Creativity in Teaching

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It is the supreme art of the teacher to awaken joy in creative expression and knowledge.

Albert Einstein

Introduction

How might researchers think about creativity in the domain of teaching? An important first step is to recognize that creative teaching, like all forms of teaching, is a polymorphous act (Hirst, 1971). Researchers, therefore, need to distinguish between different forms of creative teaching based on differing pedagogical aims. Elsewhere (Beghetto, 2013a), I have outlined three different but interrelated forms of creative teaching: teaching about creativity, teaching for creativity, and teaching with creativity. These different forms of creative teaching have different pedagogical aims.

Whereas teaching about creativity is aimed at increasing knowledge about creativity and the field of creativity studies, teaching for creativity is aimed at cultivating creative thinking and creative actions in students. Finally, teaching with creativity is aimed at teaching any subject matter (be it biology, mathematics, or even creativity itself) creatively. In addition to having different aims, each of these forms of
creative teaching also draws from a different knowledge base. Consequently, just because someone knows how to teach about creativity or even teach for creativity, it does not mean that person would know how to teach creatively. Indeed, Simonton (2012), who has taught courses on creativity for more than two decades, notes that teaching creativity creatively is “a far more difficult goal to achieve” (p. 220).

The purpose of this chapter is to explore creativity in the domain of teaching by describing three different forms of creative teaching. This includes highlighting the different aims, the knowledge base necessary for each form of creative teaching, previous work on each form, and directions for future research.

**Three Forms of Creative Teaching**

As already noted, creative teaching can take at least three different forms: teaching *about* creativity, teaching *for* creativity, and teaching *with* creativity. Table 30.1 provides a summary of these three forms of creative teaching.

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1 Three decades ago, Lee Shulman (1987) stressed the importance of recognizing distinct yet interrelated types of knowledge necessary for knowing how to teach academic subject-matter. In the intervening decades, scholars from various fields of study (e.g., technology, engineering) have elaborated on Shulman’s ideas. Following along these same lines, the field of creativity studies might benefit from elaborating on Shulman’s pioneering work and applying it to creative teaching. I therefore introduce three types of knowledge necessary for creative teaching: Pedagogical Creative-Domain Knowledge (PCdK), Pedagogical Creativity Enhancement Knowledge (PCeK), and Creative Pedagogical Domain Knowledge (CPDK). My hope is that introducing these different types of pedagogical knowledge can clarify the knowledge necessary for creative teaching and, in turn, help researchers start empirically examining how such knowledge develops and the impact that this knowledge has on creative teaching, student learning, and even student creativity.

Table 30.1
Three forms of creative teaching

<table>
<thead>
<tr>
<th>Form of teaching</th>
<th>Pedagogical aim</th>
<th>Knowledge necessary</th>
<th>Examples of prior work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching about creativity</td>
<td>Develop students’ awareness of creativity by introducing them to key theories and findings in the creativity studies literature and helping them develop and understand creative phenomena in its many manifestations. This can occur in the context of subject matter teaching (e.g., teaching about creativity in a writing class or a class devoted specifically to creativity).</td>
<td>Pedagogical Creative-Domain Knowledge (PCdK)</td>
<td>Beghetto (2013a) Beghetto &amp; Kaufman (2010) Plucker &amp; Dow (2010) Simonton (2012)</td>
</tr>
<tr>
<td>Teaching with creativity</td>
<td>Teaching creatively by applying principles and techniques of creativity to subject matter teaching (e.g., creatively teaching math, creatively teaching educational psychology) or the teaching of creativity itself (e.g., teaching creativity creatively).</td>
<td>Creative Pedagogical Domain Knowledge (CPDK)</td>
<td>Beghetto (2013a, 2013b) Gregerson et. al (2013) Jeffrey &amp; Craft (2004) Sawyer (2004)</td>
</tr>
</tbody>
</table>

As displayed in Table 30.1, each of the three forms of creative teaching is differentiated by its pedagogical aim and specific knowledge base. In the sections that follow, I elaborate on each of the three forms of creative teaching.

