Constructivist Meta-practices: When Students Design Activities, Lead Others, and Assess Peers

David S. Bright
Professor
Wright State University

Arran Caza
Associate Professor
University of Manitoba

Elizabeth Fisher Turesky
Associate Professor
University of Southern Maine

Roger Putzel
Professor Emeritus
St. Michael's College

Eric Nelson
Professor
University of Central Missouri

Ray Luechtefeld
Assistant Professor
University of Central Missouri

Abstract

New educators may feel overwhelmed by the options available for engaging students through classroom participation. However, it may be helpful to recognize that participatory pedagogical systems often have constructivist roots. Adopting a constructivist perspective, our paper considers three meta-practices that encourage student participation: designing activities, leading others, and assessing peers. We explored the consequences of these meta-practices for important student outcomes, including content knowledge, engagement, self-efficacy, sense of community, and self-awareness. We found that different meta-practices were associated with different combinations of outcomes. This discovery demonstrates the benefit of studying meta-practices so as to reveal the nuanced effects that may arise from pedagogical choices. In addition, an understanding of meta-practices can help leadership educators to be more discerning and intentional in their course designs.

Introduction

The traditional, teacher-centric mode of instruction is being questioned at an unprecedented level, both in education generally, and specifically in leadership development (Parks, 2005; Rosch & Caza, 2012; Young, 2010). In response, many instructors use participatory practices in their teaching (Bedwell, Fiore, & Salas, 2014; Brutus & Donia, 2010; Smith & Woodworth, 2012). Yet many leadership educators receive limited training in how to teach, and thus they may select particular pedagogical techniques based on conjecture, their idiosyncratic experience, or their personal disposition.

This study is especially designed to help educators such as these, who may be passionate about using participatory techniques to engage students, but who may feel befuddled by the many pedagogical choices for doing so. We present the idea of a "meta-practice," a pedagogical element that is used across various teaching strategies or pedagogical systems, as a way to find common threads that cut across various teaching approaches. Our premise is that various pedagogical systems provide a menu of choices for classroom design. However, this view requires some basis for understanding how to compare and contrast what they offer.

Thus, to frame the concept of a meta-practice, we suggest that most participatory pedagogical systems share the assumptions of a constructivist approach to learning (Merriam, Caffarella, & Baumgartner, 2007). Specifically, we first identify three constructivist meta-practices: students designing elements of the curriculum, students leading peers, and students assessing peers. We then illustrate how these meta-practices are exercised within three common pedagogical systems.

Next, we explore how these three meta-practices may influence various learning outcomes. We report the results of a multi-classroom survey of the relationships among the meta-practices and students' content knowledge, self-efficacy, self-awareness, engagement, and sense of community. Such learning outcomes are important leadership capabilities and they determine how leaders manage themselves and their relationships with others (Avolio, 1999; Avolio & Gardner, 2005; Boyatzis & McKee, 2005; Kouzes & Posner, 1995).

Finally, we discuss how meta-practices may inform pedagogical choices. That is, an exploration of meta-practices allows for meaningful comparisons among teaching options. In addition, the concept of a meta-practice provides a path for researchers to consider the costs and benefits of certain techniques relative to particular teaching goals (Magni, et al., 2013; Zepke & Leach, 2010).

Notably, while we draw on constructivist theory to analyze these participatory pedagogies, a teacher need not be steeped in a constructivist perspective to benefit from the idea of a meta-practice. Simply recognizing that there may be many ways to accomplish desired outcomes through particular meta-practices should be helpful. As educators better understand the possibilities and benefits of participatory options, they should be able to make more informed design choices.

Constructivist Learning and Student Participation

Constructivist ideas in education have existed for many decades and can be traced to writers such as Dewey, Piaget, and von Glasersfeld (Phillips, 1995). There are many ways to understand constructivist teaching (Duffy & Cunningham, 1996; Pelech & Pieper, 2010; Phillips, 1995), and a full review is impossible within the scope of this article. (For summaries, see Merriam, Caffarella, & Baumgartner, 2007; Phillips & Soltis, 2009.) However, all constructivist approaches assume that knowledge and learning are emergent: "knowledge cannot be transmitted, but must be constructed by the mental activity of learners" (Driver, Asoko, Leach, Scott, & Mortimer, 1994, p. 5). When students' current constructions are challenged, they engage in a sense-making process that generates learning (Piaget, 1977).

Hence, a constructivist teacher encourages participation by facilitating opportunities for students to discover, practice, and act their way to knowledge (Baker & Baker, 2012). The instructor and students often share power, or more accurately, a constructivist teacher encourages students through "guided participation" (Mascolo, 2009, p. 3). In a popular metaphor, the teacher shifts "from the sage on the stage to a guide on the side" (Ramsey & Fitzgibbons, 2005, p. 336). The instructor typically invites students to participate in self-directed actions and experiences (Weimer, 2002). Content is viewed as both a "means and an end of instruction" (Weimer, 2002, p. 51), and every component of a class is viewed as a potential learning opportunity (Cohen & Fink, 2001). The overall intent is to help students, not only master content, but also become more capable and self-motivated (Candy, 1991).

Meta-Practices

Our review of the literature, summarized in the subsequent section, suggests that certain participatory practices are common to several constructivist pedagogical systems. Specifically, we focus on three participatory meta-practices that consistently appear in management and leadership education: (1) giving students a significant role in *designing* curriculum or course activities; (2) providing students with the opportunity to *lead* other students in the classroom; and (3) involving students in *assessing* other students through peer evaluation and grading.

Students design curriculum when they help to choose, create or develop class topics and activities. Inviting students to design curriculum is a form of collaborative learning and power sharing (Ares, 2008). Instructors use this practice when they ask students to take an active part in the planning of learning activities. For example, students may determine the topics of greatest interest or the order of topics to be covered. They may also design the agenda for class sessions, thereby influencing the emphasis of instruction. In addition, through a process of formative assessment, students may provide information about how well they are grasping concepts during the learning process, thus allowing the curriculum to adapt to emergent student needs (Butler & Winne, 1995; Clark, 2012; Hattie & Timperley, 2007; Nicol & Macfarlane-Dick, 2006).

Students lead their peers, either formally or informally, when they direct other students' class-related activities. When students lead their peers, they influence learning outcomes and develop their own leadership capacity. Students might lead in-class activities for a portion of a class, or at another level, manage other students in a formal role. Because developing leaders is the defining goal of leadership education, this meta-practice should be particularly common and familiar to leadership instructors (Caza & Rosch, 2013; DeRue, Sitkin & Podolny, 2011).

Students assess their peers when they make observations of one another. This exercise is among the most developed meta-practices in the constructivist repertoire, and it has enjoyed long-standing use in management education (Black & Wiliam, 1998; Harlen & James, 1997; Price, O'Donovan, & Rust, 2007). When assessing peers, students may simply provide performance feedback to each other, or they may determine a portion of others' grades (Gueldenzoph & May, 2002). Students may also design and administer their own assessments (Topping, 2009). In all cases, the ability to develop and convey feedback for others is a crucial leadership skill (Cameron & Caza, 2005; DeRue & Wellman, 2009; Goleman, Boyatzis & McKee, 2013; Kouzes & Posner, 1995; Rogers, 1969)

Examples of Meta-Practices in Use

The utility of clearly identifying meta-practices begins with an understanding of how they are used in different approaches. To illustrate, the rows in Table 1 explain how the three meta-practices appear in three constructivist pedagogies: Problem-Based Learning (PBL), Team-Based Learning (TBL), and Classroom-as-Organization (CAO). Though our derivation of the three meta-practices is grounded in our review of PBL, TBL, and CAO, we suspect that they are common to other approaches as well.

