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A Team Challenge: Ask Your Gifted Students, “What’s a Red Brick?”

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Here is an interesting challenge I like to give to gifted classes of all ages, including college students. I once gave it to 40 teachers in an inservice seminar class I was teaching on invention. It's really all about structured idea generation, and about getting teams of students to think before they start trying to solve a problem challenge.

"OK class, you gifted and talented students in the room, I want you to break into teams of 4-5 people. Our challenge today is a simple one. I need you to generate ideas for how we can use red bricks. I have a friend whose red brick making factory has made too many red bricks, and he needs some new markets for his oversupply. Your challenge in the next 15-20 minutes is to generate some new application ideas for my friend to think about. Let's begin to list our raw ideas now!"

Undoubtedly, the G&T students start massively dumping raw ideas to paper and make lists of what they would use red bricks for. Over the years I have seen lots of interesting ideas some of which include:

- Decorative walls -Driveway pavers -Planters
- Toilet tank volume reducers (to save water) -Hull ballast for ships
- Artillery projectiles -Artificial reefs

This is a very brief list of the many applications I always see; but, it simply boils down to capturing what happens to pop into the minds of G&T team members while they are engaged in generating ideas. The students generally are not structuring their thinking, because if they did, they would generate even more ideas.

Structured Thinking

Here is what I mean by structured thinking. Don't worry so much about what you can dream up for how to use red bricks.....first determine the characteristics of the red brick. If we do that, we find that red bricks have:

- Uniform shape -Uniform size -Color
- Known density -Known weight -Known volume
- Ability to be stacked -Survivability underwater -will not melt or dissolve
- No ability to float -Resistance to fire damage -Impact resistance
- High durability and long life -Huge compressive strengthetc.

Now having done this “characteristics evaluation,” one can develop a series of application suggestions for each characteristic – resulting in a broad and deep matrix of applications. This little bit of up front prep-time will most definitely result in more total ideas generated. For instance, let’s take a look at the one characteristic identified above as “ability to be stacked”. Here are some specific applications for red bricks having this characteristic:

- Building walls -Building foundations -Elevator counter weights
- Planters-potters -Pillars for construction
- Raised amphitheaters -Steps into buildings or other structures
- Pools for fountains -Swimming pools
- Underground storage vaults -Free-standing book shelves
- Ballast for ships -Room partitions in houses, commercial buildings
- Privacy barriers -Wind protection barriers to structures/homes
- Soil stabilizers on sloped ground

Some of these applications you may instantly recognize and some may seem quite unusual. The point is the characteristics evaluation orders thinking so new idea generation can be focused deep along one line of reasoning –

“ability to stack the bricks.” This kind of idea generation can be duplicated for each identified characteristic; and it will result in many more ideas generated by your gifted students, a broad and deep compilation of ideas.

Putting it into Perspective

This example is illustrative of how we as humans think. Think about what happens in kindergarten when young children are allowed to play with wooden blocks, that old standard activity we all remember. The first thing energetic children do, is build something with the blocks. Their young minds "apply" the blocks, gaining satisfaction with making something.

They do not necessarily theorize about the blocks or organize them by characteristics. This kind of logical analysis comes later via their teachers. First, they are encouraged to explore and be creative. Our minds are always looking first to create, even as adults. By the way, this exercise is exactly what the legendary Dick and Jane readers did. They used a see and say method to engage the natural enthusiasm of children, allowing them to have quick success at reading. The teachers then filled in the gaps with word pronunciation, meaning, spelling, and when done right, with phonics as well. The theory and formalized process of reading came after the empirical success. The characteristics evaluation of the red bricks is no different. We naturally resort to "application" at the outset when confronted with something new. It is a basic human reaction. By applying the red brick, we gain familiarity and success with it. Organization and structured thinking take us the rest of the way by hyper-charging our thinking and creativity as well. Is all this not reminiscent of that wonderful story *Rocket Boys* (1998) later made into a movie, *October Sky* (1999)?

In the business world of project managers and supervisors, 70-80% of any project challenge is spent in planning and analysis. Here we bound the problem, ask critical questions, and fully understand what it is we are trying to accomplish. After that, the rest is execution. Planning and organization skills are very important. One cannot afford to waste time and resources.

Here is another example of something I do with students and teachers that reinforces this type of thinking. I throw a ping pong ball down a long tube and allow students to use anything they want to get the ball out – except of course turning the tube upside down. Many students try tape and even gum on the end of long sticks, or use two sticks to wedge the ball out. Some have even tried to vacuum the ball out. The real answer is to think about the characteristics of the ball, and when one realizes that it floats, simply pour water into the tube to bring it to the top.

When you do the red brick challenge with your classes, look for G&T students who try to reshape the paradigm. These creative individuals may launch into out of the box thinking to bypass restrictions to increase application potential. They might say:

- Why does the brick have to be red?
- Can it be another color?
- Can it be made of something other than stone/cement?
- Can't we change its size – make bigger and smaller versions?

These young and gifted iconoclasts are valuable paradigm smashers, redefining the world to gain advantage. Very often, the best inventions result from twisting conventions and looking at the problem from a new perspective. That's how Post-it[®] Notes were created. The weak glue that holds the notes was really a failed glue that was supposed to be much stronger. The failure was turned into a huge market success (lemonade from lemons).

Successful inventions and new businesses don't have to incorporate wholly new materials or sophisticated concepts. They can be a redefinition of what already exists. Creative teens do this all the time when they find new ways to wear clothes – men's ties for belts or headbands; multiple layers of colored pullover shirts; torn pants legs on jeans; a florescent choker necklace. It's all about looking at the characteristics of something and exploiting those traits that offer the best opportunities. Turn your gifted students loose and have fun. Try the red brick exercise.