Using workplace experiences for learning about affect and creative problem solving: Piloting a four-stage model for management education

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**Abstract**

This article reports on the theoretical and empirical development of a four-stage model intended for developing management cognition in the area of creative problem solving that was piloted with a doctoral student who holds a managerial position in a college. Using a single subject case study design that employs experience sampling methodology, the models flips the order of the teach-then-assess approach: Stage 1 examined the student’s approach to solving problems at work through collecting two weeks of survey responses on her smartphone at work. Stage 2 scaffolded the student’s approach to creative problem solving with a focused discussion of research on the role affect plays in problem solving. Stage 3 gave the student time to reflect upon this research by journaling for five days, followed by a discussion with faculty members. Finally, Stage 4 repeated examining the student’s approach to problem solving through a survey on her smartphone and presented the student with an analysis of the two rounds of ESM data, and how it differed depending on solving a “new” versus “prevalent” problem (i.e., Stage 1 & Stage 4) and her journal entries. This time she derived new ways to solve organizational problems. Student data from these four stages is compared to extant literature and analyzing creative problem solving practices with real-time data collection methods is discussed.

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The growing body of scholarship on leader and management cognition suggests that how managers think and solve problems influences their actual performance (Mumford, Friedrich, Caughron, & Byrne, 2007; Schmidt-Wilk, 2011; Yang, Wang, & Wu, 2010). The ability to solve problems effectively and creatively includes generating new approaches that depart from established policies and practices, which can be vital to organizational success (Isaksen, Dorval, & Treffinger, 2011; Isen, 2008; Puccio, Mance, & Murdock, 2011; Sawyer, 2012). Graduate-level instruction is one way to help aspiring leaders and managers make better decisions and solve problems more effectively, in order to improve their performance and organizational outcomes, and help their colleagues develop their own problem-solving expertise. Creative problem solving relies not only cognition, but also on emotion (Mumford, Mobley, Ulman, Reiter-Palmon, & Doares, 1991). Thus, management program design, curriculum and instruction should consider ways to help managers understand both the affective and cognitive components of problem solving. This focus necessitates connecting the applied workplace experience of managers...
in a more deliberate and purposeful way to instruction that departs from the traditional teach-then-assess approach in higher education programs.

This article presents the theoretical and empirical development of a four-stage instructional model designed to integrate workplace problem-solving experiences with instruction and learning, piloted with a single subject case study: a doctoral student enrolled in an educational leadership program who holds a managerial position in a college. In this four-stage model, we flipped the traditional teach-then-assess-approach: Experience sampling methodology (ESM) was used to closely examine and give feedback on workplace experiences in order to investigate how problems were solved before and after learning about research-based creative problem solving models in the classroom. Problem solving is defined as “the process of sensing difficulties, problems, gaps in information, missing elements” (Torrance, 1969 as cited in Kerr and Gagliardi, 1003, p. 16), and involves cognitive and affective dimensions (Isen, 2008). Experience sampling methodology (hereinafter referred to as ESM) can be a useful method for examining approaches to problem solving because it is based on contacting study participants to report on their real-world problem solving experiences multiple times a day, over a period of several days (Hektner, Schmidt, & Csikszentmihalyi, 2007). In this study, we focused on studying a single subject in order to better understand how a doctoral student fairly new to the role of management faced problem solving, as she was interested in learning to be more creative.

A common teaching method used in higher education is to collect retrospective information on experience through course evaluation surveys. ESM, however, is based on collecting multiple surveys, longitudinally (over at least two different times). Therefore, using ESM can allow instructors to understand students’ approaches and practices, and then coach them based on what they are doing. It is thus grounded in the principle of ecological validity (Brunswick, 1956), which emphasizes the importance of the transaction between the person and the environment as a key component of the experiential learning process (Argyris & Schon, 1978; Kolb, 1984; Lewin, 1951). By incorporating ESM into an instructional model, management faculty can better position themselves to help students improve how they solve real-world problems, and derive and implement innovative ideas, thus leading to more robust management education.

This paper begins with a hypothetical workplace scenario that demonstrates a lack of creative problem solving to illustrate the importance of bridging the classroom-workplace gap, and the need to teach creative problem solving in Management Education. Next, the disconnection between classroom and workplace experiences is highlighted. The lack of understanding affective and cognitive processes in creative problem solving at work is a critical gap that necessitates the use of novel assessments like ESM. This is followed by the delineation of the theoretical framework informing our application of ESM and explanation of our instructional model. Each of the model’s four stages is presented with data from a pilot study of a manager enrolled in an educational leadership doctoral program. Finally, key research and practice implications are discussed.

1. Scenario of a workplace problem

As a head manager with emerging leadership responsibilities, “Cara” learns of a new management position opening at New Tech Corp. and decides to apply. Her friend and colleague, Jim, also applies. Their CEO, Mark, however, considers neither as final candidates. Instead, he gives preference to a candidate who is his friend from his former job in a different area of the state and decides to hire him. This results in Cara feeling betrayed and she shares her feelings with Jim. Jim appears less agitated as he has experienced similar situations in the past. But, Cara finds Jim’s indifference further disturbing and decides to email the CEO Mark requesting an explanation of why her candidacy was declined. In absence of a rational reason, Mark avoids responding back until one day Cara confronts him in a meeting. Their encounter soon results in an unpleasant argument that draws the attention of other employees.

First, it appears that the manager-C.E.O. relationship shifts from collegial to distant to malevolent. Cara appears angry for not being hired internally, and Mark seems to have interpreted her frustration as a deficit in that he took a punitive approach, casting her behavior as poor work performance. Neither party used creative problem solving strategies to examine each person’s different perspective to build mutual understanding. In addition, neither party seemed to make sufficient effort to change their responses. Non-creative approaches to problem solving include reacting to a situation without examining diverse perspectives, and relying on habitual, ineffective responses (Isaksen et al., 2011): these behaviors occurred when Cara resorted to arguing rather than engaging in open discussion and when the C.E.O. Mark attempted to ignore Cara’s email correspondence in an effort to sweep her different perspective under the rug. Most likely Mark and Cara would have improved the situation by attempting to regulate their feelings, suspend judgment and delay their reactions before engaging with each other.

