Fundamentals of cREATiViTy

Five insights can help educators nurture student creativity in ways that enhance academic learning.

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Creativity has become a hot topic in education. From President Barack Obama to Amazon's Jeff Bezos to *Newsweek* magazine, business leaders, major media outlets, government officials, and education policymakers are increasingly advocating including student creativity in the curriculum.

But without a clear understanding of the nature of creativity itself, such well-meaning advocacy may do more harm than good; educators may experience calls for teaching creativity as just another guilt-inducing addition to an already-overwhelming set of curricular demands. Here are five fundamental insights that can guide and support educators as they endeavor to integrate student creativity into the everyday curriculum.

1. Creativity Takes More Than Originality

The first question educators should address is, *What is creativity?* People commonly think of creativity as the ability to think outside the box, be imaginative, or come up with original ideas. These are aspects of creativity, but they tell only half the story.

Scholars generally agree that creativity involves *the combination of originality and task appropriateness* (Kaufman & Sternberg, 2007; Plucker, Beghetto, & Dow, 2004). This combination may seem contradictory. How can something be original and at the same time conform to a set of task requirements? And isn't originality sufficient for something to be judged creative? Why must it also be task appropriate?
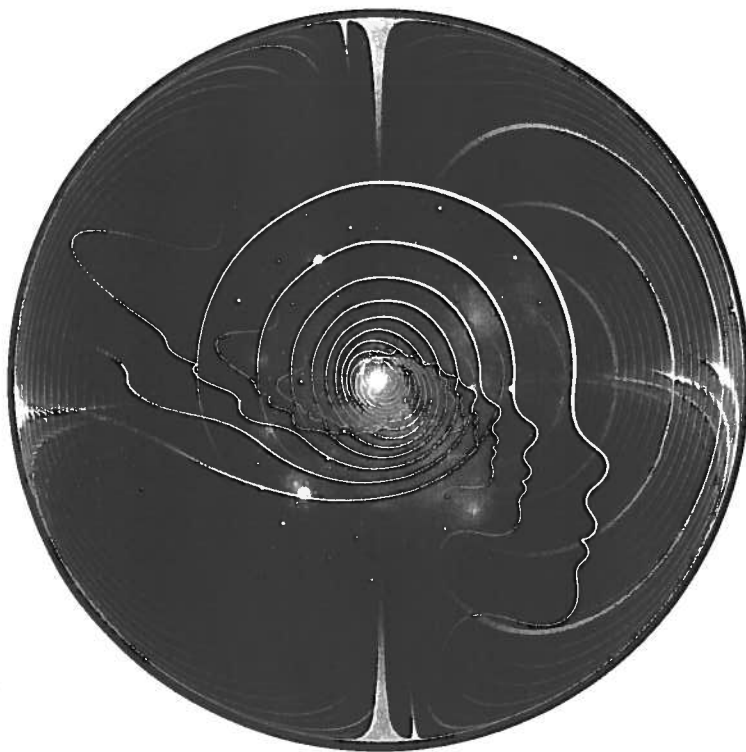
A quick example (adapted from Beghetto & Plucker, 2006) may help. Consider a teacher who wants students to express creativity in their science fair projects. Before assigning students to create their own projects, the teacher discusses the scientific conventions and requirements of the project. (For example, each project must pose a hypothesis, gather evidence to test the hypothesis, and explain whether the hypothesis has been supported.) Students are then invited to work within these conventions to create their own original, personally meaningful science fair projects.

One student's final project simply reproduces a class lab experiment in which students guessed how much acid various brands of soft drinks contained and then measured the degree of acidity in each. Although this project is task appropriate, it is not creative because it does not contain the student's original ideas. At the other extreme, one student performs an interpretive dance illustrating the biological phenomenon of mitosis; this project is highly original, but it is not creative because it does not fulfill the academic requirements of this particular task. For a student's project to be considered creative, it would need to incorporate the student's own ideas while staying within established academic guidelines and the conventions of scientific inquiry.

Teachers who understand that creativity combines both originality and task appropriateness are in a better position to integrate student creativity into the everyday curriculum in ways that complement, rather than compete with, academic learning. For example, during a lesson on ancient Rome, students might create a diary for a person living during this time, with period-accurate details. A biology class might have students brainstorming about the conditions under which a plant might grow best. Or a math teacher might have students explore how many different ways they can solve an algebraic proof.

2. There Are Different Levels of Creativity

Some instances of creativity occur every day (for example, a 4th grader coming up with an idea for a short story). Other instances of creativity redefine the way things are done (for example, smartphones) or even transform history (the computer chip, the Declaration of Independence, the scientific method, electricity, or Billie Holiday's powerful performance of the anti-racist song "Strange Fruit").

