

Creativity and Education

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Abstract

Background: A concern for scientific rigor has directed most recent research on creativity towards the study of unambiguous expressions of talent. This is problematic for educators and anyone else who is interested in children's creative potential.

Focus of discussion: Creative potential should be the primary concern for educators. Theories of and methods used for enhancing creativity which focus on actual performance are misleading and may not help with the fulfillment of potential.

Suggestions: Potential is not always obvious, but educators and others working with children should consider defining creativity in literal terms, as thinking or problem solving that involves the construction of new meaning. This in turn relies on personal interpretations. These are personal and new for the individual, not on any larger scale. This approach is consistent with the educational premise "to understand is to invent," and it allows educators to target students' self-expression. The emphasis is thus on the individual, the self. Equally significant for educators is that this view posits that creativity is widely distributed. Virtually every individual has the mental capacity to construct the personal interpretations that are involved.

Conclusion: Creativity is something we can find in every child, not just the gifted or highly intelligent.

Keywords: (3 keywords): productivity bias, art bias, ego strength, originality, spontaneous integration

創意與教育

摘要

背景：最近因科學嚴格的論證引導著創意研究邁向對天分毫不含糊表達的研究，正引起憂慮，教育家和任何對兒童的創意潛能感興趣的人都覺得有問題。

討論焦點：創意潛能應該是教育家主要的關心，聚焦於實際提高創意表現的理論和方法會使人誤入歧途，不能幫助潛能的履行。

建議：潛能不是經常外顯的，但是教育家和其他服務孩子的人應該考慮用文字術語來界定創意，有如思考或解決問題引入新意義的構建，這又與個人的詮釋有關，這些在各人不是在任一大規模的層面都是個別化和新的。這種方法與教育前設 "瞭解即發明" 是一致的，並且它允許教育家瞄準學生的自我表達，因而重點是在個體自己。對教育家同樣重要的是創意的廣泛分佈，實際上每個人都有足夠的智力去建構個人有關的解釋。

總結：我們能發現每個孩子都有其創意，不僅是有天賦或很聰明的兒童。

關鍵詞：生產力偏向，藝術偏向，自我力量，獨創性，自然綜合

Creativity and Education

Education should support various kinds of thinking. Critical thinking is good, and creative thinking probably even better. Education should be clearly tied to theory, and good educational theories in turn validated with rigorous research. The best educational theories are not speculative, not mere opinions. Teachers should not be experimenting with their students but should rely on tried and true theories of education.

Yet just because a theory is consistent with data does not mean it is applicable to the classroom. In fact, quite a number of theories of creativity are not appropriate for education. The least useful theories may be classified as *performance theories of creativity* (see Figure 1). These each emphasize manifest products or achievements. In fact, for years this approach to creativity was identified by the reliance on products. Other common approaches were labeled *person*, *process*, and *place* (Rhodes, 1962; Richards, 1999). Simonton (1995) added

persuasion to this list, the idea being that creative people change the way that others think.

Though often employed, the alliterative formulation (each starting with the letter P) does not adequately capture all research, and it ignores key intersections among the various person, place, process, and product perspectives. The hierarchical reformulation presented in Figure 1 is more comprehensive and up-to-date. It also allows a distinction between those theories that apply in a useful fashion to education and those that do not. This is apparent at the highest level of the hierarchy and the distinction between theories of *creative performance* and *creative potential*. The former requires some sort of manifest end result. Works of art have been examined in research that exemplifies this approach, as do studies of inventions, patents, discoveries, and so on (e.g., Albert, 1975; Simonton, 1995, 2007; Weisberg & Hass, 2007). These are all very interesting but only provide reliable information about the products; little is said about the process or people, and usually the people involved are not students nor children but famous creators, or at least high achievers.

This is not the kind of theory that should be used to direct educational efforts. Performance theories say nothing about potential nor about students who have potential but are not yet in a position to produce anything of social significance. The same can be said about theories of creativity that define it in terms of persuasion (Kasof, 1995). They too can mislead practitioners, including educators.

This is by no means a straw argument. In fact, because it is easier to be objective (and therefore scientific) about objects, very likely there are more theories of creativity which focus on products than those which examine potential. Productivity can be quantified (e.g., Picasso created over 20,000 works of art) and tangible products counted, and thus the product approach is deemed reliable and scientific. This kind of theory has also made its way into our educational system. Consider, for instance, the idea of using portfolios and achievement indices to select children for gifted and talented programs. Perhaps it has snuck into the educational system because of the trend towards *accountability*. That too is facilitated with objective information, such as products and productivity.