**Teaching About Creativity**

Teaching about creativity refers to teaching students about creative phenomena, including the individual and contextual factors that influence the development and
expression of creativity. This starts with helping students understand how creativity is defined (e.g., Plucker, Beghetto, & Dow, 2004) and also helping students understand different ways it can be expressed (Rhodes, 1961; Glăveanu, 2013; Sternberg, Kaufman, & Pretz, 2002), what it looks like in various domains (Kaufman, Beghetto, Baer, & Ivcevic, 2010), how it develops (Beghetto & Dilley, 2016; Beghetto & Kaufman, 2007; Kaufman & Beghetto, 2009), what environmental factors influence creativity (Amabile, 1996; Beghetto & Kaufman, 2014; Hennessey, 2010), and understanding key theories (e.g., Kozbelt, Beghetto, & Runco, 2010), research findings (Kaufman, 2016; Runco, 2007), and controversies in the field (Simonton, 2012). In short, teaching about creativity has the aim of promoting students’ understanding of creative phenomena in its many manifestations by introducing students to findings and insights from the field of creativity studies.

Prior Work on “Teaching About Creativity.” There are a small but growing number of scholarly works on how to teach about creativity (Beghetto, 2013a; Plucker & Dow, 2010; Simonton, 2012). Some of this work (e.g., Beghetto, 2013a) has focused on how to teach about creativity in the context of other academic subject areas (e.g., math, science, history, and literature). Some examples include:

(a) Identifying and discussing domain-specific examples of everyday and highly accomplished creators (e.g., Who has made creative contributions in this domain? Who were some of the key progenitors of the ideas, concepts, events and accomplishments we are studying about in this course?);

(b) Exploring specific kinds of creative accomplishments in the domain (e.g., What are some of the legendary or key contributions that have been made in this domain? What kinds of creative contributions are still being made in
this domain? What additional contributions are needed or might be on the horizon?),
(c) Learning about the kinds of domain-specific and domain-general creative processes involved in making contributions in subject area (e.g., What role does the creative imagination play in mathematical thinking and reasoning? How do poets use language and grammar in new and highly original ways? How do engineers find problems to address, develop designs, and test out and refine those designs? How are creative processes similar or different in this domain as compared to others?), and
(d) Discussing circumstances that support and impede accomplishments in the domain (e.g., Who decides what counts as a creative contribution in this domain? How are accomplishments recognized in this domain? How do some creative accomplishments in this domain stand the test of time, whereas others fade away? What types of chance opportunities, access to resources, and socio-cultural and historical supports allowed for these accomplishments? What kinds of setbacks did creators face and how did they overcome such setbacks? How many years of sustained effort are, on average, needed to make a contribution to this domain? Who historically has had the access and opportunities to make contributions in this domain? Who has been excluded? Has this changed in recent years? If so, how? If not, why not and what can be done about it?)

In addition to work that has focused on teaching about creativity in the context of other academic topics, there is also a line of work that has focused on standalone
creativity courses (Plucker & Dow, 2010; Simonton, 2012). This work tends to focus on college-level courses, although this trend may be changing (see Zhao, 2012).

When teaching standalone creativity courses, instructors can use standard pedagogical techniques to teach students about the topic of creativity. Indeed, as Simonton (2012) has explained, “teaching creativity is not different than teaching any other subject in psychology” (p. 220). Given that the topic is creativity, however, instructors often recognize that there is a tacit (if not explicit) expectation to try to approach the topic somewhat creatively. Indeed, it is easy to imagine such courses being criticized on course evaluations as being ironically uncreative. Such a criticism, however, fails to recognize that teaching about creativity is very different from teaching creativity creatively. Still, there are opportunities for the creative teaching of creativity.

