroom.

Proposition 6. *Faculty members with applied work experience are more likely to integrate research and teaching.*

1.2.4. Personality

It has been proposed that the teaching-research gap can, in part, be attributed to the different personality traits associated with effective teaching versus research (Duff & Marriott, 2012, 2016; Hancock et al., 2017; Richards & Levesque-Bristol, 2016). That is, to the extent certain traits are better suited to teaching versus research, it would make integrating these activities more difficult for the faculty member. For example, extroversion, emotional stability, and dominance have been found in prior studies to be positively associated with teaching effectiveness (e.g., Murray, Rushton, & Paunonen, 1990; Padhye, 2013; Radmacher & Martin, 2001; Scheepers, Lombarts, Van Aken, Heineman, & Arah, 2014). Rushton, Murray, and Paunonen (1983) described the ideal, most effective teacher as sociable, extroverted, supportive, and non-anxious. Other research has suggested that conscientiousness, creativity, agreeableness, and openness to experience are also related to instructional effectiveness (Clayson & Sheffet, 2006; Patrick, 2011). Additionally, professors with high levels of neuroticism and low levels of extroversion typically experience higher levels of teaching anxiety (Houlihan, Fraser, Fenwick, Fish, & Moeller, 2009).

In contrast, there is less research concerning the personality traits and attributes of successful researchers. Rushton et al. (1983) described the ideal researcher as ambitious, dominant, aggressive, independent, and non-meek, and one who is capable of complex and imaginative cognitive thoughts. Further research has asserted personality traits such as high ego strength, dominance, and introversion (i.e., a preference to work with things rather than with people) to be associated with research effectiveness (e.g., Fox, 1983; Tinsley & Tinsley, 1993).

In sum, it is likely that personality traits and behavioral expressions of those traits may be associated with a faculty member's ability to integrate the teaching and research functions. Similar to the area of self-efficacy, incorporating personality traits into the selection and placement of faculty members could prove to facilitate the integration of teaching and research. However, more research is needed on personality variables so that specific suggestions for faculty recruiting and selection can be honed; therefore, we offer a generalized proposition.

Proposition 7. *Personality traits will influence the extent to which faculty members integrate teaching and research.*

1.3. Institutional factors

1.3.1. Type of university

Certain macro-level factors likely are responsible for the research-teaching gap as well, such as the type of university. As universities are increasingly being transformed into entrepreneurial businesses competing for staff, students and funding, they are seeking resources to more effectively compete and create sustainable competitive advantage (Bobe & Kober, 2015). These differential resources create diverse types of missions and objectives. In the broad terms often used in academe, there are research-oriented institutions, balanced institutions, and teaching institutions. For instance, universities classified by the Carnegie Foundation as doctoral or research universities (formerly “Research 1” universities) typically emphasize research activities more than teaching-oriented activities.

Colbeck (1998) observed faculty at research-oriented university and at a masters-level university (i.e., balanced university) and found that the research university had narrowly defined scholarship expectations centered on basic scientific research, while the masters-level university defined scholarship more broadly, including basic, applied and pedagogical research. Miller, Glick, and Cardinal (2005) examined the relationship between the prestige of one's doctoral program and the outcomes of the prestige of post-graduation job placements and research success. The prestige level of doctoral programs (e.g., having brilliant scientists, resource availability, reputation) was positively related to the prestige of job placement and research success (e.g., publication impact factor ratings) over one's career. Though these studies did not directly measure the research-teaching gap, it is generally believed that the gap is wider at institutions with research-oriented missions and objectives (c.f., Burke & Rau, 2010).

Proposition 8. *Faculty members at universities with research-oriented missions are less likely to integrate research and teaching.*

1.3.2. Administrative policies

Coate, Barnett, and Williams (2001) noted a paradox revealed in their discussions with heads of departments and other administrators that “on a managerial level, it is more convenient for teaching and research to be treated as distinct activities. On an intellectual level, however, academic managers would rather perceive the two to be synergistic” (p. 162). Lapworth (2004) suggested this paradox results in an administrative strategy that separates teaching and research, especially when

resources are scarce. Specifically, the job market and staffing policies reinforce the separation of these activities by incentivizing faculty members' research to attain university accreditation and higher rankings (Dyllick, 2015) and place little emphasis on the ability to create research and teaching synergy (Marsh & Hattie, 2002).