Table 1: Examples of Constructivist Meta-practices Found in Common Pedagogies

Meta-practice	Problem-Based Learning	Team-Based Learning	Classroom as Organization
Students designing elements of the curriculum	HIGH Curriculum is designed around ambiguous, real-life problems. Students must develop their own resources, generate a plan that resolves the problem, and establish a method for implementing the solution.	LOW Limited opportunities for students to co-construct the curriculum. Instructors must engage in considerable preparation to generate cases and activities that will illustrate the desired application of concepts.	HIGH Extensive opportunity for students to develop content and delivery methods. Students are responsible for teaching other students significant segments of class content. They are free to innovate as needed to bring additional resources to the classroom while fulfilling this responsibility.
Students leading peers	VARIABLE Students are often organized into self-managing teams. An external tutor may be designated. Students may be required to work together extensively to solve the problem posed by the instructor.	HIGH Students are always organized into self-managed learning teams. The team takes quizzes together on a regular basis. To be successful in the class, they must develop a capacity to teach and challenge one another within the team.	HIGH Students are organized into self-managing teams. They may or may not designate a leader within the team. The team as a whole is required to lead all other teams in the class through a differentiated responsibility.
Students assessing peers	VARIABLE Students may evaluate other students within their teams. Use of peer assessments varies widely in practice.	HIGH Students evaluate other students within their teams.	HIGH Students evaluate and provide detailed feedback to students, both within their teams and also across the entire class organization.

Note: The descriptions in this table were derived from Boud and Feletti (1997), Michaelsen, Knight and Fink (2002), Cohen (1976), and Putzel (2010).

Problem-Based Learning. PBL, which has received extensive coverage, assumes that real-world decision-making is often messy, uncertain, and intuitive, and that students should learn how to solve real problems (Coombs & Elden, 2004; Goltz, Hietapelto, Reinsch, & Tyrell, 2008; Parks, 2005; Peterson, 2004). PBL allows students to work out what aspects of the problem are important and which information is relevant (Hmelo-Silver, 2004). Students assess the situation, develop interpretations, and determine appropriate actions (Coombs & Elden, 2004; Duffy & Cunningham, 1996).

PBL students participate in the design of curriculum when they work with an instructor to define the problem, construct a plan to investigate alternatives, and craft recommendations (Kloppenborg & Baucus, 2004; Peterson, 2004). Students typically exercise significant discretion in the analysis, learning activities, and the presentation of their solutions, often modeling how professionals behave in practice (Barrows, 1996; Kloppenborg & Baucus, 2004). PBL instructors sometimes create self-managed teams in which students exercise leadership as they develop and direct activities. Indeed, PBL is premised on students learning to direct their own learning, often accomplished through a peer tutoring system (Barrows, 1996, p. 246; Coombs & Elden, 2004). The use of peer assessment in PBL varies dramatically in practice. Some instructors rely solely on quantitative instruments while others require teammates to deliver feedback in many ways throughout a term (Papinczak, Young, & Groves, 2007).

Team-Based Learning. In TBL, team interactions produce learning experiences. A TBL unit begins with individual study, followed by feedback through an individual exam, group study, a group exam, instructor-led discussion and active learning experiences (Michaelsen, Knight, & Fink, 2004; Michaelsen & Sweet, 2008). The approach relies on students teaching students and holding peers accountable for learning performance; students essentially become tutors for one another (Michaelsen, Watson, & Schrader, 1984).

Student participation in design is more limited in TBL than in PBL. Typically, the instructor defines the content, and students have little control over the curriculum (Michaelsen, Knight, & Fink, 2004). However, TBL relies on intra-team leadership more than PBL. For example, TBL instructors may require students to manage administrative tasks (e.g. taking attendance) that the instructor would otherwise handle (Michaelsen, Knight, & Fink, 2004; Michaelsen, Watson & Schrader, 1984). With respect to assessing, Michaelsen and Sweet (2008) explain, "without peer evaluation, [a class design] is not TBL" (p.2). Indeed, TBL proponents claim that one of the key drivers of learning is the motivational power of peer accountability (Sweet & Pelton-Sweet, 2008).

Classroom-as-Organization. As a final example, the CAO design allows the class to evolve as an organizational system in which students direct their peers, much as managers do in a business (Cohen, 1976; Putzel, 2007). This approach takes the constructivist edict "learn by doing" (Dewey, 1938) to an extreme, treating every aspect of the class experience as data to examine in light of organizational theory (Putzel, 2010). A variety of CAO designs have been employed for teaching a range of management and leadership topics (Cohen, 1976; Gardner & Larson, 1988; Putzel, 2007, 2010; Wagner & van Dyne, 1999).

The CAO approach makes extensive use of students designing curriculum. Students work in differentiated groups to fulfill complementary areas of responsibility for significant parts of the curriculum. In addition, leadership opportunities are abundant in CAO. In some designs, the instructor delegates to students management responsibility for in-class activities (Romme & Putzel, 2003; Putzel, 2007). Students fulfill differentiated roles and eventually direct every in-class activity (Putzel, 2010; Romme & Putzel, 2003; Gardner & Larson, 1988; Cohen, 1976). Finally, the CAO design relies heavily on students assessing peers. In contrast to TBL and PBL, which employ peer assessment primarily within teams, CAO encourages feedback both within a team and across an entire class. For example, Putzel's (2010) eXperience Based Management

(XB) model requires students to generate over 150 performance measures that contribute substantially to the final grade. Other CAO designs arrange students into a formal organizational hierarchy with managers and subordinates. Student managers grade their subordinates, who in turn grade the managers (Cohen, 1976; Gardner & Larson, 1988).

To reiterate, our point in sharing these examples is not to provide a comprehensive review of their use, but rather to show how meta-practices are common across several pedagogical systems. Therefore, a leadership educator designing instruction can assess different ways of implementing a meta-practice. Rather than choosing between this or that pedagogical approach as a whole, an educator might think in terms of meta-practices and their effects.

Effects of Meta-Practices

Ultimately, any pedagogical choice aims to produce particular outcomes among students. If meta-practices are to inform pedagogical choices, we need to understand their effects on students. Thus, we set out to explore the potential effects of the meta-practices we identified. Specifically, previous research demonstrates that constructivist practices generate results on traditional measures such as content knowledge and engagement (Travis & Lord, 2004). In addition, leadership educators often want students to develop personal capabilities such as self-efficacy, self-awareness, and sense of community (Waddock & Lozano, 2013).

