Creative Learning and The Possible

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Abstract

Creative learning serves as a vehicle for the possible. Creative learning moves people from what is currently known to new ways of thinking and acting. More specifically, creative learning refers to a process that results in new and personally meaningful understandings for oneself and others. The purpose of this entry is to provide an overview of the theoretical concept of creative learning and its posited relationship to the possible. Research and theoretical implications are also discussed.

Keywords:

creativity, learning, education, creative learning, new possibilities, creative contributions

Overview:

Researchers have conceptualized creative learning in a variety of ways (see Beghetto, 2016). Some have focused on the creative aspects inherent in learning (Guilford, 1950; Sawyer, 2012). Others have emphasized the learning that results in creative outcomes (Wyse & Spendlove, 2007). Still others have taken a more encompassing focus, which has outlined the conditions, contexts, curricula and factors

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that might be classified under the heading of creative learning (Sefton-Green, Thomson, Jones, & Bresler, 2011).

Although there are differences in the emphasis of these conceptualizations, the concept represents a synthesis of creativity and learning. Creativity typically refers to that which has been judged as original and meaningful in a particular socio-cultural and historical context (Plucker, Beghetto, & Dow, 2004; Runco & Jaeger, 2012). Learning typically refers to a process that results in a relatively stable change in a person or persons (Alexander, Schallert, & Reynolds, 2009). Creative learning has been defined as a "combination of intrapsychological and interpsychological processes that result in new and personally meaningful understandings for oneself and others" (Beghetto, 2016).

When considering these definitions together, the overlap between creative learning and the two concepts it emerged from is quite clear. Moreover, the connection to the possible is also suggested in this definition, because creative learning results in the possibility of new and meaningful understandings. Creative learning, however, also differs from broader conceptions of creativity and learning in several important ways. Specifically, creative learning represents a special case of creativity, which is constrained by an educational focus. Researchers interested in the concept of creative learning are concerned with the genesis of new understanding in the context of educational settings broadly defined. Moreover, creative learning also focuses on the creative contributions to one's own and others' understandings, which emerge from the combination of new learning stimuli and existing knowledge and experiences. In this

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way, creative learning represents a more epistemologically and educationally focused aspect of the broader concept of creativity.

Creative learning also represents a special case of learning. Creative learning is concerned with the personal and socio-cultural processes that result in creative contributions to one's own understanding and the understanding of others. This emphasis goes beyond reinforcing, matching or reproducing existing understandings and toward the development of new and possible understandings (Beghetto & Schuh, in press). These new and possible understandings can be reflected in ideational, behavioral or material artifacts and can be judged to be creative contributions by oneself or others[1]. In this way, creative learning focuses on the combinatorial and emergent aspects of learning, which represent key characteristics of creativity (Sawyer, 2012). Figure 1 highlights the key features of creative learning (based on a previously introduced model of creative learning, see Beghetto, 2016).

[1] I want to thank the editor of the encyclopedia for requesting clarification on whether creative learning is limited to mini-c creativity. It is important to stress that although creative learning may often be experienced at a more subjective and ideational level (e.g., mini-c creativity, Beghetto & Kaufman, 2007), it is also possible that the outcomes of creative learning can be represented in behavioral and material artifacts, which can be recognized by others as creative contributions (e.g., little-c or larger-c creativity, Kaufman & Beghetto, 2009).

