

Creative Openings in the Social Interactions of Teaching

Ronald A. Beghetto

University of Connecticut, USA

E-mail address: Ronald.Beghetto@uconn.edu

ARTICLE INFO

Keywords:

Creativity Theory
Creativity Research
Classrooms
Education
Dynamic Creativity
Micromoments
Methods

Article history:

Received: 25 April 2016
Received in revised form: 16 July 2016
Accepted: 16 July 2016
ISSN: 2354-0036
DOI: 10.1515/ctra-2016-0017

ABSTRACT

What role does creativity play in the social interactions of teaching? The purpose of this brief communication is to address this question by introducing the concept of *creative openings*. Creative openings refer to unexpected breaks in otherwise planned teaching interactions that result in new and meaningful insights, perspectives and understandings. The concept of creative openings builds on recent work that has endeavored to explore how creative thought and action can emerge in the socio-psychological and material interactions of practice. The article opens by briefly introducing creative openings, highlights three key moment (interactional ruptures, interactional responses and interactional outcomes) that researchers can use to examine the trajectory of creative openings. The article closes with a brief example that illustrates these key moments and how they might be represented diagrammatically. Directions for future research are also discussed.

What role does creativity play in the social interactions of teaching? Creativity researchers have traditionally explored this question along three interrelated lines of research (Beghetto, in press), specifically: creativity as an instructional aim (i.e., teaching *for* creativity), creativity as a cognitive and behavioural trait of teachers (i.e., teaching *with* creativity), and creativity as an object of study (i.e., teaching *about* creativity). Although such perspectives on creative teaching help to shed light on the role that creativity plays in the domain of teaching, much of this work tends to overlook how opportunities for creative thought and action can manifest in the interactions amongst teachers, students and situations.

The purpose of this short communication is to introduce the concept of *creative openings* in the context of the social interactions of teaching.

CREATIVE OPENINGS

Creative openings refer to unexpected breaks in otherwise planned teaching interactions, which result in new and meaningful insights, perspectives and understandings. The concept of creative openings builds on previous work that has endeavoured to highlight the creative potential of unplanned moments of teaching (Beghetto, 2013a, 2016a), how creativity is constructed in the dynamic moment-to-moment interactions between people in educational settings (Glăveanu & Beghetto, 2016) and how the sociomaterial features of situations impinge upon creative thought and action (Tanggaard & Beghetto, 2015). In what follows, I discuss how the social interactions of teaching represent a key situation for creative openings to emerge.

CREATIVE OPENINGS IN TEACHING

Teaching is a socio-psychological act. Indeed, social interactions amongst teachers and students serve as a central feature of classroom instruction. Teaching is, in fact, so dependent upon social interaction that without learners, there would be no teachers. Some theorists have gone as far as to describe teaching as “parasitic upon learning” (Hirst, 1971; Mendelson, 2001, p. 482), which suggests that learning can occur without classroom teachers (but classroom teaching cannot exist without learners).

As with all social interactions there are elements of uncertainty that inhere in the act of teaching. This uncertainty is, in part, a result of the surplus of difference in perspectives among teachers and students (Glăveanu & Beghetto, 2016). Consequently, teachers can never know with certainty how they or their students will interpret, understand or react to social interactions that manifest in a given lesson. In this way, teachers’ and students’ reactions are governed, in part, by various socio-psychological factors, including the manifestation of various affective states (e.g., anger, sadness, joy, pride, shame, fear), prior learning experiences and expectations (e.g., successes and failures; expectations of teachers, students, parents and peers), fluctuating motivational beliefs (e.g., varying levels of interest, engagement, disaffection, curiosity and confidence), dialogical features of teaching and learning (e.g., engagement with differing external and internal audiences) and numerous inchoate interpretations of the unexpected turns in a particular instructional interaction (see Beghetto, 2013b; Glăveanu & Beghetto, 2016; Sawyer, 2011).

In addition to the socio-psychological features of teaching, there are also sociomaterial features of the situation that add uncertainty to the act of teaching (Tanggaard & Beghetto, 2015). These include everything from physical lesson plans and learning materials to “unsanctioned” objects possessed by students, such as small toys, cell phones, drawings and notes intended for friends (Glăveanu & Beghetto, 2016; Matusov, 2009).

These sociomaterial features become animated in the teaching interactions of the classroom and therefore make it difficult for teachers to predict how they or their students will interpret and react to the myriad of physical and sociocultural affordances and constraints that come into play during a particular lesson.