Content Knowledge. The most basic form of learning involves students remembering and understanding concepts (Anderson & Krathwohl, 2001), and the preceding review of the three meta-practices suggests that they could influence students' understanding of content knowledge. In regard to students designing learning activities, studies on employee behavior show that employees who participate in decision-making are more supportive of the resulting decision (Appelbaum et al., 2013; Black & Gregersen, 1997). We would expect a similar result among students. Students who have a role in choosing what and how they learn are more invested in their learning and more likely to find personal relevance in the material (Baker & Baker, 2012). Thus, students designing activities may encourage mastery of content knowledge. Similarly, leading other students reinforces content learning through the process of helping others to understand and learn. For example, when preparing to lead a discussion, students summarize or explain a topic to other students. Moreover, since students learn about concepts through repetition, experimentation, or watching classmates succeed or fail, leading others may also lead to greater content knowledge.

Finally, assessing peers fosters mutual accountability among students and greater commitment to learning (Bryant & Carless, 2010; Cestone, Levine, & Lane, 2008). The learning benefits are greater still when students are graded on their assessments of peers (Michaelsen, Parmelee, McMahon, & Levine, 2008). Dochy, Segers, and Sluijsmans's (1999) meta-analysis shows that peer assessment improves both quantity and quality of content knowledge.

Engagement. Defined as cognitive, emotional, and behavioral investment in an activity, engagement is a positive and fulfilling state characterized by vigor, dedication, and absorption (Rich, LePine, & Crawford, 2010; Schaufeli & Bakker, 2004; Zepke & Leach, 2010). In educational contexts, class engagement denotes cognitive and emotional arousal concerning a topic of study. Engaged students feel vigorous, dedicated to study, and absorbed in study-related tasks (Ouweneel, Le Blanc, & Schaufeli, 2011). Because engagement improves a student's educational focus, it constitutes an important outcome (Kuh, Kinzie, Schuh, & Whitt, 2005). Proponents of constructivist approaches nearly always claim engagement as a key outcome, and indeed, research demonstrates a consistent association between engagement and constructivist methodologies (Smith, Sheppard, Johnson, & Johnson, 2005; Weimer, 2002).

Specific to the potential relationship between engagement and the meta-practice of students designing activities, we might expect students to be engaged when they craft their own learning experience. Engagement occurs when students "feel comfortable to voice their opinion" (Kiener, 2009, p. 23), and the power to design activities gives them the freedom to express their views. Moreover, students may experience cognitive arousal and emotional investment when they think about a specific, often ambiguous, challenge or problem, such as designing a classroom activity (Barrows, 1996). Leading others may contribute to engagement for similar reasons. Leading requires planning, implementation, and influencing others. Such actions may provide ample opportunities for cognitive arousal (e.g. students determine how to accomplish desired goals), emotional arousal (e.g. fear, satisfaction), and behavioral investment.

Finally, assessing peers may provide an organizing framework that enables creativity and innovation by establishing an egalitarian setting that frees students to share meaningful perspectives with one another (Baker & Baker, 2012). Many constructivist practitioners have described the range of reactions and emotions that students experience when giving feedback to their peers. Anecdotally, many students are initially tepid about sharing corrective feedback with one another early in a class, but with practice, they may gain confidence and the ability to be honest with and empower their peers (Putzel, 2007). Reactions of this sort may capture students' attention and produce the responses associated with engagement.

Self-Efficacy. Self-efficacy, which is a generalized belief in one's own competence, is an important educational outcome because of its associations with improved cognition, motivation, affect, and activity choices (Bandura, 1986, 1994; van Dinther, Dochy, & Segers, 2010; Wood & Bandura, 1989). Individuals with high self-efficacy believe that they can produce desirable outcomes in their lives. High self-efficacy inclines individuals to view challenging tasks as opportunities rather than threats; as a result, they are more likely to set and pursue ambitious goals (Ormrod, 2006). Self-efficacy contributes to improved performance, both in academics and at work, and it has been identified as one of the most reliable predictors of leadership success (Ferla, Valcke, & Cai, 2009; McCormick, 2001; Stajkovic & Luthans, 1998).

Bandura (1986) identified "mastery" experiences – facing new challenges and succeeding at them – as the most important source of self-efficacy. A second important source of self-efficacy is the opportunity for vicarious learning through social modeling (i.e., seeing others like us persevere and succeed at important tasks). Self-efficacy and closely related constructs (e.g., self-confidence) are frequently described as key outcomes of constructivist pedagogies (Gerringer, Stratemeyer, Canton, & Rice 2009; Grier-Reed & Skaar, 2010; Romme & Putzel, 2003; Zimmerman, 1990).

The meta-practices of designing activities, leading others, and assessing peers may provide students with specific opportunities for self-efficacy enhancing mastery experiences and vicarious learning. The basic underlying process that should build self-efficacy is straightforward and common to all three. First, the student must perform a novel activity or role. Next, the student experiences personal success in fulfilling this role and/or witnesses peers doing so. Finally, the student develops an understanding that he or she is capable of being successful in future, similar circumstances. Through this process, students may increase their self-efficacy (Bandura, 1986).

Self-Awareness. Individuals with self-awareness possess metacognitive knowledge, a capacity for understanding their own attributes, values, traits, strengths, and weaknesses (Schraw, 1998). A student whose self-awareness increases should be better prepared for the future (Boyatzis, Stubbs & Taylor, 2002). Moreover, self-awareness is another important antecedent of leadership success (Van Velsor, Taylor & Leslie, 1993). At a general level, constructivist methods have been shown to increase self-awareness (Sheehan, McDonald & Spence, 2009).

An increase in self-awareness occurs when people encounter differences between their own and others' perceptions (Taylor & Bright, 2011); that is, self-awareness comes from experiences that challenge self-beliefs and self-perceptions. The constructivist meta-practices should provide such encounters. Designing activities may increase self-awareness through moments of debate, controversy, or conflict over what information is most important or relevant. Leading other students will create the opportunity for contrast between self-perceptions and others' perceptions because of the power dynamics that accompany any exercise of influence. Likewise, peer assessment strongly encourages self-awareness because it requires students to share their perspectives with one another (Mayo, Kakarika, Pastor, & Brutus, 2012). The meta-practices should lead students to discover how others see them, their actions, and their personal characteristics, which enables reflection and a revision of one's narrative of self.

Sense of Community. Classroom community, a shared sense of identity emerging from shared experience, is another potentially important consequence of constructivist practice (Driver et al., 1994; Duffy & Cunningham, 1996; McMillan & Chavis, 1986; Peterson, Speer & McMillan, 2008). A sense of community exists when people feel membership identity, have influence in or are influenced by the collective, and feel an emotional connection or bond to the collective and its members (McMillan & Chavis, 1986). Community is important to the constructivist approach because it enables students to share their emerging constructions with one another in the meaning-making process (Nicolini, 2012, p. 86).

Working with others helps build the interpersonal bonds that form the foundation of community (Ren, Kraut, & Kiesler, 2007). The meta-practice of designing activities should elicit the emergence of community because it requires students to work interdependently: any one student's design contributions may shape the learning experience for all the students in a class. Leading and assessing peers should similarly contribute to building community because both meta-practices require students to influence and to be influenced by other students. It appears that students may be especially attached to the class and its community when these meta-practices are a regular part of the classroom experience (Putzel, 2007).