Plucker and Dow (2010), for instance, describe several creative teaching activities that they have used to help students learn about creativity and have also helped students develop more positive attitudes about creativity. Simonton (2012) has also described such opportunities, such as when teaching students about divergent thinking tests. In such cases, the instructor and students can complete sample test items together (e.g., unusual uses for a brick or paper clip) and thereby experience the double benefit of introducing students to “measurement issues in the context of a direct experience that [they] all share” (Simonton, 2012, p. 220). In this way, teaching about creativity can (and sometimes does) involve teaching with and for creativity. As will be discussed in later sections, however, teaching with and for creativity requires more than having students try out a few sample items on a divergent thinking test. Still, such an example does illustrate how these three forms of teaching can be interrelated.
Pedagogical Knowledge Necessary for “Teaching About Creativity.” It is easy to assume that teaching about a topic, like creativity, simply requires knowing something about it. Such an assumption oversimplifies the act of teaching. Although it is true that domain knowledge (i.e., knowledge of the key concepts, theories, and research about creativity) is necessary, it is not sufficient. A simple reflection on one’s own experiences learning from top experts in a particular domain (e.g., physics, mathematics, philosophy, literature) can make this readily evident. Although you may have been fortunate enough to learn from a brilliant scholar who was also a brilliant teacher, chances are you have also experienced subpar instruction from top scholars in their field.

Scholars of teaching have endeavored to document, over the past thirty years, that teaching any subject matter requires more than just having deep domain knowledge. Lee Shulman (1987), for instance, highlighted three types of knowledge necessary for successful instruction in any domain: content knowledge (i.e., knowledge of the subject matter you are teaching), pedagogical knowledge (i.e., general knowledge of teaching, including general strategies and techniques), and pedagogical content knowledge (i.e., more specific knowledge of how to teach particular subject matter topics to a particular set of students in a particular context).

With respect to teaching about creativity, these three forms of knowledge can be combined into what I call Pedagogical Creative-Domain Knowledge (PCdK). PCdK refers to a combination of creative domain knowledge (i.e., knowledge of key creativity concepts, theories, and studies from the field) and the pedagogical knowledge (i.e., knowing how to teach a particular population of students about creativity in a particular context). The importance of PCdK can be illustrated by considering what one...
would need to know if teaching an introductory undergraduate creativity course to undergraduates versus teaching sixth graders about creativity in the context of their science class. The former would require knowledge of creativity and knowledge of how to make the subject matter relevant and accessible to undergraduate students. The latter would also require knowledge about the domain of creativity, but also knowledge of how it is represented in the domain of science and knowledge of how to make it accessible for young students. Recognizing, assessing, and developing this unique type of pedagogical knowledge is an area of research that has gone largely unnoticed by creativity researchers. As such, subsequent work aimed at understanding this form of pedagogical knowledge serves as a potentially fruitful line of future research for scholars interested in creative teaching.

**How Teaching About Creativity Can Be Measured.** Given that teaching about creativity treats creativity as a subject-matter topic or focus of a course, researchers interested in studying the impact of teaching about creativity would need to use (or develop) measures that focus on potential changes in students' knowledge, attitudes, and beliefs about creativity. This would include more traditional measures used by instructors, such as student performance on assignments, exams, projects, and course grades. It could also include measures that pertain more directly to the aims of a particular course (e.g., changes in beliefs and attitudes about creativity, see Plucker & Dow, 2004).

Research on teaching about creativity is a small but promising area of inquiry for creativity researchers. Indeed, as more courses focus on or include teaching about creativity, researchers will have opportunities to explore how pedagogical creativity-
domain knowledge impacts instructors’ ability to teach about creativity more effectively and perhaps even how it influences instructors’ ability to teach for and with creativity.