There is even an occasional *productivity bias* (Runco, 2007a). This is analogous to the *art bias*, which occurs when an educator (or parent, or anyone) equates creative potential with artistic talent. Certainly the arts are unambiguously creative, but creativity is also apparent in many other domains, both formal and informal (e.g., everyday creativity; Richards & Runco, 1998). If this is overlooked and creativity presumed to occur only in the arts, children who are not artistically talented are deemed uncreative. That is the art bias, and much the same can occur if one student is manifestly productive in terms of stories, solutions, ideas, or original contributions to the classroom, while another student is not productive in the same fashion. That latter might be creative even if it is not obvious from his or her only moderate or low productivity. Educators should consciously avoid both the art- and the productivity-bias. Instead, they should attempt to fulfill creative potentials.

How to Fulfill Creative Potentials

Fortunately there are theories specifically of creative potential which lend themselves to practical application (Helson, 1996; Runco, 2003; Smith, 1999). Consider, for example, the idea that creative thinking reflects the *original interpretation of experience* (Runco, 1996). Each of us has the capacity to construct original interpretations, and if it is a useful and original interpretation, it qualifies as “creative.” That is how creativity is typically defined, as both useful and original (Barron, 1955; Runco, 1988). That should apply to interpretations and

ideas, just as it does to observable products. There may be no manifest product with such a focus on interpretations, but what is important is to define creativity such that it is independent of a product.

Note also that this is a *process* view of creativity (see Figure 1). Also significant is that children may use the process, which is essentially the same as Piaget's (1976) description of assimilation, in the classroom and for non-tangible but creative ideation, but they may also eventually use exactly the same process for their later creative achievements. In short, the process may develop such that it can lead to manifest creative performances. In a manner of speaking, that is the advantage of a process view. It focuses on the mechanism which underlies all creative things, and it reflects an important potential. By reinforcing the construction of original but appropriate interpretations in the classroom, creative potentials should be fulfilled and actual creative performances very likely.

This is entirely consistent with learning theory. In particular, learning theory holds that reinforcement should be given to (a) behaviors which are already within behavioral repertoires, but also (b) connected in some way to the terminal or target behavior. The first of those—the one that already exists, though perhaps not in a directed fashion—involves the original interpretation of experience. The second requirement—the terminal behavior (b)—is actual creative performance. Admittedly, care must be taken when giving reinforcement. Inappropriate reinforcement may lead children to construct original interpretations only for the extrinsic incentive or reward, in which case they will lose sight of any intrinsic motivation (Amabile, 1990; Runco, 2006). It is also important to exercise discretion and mindful originality. By no means should children act in an original fashion all of the time. Discretion should be exercised such that they know when to be original (e.g., open-ended or ill-defined tasks) and when to conform (e.g., when asked about particular facts).

Children will be able to construct their own original interpretations if they have the *opportunities* to do so. The curriculum must allow it; there must be the opportunity to work on open-ended and ill-defined tasks which do not depend on memory.

Children should also see *models* of such originality. This is of course social learning theory, the idea being that children will imitate respected models. There is more than simple imitation, however. Children also abstract values from the models they observe. Hence a student who sees his or her teacher constructing original interpretations is likely to realize (and internalize the idea) that originality is a good and valuable thing.

Self-Expression

All of this is consistent with a curriculum which allows frequent *self-expression*. By definition, self-expression requires that the individual student him- or herself decide what to express. That assumes that the individual him- or herself first constructs an original idea. Otherwise it is not self-expression but the expression of someone else's thinking.

This is not as easy as it sounds. Educators tend to have groups of students in the classroom, and there is a curriculum—a plan, if you will. Original ideas and self-expressions are often contrary to that plan. No wonder, then, that *tolerance* is often listed in descriptions of creative environments (Runco, 2007).

Here again, discretion is vital. As noted previously, children should not always be creative nor original. There is a time and a place for it. Sometimes, memorization is best. Sometimes conventional thinking is best. Sometimes even conformity is best. No one wants children who are wonderfully original but do not know their alphabet or times tables. What is

needed, then, is a balance.

This balance has been described as *post-conventional thinking* (Runco, 1996). That term was first proposed as part of moral reasoning and later used to understand children's art work (Rosenblatt & Winner, 1982). Even later it was used to understand how children can both draw from their knowledge of conventions but retain the capacity for originality. Simply put, post conventional thinking means that the individual knows what is conventional, but also makes decisions for him- or herself, rather than blindly conforming to all expectations and conventions.