Taken together, the social, material and psychological features of classroom instruction introduce uncertainty in the interactions amongst teachers and students. Consequently, no matter how tightly planned (or even scripted) a lesson, there is always some level of uncertainty in teaching. Indeed, when the lesson-as-planned meets the lesson-as-lived, breaks will emerge in what was expected and what is experienced (Aoki, 2004). In some cases these ruptures will be quite small, such as a student sharing an unexpected idea (Beghetto, 2013b). In other cases the rupture can be more substantial, such as a student having an intense emotional reaction to some feature of the teaching situation (Rosiek & Beghetto, 2009). Regardless of the magnitude, these ruptures represent creative opportunities. As Aoki (2004) has explained, these unexpected breaks represent “a space of generative interplay between the planned and lived curriculum (...) a site wherein the interplay is the creative production of newness, where newness can come into being ... ” (p. 420).

We can therefore say, following Aoki (2004), that curricular breaks in the socio-psychological interactions of teaching represent *potentially* creative openings. That is, they represent unanticipated opportunities for teachers and students to think and act in creative ways. Indeed, a sign that it is time to be creative is when our habitual forms of thinking and acting break down (Anderson, 1987; Beghetto, 2016b; Beghetto & Schreiber, 2016). This is not to say that such moments only happen by chance; teachers can establish openings in their curriculum to provide opportunities for them and their students to learn how to more productively respond to uncertainty (Beghetto, 2016c, 2013a). Still, regardless of whether such openings are intended or unexpected, the key question for researchers is: How might such openings lead to creative outcomes?

TRAJECTORIES OF CREATIVE OPENINGS

How might creativity researchers study and thereby contribute to our understanding of the genesis and outcomes of creative openings in the social interactions of teaching? One way is to map-out critical moments in the trajectory of such openings. Researchers can then use these moments to specify research questions, identify (or develop) analytic techniques for addressing these questions, and ultimately explore whether and how unexpected ruptures lead to creative outcomes. Doing so may require researchers to make a shift in how they view the nature of creativity in the context of classrooms. More specifi-

cally, it will require broadening methodologies to go beyond static surveys of individuals and, instead, provide a more dynamic representation of the social, psychological and material entanglements that inhere in the interactions of teaching. In the sections that follow, I briefly describe three key moments in the trajectories of creative openings: *interactional ruptures*, *interactional responses* and *interactional results*.

Interactional Ruptures

The first key moment in the trajectory of a creative opening is the interactional rupture. An interactional rupture is an unexpected break in what participants of the interaction expect either substantively (e.g., the topic of discussion) or structurally (e.g., the pattern of interaction). Interactional ruptures represent a specific case of what I have elsewhere described as “micromoments” (Beghetto, 2013a, 2013b). Micromoments are brief, surprising breaks in everyday routines, habits and planned activities. These ruptures represent a *potentially* generative curricular opening for students and teachers to explore and experience something new, unscripted and unplanned (Aoki, 2004; Beghetto, 2016c). There are at least three types of interactional ruptures that can be posited for empirical exploration.

The first is an *external social rupture*. External social ruptures represent breaks in the expected pattern of interaction resulting from other participants. Examples include everything from a student sharing an unexpected idea (Beghetto, 2013a) to students demonstrating surprising emotional and behavioural responses in the social interactions of teaching (Rosiek & Beghetto, 2009). External social ruptures can also occur from students having side-conversations with each other or engaging in other off-script behaviours that get noticed by teachers and taken-up into the instructional interaction (e.g., Gutierrez, Rymes, & Larson, 1995).

The next type of rupture is an *external sociomaterial rupture*. An external sociomaterial rupture represents a break that emanates from the material features of the situation. Sociomaterial theorists have, for instance, highlighted how otherwise inanimate, non-human objects in the environment can take on agentic properties in the social interactions of practice (Fenwick, 2010; Orlikowski, 2007). The physical materials used for a science activity may, for instance, provoke unexpected ruptures in a planned lesson -- propelling teacher and student learning in new and unplanned directions (see Hammer, 1997; Robertson, Sheer, & Hammer, 2016).