**Teaching For Creativity**

Teaching for creativity refers to efforts aimed at enhancing students’ creativity. As with teaching *about* creativity, teaching for creativity can occur in the context of other academic subject areas (Beghetto, 2013a; 2015; Beghetto, Kaufman, & Baer, 2015; Halpern, 2010). Teaching for creativity can also focus more directly on nurturing or training creativity itself, most commonly in creativity training programs (Isaksen & Treffinger, 2004; Nickerson, 1999; Scott et al., 2004).

**Prior Work on “Teaching For Creativity.”** With respect to teaching for creativity in the context of other subject-areas, prior work has highlighted how instructors can blend students’ original ideas, examples, and insights within the context of pre-existing academic subject-matter constraints. Some researchers have highlighted how teaching for creativity in the context of academic learning can simultaneously promote student learning and students’ creative capacity (see Craft et al. 2013; Beghetto, 2013a, 2016a; Niu & Zhou, 2010). Others have focused on developing habits of creative thinking in the context of teaching other academic subject areas (e.g., Sternberg, 2010). Still others have focused on teaching for creativity in the context of external content standards and accountability mandates (e.g., Baer & Garret, 2010; Beghetto et al. 2015). In all cases, this line of work has attempted to demonstrate how creativity can not only co-exist, but thrive, in the context of academic subject-matter constraints.

Consider, for example, teaching for creativity within the context of teaching elements of a narrative (adapted from Beghetto et al. 2015). In such a case, the teacher might list out the various required elements for students on the top of a matrix, including setting, main characters, conflict, and point of view. Next, the teacher would invite students to offer several examples under each column representing a particular element of narrative (e.g., setting = remote island, abandoned building; main characters = group of friends, group of teachers; conflict = zombie apocalypse, mistaken identity; and point of view = third person; naïve narrator).

Finally, in an effort to provide students with an opportunity to express their creativity in the context of a narrative, the teacher could have students randomly select examples from each category and then write a unique story based on those elements. In this way, students are being encouraged to develop and express their creativity in the context of learning about specific academic subject matter. Doing so meets the typical definition of creativity (Beghetto, 2016c Beghetto & Kaufman, 2014): Creativity (C) = Originality (O) x Meeting Task Constraints (TC) as defined within a particular context. In the case of this particular example, a creative narrative (C) = students’ unique examples of narrative (O) x meeting the criteria of each narrative element (TC) as defined within the context of this particular lesson.

In addition to teaching for creativity in the context of academic subject-matter learning, there are also standalone creativity training programs aimed at promoting skills and strategies of creative thinking and problem solving (for reviews see Isaksen & Treffinger, 2004; Nickerson, 1999; Scott, Leritz, & Mumford, 2004). Although programs that focus on promoting “general creativity” or “instant creativity” have long been criticized for being nothing more than a bag of decontextualized tricks and tips (Baron,
1969; Baer & Garrett, 2010), researchers have identified several features of creativity-enhancement programs that seem to lead to positive outcomes (e.g., Scott et al., 2004).

More specifically, programs that have demonstrated the most promising results tend to be lengthy, challenging, and engage participants in cognitive activities related to creativity. Moreover, they include examples of how principles and strategies that are taught to participants can be applied to the relevant domain of interest and also provide ample opportunities to apply those strategies in realistic contexts (Scott et al., 2004).

There are several longstanding and well-developed training programs that include features found to be successful for promoting gains in creative thinking and problem solving. One example is the Creative Problem Solving (CPS) programs described by Isaksen and Treffinger (2004). CPS (and programs like CPS) teach participants how to solve realistic and ill-defined problems using a combination of strategies and thinking skills aimed at generating (e.g., problem finding, using analogies and metaphors) and evaluating ideas (e.g., idea evaluation, solution monitoring, convergent and critical thinking).

In sum, teaching people key principles and practices of creative thinking and problem solving, as documented in the creative studies literature, can help them develop their capacity to more creatively address the kinds of ill-defined problems and complex real-world challenges they face in their personal and professional lives (see Cropely & Cropley, 2010; Beghetto, 2016; Sawyer, 2012).

