Creativity and the Box

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For decades, researchers have focused on the importance of creativity in education (e.g., Davis, 2020; Guilford, 1967; Plucker & Renzulli, 1999). Creativity has been documented as a predictor of future performance and success and a factor in healthy emotional development, interpersonal relationships, and career advancements in science, technology, engineering, art, and mathematics (Ghosh, 2015; Plucker et al., 2004).

My last TEMPO+ article explored the topic of critical thinking inside and outside the proverbial box. This article considers creative thinking and production in respect to inside and outside the box thinking.

In the previous article, inside the box was described as,

> The keeper of best practices for gifted learners; those things available to practitioners and their students that elicit deep and complex thinking …. our tool box in which there are curriculum models and principles for meeting the nature and needs of learners who are gifted.

According to the article, this tool box contains deep box thinking which indicates that the students' knowledge source is robust with the ability to manipulate information in ways that add depth to content and complexity to thinking. In other words, students with a deep

knowledge source can critically examine a topic or an issue and, as presented in this article, manipulate the information to find new perspectives and solutions.

Before this article describes a different view of inside and outside box thinking as it relates to creativity, characteristics of creatively gifted students and best practice are submitted for the reader to become familiar with creative thinkers.

Characteristics

Kessler (2023) offers a list of characteristics of a creatively gifted child. She warns,

> Remember that all children are different. Your creatively gifted child may exhibit some of these characteristics, all of them, or none at all. One of the reasons it can be so hard to identify creatively gifted kids is that they are as different from each other as they are from average children (p.1).

Her list includes these characteristics:

- thinks independently
- comes up with multiple innovative solutions to problems
- has a great sense of humor
- is inventive
- is imaginative
- has a talent for improvisation
- enjoys being different
- works well on his own schedule

- can be a risk taker (p.1)

Kessler's list gives insight into students who not only look at the world through a lens that is different from many thinkers, but also is independent in thinking and doing.

Kessler reflects the writing of the Torrance Center Creative Oklahoma (2023) who share Dr. E. Paul Torrance's ideas about creativity. For example, the Center shares Torrance's words:

> It takes courage to be creative. Just as soon as you have a new idea, you are a minority of one. Torrance found that learning and thinking creatively takes place in the process of sensing difficulties, problems, and gaps in information; making guesses or formulating hypotheses about these deficiencies; in testing these guesses and possibility, revising and retesting them; and finally in communicating the results (p.1).

Creativity

In his book The Search for Satori and Creativity (1979). Torrance presented the important aspects of creativity as fluency, flexibility, and elaboration. These insights and elements along with originality are defined for students as the following:

- Fluency – How many ideas can you bring to an idea, problem, or issue? List as many words/ideas without making judgements about them.
- Flexibility – How many different ideas can you bring to a topic/idea/issue. Consider your ideas from other perspectives.

- Originality – How many original ideas do you have from your lists of fluency and flexibility? Along with fluency, look for ideas that are unique from peers.
- Elaboration – How will you take your best ideas and add details that show depth and complexity of thinking.

These four descriptors (FFOE) are the foundation for creative endeavors students will attempt in Creative Problem Solving (Eberle & Standish, 1996; Treffinger, et.at. 2006). (See Springing Out of the Box below.)

In addition to FFOE, S.C.A.M.P.E.R. (Eberle, 2008) and de Bono's Six Thinking Hats (de Bono, 2000) are other tools that facilitate students' creative thinking and production. As students are building their deep box knowledge, these creative thinking methods enhance their endeavors for out-of-the-box thinking.

The Box

For the purposes of this article the analogy of inside, outside, and in and out of the box are replaced with padding the inside of the box, loading the spring, springing out of the box, and padding the outside of the box. The definition of each:

Padding the inside of the box- Deep box content and thinking. The box must be filled to support the outside of the box. The box is padded with content, previous knowledge, and new learning. This part of the creative process ensures that students have a large store of knowledge necessary to complete a product developed through the Creative Problem-Solving (CPS) Process.

Loading the spring- New and advanced content. To load the spring for students to leap out of the box, there may be new content that students require to create a unique product or to develop new ideas and unique approaches to topics, problems, or issues.

Springing out of the box- Thinking processes. This is the time to introduce or reinforce the Creative Problem-Solving process to students. (See below)

Padding the outside of the box – Product and Evaluation. Once outside the box, students complete the creative process with a product or performance. Extra padding for the box includes evaluating the process and product. The outside of the box has new ideas, products, ways of thinking, perspectives that create padding to strengthen the whole box.

The following is an example of an issue that follows the examples to practice creative thinking.

THE SWIMMING POOLS

Your mentor, the mayor of your city, leaves a message for you to meet her at the city swimming pool on the south side of town during your lunch time. She has talked with your principal to see if you can stay with her for the remainder of the school day. The mayor tells you to bring old clothes and shoes. She wants you to study the situation in order to make a recommendation and presentation for the city council.