A third type of rupture is an *internal rupture*. Internal ruptures emanate from dialogues that teachers have with themselves during the act of teaching. Sociocultural and dialogical theorists assert that we engage with “internalized others” when performing activities (Glăveanu, in press; Glăveanu & Lubart, 2014). In the context of teaching, we can have in-

ner-dialogues with prior, current or even imagined interlocutors (e.g., mentors, colleagues, administrators, students and oneself). These inner-dialogues can cause tensions that, in turn, open opportunities for pursuing unanticipated directions in teaching and learning.

Researchers interested in identifying and understanding interactional ruptures will benefit from collecting and analyzing a variety of data sources, including: audio and visual records of instructional interactions (ideally representing the multiple perspectives of teachers and students); experience sampling of participants engaged in teaching interactions; observational protocols that catalogue classroom materials, features and physical arrangements of the interactional setting; and data collected from semi-structured interviews and stimulated recall of teachers and students. These and related data-sources may prove useful in identifying the nature and potential source of ruptures.

Interactional Responses

Another key moment in the trajectory of a creative opening is the interactional response. Interactional responses refer to how participants in teaching interactions respond to particular ruptures. Researchers have typically focused on teachers (e.g., Beghetto, 2009, 2013; 2016a; Jurow & Creighton, 2005; Robertson et al. 2016); however, such responses need not be limited to teachers. Moreover, even if the focus is on teachers, there are various social, individual and material features of the instructional setting that impinge upon teachers' responses.

Social features include everything from how students are reacting to the rupture (e.g., students laughing or jeering at their peers; students drawing attention to or re-voicing a peer's unconventional idea that was ignored or overlooked by the teacher) to the presence of an outside observer (e.g., an administrator conducting a teaching evaluation, a researcher collecting observational data, a colleague walking by the open door of the classroom). There are also various individual factors that can influence how teachers respond to a rupture, including: the teacher's physical or emotional state (e.g., feeling tired, ill, anxious, uncertain, angry, relaxed) and the teacher's own inner-dialogues (e.g. internal re-voicing of an administrator's admonition to focus on the prescribed curriculum, an inner dialogue surfacing a tension to move forward with the lesson versus dwell on a potentially fruitful, unexpected student reaction or idea).

Finally, teachers can experience material features of the classroom environment "speaking back" to them. This, in turn, can influence their response to a rupture. Examples include the clock on the wall pressuring them to move on (e.g., "You're running out of time..."), the pull of a lesson plan (e.g., "You're drifting off track...get back on topic!"), or even feeling constrained by the physical arrangement of the classroom (e.g., "You need a larger classroom for this activity to be successful").

Taken together the dynamic, individual, social and material features of the classroom setting can influence teachers' "on the fly" responses to interactional ruptures (regardless of what teachers might otherwise espouse or intend when not engaged in the act of teaching). Interactional responses can therefore take various forms, including everything from dismissing the rupture to actively engaging with it. Although it might be posited that engagement with unexpected breaks in teaching interactions can increase the chances of creative outcomes (Beghetto, 2016a, 2016b), there are no guarantees. It is therefore important that researchers trace the full trajectory from rupture and response to resulting outcome.

Researchers interested in understanding how teachers and students respond to particular ruptures in a given teaching interaction will need to use a variety of methods and analytic techniques (such as those described earlier) to identify and draw out these responses. A central focus in analyzing interactional responses is to examine not only how participants (teachers and students) behave in response to the rupture, but also how participants experience the rupture. Analysis of video footage, transcripts of interactions, sociomaterial audits of the setting¹, and interviews with participants (e.g., using stimulated recall of video footage and questions aimed at exploring the socio-psychological and material features of the setting) may prove useful in providing researchers with various insights and perspectives into the *how* and *why* of interactional responses.

Interactional Results

The interactional result is yet another key moment in the trajectory of a creative opening. The interactional result refers to the outcome of the response. Of interest to researchers is whether the result represents a creative outcome (i.e., new and meaningful ways of thinking or acting on the part of teachers and students). In some cases, participants can quickly recognize a creative outcome. An example of this would be a student who shares an unexpected response, the teacher invites the student to explain it, and the teacher and students immediately recognize the idea as creative (see Beghetto, 2013b).

In other cases, participants may recognize the creative outcome only after several interactional turns or in a subsequent interaction. An example of this would be a student, who at the start of a class discussion, shares a new and personally meaningful insight that resulted from previous interactions with a group, but it is only after the student's teacher and peers struggle to clarify and work with that insight, that they eventually recognize its creative merit (e.g., Beghetto, 2016a).