Teaching for creativity (as compared to teaching about and teaching with creativity) has received the most attention in the scholarly literature. Still, much work is needed in this area. Historically, a key hurdle in this line of work has been finding teachers who actually know how to teach for creativity (Schacter, Thum, & Zifkin, 2006;
Torrance & Safter, 1986). With increased interest in promoting creativity in K12 and higher-education settings, there likely will be more opportunities for researchers to explore what instructional factors are most supportive of student creativity in and across various academic domains.

Understanding how creative thinking and problem solving differs across domains will go a long way in helping clarify principles of how to best nurture creativity in specific academic subject areas. Such work may yield insights that can help instructors move away from reaching for general or “ready-made” techniques that lack relevance for a particular problem or situation (e.g., come up with a hundred uses for a pencil) and move toward understanding the principles of creative thinking and problem solving that can be used to development more effective “tailor-made” approaches (e.g., come up with novel and meaningful solutions to ill-defined domain-specific problems).

**Pedagogical Knowledge Necessary for “Teaching For Creativity.”**

Knowing how to teach for creativity requires a blend of creativity-domain knowledge and pedagogical knowledge about how to enhance creativity. I call this specialized form of pedagogical knowledge Pedagogical Creativity-Enhancement Knowledge (PCeK). PCeK refers to knowing how to enhance students’ creative attitudes, beliefs, thoughts, and actions in the context of other academic subject areas or in standalone creativity enhancement trainings or workshops. As with pedagogical creativity-domain knowledge, the importance of recognizing that specialized pedagogical knowledge is necessary to teach for creativity is often overlooked by instructors and scholars. However, anyone who has attempted to enhance creativity – either in a standalone seminar or in the context of another academic domain – recognizes that there is more to teaching for creativity than knowing an array of creativity techniques, activities, or
tricks (Beghetto, 2010, 2013a). Knowledge of one’s audience, potential barriers, affordances, and constraints, and how creativity can be applied in specific contexts, are also critically important.

At present, this knowledge has only been indirectly recognized by virtue of identifying features of more or less “successful” creativity training programs (Scott et al., 2004; Isaksen & Treffinger, 2004) and other instructional practices believed to be linked with supporting creativity (e.g., Beghetto & Kaufman, 2014; Schacter et al. 2006). Much additional work is needed to explore how PCeK can be developed, assessed, and applied in efforts aimed at enhancing creativity both in standalone trainings and in the context of other subject areas (e.g., teaching for creativity in the context of a mathematics classroom).

**How Teaching for Creativity Can Be Measured.** There are various ways that teaching for creativity can be measured. When teaching for creativity in the context of other academic subject areas, researchers have described methods for simultaneously assessing students’ subject matter learning and ability to think creatively in specific subject areas (Beghetto, 2013a; Grigorenko, Jarvin, Tan, & Sternberg, 2008). This includes developing and using rubrics that can help assess growing levels of academic and creative competence within specific subject areas (see Beghetto, 2013a; Beghetto et al. 2015 for examples).

With respect to assessing the effectiveness of creativity enhancement, researchers can also draw on the full array of existing creativity measures (see Kaufman, Plucker, & Baer, 2008 for an overview). Examples of such measures include everything from more subjective measures of self-beliefs (e.g., Beghetto & Karwowski, Beghetto, R. A. (2017). Creativity in teaching. In J. C. Kaufman, J. Baer, & V. P. Gläveanu (Eds.). Cambridge Handbook of Creativity Across Different Domains. New York: Cambridge University Press.
to performance on divergent thinking tests (e.g., Torrance, 1966) and the assessment of actual creative products (e.g., Amabile, 1996; Besemer & O’Quinn, 1989).