1 This workplace scenario is an excerpt from a former leadership study (Katz-Buonincontro, 2011). The details of the scenario were changed slightly and pseudonyms were used to protect the leaders’ confidentiality and anonymity.
Creative problem solving research indicates that the initial framing of a problem is crucial for determining productive solutions (Getzels, 1979). Sufficient time and approaches are necessary for understanding emotional experiences (Dewey, 1894, 1895) while problem solving. This process can be enhanced while in the presence of others (Davidson, 2003), especially when leaders display positive affect to support creative behavior in followers and teams, as supported by a significant body of research examining the role of affect in successful teamwork. The interactions depicted in this scenario paint an underlying picture of work life that merits more extensive scholarship on the nature of feeling and thinking in experiences leaders and managers might often encounter in organizations. Organizations are places where managers constantly negotiate emotional aspects of the self as they problem-solve throughout the course of the day, yet our instructional practices do not necessarily prepare managers to do so while they are taking courses in M.B.A. and Ph.D. programs (Simpson & Marshall, 2010).

The next section further unpacks these issues by examining the issue of teaching creative problem solving, the research on emotion and problem solving and examples of creative problem solving models.

2. Improving how faculty members help students solve workplace problems

It can be difficult for faculty members to ascertain students’ actual experience (affect, thought, and behavior) while engaged in creative problem solving, deriving and implementing new ideas at work. In this section, three instructional gaps are elaborated upon: the interplay between students’ workplace environment and classroom learning, conceptualizing authentic student learning experiences by getting feedback on both affect and thought during creative problem solving episodes, and integrating research on affect into instructional models of creative problem solving. Understanding experience is central to adult learning (Dewey, 1938; Merriam & Caffarella, 1999), especially for those who aim to learn management and leadership skills (Gosling & Mintzberg, 2006). Developing innovative and effective managers depends on the quality of learning in the classroom and in the workplace (AASCB, 2010). For example, one of the six Principles for Responsible Management Education emphasizes “educational frameworks, materials, processes and environments that enable effective learning experiences for responsible leadership” (para. 3). However, current management education practices have been characterized by management scholars as insufficient (see Berggren & Soderlund, 2011), with regard to developing ‘soft skills’ (Elmuti, 2004) like creative problem solving, as required in the scenario above. This may be due, in part, to traditional doctoral training (Wren, Buckley, & Michealsen, 1994) that focuses on lecture-based instructional delivery.

2.1. Instructional gap#1: the workplace environment and classroom learning

Steve Kerr, former chief learning officer of Goldman Sachs, once stated that ‘you never send a changed person back to an unchanged environment’ (Raelin, 2009, p. 407). This statement elucidates the problematic gap between the workplace environment and classroom learning. Course assignments might ask students how the workplace affects their thoughts, feeling and behaviors, with lesser regard as to how classroom discussions may change students’ thinking, feeling and behaviors and hence shape their experiences at work. This instructional design undergirds M.B.A. and doctoral programs wherein the person-environment relationship is perceived as mono-directional, placing a higher emphasis on the effect of environment on student behavior, but not vice versa (Kolb, 1984). Without an in-depth knowledge of how students’ experiences and classroom discussions co-evolve (i.e., how instruction can shape experience and how experience can shape instruction), instructors can fall short of making student learning in classrooms truly experiential.

This gap is evident in management professors’ claims that M.B.A. students find it difficult to fit what they learn in the classroom into the workplace environment (Gold, Holt, & Thorpe, 2007), and that instructional practices are insufficient (Raelin, 2009). For example, Gosling and Mintzberg (2006) have pointed toward an overreliance on case studies. Argyris’ (2007) well-known ‘theory-in-use’ method strives to address this difficulty. He advocates for faculty members helping students sort out how their thoughts inform actions in the workplace through role-playing and case study. In these approaches, students write about an experience, which allows them to disclose their thoughts and feelings that they did not communicate in the workplace.

While role-playing, case studies and writing are important instructional approaches, there is a time delay between workplace experiences and problems, reflection upon these workplace experiences and problems, and exploring and developing solutions to problems. Students might explore skills like creative problem solving in their courses, but might not know how to apply these skills successfully in their current jobs. Case settings are emphasized as the main way to teach problem solving skills for exploring ethical issues and proposing tentative solutions (AASCB, 2010, p. 7), but more critical teaching methods may pave new directions in developing skills like innovation and creative problem solving (Cunliffe, Forray, & Knights, 2002). Therefore, it is important to examine students’ approaches to how he or she uses cognitive skills like problem solving on a daily basis ‘on the fly’. Such management cognition is not static, rather it is everchanging and adapting to the task and environment.

2.2. Instructional gap#2: understanding affect and thought processes during creative problem solving

‘Problem-solving abilities’ are listed in the Assurance of Learning Report’s description of management program learning goals (AASCB, 2010, p. 6 and 16), but what is an authentic problem-solving experience for a management student? Creative problem solving is a key management and leadership practice that can be stimulated through active, reflection-based
A non-creative task is based on a “solution (that) is clear and straightforward” whereas a creative task as “not hav(ing) a clear and readily identifiable path to solution” (Amabile, 1983, 1996 in Sawyer, 2012, p. 150). Therefore, a person who uses a new way to solve a problem as opposed to applying existing procedures, rules and policies would be characterized as a creative problem-solver. A person could be a problem solver in some situations, and a creative problem solver in other situations. The ability to invent new, creative ways to solve problems is the thrust of development in both management (Isaksen et al., 2011) and leadership (Puccio et al., 2011).

Education for creative management necessitates more than a cognitive approach: the process of thought generation characterized in creativity has been influenced by positive affect as traced in neuropsychological research (Isen, 2008), demonstrating a link between affect and cognition. Positive affect influences how the mind organizes and accesses information (Isen, 2008). Scholarship on the relationship of affect and creative problem solving in organizations, though, is complex and inconclusive. Positive affect has been shown to lead to higher levels of creativity (Hennesy & Amabile, 2010). Specifically, “mild, everyday positive affect” has been shown to facilitate two types of tasks related to creativity: word association and unusual categorization of concepts (Isen, 2008). These studies, however, are experimental as opposed to applied workplace studies: the Duncker’s (1945) candle problem and items of the Remote Associates Test (Mednick, Mednick, & Mednick, 1964) were used as measures of “creative problem solving.” Thus, these studies do not necessarily examine the types of real-world problems encountered in different organizations, and do not explore applied creative problem solving models where the initial stage of problem identification is explored, and grappled with. Problem identification, for instance, might involve mild, negative affect before deriving solutions, which then might be associated with the type of mild, everyday positive affect found in these experimental studies.