¹ Cataloguing the material objects and physical arrangements of the setting may prove useful in identifying - through analysis and interviews - the role that material objects may have played in the response to a rupture (e.g., the teacher noticing the clock and feeling pressured to move on; a student's use of an "unsanctioned" item, such as a smartphone and so on).

In still other cases, a creative outcome may not be realized until much later by participants or an external observer. Examples of delayed recognition of creative outcomes might include teachers' or researchers' retrospective analysis of transcripts or video footage (e.g., what was initially viewed as a student's confusion is recognized as a creative insight). Finally, it may also be the case that what was once viewed as creative in the midst of a teaching interaction is no longer viewed as creative upon retrospection. Consequently, it is useful to develop and maintain data-records of instructional interactions that can be used to identify creative outcomes that may have been judged too quickly in the immediacy of the actual interaction. Doing so will also require a shift from thinking about creative outcomes as static and finalized to recognizing that judgments about creative outcomes can be more dynamic² and thereby vary within and across sociocultural and temporal contexts.

Researchers interested in analyzing the outcomes of interactional ruptures therefore need to use a variety of methodological techniques (e.g., video and audio recordings from multiple perspectives, experience sampling, observational records and follow-up interviews) from a broad array of sources (e.g., students, teachers, researchers, expert judges) to help identify and better understand the full trajectory of such outcomes. This includes exploring how trajectories vary based on differing configurations of the socio-psychological and material features of a lesson. How, for instance, might the trajectories of creative openings look in lessons aimed at introducing new material or reviewing previously taught material versus lessons that have the goal of promoting student inquiry and exploration³?

Addressing questions such as these may lend important insights into how situational features of teaching influence the trajectories of creative openings. Promising methods for identifying and analyzing such trajectories include diagrammatic methods that allow researchers to trace the patterns of interactions in and across lessons (see Tanggaard & Beghetto, 2015; and Figure 1 in the example that follows) as well as blended methods that can help uncover the more subjective and the more overt experiences, perspectives and actions of participants (Beghetto, 2016a).

Mapping Interactional Trajectories: An Example

At this point, a brief example using an excerpt from an actual lesson (adapted from Ball & Bass, 2000) and a visual diagram (Figure 1) developed here (and in accordance with what has been suggested by Tanggaard & Beghetto, 2015), may help illustrate how key

² See also Corraza (2016) and Beghetto & Corraza (in preparation) for additional perspectives on dynamic conceptions of creativity.

³ I'd like to thank the anonymous reviewer who noted that "every didactic process has a specific objective" and, consequently, differing aims, objectives and domains of lessons will likely result in differing trajectories of creative openings. This is a compelling point and certainly worth further exploration in future theoretical and empirical work in this area.

interactional moments can be identified, visually represented and analyzed⁴. The example is based on a description of a grade three lesson (presented in Ball & Bass, 2000) wherein students and their teacher are discussing solutions to the following double-digit subtraction problem: “Joshua ate 16 peas on Monday and 32 peas on Tuesday. How many more peas did he eat on Tuesday than he did on Monday?” (p. 91).

The teacher (Ball) invited her students to share their solutions and the methods they used to arrive at those solutions. One student (Sean) provided a somewhat conventional explanation using a number line, starting at 16 and counting up to 32, yielding 16 as his answer. Other students agreed with the answer and Sean’s method. This social interaction is represented as *Episode 1* in Figure 1. The dotted line represents the *lesson-as-planned* (LaP)⁵, whereas the solid line depicts the *lesson-as-experienced* (LaE). As illustrated in Figure 1, this first interactional episode represents a somewhat expected trajectory with no interactional ruptures (as depicted by the LaE line running parallel with the LaP line).