Although existing measures are useful, there is also need for the development of more nuanced and dynamic assessments of teaching for creativity (see Beghetto, 2016; Beghetto & Tanggard, 2015). Developing more sensitive and dynamic methods for measuring teaching for creativity (e.g., simultaneously assessing the confluence of teacher, student, and environmental factors on domain-specific creativity enhancement) is an important and much needed area of future inquiry for researchers interested in understanding how teachers might support students’ creative thinking and action.

**Teaching With Creativity**

Teaching with creativity refers to approaching teaching creatively. It is therefore most readily signified by the terms “creative teaching” or “teaching creatively.” Teaching with creativity locates creativity in the act of teaching itself, rather than positioning it as the subject matter (i.e., teaching about creativity) or an instructional outcome (i.e., teaching for creativity). Teaching creatively can also occur when teaching for or about creativity. Consequently, teaching with creativity can occur in the context of teaching almost any subject matter in an effort to promote almost any instructional goal.

**Pedagogical knowledge necessary for “teaching with creativity.”**

Knowing how to teach creatively requires a blend of creativity-domain knowledge and creative pedagogical knowledge. I call this specialized form of pedagogical knowledge Creative Pedagogical Domain Knowledge (CPDK). CPDK refers to the knowledge necessary for creatively teaching specific subject matter (e.g., mathematics, science, and
even creativity itself) to a particular population of students. Consequently, just because someone might know how to creatively teach 8th grade students mathematics does not mean they would know how to creatively teach 1st grade students mathematics or how to creatively teach 8th grade students social studies. CPDK is specialized knowledge that varies across subject-matter topics, populations of students, and contexts.

**Prior work on teaching with creativity.** In the creativity studies literature, teaching creatively is typically described in the context of teaching for creativity (e.g., Beghetto, 2013a; Gregerson, Snyder, & Kaufman, 2013; Jeffrey & Craft, 2004). One reason is because researchers who have focused on teaching for creativity often highlight how teaching creatively can establish a classroom context conducive to supporting student creativity. Lilly & Bramwell-Rejskind (2004) have, for instance, asserted that creative teaching “provides a safe climate where students can [take intellectual risks] and push boundaries” (p. 104).

Central to the claim of the influence that creative teaching has on student creativity is the phenomenon of social-behavioral modeling. Specifically, the key assertion is: If teachers model behaviors associated with creativity, then they can help establish classroom conditions whereby students feel encouraged and supported in exhibiting the similar behaviors (Bandura, 1997; Beghetto, 2016c; Jeffery & Craft, 2004). More specifically, teaching with creativity is thought to model key behaviors such as the willingness to: take risks (such as trying to learn or do something new); learn from (rather than avoid) mistakes; accept uncertainty; seek out complexity; approach teaching and learning with flexible thinking and open-mindedness; seek out and explore diverse ideas, perspectives, and experiences; and demonstrate a deep
commitment to and enjoyment of one's own learning process (Beghetto, 2013a; Jeffrey & Craft, 2004; Lilly & Bramwell-Rejskind, 2004).

Although the link between teaching with creativity and teaching for creativity makes sense conceptually, it can obscure what exactly is involved in teaching creatively. Indeed, beyond describing creative teaching as using behaviors associated with creativity more generally (e.g., openness, flexibility, risk-taking), there has been scant theoretical, conceptual, and thereby empirical work focused on clarifying what exactly teaching creatively entails, how it develops, and what impact it can have on teachers and students.

One way creativity researchers have conceptualized creative teaching is by using the metaphor of "disciplined improvisation" (Beghetto & Kaufman, 2011; Sawyer, 2004), likening it to a performance that blends specific knowledge and skills with more emergent actions and behaviors. Such a view recognizes that creative teaching includes more than a set of ready-made strategies and techniques and, instead, has its basis in knowing how to approach instructional planning and the actual moment-to-moment decision making of teaching (Beghetto, 2013a, 2013b). In short, there is a knowledge base of teaching creatively. Unfortunately, only a few creativity researchers have attempted to understand and document this knowledge base (e.g., Niu & Zhou, 2010; Sawyer, 2011). As such, much additional work is needed to clarify what exactly teaching creatively entails, outcomes of doing so, and how it can be developed. This includes exploring the relationship between creative teaching and what educators might describe as successful teaching (or simply teaching well).