Policies that reward research productivity with a reduction in teaching, evaluate teaching and research performance as independent activities, and provide greater rewards for research success than teaching success (e.g., in terms of compensation, promotion, and public recognition of excellence) all serve to pull apart the teaching and research functions (e.g., Leahey, 2007). Indeed, research endeavors (e.g., grant acquisition, number of publications) are positively related to salary, while teaching activities are rarely related to increases in salary (Bak & Kim, 2015; Melguizo & Strober, 2007). This encourages rational actors (i.e., faculty) to compromise their teaching efforts in order to improve their career outcomes (Cadez et al., 2015; Moya, Prior, & Rodríguez-Pérez, 2015).

To cultivate integrative synergy, university administrators could give greater attention to the design of faculty reward systems, performance management interventions and work design to nurture and reinforce teaching-research integration. Khurana and Marquis (2006) suggest the creation of mechanisms to showcase and celebrate faculty research along with a reward system for research that stimulates discussion and debate (and therefore is potentially more useful for classroom application). In addition, administrators can give greater weight to teaching-research integration in the development of their strategic plans. For example, Jenkins and Healey (2005) suggest incorporating the teaching-research interplay in strategic planning, institutional events and mission statements. Further, they propose that teaching-research be incorporated in curriculum requirements, teaching policies and practices, research centers and special programs.

Proposition 9. *Administrative policies that separate the research and teaching activities of faculty as independent activities are negatively related to the integration of research and teaching.*

1.3.3. Resource allocation

Resource allocation decisions can also work to separate (or integrate) the research and teaching functions. First, when funding for teaching and research activities reside in separate pools, faculty are set up to compete for funds within each. Very few funds are allocated to projects that meet combined teaching and research objectives, and competitive processes for funds tend to be separated. Similarly, committees aimed at improving research and teaching generally operate as separate entities with little cross-pollination or communication about their potential synergistic functions. For example, Trank and Rynes (2003) pointed out that over time resources in business schools have been reallocated toward MBA and executive programs and away from doctoral programs where the most natural research–teaching connection exists.

Second, academic work has become more fragmented with the increasing use of part-time, contract instructors and other categories of personnel supporting specialized functions (Geschwind & Broström, 2015; Jones et al., 2014). Contingent, part-time instructors and teaching assistants have been hired in many universities to assist with the demands of teaching undergraduate classes. Similarly, individuals may be hired for administrative support of research proposal development, project management of large projects, or research assistants (Jones et al., 2014). Having individuals fulfill separate roles within institutions further solidifies the partitioning of resources. If symbiotic behaviors are ultimately desired, then appropriate funding systems are needed to support integrative budget decisions.

Proposition 10. *Resource allocation processes that manage research and teaching independently are negatively related to the integration of research and teaching.*

1.3.4. Departmental ethos

Lastly, in terms of institutional factors, it has been suggested that departmental ethos will impact the research–teaching relationship, such that some departments are more successful in creating a collective environmental climate where this linkage can thrive (Ramsden & Moses, 1992; Tight, 2016; Volkwein & Carbone, 1991). Feldman (1987) conducted a meta-analysis that suggested that the relationship between teaching and research was moderate in "low-consensus" disciplines (i.e., social sciences) but low in "high-consensus" departments (e.g., physical sciences). Findings are, however, equivocal. Subsequent research by Marsh and Hattie (2002) concluded that there were no significant departmental differences in their study across 20 academic departments and 1982 individual academics at one university but called for further research across universities at all different levels.

A better understanding of departmental characteristics that either encourage or discourage teaching and research as mutually reinforcing activities would be helpful to administrators. It is likely that administrative leadership plays a role in creating and molding appropriate departmental values with respect to the research-teaching linkage. A strong climate with shared beliefs among faculty is likely to emerge when departmental leaders implement distinctive and mutually reinforcing policies (Bowen & Ostroff, 2004) that simultaneously complement both research and teaching. Hence, creating a climate of research-teaching integration at the department level through merit, renewal, promotion and tenure requirements as well as teaching awards could be useful drivers of faculty members' behavior.