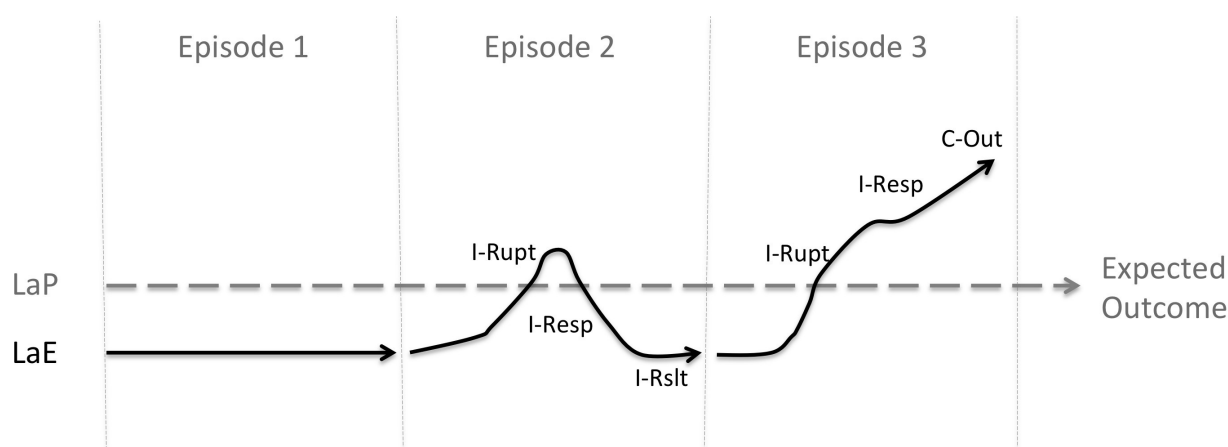


Figure 1. Trajectories of interactional moments across three episodes of a lesson

LaP refers to the lesson-as-planned and is depicted by the dotted line across the three episodes of the lesson. LaE refers to the lesson-as-experienced and is depicted by the solid black line across the three episodes of the lesson. The remaining abbreviations include: I-Rupt = interactional rupture, I-Resp = interactional response, I-Rslt = interactional result, and C-Out = creative outcome.

⁴ I'd also like to thank the anonymous reviewer who suggested that I include an applied example of key moments in the trajectory of a creative opening. Given that this example is based on a published account (adapted from Ball & Bass, 2000) and does not draw from primary data, my interpretations of the social interactions in the example are somewhat speculative and therefore should be viewed as pedagogical, rather than a case-study or empirical analysis of the interactional episodes. The diagram introduced in this example (Figure 1) is also meant to be instructive (rather than prescriptive) - sketching out a potential way for researchers to visually represent the dynamic episodes and moments of a creative opening. That said, diagrams (like the one presented in Figure 1) might prove useful for subsequent work in this area (see also Tanggaard & Beghetto, 2015). I therefore encourage researchers to explore whether and how they can adapt such diagrams for their own purposes.

⁵ It is worth noting that although the lesson-as-experienced parallels the lesson-as-planned, there is still a slight (space) gap between the two (which is depicted in Figure 1). I maintain, following Aoki, 2005, there is always some difference in the planned and experienced lesson. It is also worth noting that the lesson-as-planned is represented in Figure 1 with a dotted line in an effort to highlight the assertion that there are always permeable gaps within any lesson plan, which can serve as opportunities for ruptures that can lead to creative openings.

In *Episode 2*, a student (Riba) asserted that she could prove that Sean's answer was correct, "*Because a half of...a half of 32 would be 16*" (Ball & Bass, 2000, p. 92). The teacher asked Riba for clarification and Riba essentially repeated her initial explanation, "*I...because....it's...it's half of 32. Sixteen is half of 32. That proves his answer*" (Ball & Bass, 2000, p. 92). According to Ball and Bass (2000), the teacher did not know how to respond to Riba's idea, ignored it, and moved on to another student.

The key moments in this second interactional episode are visually represented in Figure 1. Specifically, Riba's assertions represent an interactional rupture (I-Rupt), which presented an opportunity to move the lesson-as-experienced into an unexpected trajectory. The teacher's response of clarifying and ultimately ignoring Riba's assertion (I-Resp), however, resulted in returning the trajectory of the interaction (LaE) back into alignment (I-Rslt) with the expected trajectory of the planned lesson (LaP).

In the next and final episode discussed here (*Episode 3*), a student (Betsy) stated that her answer was 15 and she used counting sticks (representing tens and ones) and an overhead projector to demonstrate how she arrived at her answer. Betsy's method involved using the counting sticks to represent the total amount of peas eaten on each day (16 on Monday and 32 on Tuesday) and then matched the sticks of the two days together. As Betsy started demonstrating her method, another student (Mei) interjected stating, "If you do that you'll...if you want to do 32 take away 16 or something like that, you'll need to take away only 16 and...and you shouldn't be putting on 32 *and* 16 up there" (Ball & Bass, 2000, p. 92).