Thus, to state that the expression of happiness (positive affect) effectively facilitates original, relevant and high quality thought (creativity) would be an oversimplification of the actual process of creative thinking and problem solving in organizational settings. George and Zhou (2002) found that individuals need to have a clear sense of their feelings and that the culture of the workplace can impact creativity in terms of expecting and supporting, or inhibiting, organizational conditions that may be conducive creativity. Again, this stresses how the management of emotions might be an important aspect of creativity. The terms “affect” and “emotions” are not used consistently by psychologists. For instance, emotional management, or the ability to identify, use and generate emotions, is one of four “branches” of emotional intelligence (Salovey, Mayer, Caruso, & Lopes, 2003, p. 252). Therefore, the experience of emotions is an important first step at studying affect, or emotions, as they relate to problem solving. Different emotions can facilitate different mental sets (Salovey et al., 2003, p. 253), implying that affective states can either promote or hinder creative problem solving in the workplace.

For example, people might experience simultaneous emotions, or “blends” that can change over time (Salovey et al., 2003, p. 254). People might also experience different types of affect during different stages of creative problem solving. Runco contends that mild frustration precipitates (and perhaps even sustains) the desire to solve persistent problems. So, in the initial stages of creative problem solving, dissatisfaction with an organizational problem, for instance, can propel someone to examine a problem from multiple angles (problem solving) or explore a new way to solve the problem (creative problem solving). Later in the creative problem solving process, a person might feel relief, satisfaction and perhaps even elation when implementing a new solution. This corroborates Csikszentmihalyi’s work on flow wherein a person feels positive affect when engaged in challenging activities. In addition to affect, emotional expression is another factor to consider for future studies: how a person expresses and thus communicates his or her emotions might have different effects on others in terms of a sociocultural approach to interpersonal dynamics (see Sawyer, 2012, p. 364–5).

Higher education coursework typically approaches the academic and social development of students in terms of how and what they think and can do, with less attention on emotional experience. Emotional processes, responses and behaviors are primarily conceptualized as being controlled by cognitive processes (the entrenched Cartesian legacy of the separation of body and mind (Averill, 1999, 2002, 2004; Damasio, 1999)). For example, one often associates thinking (cognition) processes with a person’s rational side, expecting people to maintain control over their emotions, especially at work. When a person expresses clear affect (e.g. joyful, passionate or angry), it can be interpreted that he or she lacks control of her thinking, and that the person might be reacting to an experience somewhat irrationally. Still further, people might think that emotion interferes with decision-making and problem solving (Isen, 2008).

In actuality, emotions often inform our decision-making (LeDoux, 1996 in Marzano, 2001), instead of being just a reactive form of behavior. Thinking and feeling are intertwined in significant ways, and hence should receive more attention in much of our university-based curriculum designed to prepare managers, leaders and other practitioners who serve the public (Kolb & Kolb, 2005). Specifically, instruction for adult learners enacting leadership roles in organizations should build an understanding of the relationship between emotional experience and thinking in the creative problem solving process. Zhou and George (2003, p. 11) propose that:

[Leaders’]… knowledge of emotions will enable them to channel negative affect into appropriately identifying problems and coming up with creative solutions to solve them, ultimately improving organizational effectiveness and employee affect.

Amabile, Schatzel, Moneta, and Kramer (2004) found that team managers also affect team members’ feelings: unsuccessufl team managers micromanaged and withheld information, resulting in employees’ negative feelings, which ultimately stymied their creativity. This points toward the importance of bridging emotions and thought processes like creative problem solving (Isaksen et al., 2011) and leadership (Puccio et al., 2011).
solving for management students. To address these instructional gaps, creative problem solving models developed for management and leadership education are next explored.

2.3. Instructional gap #3: integrating research on “affect” into instructional models of creative problem solving

Instructional models of creative problem solving focus on a series of components, phases or stages, which can be beneficial for helping students learn the process of creative problem solving (cps) without taking shortcuts. Creative problem solving is conceptualized as dependent upon emotion management (McDowell & Buckner, 2002) and empathy. Unpredictable interactions and encounters such as the one illustrated in the workplace scenario suggest that affect needs to be acknowledged and addressed through teaching creative problem solving skills in classrooms. But, creative problem solving models do not explicitly discuss how emotion might influence each person’s cognitive approach to examining problems (initial steps), and then later implementing them in the social context of organizations (final steps).

Isaksen, Dorval, and Treffinger’s model of creative approaches to problem solving resembles extant historical approaches used in cognitive psychology and is popular in the field of management. This model involves four main components: a) understanding the problem, b) generating ideas, c) planning for action and d) planning your approach (Isaksen et al., 2011). Within these components, there are eight stages: constructing opportunities, exploring data, framing problems, generating ideas, developing solutions, building acceptance, appraising tasks, and designing process. This seems to corroborate with the many cognitive approaches to problem solving outlined by seminal researchers Dewey (1910), Wallas and Parnes, among others (Mumford et al., 1991). Isaksen et al. (2011) approach is similar to Puccio et al. (2011)’s creative leadership model, which also focuses on three main stages: clarification, implementation and transformation approach. Similar to the Isaksen, Dorval, and Treffinger model, there several steps that elaborate on these three stages: exploring the vision, formulating challenges, exploring ideas, formulating solutions, exploring acceptance and formulating a plan (Puccio et al., 2011).

Because the CPS framework (Isaksen et al., 2011) does not explore the role of emotion extensively, instructors face the challenge of identifying research to integrate into cps models. Prior scholarship has accounted for the significance of emotion in directing one’s attention while selecting a problem to investigate (Dewey 1910), and emotion has been recognized as a key component in influencing the support of an idea (Mumford et al., 1991). Affect is integrated conceptually into the CPS stages, below, which are not numbered to show that each stage can be cycled through at different times during the creative problem solving process.

2.3.1. Understanding the problem

Problem framing includes facing ambiguous situations and thus requires not feeling overwhelmed and, at the same time, not rushing to shortcuts when gathering information about the problem. As described in the prior section, mild negative affect such as dissatisfaction might drive a person to solve a problem (Getzels, 1982; Shaw & Runco, 1994). Strong negative emotions such as anger and extreme frustration might throw a person off course for a perceived problem (Isen, Daubman, & Nowicki, 1987; Schwarz & Skurnik, 2003). Thus, the characteristic of intellectual curiosity combined with mild, negative affect might be beneficial to this initial stage of creative problem solving.

2.3.2. Generating ideas

Generating options requires refraining from premature judgment, which implies the need to withhold negative feelings when communicating with others (Isaksen et al., 2011). To focus on “positive judgment” without killing ideas, it is important to identify, consider and discuss the relative merits of ideas (Isaksen et al., 2011, pp. 44). Mild positive affect is perceived as beneficial for promoting idea exploration, cognitive flexibility and even task performance (Isen, 2008). The feelings of enjoyment and cognitive challenge sustain interest and intrinsic motivation while solving problems creatively (Csikszentmihalyi, 2003). Low challenge and skill levels have been associated with eventual boredom—and even anxiety—in a task. Thus, past research on flow indicates that a person needs to feel sufficiently challenged in order to be optimistic and happy (Csikszentmihalyi, 2003), which create the requisite conditions for problem solving in a creative manner.