Post conventional thinking assumes the necessary discretion. It is a bit like the phrase, "discretion is the better part of valor," only here it is the "better part of creativity." Not to belabor the point but children should retain the capacity for creative thinking, but they exercise discretion and know when it is useful (those open-ended opportunities noted above) and when it is not (academic tests which require memorization).

Discretion may sound like a difficult educational target, but it can be taught, or at least exercised. Have you ever used the phrase, "now is not the time for x, y, or z" with your own children or with your students? Perhaps you mean that "that is interesting but not appropriate right now." You were suggesting that your charge exercise discretion. More formally, the individual who first proposed the idea of post-conventional thought (Kohlberg, 1968) had exercises which he believed led to higher levels of moral reasoning. These exercises required that children use their discretion. Admittedly there is a nonlinear relationship between moral reasoning and creative thinking—the first of them often highly conventional and the second often highly unconventional—but the point is that discretion can be and have been exercised. [Various perspectives on the relationship between morality and creativity were explored by Wallace and Gruber(1993)]

I recently had an experience with a college student which may be relevant. I teach an online course, and during the first week of instruction I received email from one of the 95 students. After reading my syllabus she sent me email which had no punctuation, no capital letters (even though there were 3 paragraphs and at least 12 sentences, and she used her own name), and abbreviations that I had only seen in text messages (e.g., "u" for you and "ur" I suppose for your). It was entirely ungrammatical. I was surprised that she would send such a message to her professor. Either she is fairly illiterate or she did not exercise much discretion. All of my other students, even though they abbreviate when they send text messages, they realize that I am grading them on grammar, and they write me using more standard English.

I respect the enormous creativity in our day-to-day language use and further respect the creative opportunities that are provided by new technologies, including computers (e.g., My Space) and cell phones.. As a matter of fact I am quite explicit in my writing course about this issue. I tell students that they may best communicate in conversation if they are informal, but when writing, stick to standard English.

Integration of Discrete Behaviors

There is another concept from learning theory which is very useful for the fulfillment of creative potentials. This is the *spontaneous integration of previously learned responses*. Epstein (1990) demonstrated how seemingly insightful solutions to presented problems can be elicited if reinforcement and shaping are given individually to discrete behaviors. When the shaping is complete, insightful solutions and behaviors are emitted. These are original in the sense that they have never been emitted before. They are, however, simply the spontaneous

integration of previously learned responses (the previous responses being the discrete behaviors which were independently reinforced.) The originality is in the integration of them.

The suggestion proposed here is that a similar method could be used with human creative potential. Simplifying somewhat, suppose a child is capable of original ideation. That is an easy supposition to accept. Children do produce their own ideas. This is seen in the extreme when they play imaginatively. Children's original ideas may, however, be only original and not creative. After all, often ignore things which are in fact quite relevant and important. They regularly do imaginative and unrealistic things, sometimes quite frequently, depending on their age. They often do so without discretion, and in fact their ideas (and the behaviors resulting from them) may be, from a mature perspective, inappropriate. So again, they are only original and not creative.

A second supposition is that creativity requires more than just originality. All creative things, be they ideas, inventions, insights, or solutions, are original, but they are also somehow effective, appropriate, fitting, or useful. After all, a psychotic may be highly original, but his or her originality may have no connection with reality. It is therefore psychotic and original, but not creative. It lacks the second requirement, the effectiveness. That is just one example of how easy it is to separate originality from creativity, even though the former is a prerequisite. It is necessary but not sufficient.

These two suppositions—that children produce original ideas (which are admittedly often unrealistic) and that originality is necessary but not sufficient for creativity-- suggest a definition of creative potential. One part of creative potential is the capacity for originality. A second capacity which is necessary but not sufficient for creativity but unrelated to originality is the capacity for directing thought and action towards some goal. Sometimes this is used for problem solving, and perhaps adaptation and coping. This may sound like it is related to originality, but surely individuals can solve problems using unoriginal (conventional or common) solutions. Sometimes they adapt or cope without generating a new and original idea.

Significantly, neither of the two discrete behaviors included in this definition of creative potential individually guarantees actual creative action and performance. Recall here that the capacity for originality is often used by children but, since it is not directed or used in an effective fashion, it is not creative. The other part of creative potential is the direction of thought and action, manifested when ever a child effectively (but without originality) solves a problem.