Your city has two swimming pools: one in the south part of town that is the oldest; it is called Park Cities (Park), and one in the north that is new and offers sports water park-like slides

and pools. It is called The Slides of Glenview (Slides). Both are connected to a park area. You remember that there have been issues with Park Cities for the past year.

The issue with Park stems from its location and age. The pool is forty years old and situated next to an old fertilizer plant. The pool was shut down at the end of the swimming season last year because of fears of leakage from the fertilizer storage tanks and the old and often repaired cracks in the pool. Because of the pool's problems, age, and location, the city council decided to close it permanently. The town's citizens disagreed with their decision. For the past six months, citizens for both sides of the issue have appeared before the council in order to express their opinions.

Today the mayor and city council are meeting with local citizens, engineers, representatives from the EPA, a scientist who specializes in ground water contamination, and the county representative from Texas Parks and Wildlife who could provide funding for rehabilitation of the pool. Their purpose is to collect data in order make a decision about the future of the pool.

The citizens are ready for the council to rescind or maintain its decision because swimming season opens in four weeks. (Adapted from Boswell & Carlile, 2010)

The following is an example of a way to employ creative thinking as described above.

Padding the inside of the box- Deep box content and thinking. What do students already know about the facts as presented? If their issue focuses on leaking from the fertilizer tanks, ask students to list the facts, then respond with the knowledge they have about each, as an easy way to pre-test. From this step, ask students what they need to know about each of the facts.

For example, what do students know about fertilizer stored in tanks? Is there natural leakage? Is the leakage unusual? How does EPA monitor fertilizer that is stored in this manner? One way to start this discussion is with Richard Paul's Reasoning Model (2005). Once students believe they have all the content they need for the scenario and have used their critical and creative thinking, it is time to load the spring.

Loading the spring- New and advanced content. An issue is presented in the scenario, but there is more than one approach to their presentation. Different students will have different issues to discuss. For example, do students want to delve into the issue of the fertilizer leakage, or the disparity between the two pools and the parks, or an idea from their own experiences. While the scenario may seem straightforward to educators and to some of the students, watch for the students who perceive of issues that are not so transparent (i.e., those you personally never might have considered).

During this process students may delve deeper into content that is beyond their grade level or may talk to/correspond with/research new information. Do not let them skip over this part to spring out of the box. Their final product depends on the depth and complexity from this stage.

Springing out of the box- Thinking process. This is the time to introduce or reinforce the Creative Problem-Solving process to students. Lead the students though the process if they have never experienced it before. Students may go with the first idea they have, but it is important that they consider all avenues of thought before creating their solution.

The steps in CPS listed here are the simplest form. There are others that have been published, but these four suffice for the purposes of this article.

- Fact finding - They have already completed the Fact Finding in the Reasoning Model.
- Idea Finding – This portion requires that students have determined their perception of the Problem/Issue they listed in the Reasoning Model. Students then brainstorm as many solutions to the problem that they can think of. Next, they ask peers to add to their list. Once they have an exhaustive list (hold their feet to the fire to come up with multiple answers), they may move to solution finding.
- Solution Finding – This part of the process asks that students list at least 3-5 of their ideas in a grid with criteria that lends itself to numerical evaluation of each of the possible solutions. Students evaluate their solutions by tallying up the scores of each. The one with the post "points" could be the solution they will try. If, however, they are not happy with the outcome, they may opt for the solution they want. The point is to make them consider all aspects in order to actually spring out of the box with a highly creative solution that no one else has considered.

  Sample Grid

Directions: Evaluate each on a 1–5 scale with 1 being the lowest score and 5, the highest. Tally each.

Solution	Develop a central location pool	Create a new pool for Park	Create a Park similar to Slides
Cost			
Accessibility			
Need			

Note. See CPS for Kids (Eberle & Standish, 1996) for an in-depth practice with this process. (See CPS for Kids [Eberle & Standish, 1996] for an in-depth practice with this process.)

Action- Padding the outside of the box: Students are ready with their final solution and a product of their choice for an audience outside the school. The scenario suggests that they present to the City Council, but how that presentation is made and to whom will be up the creativity of the students.

Evaluation: Students may evaluate their product by your standards, those found in the Texas Performance Standards Project (TEA, 2019), or an evaluation by the audience to whom the product is presented, e.g., Shark Tank©. The extent of the padding for their box will be determined in this stage.

This article offers educators a way to lead students from an issue or problem to an unknown that the students themselves create. While they will use their critical thinking skills, ultimately, it will be their creative thinking skills and abilities that will strengthen the box for them.

Author's Notes:

1. The sample project is similar to one I used with secondary gifted students. After illustrating the Creative Problem-Solving process with a scenario, I gave them another issue to consider. They seemed to ignore the formal process, but actually were doing it intuitively.

2. Some of the references go back more than ten years. I have chosen them because they are standards in the field. You may know of more that align with technology, but I feel it is important to look at seminal work in the field.
3. Thank you to Dr. Matt Fugate who helped with the introduction to this article.

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