2.3.3. Planning for action

Planning for action requires evaluating the ideas generated in the second stage. This involves weighing options and being patient enough to revise ideas to improve them, which usually means more work, effort and time. Again, this stage could hypothetically involve mild negative affect like frustration to suspend acceptance, wrestle with improving ideas and applying a critical eye to evaluate ideas more than one time. This stage also requires trying to communicate ideas effectively, running them by colleagues and attempting to gain initial acceptance (Isaksen et al., 2011). Finally, managers would need to engage in pro-social behavior to support planning for action, which would include positive emotions like empathy (Spinrad & Eisenberg, 2009).

2.3.4. Planning your approach

This culminating process of creative problem solving relies on implementing new solutions and ideas that may depart from established, or habitual practices, policies and procedures. Leithwood and Steinbach’s (1995) extensive research on expert versus novel creative problem solving abilities in school administrators is insightful because of its applied, observational focus in real workplaces. School administrators who were expert problem solvers adopted a broad range of problem
solving goals, took a less personal stake in the problem and overall strive for a best solution. With regard to emotions, they are better able to control intense moods, remain calm, are more self-confident about their ability to solve ill-structured problems and consistently treat staff with respect (Leithwood & Steinbach, 1995). This corroborates with Isen’s (2008) nearly four decades of research confirming that mild positive affect appears to benefit the creative problem solving process, both intrapersonally and interpersonally.

In closing, these stages give a conceptual overview of creative approaches to problem solving coupled with relevant research on affect and emotions. Class exercises requiring students to share accounts of past workplace experiences may be limited in capturing intense affect that students feel during a workplace experience as retrospective accounts may be clouded or conflated. The act of recalling experience sometimes loses a sense of freshness and immediacy, which is necessary for infusing objectivity, reflection and criticality into the management classroom (Cunliffe et al., 2002). Even further, one’s memory of problem-solving micro-moments may not be accurate. Therefore, teaching creative problem solving in a more ‘real-time’ approach implies the need for new experimental methods. Next, the link between Kolb’s (1984) model of experiential learning and experience sampling methodology (Hektner et al., 2007) is explored as a foundation of the instructional model in the following section.

3. Theoretical framework of four-stage model

3.1. Adapting Kolb’s experiential learning model

To address the three instructional gaps outlined in the literature review and expand management education research beyond the experimental designs of affect and creative problem solving, we wanted to adapt experiential learning to our instructional model. Thus, we selected Kolb’s (1984) four-stage cycle of experiential learning that draws heavily from Kurt Lewin’s (1951) Model of Action Research and Laboratory training (see Fig. 1). In an idealized learning cycle, learning begins when immediate problem-solving experiences are used as the basis for observation and reflection. These reflections help to develop new understandings and interpretations of those problem-solving experiences. And, interpretations then serve as guides in acting to create new experiences. Learning becomes truly ‘experiential’ only if all four phases in the learning cycle are addressed. Most assessments in adult learning such as case studies or learning journals focusing on workplace experiences stop with conceptualizing new interpretations. This model uses experiential sampling methodology to assess how new interpretations developed through such reflections and discussions could be used effectively as scaffolds to shape students’ workplace experiences and influence their approach to problem solving.

Moreover, the application of ESM can allow students to spiral through the learning cycle, i.e., to make multiple iterations so that they will complete the learning loop no matter where they begin, and build on previous experience. This addresses a common critique of Kolb’s model relating to a lack of explanation of how the experiential and conceptual stages of the cycle are indispensably connected (Miettinen, 2000; Vince, 1998). By allowing a learning spiral, our model identifies how the different stages of the experiential learning cycle are determined through each other. In addition, the amount of time for the
effective transfer of learning is important. Some students might need multiple, successive work opportunities to apply new creative problem solving approaches and to demonstrate their learning in the classroom.

Conceptually, ESM can reflect human behavior more specifically than global, retrospective survey responses based on memory, and more naturally than laboratory experiences used in behavioral science research (Reis, 2012). While survey responses can be valid, they are limited in terms of the range of experience that they reflect and may fail to capture how experiential learning ‘cross-cuts’ more than one social setting. The application of ESM aligns well with the emphasis on ecological validity and social action field research in experiential learning (Kolb, 1984; Lewin, 1951). As put forth by Lewin, laboratory experimentation with its many advantages of controlled settings and procedures lacks a ‘close relation to life’ (1951, p. 169). Most importantly, it lacks representativeness of the conditions otherwise present in real life. With regard to ecological validity, Brewer (2000) raised the question as to “whether an effect (and its underlying processes) that has been demonstrated in one research setting would be obtained in other settings, with different research participants and different research procedures” (p. 10). Taken together, these issues raised by prominent social scientists point toward assessing learning multiple times, in real life.

Similar to laboratory experimentation, the abstract nature of learning in most classrooms draws heavily on theories, models, algorithms and extensive use of readings lacks the connection to the student’s real workplace environment. And, even if some teaching strategies like internships, field trips, films and case studies (Svinicki & Dixon, 1987) help to approach the process of learning from an experiential standpoint, they fall short of assessing if students succeed in transferring learning from the classroom to their work. Learning a concept in a classroom involves interacting with different persons than applying that concept at work, thus pointing toward the importance of differing social dynamics. For example, Knowles, Holton, and Swanson (2005) distinguished between adult learners who prefer external reinforcers and thus learn well collaboratively guided by others, versus adult learners who like transferring knowledge to novel situations and prefer to problem solve independently (p. 211). This highlights the tension about preferences for learning in the classroom and then applying that learning at work, especially within the context of problem solving and creativity.

Daily life accounts captured through ESM can assess transfer of learning between classrooms and work environments. Specifically, the following consecutive steps explain how ESM can enhance the application of Kolb’s model for working adults to coursework:

1. Kolb’s stage 1 focusing on Concrete Experience: ESM provides data that help in deriving a multi-dimensional (e.g., affective, cognitive, and behavioral) understanding of workplace experiences.

2. Kolb’s stage 2 focusing on Observations and Reflections: Data from ESM informs classroom discussions to stimulate observations and reflections.

3. Kolb’s stage 3 focusing on Formation of Abstract Concepts: Students learn to develop new interpretations of their experiences through reflective dialogues in class and through journaling.