Method

Participants and Procedure. Data were collected over nine semesters (4.5 years) from students in introductory general management or organizational behavior classes at five universities across the United States of America. We chose classes to increase the generalizability of our findings. The universities included small private institutions and large public ones. The instructors included both those who were intentionally using constructivist practices and those who were not and a variety of experience levels. We sought as wide a range of instructional approaches as possible so that the sample would include students with both high and low experiences of the meta-practices.

In each class, students were invited to participate in an anonymous, voluntary survey at the end of the semester. Students in 25 classes were invited to participate, but classes where fewer than 10 students responded were eliminated. As a result, we collected data from 650 students who represented 22 different classes and eight different instructors. Six instructors explicitly practiced some form of TBL, CAO, or PBL. The overall response rate was 79%.

Participants indicated which section they were in, to allow response matching, and completed all study measures and demographic questions. The sample had slightly more men (53.2%) than women and an average age of 23.7 years (SD = 6.32). Six of the eight instructors were male, and most (70.0%) were untenured.

Measures. Participants reported their experience of the use of the three constructivist meta-practices in their class on 5-point scales measuring the extent to which they felt that they designed classroom activities, led other students, and assessed their peers (see Table 2 for all study measures). In addition, since the use of constructivist pedagogy does not preclude an influential role for the instructor, we included a control measure reflecting how much influence each participant felt the instructor had had in a traditional didactic role (Duffy & Cunningham, 1996). Participants' content knowledge was assessed with 25 multiple choice questions, each having four possible answers. The same test was used in all classes and addressed common management topics (e.g., "A manager assigns a team project to his work group. Which of the following actions is likely to be effective in reducing social loafing within the team?"). For ease of interpretation, test results were multiplied by four to yield a score out of 100. Attitudinal outcomes were assessed with self-report scales measuring class engagement, generalized self-efficacy, sense of community, and self-awareness. We also collected student and instructor demographic information.

Table 2: Study Meas

Variable	Items
Students designing classroom activities *	Students determined the order in which topics were covered. Students selected the topics they would master. Students planned the agenda for an entire class.
Students leading peers*	Students led in-class activities. Students had unique roles in the class. Everyone contributed in different and important ways.
Students assessing peers*	Regularly received evaluation from other students about their performance. Students graded each other.
Didactic role*	Knowledge is transmitted primarily from instructor to students. The instructor serves as the primary evaluator. Emphasis is on students getting "the right answers."
Class engagement (Schaufeli et al., 2006)	I was enthusiastic about this class. This class inspired me. When I got up in the morning, I felt like going to this class. I am proud of the work that I did in this class.
Self-efficacy (Schwarzer & Jerusalem, 1995)	I can always manage to solve difficult problems if I try hard enough. It is easy for me to stick to my aims and accomplish my goals. I am confident that I could deal efficiently with unexpected events. I can remain calm when facing difficulties because I can rely on my coping abilities. If I am in trouble, I can usually think of a solution. I can usually handle whatever comes my way.
Sense of community (Peterson et al., 2008)	I feel like a member of this class. I belong in this class. I feel connected to this class. I have a good bond with others in this class.
Self-awareness*	I have a good understanding of my strengths. I have a good understanding of my weaknesses. I know my traits and characteristics as a person. I understand how others see me.

Note: Measures marked with asterisks were developed for this study.

Analysis and Results

The analysis was conducted at the individual level, focusing on the experiences and reactions of students. Our experience, supported by the data, was that even students in the same section of the same course can respond quite differently about what occurred in class. Indeed, it is possible that some students in some classrooms may choose not to take advantage of opportunities to engage in meta-practices. Thus, we neither expected nor observed high levels of agreement among students about their instructors' practices. Differences in the instructor's' behavior surely contributed to variance among the students' responses, but our concern here was with what students experienced, not with the instructors.

Table 3: Comparison of Alternative Measurement Models

Model	χ^2	Df	SRMR	CFI	RMSEA	$\Delta\chi^2$	Δdf
Proposed eight-factor model	1346.58	349	.06	.95	.07	--	--
Six-factor model, collapsing the three constructivist dimensions to a single factor	1781.15	362	.07	.93	.08	434.57*	13
Five-factor model, collapsing the three constructivist dimensions and the instructor influence scale to a single factor	2354.58	367	.09	.90	.09	1008.00*	18
Five-factor model, collapsing the three constructivist dimensions and the self-awareness scale to a single factor	3358.02	367	.08	.85	.12	2011.44*	18
Four-factor model, combining all measures developed for this study into one factor (i.e., the three constructivist dimensions, the instructor influence scale, and the self-awareness scale)	3965.60	371	.09	.82	.13	2619.02*	22

We conducted a series of maximum likelihood estimation confirmatory factor analyses (CFA) to assess the adequacy of the self-report measures. A CFA of all the measures showed a good fit with the data (see Table 3) and suggested that the measures had desirable psychometric properties. All items were significantly associated with the appropriate factor and had standardized loadings greater than 0.60. The average variance extracted was 0.75, which was greater than the squared multiple correlations among variables. We also conducted a rival model analysis, and the proposed model had a significantly better fit than the alternative models we tested (in Table 3). All of these results suggest that the measures performed appropriately.

Table 4 provides descriptive statistics for all individual-level variables. Although our concerns were at the individual level, students were grouped in classes, so their responses were not independent. To correct for this lack of independence, we used mixed-effect multilevel modeling. Demographic variables were often non-significant predictors, and even when they were significant, their inclusion did not change the substantive results. Since we had no theoretical rationale to include demographic variables, we excluded them for parsimony. We estimated five models, one for each outcome, as shown in Table 5.

Table 4: Descriptive Statistics for Individual-level Variables

	Mean	s.d.	α	1	2	3	4	5	6	7	8	9
1. Student age (years)	23.67	6.32										
2. Sense of community	2.22	1.13	.96	.07								
3. Self-efficacy	2.20	1.04	.96	.05	.78*							
4. Engagement	2.50	1.00	.89	.00	.81*	.65*						
5. Self-awareness	2.25	1.01	.93	.05	.77*	.91*	.66*					
6. Content knowledge	63.92	22.41		.24*	.20*	.22*	.14*	.24*				
7. Instructor (didactic) influence	3.17	1.02	.78	.00	-.13*	-.11*	-.08*	-.09*	.14*			
8. Designing curriculum	2.49	1.14	.84	.15*	.58*	.50*	.54*	.50*	.21*	-.34*		
9. Lead other students	2.16	1.20	.92	.11*	.82*	.78*	.68*	.76*	.24*	-.28*	.73*	
10. Assess peers	2.32	1.23	.84	.14*	.68*	.64*	.57*	.65*	.22*	-.33*	.80*	.80*

Note: N = 650. * indicates correlation is significant ($p < .05$)

Mean performance on the test of *content knowledge* was moderate (64%) and was influenced by only one meta-practice (see Model 1, Table 5). The more students reported *designing* classroom activities, the better they did on the test of content knowledge ($\beta = 3.20, p < .01$). Despite the positive correlations in Table 4, after controlling for the effect of *designing* classroom activities, neither *leading* other students ($\beta = -1.13, p = .46$) nor *assessing* peers ($\beta = 1.99, p = .17$) was related to the test of content knowledge. In contrast, all three meta-practices were positively related to reported *engagement* (Model 2, Table 5): *designing* classroom activities ($\beta = .14, p < .01$), *leading* other students ($\beta = .43, p < .01$) and *assessing* peers ($\beta = .11, p = .03$).