Proposition 11. *Faculty members who perceive a departmental ethos that research and teaching are mutually supportive activities are more likely to integrate research and teaching.*

1.4. Culture of the profession

1.4.1. Value of teaching versus research

The culture of the academic profession likely also perpetuates the research-teaching gap. There remains a culture in academe where research is valued over teaching; consequently, status differentials endure. For example, doctoral programs build prestige by the placement of their students in research-oriented institutions (Weeber, 2006). There is also a push toward research by educational institutions and their accrediting bodies (Shea, 2002). Bennis and O'Toole (2005) went so far as to say that there is a crisis in management education that can be attributed to an excessive focus on measuring graduate program success based on the "rigor of their scientific research" rather than on the competence of their graduates or how well faculty understand business (p. 98).

Within the professoriate itself, some scholars argue younger faculty members are more research-oriented than older faculty (Tang & Chamberlain, 2003). Other scholars (Hancock et al., 2017) argue that typically more junior and teaching-oriented faculty members see merit in the integration of research and teaching. Thus, which types of instructors are more likely to integrate teaching and research is not clear based on prior research; future research is necessary to address this issue.

In addition to its elevated status over teaching, or perhaps as a result, some systems explicitly and implicitly reward research quantity over quality (Denning, 1997). An emphasis on quantity motivates academics to "tinker at the margins," addressing a microcosm of their particular field. The results of incremental studies, although meticulously written, may even be summarized in a sentence, and it could also take years to accumulate enough findings to conclude something consequential for the classroom. Thus, while there seems to be a general consensus that the research–teaching relationship is important and is worth strengthening, in reality little has been done in most universities to encourage a link between them as the teaching function has been overshadowed by the research function.

The resolution is not to subjugate research to teaching, for this too presents a danger in higher education (e.g. Peng & Dess, 2010). Rather, the solution lies (in part) in creating an environment where research and teaching excellence can be pursued jointly. Undoubtedly, reward structures and incentives influence faculty efforts, priorities, and work performance in significant ways, just as they impact employees and managers in any organizational culture (Kerr, 1975; Duff & Marriott, 2012; 2016). Modifying reward strategies in academe for both research and teaching will be important in creating a "sea of change" because what gets rewarded typically is what gets done in organizations (Kerr, 1975).

Proposition 12. *A research-oriented culture will decrease the integration of research and teaching.*

1.4.2. Doctoral curricula and mentoring

Those who will ultimately be spending a large part of their professional lives teaching are seldom taught how to do it, and trial and error methods prevail. For example, Marsh and Hattie (2002) noted:

Academics receive considerable training in how to be productive researchers and are constantly exposed—through professional reading, conferences, and collaboration—to role models who are productive researchers. Because academics know how to be productive researchers, it follows that greater motivation, time, effort, and appropriate activities should result in increased research productivity. In contrast, most academics receive little or no training on how to be effective teachers and are rarely exposed to role models who demonstrate effective teaching (p. 635).

Dissertation chairs and program mentors can significantly influence doctoral students during their early identity formation in the academic world (Sharp, Hemmings, Kay, & Callinan, 2015). Hall and Burns (2009) suggest doctoral students not only learn research skills during their training but that they also engage with their mentors in open and receptive dialogue about what it means to "become" a professor. According to Hall and Burns, "faculty mentors must learn about and consider identity formation in order to successfully socialize more diverse groups of researchers" (2009, p. 49). Additionally, Bonner, Phillips, Neely, & Utecht (2015) argue research institutions have a moral obligation to provide their students with a realistic job preview by exposing them to major aspects of their future occupation including teaching (e.g., responding to student questions, encouraging student engagement). Ultimately, if academics are to work more effectively at the intersection of research and teaching, exposure to such conceptualizations should be helpful early on in their training, socialization, and role as a protégé.

Proposition 13. *Inclusion of teaching pedagogy in doctoral curricula will increase the likelihood that faculty members will integrate research and teaching.*

1.5. Societal influences

1.5.1. Short-run focus

Societal influences also underlie the research-teaching gap. Trank and Rynes (2003) point out that the business world, particularly in the U.S., has shifted from long-term performance objectives toward short-term gains. According to these

authors, this perspective combined with the increasing influence of managers and business practitioners over higher education (in business) has resulted in at least two trends that affect the research–teaching relationship. First, there is a push for immediate skills – at least within schools of business – rather than an emphasis on abstract, theoretical concepts, and general knowledge. As Rowland and Hall (2014) state,

> There are strong indications to suggest that many organizations favor the pragmatic, short-term approach and have a tendency to marginalize the academic approach. Research is all too often discounted in favor of quick fix solutions. The value of learning, particularly of evidence-based learning, is frequently marginalized (p. 253).