**How Can Teaching With Creativity Be Measured?** Given that teaching creatively has received little attention in the literature, there are few studies or
descriptions of how it might be measured (e.g., Beghetto, 2016a; Beghetto & Tanggard, 2015; Niu & Zhou, 2010; Sawyer, 2011). One of the difficulties in measuring teaching creatively is that it is a dynamic act or performance. As such, traditional survey methods, checklists, and other static outcomes measures are not sufficiently dynamic to capture the act of teaching creatively. Fortunately, creativity researchers have started using and developing more dynamic techniques that might be adapted for measuring teaching with creativity, including experience sampling (Silvia, Beaty, Nusbaum, Eddington, Levin-Aspenson, & Kwapil, 2014), Consensual Assessment Technique (Kaufman & Baer, 2012), and trajectory mapping (Beghetto, 2017; Gajda, Beghetto, & Karwowski, in press; Tanggaard & Beghetto, 2015).

In addition to such methods, researchers will need to modify or develop methods that allow them to zoom-in on idiosyncratic and micro-dynamic features of creative teaching (e.g., moment-to-moment instructional moves used when teaching in particular contexts) and zoom-out to identify features of creative teaching that may generalize across domains and contexts (Beghetto, 2014). Doing so likely will yield new insights into how creative teaching influences (and is influenced by) students’ emerging creative ideations and actions. This is a fertile ground for additional research. Indeed, there is a great need for researchers to carefully consider how to best measure teaching for creativity. This includes developing new methods and measures and also exploring whether and how existing methods and measures used in other domains might be adapted for educational settings (see Reiter-Palmon, Beghetto, & Kaufman, 2014, and other chapters in this volume).
Conclusion and Future Directions

In this chapter, I attempted to provide an introduction to what I see as key themes in research on creativity in the domain of teaching. This is an emerging and exciting line of inquiry for current and future creativity researchers. Indeed, there are numerous promising directions for research on creative teaching. As has been discussed, the vast majority of previous work has focused on the impact of creativity training (or teaching for creativity). Although this work is important, it represents a narrow slice of the full domain of creative teaching.

Given that there are at least three ways to classify creative teaching, including numerous aims, knowledge bases, and processes and outcomes that can be explored, there is a need to broaden the scope of research on creative teaching. Moreover, with increased interest and attention being paid to creativity in K12 and higher education settings, there is a growing need to understand how teachers and instructors can teach for, with, and about creativity. In what follows, I close by highlighting a few promising areas for future research on creative teaching.

Measures of Creative Pedagogical Knowledge

The types of pedagogical knowledge introduced herein (e.g., pedagogical creativity-domain knowledge, pedagogical creativity-enhancement knowledge, and creative pedagogical domain knowledge) require further theoretical elaboration and empirical exploration. Specifically, measures and methods for assessing these forms of knowledge need to be developed. Doing so will go a long way to understanding how these specific forms of pedagogical knowledge influence creative teaching. Moreover, such work can
also provide a window into how these specific forms of creative teaching knowledge might be systematically developed in K12 teachers and college-level instructors.

Creative teaching, like all teaching, is an embodied activity. As such, the kinds of methods and measures for assessing the knowledge necessary for creative teaching would require the development of measures that take into account both the espoused situational knowledge of teaching (e.g., knowing how to plan and deliver lessons based on particular situations, with specific instructional aims, and with particular populations of students) and the more dynamic-enacted knowledge (i.e., actual teaching behaviors and instructional moves used when teaching for and with creativity).