As shown in Models 3 through 5 (Table 5), the remaining outcomes had similar relationships with the three meta-practices. *Designing* classroom activities was not an important predictor, being unrelated to *self-efficacy* ($\beta = .01, p = .70$), *self-awareness* ($\beta = .02, p = .60$) and *sense of community* ($\beta = .06, p = .17$). In contrast, both of the other meta-practices were positively related to all three outcomes. *Leading* predicted *self-efficacy* ($\beta = .25, p < .01$), *self-awareness* ($\beta = .17, p < .01$) and *sense of community* ($\beta = .58, p < .01$). *Assessing* peers did likewise, predicting *self-efficacy* ($\beta = .08, p = .03$), *self-awareness* ($\beta = .17, p < .01$) and *sense of community* ($\beta = .12, p < .01$).

Table 5: Multilevel Model Results

	Model 1: Content Knowledge	Model 2: Class Engagement	Model 3: Self-Efficacy	Model 4: Self-Awareness	Model 5: Sense of Community
Intercept	37.42* (4.82)	.59* (.15)	1.43* (.19)	1.34* (.19)	.28 (.14)
Instructor's (didactic) influence	5.58* (.91)	.13* (.03)	.05* (.02)	.07* (.02)	.09* (.03)
Designing classroom activities	3.20* (1.41)	.14* (.05)	.01 (.03)	.02 (.04)	.06 (.04)
Leading other students	-1.13 (1.51)	.43* (.05)	.25* (.04)	.17* (.04)	.58* (.04)
Assessing peers	1.99 (1.44)	.11* (.05)	.08* (.03)	.17* (.04)	.12* (.04)
Pseudo-R^2	.06*	.24*	.12*	.12*	.31*

Note: N = 650 in 22 groups (except Model 1: Content Knowledge, where N = 610 in 22 groups). Standard errors in parentheses. * indicates significant result ($p < .05$)

Discussion

We have argued that participatory practices are informed by constructivist assumptions within a range of familiar pedagogical approaches. In particular, many teaching frameworks used by leadership educators may share three constructivist meta-practices: having students design classroom activities, lead others, and assess peers. The results from a large, multi-site survey suggested that these three meta-practices influence a range of important educational outcomes. Our work complements and extends research on the essential ideas that constitute a constructivist approach to teaching (e.g., Pelech & Pieper, 2010).

Interpretation of Results. This study evokes several intriguing observations. First, with respect to the development of content knowledge, we expected that designing activities, leading others, and assessing peers would all make positive contributions. In fact, however, when the three were considered together, only designing activities demonstrated positive effects for the students in our study. Our results suggest that instructors who wish to foster content mastery should invite students to help design the curriculum, and thus deepen their learning. Interestingly, leading others and assessing peers neither helped nor hindered content learning.

Nonetheless, our results suggest that leading others and assessing peers can contribute to other important learning outcomes. Specifically, while having students design activities can enhance content knowledge and engagement, leading others and assessing peers can affect engagement, self-efficacy, self-awareness, and sense of community. In other words, while leading others and assessing peers may not influence content knowledge, both practices do influence applied learning. Taken together, these findings may reveal a potential virtuous cycle in the classroom: Students who are active in the classroom, by leading and providing feedback, develop greater self-efficacy, self-awareness, and sense of community. These outcomes, in turn, may inspire students to be more engaged in classroom activities, which may lead to even greater self-efficacy, self-awareness, and sense-of-community.

However, these findings must be interpreted in light of the study's limitations. Although the measures developed for this study were based on knowledge of the literature, had high face validity, and performed well in this sample, more work is required to confirm their psychometric properties. Moreover, because of our concern with students' perceptions and reactions, most measures had to be self-reported, which may have influenced the observed relationships and certainly precludes firm conclusions about the direction of causality. Nonetheless, it should be noted that the measure of content knowledge (i.e., test performance) was not self-reported. The consistencies among theoretical predictions, self-reported findings, and objective findings impart confidence in these findings, suggesting the value in further investigation.

Beyond these measurement issues, this study has limits in generalizability, given our use of students in introductory management and organizational behavior classes. However, these limitations have interesting implications for future research. For example, perhaps different populations or classes on different topics would produce different results, or perhaps the effects of designing, leading, and assessing are moderated by the age and maturity of students (e.g., Caza & Rosch, 2013). Young students, with limited experience, may especially benefit from these meta-practices. A deeper exploration of such possibilities is certainly merited.

Implications for Practice. As the introduction stated, we want to help instructors make more effective design choices. Many existing texts invite us to include participatory practices in our teaching (Pelech & Pieper, 2010; Weimer, 2002), but this paper helps to inform the potential for nuance in the way these practices are selected and implemented. Thus, most practically, this paper shows how educators may be more discerning when deciding to select elements of constructivist approaches.

For example, an instructor may want more engagement from students based on a loosely defined desire to encourage learning. This instructor attends a conference on teaching and learning and discovers five different techniques, each seems exciting and is offered with a glowing prediction of how it will help students. A bit overwhelmed, the instructor chooses one or two techniques. But the instructor is not aware of the full range of mechanisms or outcomes (e.g., engagement, self-efficacy, or community) that may be associated with the techniques. As a result, the instructor may be largely ineffective in aligning elements of the course, and thus be disappointed by the outcome.

In contrast, suppose an instructor approaches the course design with some understanding of meta-practices and their potential connections to learning outcomes. This instructor attends the same conference and, when presented with five different techniques, sees them as options relating to the meta-practices. This instructor can be much more intentional in selecting certain techniques over others, and those selected may be better integrated, producing better outcomes.

Indeed, by using meta-practices, we can think backwards from preferred outcomes: "To develop a sense of community or self-efficacy I might use specific elements of CAO, PBL, or

TBL." Using meta-practices, the instructor can readily weigh the benefits and costs of each approach and choose elements that match requirements for the class; it becomes possible to mix, match, and experiment like an artist using a palette of colors. Further, an instructor can combine elements from different systems and experiment with new instructional models.

For example, our analysis found the meta-practice of designing was especially conducive to content knowledge and engagement. As indicated in Table 1, PBL relies extensively on designing, CAO, moderately and TBL minimally. An instructor who prefers the predictable structure of TBL might design a minor PBL-based assignment during TBL's application phase where students would apply additional concepts to a particular unit of study. Alternatively, an instructor may design a primarily CAO or PBL-based class where students think very broadly about how to achieve a particular objective, but still incorporate TBL's readiness assurance process to ensure that students have a baseline of knowledge.

Likewise, should an instructor wish to generate changes in self-efficacy, self-awareness, or community, our results indicate that leading and assessing are effective meta-practices. In PBL and TBL, leading emerges within a team, while in CAO leading also happens across the class as an organizational system. The literature on PBL, TBL, and CAO all suggest frequent peer-to-peer feedback (assessing) throughout a class, though CAO proponents advocate broader use: teams assess students outside their teams on class presentations, attendance, learning of specific content, or other class deliverables.