Betsy tried to explain her method (with Mei again seeming unconvinced). At this point the teacher intervened and encouraged Betsy to continue to work through her method. Betsy continued to demonstrate and describe her approach to the problem. Eventually with the teacher's support and repeated effort, Betsy was able to arrive at the correct answer of 16 peas (revising her initial solution of 15) and convincingly demonstrated how her unconventional matching method could be used to accurately solve this type of mathematics problem.

In *Episode 3*, the rupture (I-Rupt) occurred through a combination of Betsy describing and demonstrating (with physical counting pieces and overhead projector) an unconventional method for addressing the problem. The response to this rupture (I-Resp) initially came from Mei, a fellow student, who seemed to have the goal of returning the discussion to a more conventional trajectory. The teacher, however, intervened and ultimately was able to support a creative outcome (CO), i.e., a novel and mathematically accurate procedure for solving the problem⁶.

⁶ Although some may argue that Betsy's procedure is less efficient than more conventional approaches to the problem, allowing for less conventional approaches provides students (and teachers) with additional opportunities to engage in and represent mathematical reasoning.

In this way, Episode 3 represents the full trajectory of a creative opening (from rupture to creative outcome). This example also highlights the various socio-psychological (e.g., dissenting peer response, teacher intervention and guidance) and material features (e.g., counting sticks, overhead projector) that can impinge on and support creative openings in the dynamic interactions of teaching. Finally, this example also highlights how the construction of a visual diagram such as the one displayed in Figure 1 can help illustrate various episodes of the social interactions of teaching and key moments in the trajectory of creative openings.

CONCLUDING THOUGHTS

As our understanding of the phenomenon of creativity continues to grow, it is becoming more and more evident that researchers need new ways of conceptualizing, identifying and studying creativity in the midst of social practices (e.g., Glăveanu, 2015). Although more individually focused work has shed important light on how creativity might play a role in teaching and learning, additional efforts are needed that take a broader view of how creative openings emerge, influence, and are influenced by the socio-psychological and material arrangements of teaching interactions.

My aim in this short communication was to introduce the concept of creative openings in the context of teaching interactions. I discussed how creative openings represent unplanned opportunities for developing new and meaningful thoughts, ideas and actions. I also explained how such openings emerge as unexpected interactional ruptures and can ultimately result in creative outcomes. Moreover, I attempted to highlight how multiple socio-psychological and material features of teaching situations can come together in the manifestation, response and outcomes of interactional ruptures. Finally, I provided an example of how key moments in the trajectory of creative openings might look in an actual classroom and how those moments might be visually represented.

At this point, much additional work is needed to elaborate on and empirically test the concept of creative openings. It is my hope that this brief communication provides researchers interested in this line of work with some initial directions to move forward with this work. Developing a programme of research in this area is, undoubtedly, an ambitious undertaking. It will require establishing longer-term collaborations amongst teachers and researchers across multiple settings. It will also require using and developing more sensitive methods for collecting and analyzing the kinds of data necessary for exploring the socio-psychological and material features of teaching. Such efforts are time and labour intensive. Still, the benefits of pursuing such projects can payout in the form of a much deeper understanding

of how opportunities for creative thought and action emerge in the social interactions of teaching.