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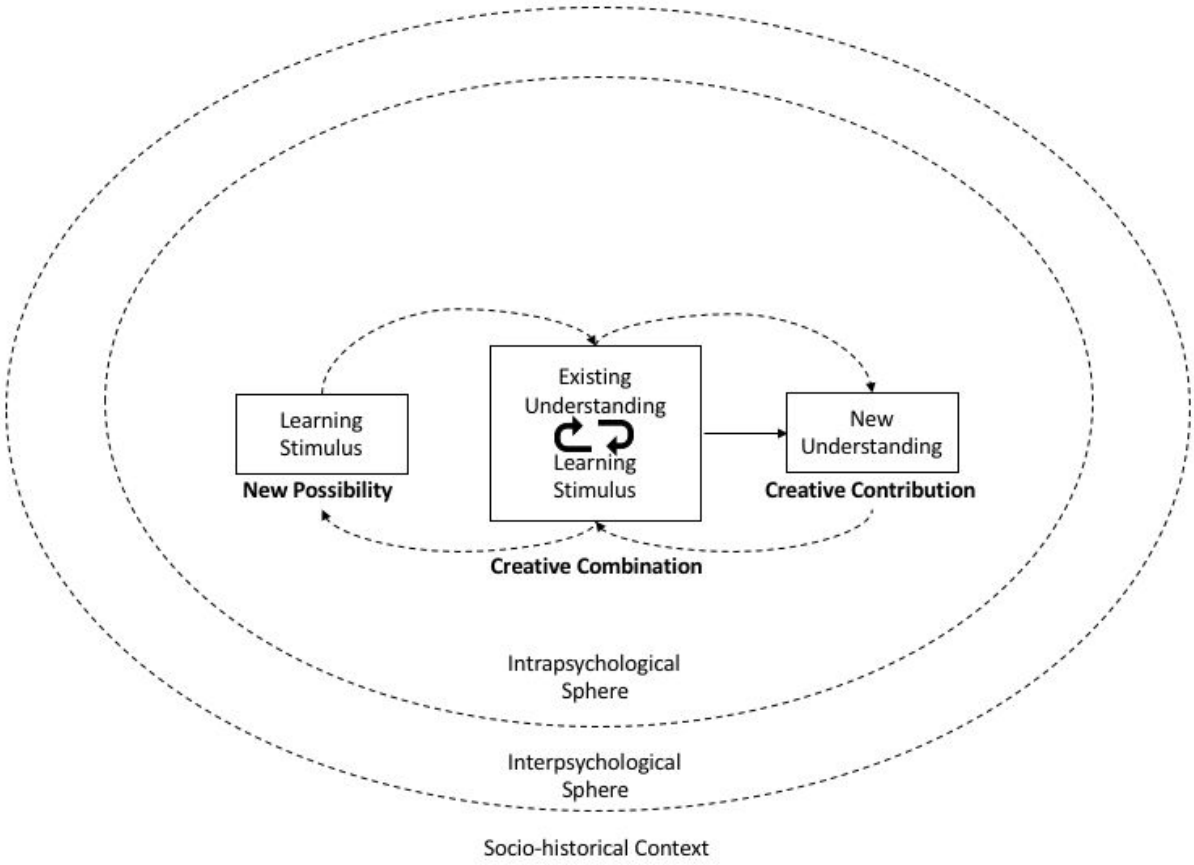

FIGURE 1 CORE COMPONENTS OF CREATIVE LEARNING

The model of creative learning depicted in Figure 1 posits that the process starts with an encounter with a learning stimulus, which serves as a *new possibility* for engaging in creative sense-making. This encounter can prompt a *creative combination* between the new possibility and existing understanding that, in turn, results in a *creative contribution* in the form of a new understanding. The model also posits that these core components can simultaneously operate in and between people in educational settings. As will be discussed in the following sections, although the same components are at play in and between people, they take-on different features at intra-psychological and

inter-psychological levels. Prior to discussing how these components playout differently at each level, it is important to highlight a few core assumptions illustrated in Figure 1.

First, is the recognition that although there is a sequence or process for how these components operate (from left to right), the model is recursive. Similar to other models of creative thinking (Runco, 2018), the recursive aspect of this creative learning model occurs both in the potential movement back and forth between components as well as iterative cycles throughout the model. Moreover, the intrapsychological (individual) and interpsychological (socio-cultural) spheres represent permeable boundaries that are always and already interconnected and mutually influencing as denoted by dotted lines. Specifically, the socio-cultural context continually influences students' learning trajectories and idiosyncratic understanding of academic subject matter (Schuh, 2017). Similarly, individual students also impact and give shape to their socio-cultural context; this can be seen in cases where students' unique perspectives are encouraged and considered by teachers and peers (Beghetto & Schuh, in press; Gajda, Beghetto, & Karwowski, 2017).