Together, these two behaviors indicate that children have creative potential, even if not actually performing in a creative way. Yet the two discrete behaviors can be brought together, in which case originality and effectiveness are both displayed and the individual has in fact performed in a manifestly creative fashion.

In sum, a person has mere creative potential if he or she can do (a) and (b) above but does not integrate them. The educational implication is to use reinforcement and shaping, just as Epstein (1990) did, thus insuring a spontaneous integration of the two part of creative potential. If (a) and (b) are eventually integrated, the individual will have used his or her "mere potential" (a and b) such that it is blended into actual creative behavior.

Discretion and Ego Strength

This view implies that creative potential is universally distributed. It is not something only geniuses and the gifted have. Of course genetic studies and logic tell us that potentials of

all sorts vary. Not everyone can develop the muscles of the current California Governor, but we all have the potential to increase muscle size and strength. Similarly, we may not all be creative geniuses, but we all have the potential to be creative. More concretely, we can all construct original interpretations of experience. That part of creative behavior need not be taught. What must be a part of development and education is the exercise of discretion and ego strength.

Children do not need to learn how to have ideas. Preschool children are fluent and original as soon as they can communicate. They are no doubt generating ideas even earlier, or at least as soon as their thinking coalesces and they stop what William James called the “booming and buzzing” of neonates. Children do not need to learn to construct original interpretations of experience. Piaget (1976) wondered how children do exactly this, through assimilation and accommodation. But they do need to learn discretion and, given all of the pressures put on them to fit into culture, they need to develop the ego-strength that will allow them to think in a post-conventional fashion. Without ego-strength, they will conform and never recover from the notorious 4th grade slump (Runco, 1999; Torrance, 1968).

This takes me to my last point, which is that in addition to opportunities and models, children need appropriate reinforcement for their original interpretations. That must be appropriate in two ways: First it should not support out-of-control originality but instead the post-conventional, mindful, controlled originality. (Barron [1993] used the term *controlled weirdness*.) They must, in short, learn to use discretion such that they know when to be creative and when to conform. Reinforcement must also be appropriate in the sense that it does not cause what is known as *over-justification* (Amabile, 1990; Runco, 2005), This occurs when a behavior which is initially intrinsically motivated is rewarded. The individual over forgets about the intrinsic motivation and focuses entirely on the extrinsic. That is a concern because intrinsic motivation is often very useful for creative thinking, and when it is lost, the creative thinking may very well suffer.

Conclusion

Several of the ideas given above are probably intuitively obvious. They do round out the picture, however, and several may sound obvious but are actually quite difficult to put into educational practice. This is in part because teachers often appreciate creativity in a general sense but have little tolerance for the characteristics which are necessary for it (e.g., unconventional thinking, intrinsic motivation) (Westby & Dawson, 1995).

Most controversial is probably the de-emphasis of cognitive skills. Of course, ideation and various aspects of thinking are related to creative efforts, but I have come to appreciate their wide distribution, even in young children, and for that reason look more to *ego-strength* as educational objective. It is vital for unconventional thought, especially around the time of the 4th grade slump, and that indicates that it is not very widely distributed. It is lost, for many children, at about age 9. If we can support ego-strength, children will continue to produce original ideas; natural creative talents will not be lost nor even slump.

It is probably most accurate to say that there are various process views of creativity which can be applied to the educational setting rather than just one theory. This is not a bad thing: It is good to have theory, but it does not need to be one theory. An eclectic theoretical approach is more than adequate.

Alternatively, we could point to the general category of theories in Figure 1 under the Process heading. Clearly educators should look to potential in addition to manifest

performance. Indeed, process is more important than product. After all, if the process is used, creative products are likely to result. This may be another way of saying that education should help to fulfill potential, with the probable outcome being manifest creative performance.

Educators should provide opportunities and models of original and creative behavior. Those might even be remote models, which can be found in books and videos. They should provide appropriate reinforcement for original interpretations and ideas and be certain to assign tasks which require that some discretion be exercised. They should be prepared to exercise their own tolerance. Creative children are not the easiest children to have in the classroom.

In a sense this perspective implies that it is not too difficult to enhance creativity. After all, all that is needed is to support what talents children already have; we do not need to start from scratch. They already have the capacity for original interpretations and creative ideas. It really is more a matter of preventing the loss of talent than it is the provision of new talents. An alternative way of saying this is that children need to learn how to direct and control their creative tendencies. Educators can be an enormous boost in this regard.

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