Researchers have drawn a distinction between these two levels of creativity: the contributions made by everyday people (*little-c* creativity) and the lasting, transformational contributions made by mavericks within a domain (*Big-C* creativity). In an effort to broaden the concept, we developed a more nuanced, developmental model, which we call the Four C Model of Creativity (Kaufman & Beghetto, 2009). This model describes the following levels of creative expression:

■ *mini-c,* or interpretive, creativity (such as a 2nd grade student's new insight about how to solve a math problem).

■ *little-c,* or everyday, creativity (such as a 10th grade social studies class developing an original project that combines learning about a key historical event with gathering local histories from community elders).

■ *Pro-C,* or expert, creativity (for example, the idea of the flipped classroom pioneered by teachers Aaron Sams and Jonathan Bergmann).

- *Big-C*, or legendary, creativity (for example, Maria Montessori's new approach to early childhood education).

The Four C Model provides a framework for including creativity in the curriculum and helping students develop their creativity to higher levels.

Consider two elementary students who each write a short story and submit it to a schoolwide literary contest. One student writes a science fiction story that is based on his own ideas and is personally meaningful to him; although the literary contest judges rate it as ordinary, the story meets the standard criteria of being task appropriate and original as judged by the student himself. Therefore, the story can be considered creative at the *mini-c* level. Another student writes a science fiction story that the judges rate as highly creative, to which they award first prize. Although this story is not of high enough quality to be published in a science fiction magazine, it displays an unusually high level of originality and quality for an elementary student and may be considered creative at the *little-c* level.

The first student's teacher could help him develop his *mini-c* ideas about science fiction stories into *little-c* creative contributions by encouraging his interest and helping him develop greater understanding and mastery of storytelling. Similarly, a teacher could work with the second student to help her develop her understanding of the science fiction genre and the domain expertise necessary to move from *little-c* science fiction stories into published, *Pro-C* science fiction. This achievement should be understood as a long-term goal: Moving from *little-c* to *Pro-C* takes years of deliberate practice (Ericsson, 2006). Few children will reach the *Pro-C* level of creativity, which is reserved for expert-level authors.
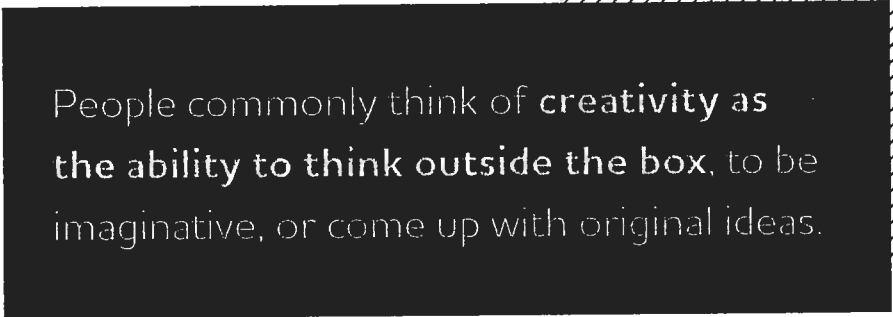
The fourth level of creativity, *Big-C*, is reserved in science fiction writing for legends like H. G. Wells, Ray Bradbury, or Mary Shelley. This doesn't mean that *Big-C* creativity plays no role in the classroom, however. Teachers can include biographies of *Big-C* creators across various subject areas to illustrate the work, setbacks, and supports involved in becoming a legendary creator. The lives of Marie Curie, Mark Twain, Martin Luther King Jr., and Claude Monet, among others, include stories of persistence and resilience, traits associated with creativity at all levels. Exploring such biographies can capture students'

imagination, raise important questions, and even dispel misconceptions about creativity in particular fields of study. Learning about C. S. Lewis's struggles with writer's block, for example, may help a young student realize that such challenges are universal.

3. Context Matters

Some education thinkers have expressed concerns that U.S. schools are stifling student creativity, or causing a "creativity crisis" (Bronson & Merryman, 2010). Although a narrow focus on convergent teaching and learning can suppress creative thinking, the good news is that where there is life, there is creativity. Research has demonstrated that creativity is a robust human trait; students can be protected and bounce back

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from creativity-stifling school and classroom practices (Beghetto, 2010).

Certain contexts can curtail and suppress creativity, however. In particular, the school and classroom environment often send subtle messages that play an important role in determining whether students will share their *mini-c* creative insights and have the opportunity to develop their creative competence.