The permeable and embedded boundaries drawn between the individual and social in Figure 1 highlight how the same components can operate differently at each level, while still recognizing that the individual is always influenced by the socio-cultural and the socio-cultural is always influenced by the individual[2]. Moreover, as is the case with how other creative processes have been conceptualized, the creative learning

[2] It can be argued from a sociocultural perspective that the socio-cultural does not simply influence individuals from the "outside," but rather that the socio-cultural is interdependent with and co-constitutive of the creative learning process. I want to again thank the editor of the encyclopedia for noting this important sociocultural distinction.

model depicted in Figure 1 acknowledges that the entire process is also influenced by socio-historical and contextual factors (Glăveanu, 2015).

Finally, the components and processes represent theoretical assertions, not prescriptions. Researchers can draw on these assertions to design studies aimed at empirically testing the posited processes represented in the model. The following sections briefly outline the key assertions associated with the core elements of creative learning at the intrapsychological (personal) and Interpsychological (sociocultural) level. The entry closes with a brief discussion of how the model connects to the possible and directions for research.

Components of Creative Learning

Intrapsychological Sphere

The interpsychological sphere of creative learning posits that personally meaningful understanding results from an encounter with a new learning stimulus, which is then meaningfully combined with one's existing understanding. Specifically, in the context of formal education, students are introduced to academic subject matter, which serves as a potential stimulus for creative learning. Learning stimuli can come in many forms, such as ideas, concepts, images, materials, and experiences. Regardless of the form that learning stimuli take, they represent a new possibility for transforming one's existing knowledge and experiences into a new and personally meaningful understanding (Beghetto & Schuh, in press).

The model posits that students must find the learning stimulus optimally novel to catch their attention (Beghetto, 2016), otherwise it may be dismissed as already known

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(not sufficiently novel) or too discrepant (overly novel). This determination is based on a student's prior learning trajectory, which includes student's prior knowledge and idiosyncratic experiences (Schuh, 2017).

If a learning stimulus is sufficiently novel, then this new possibility is considered in light of what the student already knows. Put simply, this process refers to a combinatorial, sensemaking process that can result in a new, emergent understanding resulting from the combination of what *is* known with the newly encountered possibility. This generative and combinatorial process aligns with what researchers have long recognized as central to creative endeavors (Rothenberg, 2015; Ward & Kolomyts, 2010).

More specifically, it involves engaging the creative imagination to envision new insights, which can move students beyond their existing understandings and toward new learning (Beghetto & Schuh, in press; Vygotsky, 2004). Doing so opens up a broad horizon of possible understandings. Although the potential understanding that can be generated from this process is constrained by a student's prior learning trajectory, the resulting understanding (like all creative outcomes) is difficult to predict at the outset due to its emergent and dynamic nature (Sawyer, 2012).

Consequently, there are various possible outcomes of this individual combinatorial process. In some cases, students may not be able to reconcile a newly encountered learning stimulus with what they already know. In such cases, they may choose to ignore the new possibility or seek out assistance. In other cases, the combinatorial process may result in the reinforcement of what is already known, rather

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than the development of a new understanding. This type of reinforcement or Piagetian assimilation of information is a common process of academic learning (Von Glasersfeld, 2013) but does not represent a case of creative learning.

In order for creative learning to occur at the individual levels, student's need to be able to generate a new and personally meaningful understanding, which represents a blend of the learning stimulus with their existing understanding. In this way, their prior understanding has been transformed by the new experience or information they have encountered. Learning theorists describe a similar transformation in various ways, such as accommodation (Von Glasersfeld, 2013) or conceptual change (Zaitchik, Solomon, Tardiff, & Bascandziev, 2016). In the context of creative learning, the emergent understanding represents a creative contribution to the individuals understanding. What creativity researchers have called subjective, personal, or mini-c creativity (Beghetto & Kaufman, 2007).

The model of creative learning further posits that the personal mini-c understanding can transition into a little-c (classroom-level) creative contribution to the learning of others. As will be discussed in the next section, the model of creative learning represents a way of conceptualizing how personal creative insights can convert into social creative contributions. Prior to discussing how these asserted components and processes play out at the social (interpsychological) level, it is important to briefly mention the recursive possibilities that can occur throughout the process.