REFERENCES

- Anderson, D. R. (1987). *Creativity and the philosophy of C. S. Peirce*. Hingham, MA: Kluwer Academic Publishers.
- Aoki, T. T. (2004). Spinning inspirited images. In W. F. Pinar & R. L. Irwin (Eds.), *Curriculum in a new key: The collected works of Ted T. Aoki* (pp. 413-225). Mahwah, NJ: Lawrence Erlbaum Associates.
- Ball, D., & Bass, H. (2000). Interweaving content and pedagogy in teaching and learning to teach: Knowing and using mathematics. In J. Boaler (Ed.), *Multiple perspectives on the teaching and learning of mathematics* (pp. 83-104). Westport, CT: Ablex.
- Beghetto, R. A. (in press). Creativity in teaching. In J. C. Kaufman, J. Baer, & V. P. Glăveanu (Eds.). *Cambridge handbook of creativity across different domains*. New York: Cambridge University Press.
- Beghetto, R. A. (2016a). Creative learning: A fresh look. *Journal of Cognitive Education and Psychology*, 15, 6-23.
- Beghetto, R. A. (2016b). *Big wins, small steps: How to lead for and with creativity*. Thousand Oaks, CA: Corwin Press.
- Beghetto, R. A. (2016c). Leveraging micro-opportunities to address macroproblems: Toward an unshakeable sense of possibility thinking. In Ambrose, D. & Sternberg, R. J. (Eds.). *Creative intelligence in the 21st Century: Grappling with enormous problems and huge opportunities*. Rotterdam, the Netherlands: Sense.
- Beghetto, R. A. (2013a). Expect the unexpected: Teaching for creativity in the micromoments. In M. Gregerson, J. C. Kaufman, & H. Snyder (Eds.), *Teaching creatively and teaching creativity* (pp. 133-148). New York, NY: Springer Publishing.
- Beghetto, R. A. (2013b). *Killing ideas softly? The promise and perils of creativity in the classroom*. Charlotte, NC: Information Age.
- Beghetto, R. A., & Corazza, G. E. (Eds.). (in preparation). *Dynamic perspectives on creativity: New directions for theory, research, and practice in education*. The Netherlands: Springer.
- Beghetto, R. A., & Schreiber, J. B. (2016). Creativity in doubt: Toward understanding what drives creativity in learning. In R. Leikin, B. Sriraman (Eds.). *Creativity and giftedness: Advances in mathematics education*. Switzerland: Springer.
- Corazza, G. E. (2016). Potential originality and effectiveness: The dynamic definition of creativity. *Creativity Research Journal*, 28, 258-267.

- Fenwick, T. (2010). Re-thinking the “thing”: Sociomaterial approaches to understanding and researching learning in work. *Journal of Workplace Learning*, 22, 104-116.
- Glăveanu, V. P. (2015). Creativity as a sociocultural act. *Journal of Creative Behavior*, 49, 165-180.
- Glăveanu, V. P. (in press). The creative self in dialogue. In M. Karwowski, & J. C. Kaufman (Eds.). *The creative self: How our beliefs, self-efficacy, mindset, and identity impact our creativity*. Philadelphia, PA: Elsevier.
- Glăveanu, V. & Beghetto, R. A. (in press). The difference that makes a creative difference. In R. A. Beghetto & B. Sriraman (Eds.). *Creative contradictions in education: Cross-disciplinary paradoxes and perspectives*. Switzerland: Springer.
- Glăveanu, V. P., & Lubart, T. (2014). Decentering the creative self: How others make creativity possible in creative professional fields. *Creativity and Innovation Management*, 23, 29-43.
- Gutierrez, K., Rymes, B., & Larson, B. (1995). Script, counterscript, and underlife in the classroom: James Brown versus Brown v. Board of Education. *Harvard Educational Review*, 65, 445-472.
- Hammer, D. (1997). Discovery learning and discovery teaching. *Cognition and Instruction*, 15, 485-529.
- Hirst, P. H. (1971). What is teaching? *Journal of Curriculum Studies*, 3, 5-18.
- Jurow, A. S., & Creighton, L. (2005). Improvisational science discourse: Teaching science in two K-1 classrooms. *Linguistics and Education*, 16, 275-297.
- Matusov, E. (2009). *Journey into dialogic pedagogy*. New York: Nova Publishers.
- Mendelson, M. (2001). “By the things themselves”: Eudaimonism, direct acquaintance, and illumination in Augustine’s *De Magistro*. *Journal of the History of Philosophy*, 39, 467-489.
- Orlikowski, W. J. (2007). Sociomaterial practices: Exploring technology at work. *Organizational Studies*, 28, 1435-1448.
- Robertson, A. D., Scherr, R. E., Hammer, D. (Eds.). (2016). *Responsive teaching in science and mathematics*. New York: Routledge.
- Rosiek, J., & Beghetto, R. A. (2009). Emotional scaffolding: The emotional and imaginative dimensions of teaching and learning. In P. A. Schutz & M. Zembylas (Eds.), *Advances in teacher emotion research: The impact on teachers' lives*. New York: Springer.
- Sawyer, R. K. (Ed.). (2011). *Structure and improvisation in creative teaching*. New York: Cambridge University Press.

Tanggaard, L., & Beghetto, R. A. (2015). Ideational pathways: Toward a new approach for studying the life of ideas. *Creativity: Theories-Research-Applications*, 2, 129-144.

Corresponding author at: Ronald A. Beghetto, Department of Educational Psychology, Neag School of Education, University of Connecticut, 2131 Hillside Road Storrs, CT 06269-3007.

E-mail: Ronald.Beghetto@uconn.edu