4. Kolb’s stage 4 focusing on Testing Implications: ESM assesses students’ efforts of applying the new interpretations to similar experiences at work. Through comparing this ESM data with that collected in Stage 1, students reflect on how new interpretations have changed their workplace experiences and how this reflection can inform their future action plans.

3.2. Using experience sampling methodology to enhance instruction

In order for the field of management education to advance, classroom learning should be more closely connected to applied experience. ESM combines the strength of field settings with the act of self-reporting. One of the most noted ESM surveys developed by Hektner et al. (2007) is particularly suitable for studying affect and creative problem solving because they use the PANA (Positive and Negative Affect) scale. The PANA scale represents a wide range of documented emotions, e.g., angry, frustrated or sad as well as happy, excited and proud, making it apt for studying how emotions fluctuate rapidly during the workday (Beal & Weiss, 2004) (the survey is explained in further detail in the following sections).

Emotions have a short rise time, high intensity and limited duration making them more specific to study with ESM, as opposed to moods. Emotions provide implicit appraisals of situations that have direct implications for the problem to be solved, whereas moods might linger and be more pervasive (Schwarz & Skurnik, 2003). In addition to capturing the nature of emotions, ESM is useful for helping to build a formative understanding of a student’s approach to how she problem solves on a daily basis, ‘on the fly.’ Dorfler and Ackermann (2012) describe how a manager might use a skill like problem solving according to his or her own approach which may or may not be logical (p. 547). Dane and Pratt (2007) emphasize that emotions are a critical part of problem solving and insight for managers.

ESM data can offer a variety of useful analyses for leadership researchers. Analyzing multiple self-report data allows the researcher to explore associations between affect (positive or negative) and the type of problems, look for patterns in the development of creative problem solving practices skills over time (days, weeks, months), and examine three levels: beep (or ‘moment’)-level, person-level or across multiple persons.

Using mobile devices like iPods and iPhones allows researchers to get a sense of how respondents’ creative problem solving might change depending on their location as well as time of day and day of the week (see Fig. 2). ‘Temporal-specific’ events (Schwarz, 2012) allow the researcher to see associations between types of activities and the time of day.
The limited number of ESM studies on management and leadership positions have identified administration-centered, solo practitioners and people-centered distributed leadership practices in principals (Spillane & Hunt, 2010) and math based instructional leadership (Spillane & Zuberi, 2009; Spillane, Camburn, Pustejovsky, Pareja, & Lewis, 2008). In management studies, To, Fisher, Ashkanasy, and Rowe (2011) used ESM to study mood valence and mood activation within individuals engaged in creative work projects. They found that both positive and negative mood is associated with creativity especially when the moods are considered to be ‘activating’ e.g. excited, angry, versus ‘deactivating’ e.g. relaxed, discouraging (p. 9). Other studies have indicated that experiencing positive emotions on the job is related to greater creativity (Amabile, Barsade, Mueller, & Straw, 2005) and job satisfaction (To et al., 2011). Despite these studies, there is a dearth of information on how management students perceive their feelings while solving problems. We thus devised a model for obtaining student ESM data and giving feedback on this ESM data to improve the creative problem solving practices of students. The main research question was, “How can classroom instruction be integrated with workplace learning to help management students solve problems creatively?” The methodology section below shows how this model was piloted.

4. Single subject case study design to pilot test trial the 4-stage model

The purpose of the present study was to pilot a new four-stage model with a doctoral student to better integrate management instruction with the workplace application of creative problem solving. Single-subject case study design was thus chosen to conduct a test trial of the model. Theoretical sampling of single cases is straightforward. A single subject is chosen because he or she is unusually revelatory, is an extreme exemplar, or provides an opportunity for unusual research access (Yin, 1994). Single-case research is typically used to explore a significant phenomenon under rare or extreme circumstances (Eisenhardt & Graebner, 2007; Siggelkow, 2007), such as a unique student (Yin, 1994, p. 21). Within-subjects research is quasi-experimental and involves the administration of an intervention (Creswell, 2003; Gallow, Comer, & Barlow, 2003), which was included in our model. In this single subject case study, the participant’s creative problem solving challenges or circumstances were uniquely complex as the participant was a doctoral student who was fairly new to the role of management and was challenged with addressing critical leadership problems during an ongoing de-merger in the organization where she was employed. Hence treating this particular student as a single case helped to examine how our model illuminated her creative problem solving efforts in an in-depth fashion.

4.1. Sample

In this pilot study, a doctoral student was recruited who was not enrolled in the faculty members’ courses so as not to present any conflicts of interests regarding her standing in the doctoral program and in her coursework. The student was chosen as the unit of analysis (Yin, 1994) according to “theory or concept sampling” (Creswell, 2008, pp. 216) wherein an individual is chosen to help researchers generate a theory, or deep understanding of teaching creative problem solving.
First, this student was particularly interested in learning about applying creativity and innovation principles to her workplace. Secondly, the student’s creative problem solving challenges or circumstances were uniquely complex due to the de-merger, and thus using her as a single case helped us to examine how our model illuminated her creative problem solving efforts.

4.2. ESM survey

The Experience Sampling Method (ESM) was used to gather multiple reports of momentary experience from the student while she worked in her managerial role at a college. The ESM survey used in this model consisted of approximately 30 items, as indicated in Table 1. The survey is based on Csikszentmihalyi’s (2003) research on the psychology of flow and creativity. It poses a variety of questions regarding the main activity the student is doing, if the activity involves a new or prevalent problem, and how the student is feeling. Thirteen negative and positive emotional terms were identified for the model’s ESM survey were based on the Positive and Negative Affect Scale (Watson, Clark, & Tellegen, 1988): ‘happy,’ ‘cooperative,’ ‘responsible,’ ‘frustrated,’ ‘strained,’ ‘caring about work,’ ‘caring about colleague/student,’ ‘irritated,’ ‘relaxed,’ ‘stressed,’ ‘proud,’ ‘friendly,’ and ‘productive.’ These items were chosen because they were piloted in previous research (see Katz-Buonincontro & Hektner, 2014); terms that appeared similar were eliminated to reduce the time that the survey took to complete.

4.3. Survey administration

In Rounds 1 and 2 of the ESM data collection, the student filled out approximately 5 ESM surveys a day, for one week. To adequately prepare the student to undertake the task of filling out these surveys, a special training was provided on how to fill out surveys on the student’s iPhone. Fig. 2 shows a picture of the survey screen shot as depicted on an iPhone. Data were collected on the student’s creative problem solving process (CPSP) via her iPhone as she worked. A survey was created using SurveyDeck mobile application software, and uploaded to the student’s smartphone. The student was texted or emailed 5 random times a day (computed using a formula in Excel), for five days, during each of the two rounds of ESM survey data collection. The authors monitored the student survey responses in real-time and intervened when there was a lack of responses by helping the student with any technical difficulties. The student completed 17 out of the total 25 surveys in Round 1 of ESM data collection and 19 out of the total 25 surveys in Round 2 of ESM data collection.