Specifically, creative contributions and creative combinations can spark additional combinations, possibilities, and contributions. The components and

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processes are not simply additive sequences. Although it is possible that a new learning stimulus will result in a new insight, it is also possible that a learning stimulus can provoke multiple creative combinations and thereby generate multiple creative contributions to one's understanding.

Moreover, as will be discussed in the next section, a student's new understanding can serve as a stimulus for the learning of others. In this way, the meaning-making process of creative learning can be thought of as representing a form of unlimited semiosis (Eco, 1986). Specifically, unlimited semiosis in this context refers to the potentially endless process of new understandings serving as new stimuli, which can provoke new creative combinations and, in turn, creative contributions to one's understanding and the understanding of others (Beghetto & Schuh, in press).

Interpsychological Sphere

The components of creative learning operating in the interpsychological sphere are conceptualized as the potential for students' unique insights to contribute to the learning of others (Beghetto, 2016). More specifically, the model posits that when students have an opportunity to share their new and personally meaningful understanding with others a new window of the possible opens, which has the potential to contribute to the understanding of everyone involved. The greater the diversity within classroom contexts and the greater the difference in perspectives of the individuals who inhabit those contexts, the greater the potential for creative learning to occur for the students and teachers in those settings (Glăveanu & Beghetto, 2016).

Specifically, the student who shares a new and personally meaningful understanding, will have an opportunity to receive feedback that can help clarify, correct, or verify that understanding. This is particularly important in an academic context wherein there are existing norms and conventions for determining whether an understanding is accurate or at least compatible with what is known. Consequently, such feedback opportunities are typically viewed as a necessary aspect of formal learning (Lipnevich & Smith, 2018), including creative learning.

Students who share their understanding also have an opportunity to make a creative contribution to the understanding of their peers and teachers. In this way, a student's new understanding can serve as a learning stimulus and new possibility for how others understand the subject matter under consideration. As discussed, the transfer from individually creative to socially creative can also be viewed as the transition from mini-c to little-c creativity (Beghetto & Kaufman, 2007). This transition is also similar to what has elsewhere been described as the movement from primary to secondary creativity (Runco & Beghetto, 2019). Primary creativity refers to the creator producing a creative outcome after engaging with some new medium or subject matter. Primary creativity can transform into secondary creativity when an external audience engages with the primary creative outcome and recognizes it as creative. Importantly, even when individuals are engaged in primary creativity they are still engaging in dialogue with "internal audiences" of past, present, and future interlocutors (Beghetto, 2017; Glăveanu, 2017), which can influence how the primary creative outcomes take

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shape. Secondary creativity thereby refers to the creative experience of external audiences who engage with creative artifacts resulting from primary creativity.

Specifically, when students share an unexpected or different conception (primary creativity) and teachers and peers are willing to engage with that conception and try to make sense of it in light of their own existing understanding (secondary creativity) it is possible that the combination will result in a creative contribution in the form of a new understanding for others. In this way, the core components that result in a creative outcome at the individual level reoccur at the socio-cultural level. As mentioned, given the recursive possibilities involved in creative learning, a creative contribution made by students to their peers and teachers can, in turn, result in the generation of additional possibilities that serve as new learning stimuli for others.

There are various individual and socio-cultural factors likely at play in helping to ensure that students are willing to share their new perspectives and for those perspectives to make a creative contribution to others, including students' creative confidence (Karwowski, Lebuda, & Beghetto, 2019), willingness on the part of teachers and students to take the risks necessary for exploring different perspectives (Glăveanu & Beghetto, 2016), perceptions of supportive environment (Anderson, Pitts, & Smolkowski, 2017), and willingness to break from the prototypical and more convergent patterns of interaction in the classroom (Cazden, 2001).

Taken together the core components of creative learning (i.e., new possibility, creative combination, and creative contribution) represent a special case of both creativity and learning. As discussed in the following section, the posited processes

involved in creative learning at both the individual and socio-cultural level also represent various forms of the possible.