The result is specialized training, which decreases the likelihood that faculty encourage students to appreciate the value of research skills. Second, a short-run focus tends to emphasize outcomes that are easily measured, such as number of journal articles published. In other words, societies can vary in the extent to which the culture embodies and encourages a future orientation (e.g., long-versus short-term focus). Cultures with a lower degree of future orientation deemphasize investing or planning and are more concerned with immediate gratification (Chhokar, Brodbeck & House, 2007). As such, there may be less emphasis on measuring outcomes that are intangible, yet more relevant and supportive of the research–teaching connection, such as the quality of class discussion and students' grasp of evidence-based tenets.

Proposition 14. *Future orientation will positively influence the likelihood that faculty members integrate teaching and research.*

1.5.2. Student expectations

Student expectations have created a barrier, at least in some disciplines of higher education, to the integration of teaching and research. According to Rousseau and McCarthy (2007), for example, business management students have strong beliefs about what they need to know as future managers. These biases may make it less appealing for faculty to teach material that may be perceived by students as less interesting or valuable but which, in fact, serves students' long-term career interests. Trank and Rynes (2003) suggest further that students pick up on signals from practitioners who ignore business research; as such, business faculty can "get by" with not connecting research to practice because it does not seem to be an imperative for business professionals or for business students.

In addition, some have argued that business students are pragmatic, showing concern primarily with the vocational aspects of education (i.e., how can it prepare me for a job) rather than the academic aspects (i.e., how can I learn more for the sake of learning; Duff & Marriott, 2012; 2016; Hancock et al., 2017; Voss, Gruber, & Szmigin, 2007). Raelin (2009, p. 401) lamented that "forty years of spoon-feeding in management education" has led to a passive student audience who must be convinced of the value of active learning. Such student expectations can put pressure on faculty to deliver vocational skill-based training rather than implement educational techniques that integrate research into the learning process.

Raelin (2009) suggested that this particular barrier to change in teaching practice may correct itself as the recent generation of students demands more opportunities for active, applied learning. A more proactive approach, however, would be to educate students and their parents at a very early point in their college experience (i.e., at the point of recruitment and application) as to the importance of developing mentoring relationships with faculty and expecting that the college experience be one that incorporates plenty of opportunity for active learning, problem-solving and research skill development.

Proposition 15. *Student expectations for vocational based education will decrease the integration of research and teaching.*

1.6. Implications for research and policy

Uncovering the causes and mitigations of the research–teaching gap is a necessary step for understanding the seemingly separate worlds of faculty work life. Doing so will increase the probability that appropriate change interventions are developed that could ultimately help produce students equipped with the latest knowledge in their field, and more importantly, with skills they need to be enduring clients of research. Enhanced reinforcement of the interplay between the research and teaching roles of faculty could also equalize the status of research and teaching endeavors and encourage output of higher value to the various consumers of our professional efforts. We provide a holistic framework of the faculty viewpoint and catalog influential factors of the research-teaching gap at the proximal micro-level and the distal macro-level. As highlighted in our propositions, there are ample opportunities to further study the undergirding contributors to the research-teaching divide and numerous research questions.

Survey research is common in the social sciences yet without validated scales at hand, there is risk of inaccurate measurements and conclusions. Although recent scale development work in this research niche is promising (see Duff & Marriott, 2012, 2016; Hancock, Duff, & Marriott, 2017), more work is necessary to develop validated scales particularly for the unexplored factors advanced in the current article (e.g., norms of novelty, role expectations, competing demands). Specifically, to advance quantitative work in this field, we have provided Table 2 to identify existing measures, as well as offering sample items to guide future scale development studies. With these measures, our propositions can be empirically tested.

We also suggest that an appreciative inquiry technique (Cooperrider & Srivastva, 1987; 2017) is a viable qualitative complement to survey efforts and could be used to explore those factors most conducive to reducing the teaching-research

gap in higher education. Cooperrider and Srivastva (1987) defined the role of the scientist in such methodological approaches as an "an active agent and co-participant who is primarily a source of linguistic activity (theoretical language), which serves as input into common meaning systems" (p. 136). Qualitative methods will provide insight concerning the variables presented in this paper and previous research in terms of the research-teaching gap, the moderating and mediating effects of these variables, and the identification of new, interesting variables influencing the research-teaching gap. Specifically, our paper will provide useful language to assist researchers who wish to conduct an appreciative inquiry study to understand the complexities of the research-teaching gap.