Curriculum-Based Measures of Creativity

Given that teaching about, for, and with creativity can occur in the context of a course on any topic or subject matter (including creativity itself), the development of curriculum-based measures are necessary to assess the impact of different forms of creative teaching on domain-specific student outcomes. The typical kinds of measures used by creativity researchers to assess the impact of instruction on creativity (e.g., divergent thinking tasks) and learning (course grades, GPA), likely lack the sensitivity to detect potentially meaningful changes resulting from creative teaching (Gajda, Karwowski, Beghetto, 2016). Consequently, more sensitive and multifaceted measures are needed. Such measures would need to be sensitive enough to assess changes in the target content being taught (e.g., knowledge about creativity, mathematical reasoning, understanding of scientific concepts, and so on), creative expression situated in that particular subject matter (e.g., creative expression in mathematics versus science or some other domain), and the targeted area of learning and engagement in particular
populations of students (e.g., creative expression in 4th grade mathematics versus 8th grade math or college calculus).

Developing such curriculum-based measures is an ambitious undertaking. The vast array of measures that could be developed is overwhelming (and likely one reason why we tend to reach for existing, albeit far less sensitive measures). However, if researchers start by focusing on a few specific subject areas and populations, then the work becomes more manageable. There are examples of such work being done to help teachers and researchers assess creativity in the context of academic domains (e.g., Beghetto, 2013a; Beghetto et al. 2015; Grigorenko, et al, 2008), but additional efforts are needed. Researchers who put the time and effort into this work will likely yield benefits by way of greater understanding of how creative teaching influences student creativity and student learning.

**Classroom-Situated and Multidisciplinary Efforts.**

Developing more than a cursory understanding of creative teaching will require more detailed and in-depth studies in classrooms representing different age levels and different domains. Although the field of creativity studies has a history of research situated in classrooms (e.g., Torrance, 1959), such work is scant. One reason why there are not more classroom-based research projects is because such research is resource intensive – especially with respect to time invested (e.g., establishing school contacts, obtaining permissions, time spent traveling to and from school sites, observing classrooms, and so on). It is therefore not surprising that so few researchers have engaged in more intensive, classroom-based studies of creative teaching.
With the availability of various free and effective digital video, communications, and research technologies, it seems like a good time for researchers to revisit how such technology might make such projects more feasible. Working in teams, alongside teachers, creativity researchers can make important and much needed contributions to the literature on the various forms and outcomes of creative teaching. Such efforts would benefit from cross-cultural and interdisciplinary approaches to studying creativity (Hennessey & Amabile, 2010; Reiter-Palmon, et al, 2014; Kaufman & Sternberg, 2006; Sawyer, 2012; Tan, 2007).

**Curating Cases of Creative Teaching**

Creative teaching tends to be an ephemeral phenomenon. That is, once a lesson has been taught there is no record of it other than fragments of the teacher’s planning notes and possible students’ in-class notes. Whatever “wisdom of practice” (Shulman, 1987) that can be learned from highly skilled creative teachers is lost. Although it is true that there are outlets, such as edited volumes and books that focus on teaching for and with creativity (e.g., Beghetto, 2013a; Beghetto & Kaufman, 2010; Gregerson et al. 2013; Tan, 2007), there is no repository of frequently updated and detailed cases of creative teaching (providing lessons, materials, videos, and reflections).

Such repositories of academic subject matter teaching do exist for K12 teachers and college-level teachers and may serve as a good model for developing creativity-specific versions. As such, a promising area of future work would be to develop ways to curate and share detailed case-based examples of teaching for, with, and about creativity across domains and grade levels. These data not only could help improve the

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2 Examples include [www.learner.org](http://www.learner.org); [http://gallery.carnegiefoundation.org](http://gallery.carnegiefoundation.org)
practice of creative teaching, but serve as a data warehouse for researchers interested in exploring the processes and outcomes of creative teaching.

**References**