4.4. Discussions and journals

Discussions between the faculty members and the student about her creative problem solving practices were transcribed, and notes were taken during the discussion and then the discussion was reported in a narrative style. This report was given to the doctoral student to read, make comments and to disconfirm or confirm the accuracy of the codes. The student’s journal entries were then coded by the first author in order to label, segment and assign meaning to the student’s perspectives on creative problem solving (Bogdan & Biklen, 2003). In vivo codes, or phrases lifted from the student’s journal entries, were also used to highlight her actual words (Creswell, 2008). The entries were reviewed multiple times by both authors and the student to ensure comprehensive and accurate meaning.

<table>
<thead>
<tr>
<th>Question</th>
<th>Response options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of day</td>
<td>Automatically collected</td>
</tr>
<tr>
<td>Date</td>
<td>Automatically collected</td>
</tr>
<tr>
<td>1. As you were beeped, what was the main thing you were doing?</td>
<td>See Table 2 for categories</td>
</tr>
<tr>
<td>2. Does this activity involve a challenge or problem that is:</td>
<td>New, prevalent, NA (does not apply)</td>
</tr>
<tr>
<td>3. Who were you with?</td>
<td>Colleague, Supervisor</td>
</tr>
<tr>
<td>4. As you were beeped, were you feeling:</td>
<td>0 not at all to 3 very much [answered for each emotion term]</td>
</tr>
<tr>
<td>a) Happy, b) frustrated, c) strained, d) irritated, e) relaxed, f) stressed, g) cooperative, h) responsible,</td>
<td></td>
</tr>
<tr>
<td>i) caring about work, j) caring about colleague/student, k) proud, l) friendly, m) productive</td>
<td></td>
</tr>
<tr>
<td>5. Did you enjoy what you were doing?</td>
<td>0 not at all to 3 very much</td>
</tr>
<tr>
<td>6. Was this activity interesting?</td>
<td>0 not at all to 3 very much</td>
</tr>
<tr>
<td>7. How well were you concentrating?</td>
<td>0 not at all to 3 very much</td>
</tr>
<tr>
<td>8. Did you feel in control of the situation?</td>
<td>0 not at all to 3 very much</td>
</tr>
<tr>
<td>9. How challenging was the main activity?</td>
<td>0 not at all to 3 very much</td>
</tr>
<tr>
<td>10. Did you have the abilities to deal with the situation?</td>
<td>0 not at all to 3 very much</td>
</tr>
<tr>
<td>11. Was the activity important to you?</td>
<td>0 not at all to 3 very much</td>
</tr>
<tr>
<td>12. Were you succeeding at what you were doing?</td>
<td>0 not at all to 3 very much</td>
</tr>
<tr>
<td>13. Did you wish you were doing something else?</td>
<td>0 not at all to 3 very much</td>
</tr>
</tbody>
</table>

Note: The five factors include: Self-efficacy (Items 8, 10, 12); Cognitive engagement (Items 7, 9, 11); Intrinsic motivation (5, 6, 13); Positive affect (Emotion items a, g, h, i, j, k, l, m); and Negative Affect (Emotion items b, c, d).
5. Results of the four-stage model

In this section, we report on the results of using the model's four stages, piloted during a test trial with a single subject—a student enrolled in an educational leadership doctoral program who is a manager of a university program. Each stage is titled with the main instructional activity, coupled with a key principle from Kolb's experiential learning cycle in parentheses.

5.1. Stage 1: Assessing student's creative problem solving practice (CPSP) (immediate concrete experience)

Stage 1 focused on the student's current, 'immediate concrete experience' (Kolb, 1984) by obtaining a realistic snapshot of the students' problem solving approach in her own workplace. The student's ESM data was analyzed along five factors taken from a similar former ESM study of leadership students (Katz-Buonincontro & Hektner, 2014), about the creative problem solving process (reported with the reliability coefficients): self-efficacy \(r = .75\), ability, success and control levels; intrinsic motivation \(r = .79\), levels of interest, enjoyment and desire to be at work; cognitive engagement \(r = .73\), concentration, importance and challenge levels, positive work attitude \(r = .83\), productive, proud, responsible, caring for students/colleagues, caring for work, cooperative, friendly levels, and negative affect \(r = .89\), frustrated, irritated, strained, stressed, unhappy and not relaxed levels.

See Fig. 3 for the plot of a student's self-efficacy (SE), cognitive engagement (CE), intrinsic motivation (IM), positive work attitude (PWA), and negative affect (NA) against the type of problem encountered in the activity in Round 1 of ESM data (i.e., level 1 denotes an activity posing a new problem, level 2 denotes an activity posing prevalent problem, and level 3 denotes an activity posing no problem). The student was prompted in the ESM survey to indicate the main activity she was doing when she was beeped to complete the ESM surveys on her smartphone, and if the activity involved a new, prevalent problem, or no problem. As shown in Fig. 3, the levels of student's self-efficacy, intrinsic motivation, and positive work attitude are lowest and negative affect is highest for prevalent problems.

5.2. Stage 2: Scaffolding Student's creative problem solving practice with research (observations and reflections on experience)

Stage 1 obtained a baseline understanding of the student's approach to problem solving in the workplace. Next, stage 2 attempted to foster the student's ability to 'observe and reflect' (Kolb, 1984) on her creative problem solving practice. To do this, the faculty members first shared Round 1 of the ESM data analysis (i.e., Fig. 2) with the student and engaged the student in a structured and focused discussion on creative problem solving and emotion research. Four diagrams summarizing seminal creative problem solving research were created for the student and then presented to her, based on the work of seminal business and management researchers, as explained in the literature review.