We also contend that understanding the research-teaching gap would benefit from theoretical and methodological considerations that recognize the multi-level nature of the phenomenon. Individual characteristics and individual views about the nature of academic work affect personal views about the likelihood, and value of, teaching-researching synergies; however, faculty members are nested in departments that are situated in colleges, which are part of universities (or other similar hierarchical structures). As such, individual faculty members are subject to molar-level climate influences (e.g., an integrative research-teaching climate versus a disparate research-teaching climate) at different levels of analysis. When climates are "strong" there is a consensus, and generally agreed upon behavioral expectations versus when individuals do not perceive the work environment the same way (Schneider, Salvaggio, & Subirats, 2002). There are of course many methodological approaches available; we offer these suggestions as reflective of the multiple methods of inquiry necessary to achieve a deeper understanding of the research-teaching gap.

Certainly, empirical questions remain that provide avenues for future research. Our approach to closing the research-teaching gap largely rests upon more effectively linking and bridging research and teaching; however, it may be somewhat unrealistic and perhaps even undesirable for all teachers across all institutions and disciplines in higher education to be devoting significant time and energy toward both processes. As recognized in the Carnegie system, institutions of higher learning have missions that vary in the saliency of researching and teaching. In addition, faculty members can have divergent views about the ability to integrate, and even of the value of doing so (Hancock et al., 2017). Outcomes also may vary by level of learning; for example, research may be easier to integrate in graduate education than undergraduate education, making the research-teaching connection perhaps stronger in the former (Duff & Marriott, 2016; Lindsay, Breen, & Jenkins, 2002). First, graduate students, most of whom are working adults, may be more likely to realize the types of current problems faced by businesses. Second, instructors may be able to more easily share research results because graduate students have the experience to find it more valuable than undergraduates.

From a practical standpoint, the integration role could be sourced to others, or even technological mechanisms, to fulfill the role of translator; for example, certain faculty could specialize in research while others teach, and still others act as "translators" who focus solely on studying emerging research and diffusing the knowledge to those teaching (Grant, 2014). García-Gallego et al. (2015) suggest that "light specialization" may provide the most benefits such that more successful researchers and administrators should reduce their teaching. However, they argue that the teaching load should not be increased for the non-researchers; rather, there is an optimum teaching load after which teaching quality declines.

In these efforts, there may be cultural and systemic factors that are either difficult or impossible to change. For example, only research with significant findings is typically published (i.e., publication bias; Rothstein, Sutton, & Borenstein, 2006), which may be an issue for faculty members who have ongoing research projects that fail to produce significant results. Similarly, institutions are evaluated based on their research productivity and rankings (e.g., Academic Ranking of World Universities (ARWU); Liu, 2015), but this is not without challenges (e.g., inclusion of non-English publications, database inconsistencies). Because of the inertia of such productivity measures at the institutional level, it may be hard to change the culture and criteria used to evaluate faculty.

2. Conclusion

Strengthening the research-teaching connection holds potential to not only provide upcoming generations of students with the skills needed to understand research, but also to instill values that recognize the validity of research in personal and professional decision making (Burke & Rau, 2010). Closing this gap could also benefit faculty by facilitating personal knowledge transfer across their research and teaching efforts, creating economies of scale in mutually-reinforcing work activities, and reducing conflicts in academic work roles. For institutions, bolstering the research-teaching tie could help equalize the status of research and teaching and send more consistent messages to faculty, students, and other stakeholders about priorities. In this paper, we have cataloged varied multi-level factors and offered testable propositions and measures to aid in researching, and potentially attenuating, the research-teaching gap.

Failure to understand why the research-teaching gap persists, and which factors are most primary in its entrenchment, hampers the development of appropriate interventions to address this issue and even render some well-meaning interventions useless. Indeed, it could be argued that the ability to successfully integrate research and teaching is the essence of what it means to excel as a university professor. For some disciplines, such as medicine, the research-teaching gap is minimal due to systemic requirements (e.g., longer formal training, standardized exams, continued education); in such a context, segregating research from teaching might even be considered educational negligence. Ultimately, further research is needed to explain and predict how faculty members allocate their energies and how faculty members perform in both teaching and research. Without future study, the potential rewards, whether research advancements or enhanced educational experience, that await us will remain largely unknown.

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