Overall, these findings suggest that instructors who utilize elements of constructivist systems like PBL, TBL, and CAO (and many other approaches) could benefit from intentionally thinking about how to leverage the meta-practices of designing, leading, and assessing. More instructor innovation in utilizing these practices appropriately should achieve outcomes above and beyond content knowledge. As such, knowledge of meta-practices potentially enables the instructor to combine specific techniques from different pedagogical systems. An experienced instructor may further understand the conditions that need to be facilitated in the class to fully reap the benefits of the techniques chosen.

Implications for Research. This paper also suggests several research possibilities. First, as a general implication, perhaps more can be done to incorporate the broader literature on constructivist learning theory in our understanding of participatory methods. Perhaps additional meta-practices can be identified beyond those examined in this paper. The fact that our results showed so much influence on leadership behaviors (designing activities, leading others, and assessing peers) suggests the value of using a constructivist lens in theorizing, practicing, and researching leadership education.

Second, in this paper we have proposed parsing constructivist systems such as PBL, TBL, CAO into components and selecting elements from among them. Understanding meta-practices may help instructors to compare their options, but not necessarily between supposedly competing approaches as a whole (e.g. lecture vs. PBL vs. TBL vs. CAO). This idea should be tested. Perhaps these systems, like molecules, have internal integrity that cannot be atomized. If so, which elements must be preserved and which are optional?

Third, we find it interesting that leading others and assessing peers each had a similar relationship with the learning outcomes: Do leading and assessing work best together? If we compared three types of classrooms (only leading, only assessing, and both), how might the outcomes vary?

Finally, perhaps the most important contribution of this paper is the possibility it illustrates of being precise about participatory meta-practices in leadership development and how they actually affect particular outcomes. Our review of the literature suggested that it is rare to find, even in the broader education literature, studies about how specific meta-practices within a particular constructivist approach connect to specific effects. Rather, most studies focus on the general impacts of constructivist pedagogies such as PBL, TBL, or CAO taken as a whole.

In sum, this paper suggests the value of meta-practices for understanding and advancing participatory methods in leadership education. By studying, comparing and strategically implementing the meta-practices examined in this paper, educators may create meaningful experiences that foster development of significant leadership capabilities, including self-efficacy, self-awareness, engagement, and sense of community.

References

Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching, and assessing: a revision of Bloom's taxonomy of educational objectives*. New York: Longman.

Appelbaum, S. H., Louis, D., Makarenko, D., Saluja, J., Meleshko, O., & Kulbashian, S. (2013). Participation in decision making: A casa study of job satisfaction and commitment (part one). *Industrial & Commercial Training*, *45*(4), 222–229. doi:10.1108/00197851311323510

Ares, N. (2008). Appropriating roles and relations of power in collaborative learning. *International Journal of Qualitative Studies in Education*, *21*(2), 99–121. doi:10.1080/09518390701256472

Avolio, B. (1999). *Full leadership development: Building the vital forces in organizations*. Thousand Oaks: Sage Publications.

Avolio, B. & Gardner, W. (2005). Authentic leadership development: Getting to the root of positive forms of leadership. *The Leadership Quarterly*, *16*(3), 315-338. doi:10.1016/j.leaqua.2005.03.001

Baker, D. F., & Baker, S. J. (2012). To "catch the sparkling glow": A canvas for creativity in the management classroom. *Academy of Management Learning & Education*, *11*(4), 704-721. doi:10.5465/amle.2010.0003

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of human behavior* (Vol. 4, pp. 71-81). New York: Academic Press.

Barrows, H. S. (1996). Problem-based learning in medicine and beyond: A brief overview. In W. Gijselaers & L. Wilkerson (Eds.), *Bringing problem-based learning to higher education: Theory and practice* (pp. 3–12). San Francisco, CA.: Jossey-Bass.

Bedwell, W., Fiore, S., & Salas, E. (2014). Developing the future workforce: An approach for integrating interpersonal skills into the MBA classroom. *Academy of Management Learning & Education*, *13*(2), 171-186. doi:10.5465/amle.2011.0138.

Black, J.S. & Gregersen, H.B. (1997). Participative decision-making: An integration of multiple dimensions, *Human Relations*, 50(7), 859-878. doi: 10.1177/001872679705000705

Black, P., & Wiliam, D. (1998). Assessment and classroom learning. *Assessment in Education: Principles, Policy & Practice*, *5*(1), 7–74. doi:10.1080/0969595980050102

Boud, D., & Feletti, G. (Eds). (1997). *The challenge of problem-based learning* (2nd ed.). London: Kogan Page.

Boyatzis, R. & McKee, A.(2005). *Resonant leadership: Renewing yourself and connecting with others through mindfulness, hope, and compassion.* Boston, MA: Harvard Business School Press.

Boyatzis, R.E., Stubbs, E., & Taylor, S.N. (2002). Learning cognitive and emotional intelligence competencies through graduate management education. *Academy of Management Learning and Education*, 1(2), 150-162. doi:10.5465/AMLE.2002.8509345

Brutus, S., & Donia, M. B. L. (2010). Improving the effectiveness of students in groups with a centralized peer evaluation system. *Academy of Management Learning & Education*, *9*(4), 652–662.

Bryant, D. A., & Carless, D. R. (2010). Peer assessment in a test-dominated setting: Empowering, boring or facilitating examination preparation?. *Educational Research for Policy and Practice*, *9*(1), 3–15. doi:10.1007/s10671-009-9077-2

Butler, D., & Winne, P. (1995). Feedback and self-regulated learning: A theoretical synthesis. *Review of Educational Research, 65*(3), 245-281. doi:10.3102/00346543065003245

Cameron, K. S., & Caza, A. (2005). Developing strategies and skills for responsible leadership. In J. P. Doh & S. A. Stumpf (Eds.), *Handbook on responsible leadership and governance in global business* (pp. 87-111). Northampton, MA: Edward Elgar.

Candy, P. C. (1991). *Self-direction for lifelong learning: A comprehensive guide to theory and practice.* San Francisco: Jossey-Bass.

Caza, A., & Rosch, D. M. (2013). An exploratory examination of students' pre-existing beliefs about leadership. *Studies in Higher Education*, *39*(9), 1586–1598. doi:10.1080/03075079.2013.801434

Cestone, C. M., Levine, R. E., & Lane, D. R. (2008). Peer assessment and evaluation in team-based learning. *New Directions for Teaching and Learning*, *2008*(116), 69–78. doi:10.1002/tl.334

Clark, I. (2012). Formative assessment: Assessment is for self-regulated learning. *Educational Psychology Review*, *24*(2), 205-249. doi:10.1007/s10648-011-9191-6

Cohen, A. R. (1976). Beyond simulation: Treating the classroom as an organization. *Journal of Management Education*, *2*(1), 13-19. doi:10.1177/105256297600200103

Cohen, A.R., & Fink, S. L.. (2001). *Effective behavior in organizations: Cases, concepts, and student experiences*. New York: McGraw-Hill.

Coombs, G., & Elden, M. (2004). Introduction to the special issue: Problem-based learning as social inquiry-PBL and management education. *Journal of Management Education*, *28*(5), 523–535. doi:10.1177/1052562904267540

DeRue, D. S., Sitkin, S. B., & Podolny, J. M. (2011). From the guest editors: Teaching leadership - issues and insights. *Academy of Management Learning & Education*, *10*(3), 369–372.