In this focused discussion, the student commented that the research made sense to her, but noted that organizations do not necessarily acknowledge how creative problem solving is dependent upon emotion management (echoed in McDowell &
Stage 1 examined student’s thoughts and feelings while problem solving at work through collecting ESM survey responses, and Stage 2 fostered observation and reflection with a focused discussion of the student’s CPSP in light of prior research. Next, Stage 3 aimed to give the student a chance to elaborate on her CPSP by composing five Creative Problem Solving journal entries. The journals were coded to analyze the student’s problem solving practices, from a more neutral, objective instructional viewpoint. The student was asked to refer to the diagrams of creative problem solving strategies shared with her, while composing each journal entry. She was asked to describe each entry with how she was both thinking, feeling about them. This open dialogue assisted the student in bridging daily workplace experiences to their classroom learning experience. Three organizational problems emerged from the data analysis:

5.3. Stage 3: Fostering reflection about student creative problem solving practices through journaling (formation of abstract concepts)

5.3.1. “Employees’ intelligence is wasted:” a disregard for creativity and accomplishments

The student wrote about her frustration with her organization’s work culture. She saw a direct connection between enhancing individual creativity and how that might impact the organization’s capacity for being innovative and successful. Unfortunately, she described how this connection was overlooked and stated the need to “celebrate successes.” She shared that her supervisor never encouraged her to contribute creative ideas and even if she suggested an idea, it was always a struggle getting approval from the higher ups. The top down hierarchy was too rigid to reward innovative ideas from employees. She had several ideas for encouraging people to think about new ways of doing things through increased communication.

5.3.2. “We are not robots:” lack of ability to express one’s individuality

The student advocated for people being able to let their personality shine through in an atmosphere that valued compliance and stifling individual differences in daily communication, meetings, and team-based projects by not letting people talk about their ideas and experiences. At the same time, however, she also acknowledged that if people started expressing individual differences more, then their co-workers might need to adjust and make more effort to work together better. Discussing this issue with staff was presented as the main solution.

5.3.3. “No long-term strategy:” poor communication and lack of organizational transparency

General confusion about “who does what” in the organization, and communicating that information, was a pervasive theme. Because projects involve multiple people, she reported that this often led to confusion about task delegation and completion. Such lack of transparency and poor communication impaired trust and made it more challenging for the employees to work together in brainstorming creative solutions. Reporting on administrative plans, holding focus groups to build trust through self-disclosure and using results from analogous case studies were explored as three ways for addressing this problem.

The journals provided us with a detailed reporting on the nature of the student’s creative problem solving approach. She looked at how the journals were coded, and confirmed the three main themes. This allowed her time to reflect upon her CPSP and question how she was attempting to address the problems.

5.4. Stage 4: Integrating all three stages for improving CPSP (testing new concepts)

Finally, Stage 4 of the model involved ‘testing new [innovation and creative problem solving] concepts’ (Kolb, 1984) in the workplace, constituting Round 2 of the ESM data collection. For Round 2 ESM data, the authors worked with the student to provide alarms on her phone in order to boost the response rate yielding 19 responses out of 25 surveys. See Table 2 for the dependent sample t-test statistics showing if the means of the student’s self-efficacy, cognitive engagement, intrinsic
motivation, positive work attitude, and negative affect have significantly changed in Round 2 in comparison to Round 1 of ESM data collected in Stage 1. Table 2 shows that the student’s cognitive engagement, and positive work attitude significantly increased and negative affect significantly decreased in Round 2 as compared to Round 1 of ESM data.

Further, in Stage 4, the student expressed interest in comparing her ESM data based on whether she was examining a “new” or “prevalent” problem, by examining Fig. 3. She then made the following remarks when viewing the figure, which we organized according the factor that she was examining:

1. Self-efficacy, which was lowest for prevalent problems (perceptions of being in control, versus out of control, are one of three areas of self-efficacy): “Most of the time I felt in control of the situation, for technical issues. When things can’t be resolved quickly, I feel less in control. For organizational problems, I feel less in control.”

2. Intrinsic motivation, which was highest for new problems, but lower for prevalent problems: “Building acceptance in the creative problem solving model is the problem, because I can’t tell if it’s the leadership or me. I don’t know if it is me or the main person, but I never get to the diffusion of the proposed idea.”

3. Cognitive engagement, which did not change depending on type of problem: “I still perform the task quickly because I am concerned about the other person’s job getting done.”

4. Positive work attitude, which dipped slightly for prevalent problems, and Negative affect, which spiked for prevalent problems: “Conversation has dragged from 10 months ago about a certain problem, and nothing has been done.”

As for Action-Planning, the student articulated her plans for the future as:

My goal would be to develop the skill of framing the problem, getting a full sense of the problem before actually talking to someone and making a decision. If I become angry, I would try to find out more (e.g., explore the data) because you don’t actually know the person, and what they are supposed to do. I would aspire to be an operations director of e-learning business. In this position, I would have people work at home so that they would be happier and trust them they would do the job.

The instructors further discussed the student’s plans for further developing her creative problem solving approach, to help her focus on her learning goals.

5.5. Limitations

The foremost limitation is the piloting of the four-stage model with one student, over a condensed timeline of 4 weeks. While several ESM studies use more than one person, ESM data has not been collected and analyzed on one person in two separate timeframes in management education. This makes our application of ESM in the workplace novel and unique. Modeling intra-individual differences is frequently overlooked in creative problem solving literature and in leadership research. Intra-individual differences are examined more frequently in clinical psychology (see The Oxford Handbook of Research Strategies for Clinical Psychology), for example, but not in leadership development and management education scholarship. Therefore, the focus on examining one leadership student is a critical first step for understanding variance within one single case and conducting a small pilot test before scaling up the model (see Gallow et al., 2003). Secondly, combining the quantitative analysis of the ESM survey responses with qualitative journal entries is another unique feature of the 4-Stage Model that enriches the explanation of idiographic, or subjective phenomena such as the practice of creative problem solving in the workplace.

For future research, the model can be used with a larger sample of students. It can be adapted with a variety of management and leadership students, even those who are full-time students or students with internships. Because of the quick timeline to analyze the data within the week it was collected during each stage, it caused the faculty to restructure their schedules and use more of an action research model. In the future, we hope to expand the timeframe to allow for deeper transfer of learning, instruction and data analysis. In this study we had to work around the student’s work schedule to avoid time that she was traveling or unable to be “beeped” throughout her day, especially considering the de-merger in her organization.

6. Discussion and implications

The four-stage model extends the application of ESM to a new area of management research. While ESM has been used in some leadership studies, it has not been applied to the realm of management education for adult learners enacting

<table>
<thead>
<tr>
<th>Variables</th>
<th>Round 1 ESM data mean</th>
<th>Round 2 ESM data mean</th>
<th>t-Test statistics</th>
<th>Level of significance (p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-efficacy</td>
<td>8.06</td>
<td>8.42</td>
<td>1.547</td>
<td>.139</td>
</tr>
<tr>
<td>Cognitive engagement</td>
<td>6.12</td>
<td>6.84</td>
<td>2.814</td>
<td>.011</td>
</tr>
<tr>
<td>Intrinsic motivation</td>
<td>5.59</td>
<td>5.05</td>
<td>–.862</td>
<td>.400</td>
</tr>
<tr>
<td>Positive work attitude</td>
<td>23.29</td>
<td>23.79</td>
<td>4.067</td>
<td>.001</td>
</tr>
<tr>
<td>Negative affect</td>
<td>3.59</td>
<td>2.26</td>
<td>–5.531</td>
<td>.000</td>
</tr>
</tbody>
</table>
management roles in organizations. By incorporating the application of ESM into the management education curriculum, ESM research has been connected with Kolb’s (1984) experiential learning theory and emphasize the potential of ESM as an educational tool that supports adults to truly utilize their experiences as cues for learning to improve their creative problem solving abilities as leaders. Specifically, we offer two implications derived from our piloting of the four-stage instructional model for further developing management students’ creative problem solving practices as articulated below.