For instance, research shows that creativity can suffer when people are promised rewards for creative work, when learning conditions stress competition and social comparisons, or when individuals are highly aware of being monitored and evaluated by others. Conversely, creativity generally thrives in environments that support personal interest, involvement, enjoyment, and engagement with challenging tasks (Hennessey & Amabile, 2010).

The key insight from this research is that teachers should do their best to minimize features of the environment that can impede creativity (social comparisons, contingent rewards, and so on). Instead, teachers should help students focus on the more intrinsically

motivating and personally meaningful aspects of the work by discussing how students might incorporate their personal interests into the tasks and by acknowledging their creativity.

For example, instead of having students choose from a limited set of topics for their science experiments, a teacher might encourage them to plan experiments that examine their specific interests (such as autism, nutrition, or social media). Language arts students might have the option of writing a new scene for an assigned novel instead of writing a compare-and-contrast essay. Such alternate assignments would be equally rigorous but would encourage students to be more invested in the outcome.

4. Creativity Comes at a Cost

Creativity is often associated with fun, fluff, and frills. A quick Google image search on *creativity* yields a vast array of playful images, including laughing faces, smiling light bulbs, colorful arrays of crayons, and explosive bursts of paint. These images belie the more serious aspects of creativity. Creativity can have benefits that transcend temporary enjoyment. It can produce effective solutions to highly complex societal problems; lead to higher levels of career success; and create intense personal enjoyment, engagement, and meaning in life (Kaufman, 2009).

But the benefits come with a cost; creativity requires work, effort, and risk. Many years of painstaking effort are needed to develop the expertise to make creative contributions that go beyond the everyday level. Moreover, even everyday creativity takes effort, subject-matter understanding, the ability to put a new spin on the task at hand, and the willingness to share one's creative expression with others—risking rejection, ridicule, or worse.

When a young student shares a new and personally meaningful perspective on how to solve a math problem, she risks having her idea dismissed or misunderstood by her teacher. A student who volunteers to read a story in front of the class is taking the chance of being laughed at by his peers. It does not take many such incidents for a student to learn that it's not worth the effort and risk to share personal ideas—it's much easier to provide the answers that teachers and peers expect.

Part of encouraging creativity, therefore, includes helping students become aware of the potential costs and benefits associated with creative expression. When students understand both the potential benefits and potential costs of creativity, they will be in a position to determine whether the risk is worth it.

5. There's a Time and a Place for Creativity

Given all the talk about nurturing creativity, teachers may feel that creativity should be encouraged and expressed at all times. But would you want a creative dentist or cab driver? It depends. We don't want a dentist trying a new tooth extraction procedure during a routine cleaning or a cab driver exploring a new route during a typical ride from the hotel to the airport. In such cases, we prefer that they conform to what is expected. However, if a tooth unexpectedly shatters during a cleaning, we want that dentist to be creative enough to improvise a way to fix it. Similarly, if we are running late for an important flight and the interstate traffic comes to a screeching halt, we might very well appreciate our cabbie's creative exploration of an alternate route.

Accomplished creators know when to be creative. Therefore, it's important for teachers to teach (and model) how to read a situation and determine whether and how to express one's creative ideas, insights, and behaviors. In other words, students need to develop *creative metacognition*—a combination of creative self-knowledge (knowing one's own creative strengths and limitations, both within a domain and as a general trait)

and contextual knowledge (knowing when, where, how, and why to be creative) (Kaufman & Beghetto, in press).

Educators can help students develop their creative metacognition by providing them with informative feedback on their own creative strengths and limitations. Feedback should follow the Goldilocks Principle (Beghetto & Kaufman, 2007)—it should be neither too harsh (stifling students' motivation) nor too mild (failing to acknowledge real-world standards). Teachers should provide honest feedback that strikes the just-right balance between challenging students and supporting them as they develop their creative competence.

Consider, for example, a student who is assigned to write a historical account of an event during the past decade that had an impact on the local community. The student takes a novel approach to this assignment, combining secondary sources (such as news accounts) and imaginary primary sources ("ghosts of the past" who represent various generational perspectives).

To provide balanced feedback, the teacher might acknowledge the originality and insightfulness of the student's attempt to present multiple generational perspectives of the event. The teacher might then challenge the student to replace the fictional sources with actual primary sources by locating real community members who represent different generations, interviewing them, and incorporating their perspectives into the final paper.

Realizing the Benefits

As parents, educators, and creativity researchers, we are encouraged by the increased attention being paid to creativity and the recognition that it has a role to play in schools and classrooms. It's essential, however, that education leaders develop a thorough understanding of creativity and that they take the time and care necessary to ensure that the benefits of creativity are realized in schools and classrooms. ⬛

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