DeRue, D. S., & Wellman, N. (2009). Developing leaders via experience: The role of developmental challenge, learning orientation, and feedback availability. *Journal of Applied Psychology, 94*(4), 859-875. doi:10.5465/amle.2011.0004

Dewey, J. (1938). *Education and experience*. New York: Macmillan.

Dochy, F. J. R. C., Segers, M., & Sluijsmans, D. (1999). The use of self-, peer and co-assessment in higher education: A review. *Studies in Higher Education*, *24*(3), 331–350. doi:10.1080/03075079912331379935

Driver, R., Asoko, H., Leach, J., Scott, P., & Mortimer, E. (1994). Constructing scientific knowledge in the classroom. *Educational Researcher*, *23*(7), 5-12.

Duffy, T.M. & Cunningham, D.J. (1996). Constructivism: Implications for the design and delivery of instruction. In D. Jonassen (Ed.), *Handbook of research for educational communications and technology* (pp. 170-198). New York: Simon & Schuster.

Ferla, J., Valcke, M., & Cai, Y. (2009). Academic self-efficacy and academic self-concept: Reconsidering structural relationships. *Learning and Individual Differences*, *19*(4), 499-505. doi:10.1016/j.lindif.2009.05.004

Gardner, W. L., & Larson, L. L. (1988). Practicing management in the classroom: Experience is the best teacher. *Journal of Management Education*, *12*(3), 12-23. doi:10.1177/105256298801200303

Geringer, S.D., Stratemeyer, A.W., Canton, A., & Rice, W. (2009). Assessing service-learning outcomes in a Principles of Marketing course: A team-based vs. individual-based approach. *Journal for Advancement of Marketing Education*, *14*(1), 1-12.

Goleman, D., Boyatzis, R. E., & McKee, A. (2013). *Primal leadership: Learning to lead with emotional intelligence.* Boston : Harvard Business School Press.

Goltz, S. M., Hietapelto, A. B., Reinsch, R. W., & Tyrell, S. K. (2008). Teaching teamwork and problem solving concurrently. *Journal of Management Education*, *32*(5), 541-562. doi:10.1177/1052562907310739

Grier-Reed, T., & Skaar, N. R. (2010). An outcome study of career decision self-efficacy and indecision in an undergraduate Constructivist Career course. *The Career Development Quarterly*, *59*(1), 42-53.

Gueldenzoph, L. E., & May, G. L. (2002). Collaborative peer evaluation: Best practices for group member assessments. *Business Communication Quarterly*, *65*(1), 9–20.

Harlen, W., & James, M. (1997). Assessment and learning: Differences and relationships between formative and summative assessment. *Assessment in Education: Principles, Policy & Practice*, *4*(3), 365-379. doi:10.1080/0969594970040304

Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research, 77*(1), 81-112.

Hmelo-Silver, C. E. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review*, *16*(3), 235-266. doi:1040-726X/04/0900-0235/0

Kiener, M. (2009). Applying the scholarship of teaching and learning: Pursuing a deeper understanding of how students learn. *InSight: A Journal of Scholarly Teaching*, *4*, 21-27.

Kloppenborg, T. J., & Baucus, M. S. (2004). Project management in local nonprofit organizations: Engaging students in problem based learning. *Journal of Management Education*, *28*(5), 610-629. doi:10.1177/1052562904266008

Kouzes, J.M. & Posner, B. (1995). *The leadership challenge*. San Francisco: Jossey-Bass.

Kuh, G. D., Kinzie, J., Schuh, J. H., & Whitt, E. J. (2005). *Student success in college: Creating conditions that matter* (1st ed.). San Francisco, CA: Jossey-Bass.

Magni, M., Paolino, C., Cappetta, R., & Proserpio, L. (2013). Diving too deep: How cognitive absorption and group learning behavior affect individual learning. *Academy of Management Learning & Education*, *12*(1), 51–69. doi:10.5465/amle.2011.0096

Mascolo, M. F. (2009). Beyond student-centered and teacher-centered pedagogy: Teaching and learning as guided participation. *Pedagogy and the Human Sciences*, *1*(1), 3–27.

Mayo, M., Kakarika, M., Pastor, J. C., & Brutus, S. (2012). Aligning or inflating your leadership self-image? A longitudinal study of responses to peer feedback in MBA teams. *Academy of Management Learning & Education*,*11*(4), 631–652. doi:10.5465/amle.2010.0069

McCormick, M. J. (2001). Self-efficacy and leadership effectiveness: Applying social cognitive theory to leadership. *Journal of Leadership & Organizational Studies*, *8*(1), 22–33.

McMillan, D. W., & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, *14*(1), 6–23.

Merriam, S. B., Caffarella, R. S., & Baumgartner, L. M. (2007). *Learning in adulthood: A comprehensive guide* (3rd ed.). San Francisco, CA: Jossey-Bass.

Michaelsen, L. K., Parmelee, D. X., McMahon, K. K., & Levine, R. E. (Eds.). (2008). *Team-based learning for health professions education: A guide to using small groups for improving learning* (1st ed.). Herndon, VA: Stylus Publishing.

Michaelsen, L. K., Knight, A. B., & Fink, L. D. (2004). *Team-based learning: A transformative use of small groups in higher education*. Sterling, VA: Stylus.

Michaelsen, L. K., & Sweet, M. (2008). The essential elements of team-based learning. *New Directions for Teaching and Learning (special issue)*, *2008*(116), 7-27.

Michaelsen L. K., Watson W., & Schrader C. B. (1984). Informative testing: A practical approach for tutoring with groups. *Journal of Management Education*, *9*(4), 18-33. doi:10.1177/105256298400900405

Nicol, D. J., & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in Higher Education, 31*(2), 199-218.

Nicolini, D. (2012). *Practice theory, work, and organization an introduction* (1st ed.). Oxford: Oxford University Press.

Ormrod, J. E. (2006). *Educational psychology: Developing learners* (5th ed.). Upper Saddle River, N.J.: Pearson/Merrill Prentice Hall.

Ouweneel, E., Le Blanc, P. M., & Schaufeli, W. B. (2011). Flourishing students: A longitudinal study on positive emotions, personal resources, and study engagement. *Journal of Positive Psychology*, *6*(2), 142–153. doi:10.1080/17439760.2011.558847

Pelech, J., & Pieper, G. W. (2010*). The comprehensive handbook of constructivist teaching: From theory to practice.* Charlotte, NC: Information Age.

Papinczak, T., Young, L., & Groves, M. (2007). Peer assessment in problem-based learning: A qualitative study. *Advances in Health Sciences Education*, *12*(2), 169-186. doi:10.1007/s10459-005-5046-6

Parks, S. D. (2005). *Leadership can be taught: A bold approach for a complex world*. Boston, MA: Harvard Business Review Press.