6.1. The model can help ‘connect the dots’ between preparation programs, transfer of learning, and workplace experiences

This model holds the potential to more robustly link three disparate, loosely coupled areas of practice commonly referenced in management education and leadership preparation scholarship: (1) what management education students actually do in their jobs—i.e. their existing creative problem solving practice (CPSP), (2) how students learn to pinpoint difficult problems in their coursework by analyzing their own CPSP data and (3) the transfer of this learning back into their management practice, thereby improving their CPSP at work. This can help enrich field-based experience, which is an important part of program graduates’ positive learning experience (Orr, 2011).

For instance, in the piloting of the model, the student in our single subject case study identified two types of workplace problems: technical problems i.e. designing a website and organizational problems i.e. lack of organizational transparency. The organizational problems were more persistent and emotional for the student. She identified ‘building acceptance’ in Isaksen et al. (2011) problem-solving model as the main area where she felt stuck and emphasized that this was the point where she could not control how another person reacts to a situation. She reported several times that although she might discuss a new idea with her supervisors, bottom-up acceptance was difficult to achieve. Responding to the ESM survey allowed her to identify this as an important part of her own unique problem solving process, which would not have been pinpointed as precisely in other data collection methods like interviews, class discussion, writing or case studies. The student further reflected on how her knowledge of creative problem solving derived from participating in this study will enable her to regain control in such difficult situations in the future. Improving creative problem solving seemed to take on special significance, considering that there was a de-merger in the student’s work organization.

Additionally, the student shared that participating in our study helped her to identify a lack of creativity across the organization as a significant barrier to effective communication and the resulting successful completion of projects. Several studies show the importance of a leader’s impact on the creative work environment. Shalley and Gilson (2004) indicated that if leaders desire more creativity from employees, they should explicitly communicate that expectation and follow through by supporting employees with creativity trainings. Atwater and Carmeli (2009) found that quality of employee-leader relationships were related to the energy needed for engaging in creative tasks. In another related study, an employee’s self-expectations for creativity and his or her creative self-efficacy were related to perceptions of a creative work environment (Carmeli & Shaubroeck, 2007). Thus, the higher the employee’s creative self-efficacy, the more they expected creative behavior of him or herself and of the creative work environment. In our study, the student could use the ESM data and the opportunity to journal her CPSP activities to reflect on how her style of communication was aiding or hindering creative problem solving in teams in her workplace.

6.2. The model can inform management education students about the relationship between emotional experience and thinking in the creative problem solving process

Capturing affect prompted by different workplace experiences is critical to experiential learning. This model has the potential to show management education students how emotions can inform their thinking as they engage in creative problem solving in their work settings.

Our case study of the student’s approaches to problem solving showed that negative affect/ emotions corresponded to prevalent and not new problems, thus implying that negative affect can be an impediment to solving problems by stymieing goal setting and action initiation (Ellis & Ashbrook, 1998; Schwarz & Skurnik, 2003). To address the issue, students need to identify when strong negative emotions occur in the creative problem solving cycle. In doing so, it is important to separate actual versus retrospective accounts of emotional experience because negative emotions can cloud or overshadow positive experiences. This necessitates use of ESM as given the fleeting nature of emotions, ESM captures the emotions as they are occurring, thereby allowing the students to get a more holistic understanding of how thoughts and emotions are intertwined (Kolb & Kolb, 2005).

For example, in light of the knowledge about which kind of organizational problems (e.g., prevalent or new) stir negative and positive emotions as indicated by the ESM data (i.e., Round 1 in Stage 1), the student in our case study could identify ‘framing problems’ in Isaksen et al. (2011)’s problem solving cycle as the area where her emotions seemed to be the strongest. The subsequent discussion with the student about her CPSP (i.e., Stages 2 & 3) showed that the situations where student perceived lacking control (low self-efficacy) generated negative feelings. Further, the student reflected on how being aware of her emotions enabled her to separate the problem from the person and not blame the person for incompletion of a task. Thus, she identified negative emotions as a ‘precursor’ to her attempt to objectively reflect in terms of not letting strong negative feelings influence how she perceived a persistent organizational problem. Her enhanced capacity to regulate negative emotions was also evident in the significant decrease of her negative affect in Round 2 (i.e., Stage 4) as compared to Round 1 of ESM data collected in Stage 1.
Similarly, identifying the conditions under which one experiences strong positive emotions is equally important. For example, Neck and Manz (2011) recommend that improving leadership practice involves analyzing and reshaping one’s own behavior by replicating conditions under which one feels good about work, to reinforce positive working conditions. This builds upon findings from previous research indicating that positive emotions relate to optimal creative behavior (Atwater & Carmeli, 2009). And optimal creative behavior helps set the conditions for excellent work in organizations. George and Zhou (2002) found that creativity levels in followers tended to be higher based on a leader’s positive moods. In another study, followers conveyed that a leader’s degree of support influenced positively their mood states, whereas their perceptions of leaders’ negative moods were stronger and more poignant (Amabile et al., 2004). In our study, in discussions and journaling about her CPSP (i.e., Stages 2 & 3), the student tried to link positive feelings with individual creativity and productivity of those she most closely worked with. Her ability to appraise the emotional quality of interactions with others was related not only to her desire to be a better problem solver, but also to foster creativity in others.

To conclude, the four-stage model flips the teach–then-assess model used in typical higher education courses to better integrate the emotional experience and impulses that inform cognitive acts of creative problem solving (Dorfler & Ackermann, 2012; Hodgkinson & Healey, 2011) in management students. The model’s careful instruction coupled with deliberate assessment can help address the significant challenge of better linking course textbook discussions and assignments with the development of management praxis before the culminating master’s thesis or dissertation. While the model requires commitment on the part of both instructors and students, it is exciting to collect and analyze student data in real-time based on her creative problem solving practice as she takes on new management challenges in the workplace.

References