Creative Learning and The Possible

The possible is always and already present within each component and phase of creative learning. Indeed, as illustrated in Figure 1, a learning stimulus is itself a new possibility. The uncertainty entailed in the possible, but not yet known outcome, of engaging with a learning stimulus motivates people toward resolving the uncertainty (Beghetto & Schreiber, 2017). As mentioned, the resolution of uncertainty can occur in at least one of three ways: accepted, ignored, or combined. First, a stimulus that appears novel, may be accepted as a case of what is already known. A novel stimulus may be too discrepant to be understood and is thereby dismissed as incomprehensible. Finally, a learning stimulus may be perceived as sufficiently novel to capture a person's attention and thereby move a person or group into a new state of the possible, which involves an effort to make sense of the stimulus in relation to what is already known.

The possible becomes further animated in the combinatorial phase because of the uncertainty involved in the outcomes that can be generated from this sense-making process. This, in turn, can result in the possibility of developing new and personally meaningful understandings, which can lead to further possibilities for creative outcomes when shared with others. Moreover, the recursive nature of the process continues to keep the possible at play during each phase of creative learning.

In sum, the possible is shot through the creative learning process. Indeed, the possible remains active even once uncertainty is seemingly resolved in the form of a

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new understanding. Given that a person's understanding continues to develop and change over time, the potential for new creative contributions to one's own and others' learning remains ever present. In this way, the outcomes of creative learning remain "inconclusive" (Corazza, 2016) and filled with potential for change. As a result, creative learning can be thought of as playing a central role in clarifying and actualizing a broad spectrum of possibilities; including *possible pasts* (e.g., ways in which we reflect upon and build on our prior understandings), *possible futures* (e.g., new openings, alternatives and directions our understandings can take), *possible selves* (e.g., new ways of understanding ourselves and others), and *possible worlds* (e.g., new understandings about what our world is and can be) - see Glăveanu (*The possible as a field of inquiry*) for a broader discussion of these different areas of possibility.

Directions for Theory and Research

The concept of creative learning discussed herein offers creativity researchers a lens for considering the role of the possible in the context of formal learning environments. The three components outlined in Figure 1 and the integrated individual and socio-cultural units of analysis provide a framework for researchers to examine how learning stimuli might serve as a prompt for generating new possibilities and ultimately contribute to the learning of individual students, their peers and teachers.

Theoretical and empirical work, aligned with this conception of creative learning, has been growing in recent years (Anderson, Haney, Pitts, Porter, & Bousselot, 2019; Gajda et al., 2017; Jankowska, Czerwonka, Lebuda, & Karwowski, 2018; Karwowski, 2018). Such work has helped to refine and expand on the theoretical assertions of the

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model, including highlighting the importance of researchers developing and employing mixed-methodological approaches to examine the multifaceted features of creative learning.

More specifically, this line of research has demonstrated how researchers can use blended designs to examine more fine grained, dynamic and micro-longitudinal features of creative learning in classroom settings (Gajda et al., 2017); illuminate the inward and outward features of creative learning (Anderson et al., 2019); and tease out potentially different cognitive processes at play in creative learning as well as different ways students representing their understanding of academic concepts (Jankowska et al., 2018).

Although this work is promising, much additional work along these lines is needed. Studies are needed to further examine and test out the assertions posited in this model of creative learning. In particular, additional research is needed to simultaneously examine the individual and socio-cultural aspects of creative learning and identify the factors and sub-processes at play in moving from creative learning stimuli to creative contributions in the form of new understandings.

Future work might therefore explore questions, such as:

- *What other mechanisms, components, and mediating or moderating factors are missing or misspecified in current conceptualizations of creative learning?*
- *What are the most promising methods and analytic techniques for identifying and testing the posited components of creative learning and*

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what kinds of insights might be derived from such research with respect to clarifying the individual and socio-cultural factors involved in creative learning?

- *How might clarifying the nature of creative learning and its relationship to the possible build on and inform related lines of theory and research in the fields of creativity studies and the learning sciences?*

With advances in more sensitive and dynamic methods and micro-developmental analytic techniques (Beghetto & Corazza, 2019), including the growing work occurring both in neuroscience (Jung & Vartanian, 2018) and socio-cultural perspectives on creativity (Glaveanu et al., 2019), researchers are in a position move theory and research forward on the concept of creative learning. Such work can help greatly in clarifying the nature and consequences of creative learning, including clarifying the role the possible plays throughout the process.

Cross References

Creativity
Possible in education
Pedagogies of the possible
Uncertainty

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