Peterson, T. O. (2004). So you're thinking of trying problem based learning? Three critical success factors for implementation. *Journal of Management Education*, *28*(5), 630-647. doi:10.1177/1052562904267543

Peterson, N. A., Speer, P. W., & McMillan, D. W. (2008). Validation of a brief sense of community scale: Confirmation of the principal theory of sense of community. *Journal of Community Psychology*, *36*(1), 61-73. doi:10.1002/jcop.20217

Phillips, D. C. (1995). The good, the bad, and the ugly: The many faces of constructivism. *Educational Researcher*, *24*(7), 5-12. Retrieved from http://www.jstor.org/stable/1177059

Phillips, D. C., & Soltis, J. F. (2009). *Perspectives on learning* (5th ed.). New York: Teachers College Press.

Piaget, J. (1977). *The development of thought: Equilibration of cognitive structures.* (A. Rosin, Trans.) (1st ed.). New York: Viking.

Price, M., O'Donovan, B., & Rust, C. (2007). Putting a social-constructivist assessment process model into practice: Building the feedback loop into the assessment process through peer review. *Innovations in Education and Teaching International*, *44*(2), 143–152. doi:10.1080/14703290701241059

Putzel, R. (2007). XB: New-paradigm management of the classroom as a complex organization. *Journal of Business and Leadership: Research, Practice, and Teaching*, *3*(1), 136-143.

Putzel, R. (2010). *XB: Manual for a learning organization*. Colchester, VT: St. Michael's College.

Ramsey, V. J., & Fitzgibbons, D. E. (2005). Being in the classroom. *Journal of Management Education*, *29*(2), 333-356. doi:10.1177/1052562904271144

Rich, B. L., LePine, J. A., & Crawford, E. R. (2010). Job engagement: Antecedents and effects on job performance. *Academy of Management Journal, 53*(3), 617-635.

Ren, Y., Kraut, R., & Kiesler, S. (2007). Applying common identity and bond theory to design of online communities. *Organization Studies*, *28*(3), 377–408. doi:10.1177/0170840607076007

Rosch, D. M., & Caza, A. (2012). The durable effects of short-term programs on student leadership development. *Journal of Leadership Education*, *11*(1), 28–48. doi:10.1080/03075079.2013.801434

Rogers, C. R. (1969). *Freedom to learn*. Columbus, OH: Merrill.

Romme, A. G. L., & Putzel, R. (2003). Designing management education: Practice what you teach. *Simulation & Gaming*, *34*(4), 512–530. doi:10.1177/1046878103258202

Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior*, *25*(3), 293-315. doi:10.1002/job.248

Schraw, G. (1998). Promoting general metacognitive awareness. *Instructional Science*, *26*(1-2), 113-125. doi:10.1023/A:1003044231033

Sheehan, B. J., McDonald, M. A., & Spence, K. K. (2009). Developing students' emotional competency using the classroom-as-organization approach. *Journal of Management Education*, *33*(1), 77-98. doi:10.1177/1052562908328920

Smith, K. A., Sheppard, S., Johnson, D., & Johnson, R. (2005). Pedagogies of engagement: Classroom-based practices. *Journal of Engineering Education*, 94(1), 87-101. doi:10.1002/j.2168-9830.2005.tb00831.x

Smith, I. H., & Woodworth, W. P. (2012). Developing social entrepreneurs and social innovators: A social identity and self-efficacy approach. *Academy of Management Learning & Education*, *11*(3), 390–407. doi:10.5465/amle.2011.0016

Stajkovic, A. D., & Luthans, F. (1998). Self-efficacy and work-related performance: A meta-analysis. *Psychological Bulletin*, *124*(2), 240-261. doi:10.1037/0033-2909.124.2.240

Sweet, M., & Pelton-Sweet, L. M. (2008). The social foundation of team-based learning: Students accountable to students. *New Directions for Teaching and Learning*, *2008*(116), 29–40. doi:10.1002/tl.331

Taylor, S. N., & Bright, D. S. (2011). Open-mindedness and defensiveness in multisource feedback processes: A conceptual framework. *The Journal of Applied Behavioral Science*. *47*(4), 432-460. doi:10.1177/0021886311408724

Topping, K. J. (2009). Peer assessment. *Theory Into Practice*, *48*(1), 20–27. doi:10.1080/00405840802577569

Travis, H., & Lord, T. (2004). Traditional and constructivist teaching techniques: Comparing two groups of undergraduate nonscience majors in a biology lab. *Journal of College Science Teaching*, *34*(3), 12–18.

van Dinther, M., Dochy, F., & Segers, M. (2010). Factors affecting students' self-efficacy in higher education. *Educational Research Review*, *6*(2), 95-108. doi:10.1016/j.edurev.2010.10.003

Van Velsor, E., Taylor, S., & Leslie, J. B. (1993). An examination of the relationships among self-perception accuracy, self-awareness, gender, and leader effectiveness. *Human Resource Management*, *32*(2-3), 249-263. doi:10.1002/hrm.3930320205

Wagner, J. A., & van Dyne, L. (1999). The large introductory class as an exercise in organization design. *Journal of Management Education*, *23*(2), 123-142. doi:10.1177/105256299902300203

Waddock, S., & Lozano, J. M. (2013). Developing more holistic management education: Lessons learned from two programs. *Academy of Management Learning & Education*, *12*(2), 265-284. doi:10.5465/amle.2012.0002

Weimer, M. (2002). *Learner-centered teaching: Five key changes to practice* (1st ed.). San Francisco: Jossey-Bass.

Wood, R., & Bandura, A. (1989). Social cognitive theory of organizational management. *Academy of Management Review*, *14*(3), 361-384. Retrieved from http://www.jstor.org/stable/258173

Young, J. R. (2010, June 6). College 2.0: A self-appointed teacher runs a one-man "academy" on YouTube. *The Chronicle of Higher Education*.

Zepke, N., & Leach, L. (2010). Beyond hard outcomes: "Soft" outcomes and engagement as student success. *Teaching in Higher Education*, *15*(6), 661-673. doi:10.1080/13562517.2010.522084

Zimmerman, B. J. (1990). Self-regulated learning and academic achievement: An overview. *Educational Psychologist*, *25*(1), 3–17.

Author Biographies

David Bright is a Professor in the Raj Soin College of Business at Wright State University. He teaches in the areas of organizational behavior, leadership development, and organization development. His research interests explore virtues-based organizing, positive social science, organization and leadership development, and classroom excellence.

Arran Caza is an Associate Professor in the Asper School of Business at the University of Manitoba. His research and teaching focus on leadership, autonomy, and the qualities that make managers effective.

Elizabeth Fisher Turesky is an Associate Professor of Leadership and Organizational Studies at the University of Southern Maine, Lewiston-Auburn College. Elizabeth teaches leadership, organizational change and development and organizational behavior, and her research focuses on the nexus of experiential learning and leadership development.

Roger Putzel is retired from teaching but not from advocating pedagogical change. He lives in Jericho, Vermont, USA, where he and his wife, Georgette, both active in civic projects, are working to reduce their carbon footprint.

Eric M. Nelson has 13 years of experience in management development training and organizational development. Eric’s corporate-level work included a four year expatriate assignment to Germany. Currently, he consults and teaches primarily in leadership development and team processes.

Ray Luechtefeld received his PhD from Boston College, an MBA from the University of Minnesota and a BSEE from the University of Missouri-Rolla. He is an Assistant Professor of Management at the University of Central Missouri. He has received several patents and is also a NSF CAREER awardee.