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Building creative thinking in the classroom: From research to practice

Emma Gregory [a,*], Mariale Hardiman [b], Julia Yarmolinskaya [c], Luke Rinne [b], Charles Limb [d]

[a] Department of Cognitive Science, Johns Hopkins University, 3400 North Charles Street, Baltimore, MD 21218, USA
[b] School of Education, Johns Hopkins University, 2800 North Charles Street, Baltimore, MD 21218, USA
[c] Center for Language Education, Johns Hopkins University, 3400 North Charles Street, Baltimore, MD 21218, USA
[d] Department of Otolaryngology-Head and Neck Surgery, Johns Hopkins University, 601 North Caroline Street, Baltimore, MD 21287, USA

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ABSTRACT

Classroom instruction often overlooks the importance of encouraging and explicitly teaching students to think creatively. Yet classroom learning offers an ideal opportunity for students to master content knowledge and to creatively apply that knowledge, a skill important for success in any environment. Here we review literatures on creativity, focusing on findings that clearly inform how it can be taught. We argue that some changes in the ability to think creatively arise due to factors that are directly manipulable in the classroom whereas other changes stem from increases in capacities of cognitive function. We propose simple guidelines, based on theories and research on creativity, for how teachers can build students' ability to think creatively and apply content knowledge in creative ways.

1. Introduction

Despite the importance of both content knowledge and creative thinking for educational and professional achievement, classroom instruction often provides few opportunities for students to think creatively. Nevertheless, creative thinking and problem solving can be built into instruction in many ways. For example, teachers can encourage students to seek out new connections between disparate ideas or ask students to offer multiple and varied solutions to complex problems. If the ability to be creative is indeed vital for students' future success, teachers must explicitly foster and teach creativity in school (e.g., Robinson, 2001). On this view, creativity training should be a key component of primary and secondary education.

Creativity training only makes sense, however, if we assume that everyone can think creatively and that creativity can be influenced. Fortunately, many researchers have argued – and in some cases demonstrated empirically – that every individual possesses the ability to think creatively, at least within particular contexts (e.g., Amabile, 1996; Kaufman & Beghetto, 2009). Further, research has shown that creative thinking is influenced by various circumstances, including whether work is collaborative and the extent to which individuals are motivated to solve a problem (e.g., Brophy, 2006). These findings support the idea that creativity is pliable and that creative thinking can and should be taught in some way (e.g., DeHaan, 2009). Along these lines, Schacter, Thum, and Zifkin (2006) demonstrated that classrooms in which teachers fostered student

* Corresponding author. Tel.: +1 410 516 5054; fax: +1 410 516 8020.
E-mail addresses: egregory@jhu.edu, gregory@cogsci.jhu.edu (E. Gregory).

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creativity saw student achievement gains. They also showed, however, that most teachers did not employ any strategies that would build students' creativity, suggesting a need for explicit training of creativity instruction for teachers.

Previous attempts have been made to develop creativity training and implement it in schools (see Scott, Leritz, & Mumford, 2004 for a review). While programs vary with respect to whether they are based on general or domain-specific models of creativity, the programs are often focused on divergent thinking, one aspect of creativity (e.g., Scott et al., 2004). Most programs are complex, involving multiple instructional components (e.g., Bull, Montgomery & Baloche, 1995). Such complexity is consistent with the idea that divergent thinking (and creativity) is multifaceted. Unfortunately, a major consequence of such complexity in the programs is that they require substantial time and effort for a teacher to learn. Moreover, despite appreciating the value of facilitating creativity, few teachers feel that they are sufficiently trained to support students' creative potential (Kampylis, Berki, & Saariluoma, 2009). In contrast, we advocate and offer simple, yet effective activities and pedagogical techniques that can be embedded into current instruction in any subject matter area. This allows the teaching of creative thinking to be combined with the teaching of subject matter content, without losing instructional time.

Here we review research findings that support specific techniques for integrating into instruction activities and practices to help students become creative thinkers. Our review of the literature is by no means exhaustive; rather we have chosen findings that can inform pedagogical practices through generation of simple guidelines for teachers to use in their classrooms. The findings suggest that a student's ability to creatively apply information they have learned is best supported when creative thinking is taught in tandem with subject matter content, rather than in a standalone way, divorced from content. We argue that despite the lack of a thorough understanding of creativity as a construct, educators should take advantage of what scientists have learned about creativity by incorporating into classroom instruction pedagogical techniques and activities. Ultimately, we offer guidelines, consistent with research on creative thinking, to facilitate teachers in enhancing instruction to build each student's capacity to think creatively.

We first assess how creativity has been contemplated through theory, with a close eye toward questions that are most relevant to education. We review research both on factors that affect one's ability to creatively solve problems over the long-term, and on factors that enhance creative thinking in a short-lived fashion (e.g., in a lab test or a classroom activity). We also discuss the role of certain cognitive functions in creative problem solving, including how those cognitive functions and thus resulting creativity can be trained. Finally, we offer some simple guidelines, based on theories and research on creativity, for how teachers can foster students' creative thinking in any area of instruction.

2. Creativity in theory

Creativity researchers have contemplated the construct of creativity from many approaches, addressing issues such as how creativity is defined, how it can be measured, and whether it is a fixed trait (see Kozbelt, Beghetto, & Runco, 2010 for a review). Creativity has been defined in terms of many phenomena: the context of one's personality, the products one can produce, the environment one is in when generating a creative product, and one's mode of thinking when creating an original product or response (e.g., Rhodes, 1961). The question of how to measure creativity is closely tied to how creativity is defined, as the appropriateness of any measure depends on which hypothesized aspects of creativity are being assessed. Even upon examining just one of the many published tests of creativity – for example, the Torrance Test of Creative Thinking (Torrance, 1974) – one will find that creativity is assessed by measuring not one, but several components of creative thinking (e.g., fluency, originality, elaboration). This is consistent with the idea that there are different aspects of creativity.

In the context of education, perhaps the most valuable question to ask is whether or not creativity is fixed. Namely, creativity could be a construct that is static (i.e., a relatively stable trait), or it could be modifiable through development, formal schooling, or general life experience. Consistent with this distinction, creativity has been conceptualized in terms of the magnitude or level of creative thinking one engages in, with only some levels able to be increased in response to external factors (e.g., Csikszentmihalyi, 1996). In this model, creativity can take the form of a mostly objective "Larger-C" or "Big-C" or a mostly subjective "smaller-c" or "little-c". Well-known inventions or famous works of arts would likely be associated with the former (e.g., Mozart's concertos, Picasso's paintings, DaVinci's inventions); this Big-C would not necessarily be found in everyone and would change little with experience or development (e.g., Simonton, 1994). The latter, little-c, in contrast, would denote everyday creativity that is likely found in everyone to some degree and may be dependent upon area-specific content knowledge (e.g., Richards, 2007).

The theoretical distinction between Big-C and little-c speaks to whether creativity derives in part from content knowledge. Recall that creativity could be a very general quality, or creativity could derive from the possession of content knowledge within a given domain (see Sternberg, 2005 for an in-depth discussion). A middle ground would suggest that creativity has multiple components, some derived from content knowledge and others more general (e.g., Plucker & Beghetto, 2004). We do not intend to take a stance with respect to how and whether Big-C and little-c are in fact distinct constructs. Rather, given our interest in joining classroom instruction of content with the promotion of creative thinking, the theoretical distinction highlights what we believe is important for teaching students to think creatively. Namely, our focus is on creativity that derives from content knowledge: we assume that at least some components of creativity derive from content knowledge and that these components can be enhanced or taught in everyone (see also Haring-Smith, 2006).