

4. Creativity in Your Classroom

Planning and Understanding

How can you help creativity flourish in the Gifted & Talented classroom or with groups of youth?

Modern brain-based research strongly indicates we would do well to challenge gifted students with more open-ended problems, avoiding the “given x, find y” type of problems we have all seen ad nauseam. The real world is chock filled with open-ended problems, challenging grown-ups to think before acting. Experience has taught me that 80% of the hard work in solving a problem is determining what the problem actually is, and developing a plan to solve it. The rest of the problem, once this front-end work is completed, is the execution of the solution.

This 80% rule actually was the secret behind Tom Edison’s work. He spent large amounts of time planning and organizing work to be done in his lab by his cadre of skilled professionals. His secret was to plan it so well, that all he had to do was get involved near the end to tune and tweak his new products to perfection. This is exactly how he leveraged his time across so many projects at once, at times, as many as 40 or more. It is the entire basis for his concept of the R&D lab, one of his greatest inventions.

Try this with your gifted students. After challenging them with something relevant to their school work and the real world, before they start in trying to solve the problem, encourage them to address the following suite of questions that will help focus their thinking:

- What exactly is the problem I am trying to solve?
- Do I fully understand the problem?
- Does it resemble a problem I have already solved?
- Has someone else ever tried to solve this problem?
- What do I already know about this problem?
- What don’t I know about it?
- Where can I go to get the information I need to solve it?
- What is my plan to solve this problem?

These questions can help students develop a discipline for creative thought. Being creative is not being eccentric in thought. It is the ability to see and combine everyday things and subject matter in unusual combinations. You and your gifted students have seen this kind of thinking before in your school. It is taught in geometry classes, specifically when solving geometry proofs. Geometry is a powerful problem solving discipline, one that transfers over to other subjects.

Stimulating Creative Thinking

Offer an open-ended design challenge that requires a team approach of maybe 5-6 students who can “hash-out” the problem. The most creative on-the-job solutions I have witnessed occurred when a team becomes totally immersed in a problem and actually re-defines the problem. At this point, the team “owns” the problem because they have uniquely defined it... and then creativity flows like a river. When a team personally defines a problem, it takes on a spirit and dedication all its own.

In teaching gifted 8th graders about invention, I never fail to see this particular event happen. When I ask students to break into teams, the students naturally pair up with friends. In doing so, they instantly bias their team's viewpoint. Head learners always pair up with other head learners. Hand learners likewise pair up with other hand learners. Normally, my student challenges involve the use of both head and hand thinking. They have to manipulate a piece of paper to achieve some end result. What I always observe is the hand learners dive right in and begin folding, cutting, and what not, to get an approach underway---a true trial and error tactic. The head learners stay quiet for a while and often achieve little early activity, instead discussing the problem and making some feeble attempts to manipulate the paper.

The key to balance this out is to inter-mix head and hand learners on the same team so they can learn from each other. The hand learners almost always shine in this type of activity. They seem less concerned with failure than the high-grade average students. I point out again that creativity may not always be linked firmly to IQ. We are creatures of multiple intelligences and when being creative, all skills come into play. Also pay attention to the girls who also exhibit a keen desire to invent. I have seen teams of girls outshine boys in almost every challenge I have conducted. It may be good to mix the girls up on the teams too. Invention and creativity are best learned from others. Encourage Gifted & Talented students to ask each other.....

- How did you come up with that idea?
- What made you think of that?
- Where did you learn how to do that?
- Can you explain how you arrived at that?

In the business world, team problem solving is a natural part of the day. Sometimes you might be a member of a team and sometimes you might be leading the team. Team members are chosen for the team based on their knowledge and areas of expertise. Constant learning is a hallmark of the business world. One would be terribly mistaken to think that once you enter the job world, learning stops! It is just beginning. Work today is another kind of school with a very focused purpose. Team members and co-workers always learn from each other. Start your students on the path of learning from each other. It is a particularly potent form of learning.

Let me tell you a little story about the work environment I had. Our research group was required to solve problems for the entire company, no matter where they came from. This certainly kept us on our toes since we had to be able to understand how all four major departments of the corporation worked and interfaced to the others. As a technology consultant, my engineering skills were always being stretched into new areas. One day, I could be helping nuclear power plant engineers with a robot application--the next day--consulting on the strength and dynamic testing of wood poles--the next day--developing micro sensors at a local college for field testing. My point here is the world of work becomes much more complex and multi-tasking than traditional school. How you work is as important as what you work on.

My good friend and long time research colleague, Mel, and I were usually called upon to solve some of the more arcane problems and evaluate the more esoteric technologies that senior management wanted to know about. To keep ourselves sharp we played a little game. For many years, I never scheduled any appointments in the morning during the 10:30 to 11:00 time frame. Mel would usually come sauntering into my office with a full coffee cup and simply start a conversation with the same two words....."What if?" and then he would quickly present a problem and we would discuss the ramifications. Can you see how something this simple can get the creative juices flowing....especially for your gifted students? What do you think their reactions would be at such a challenge?

Here is a powerful way to visualize a problem, and creatively explore alternate solutions. Once you have introduced the problem, have the students:

- Write a humorous story about the problem, perhaps carried to the extreme;
- Compose a science fiction story showing how the problem affects others, and what alternate solutions might do to society;
- Write a poem about the problem using bold and sparkling language and hyperbole to embellish it. Use sound effects too;
- Construct a play with team members acting out certain aspects of the problem and solutions; or,
- Draw a picture of the problem, giving its aspects color and form.

Once your gifted charges have done this, they can examine their creations and their relation to their problem. I guarantee they will either come away with new insights or maybe even want to re-define the problem.

Besides learning from each other, Gifted & Talented students can learn from inventors, studying how they solve problems. There is a rich literature available in the biographies of inventors, and accounts of famous inventions. You can always invite an inventor to visit the class and discuss some of the problems she solved, the major challenges she faced, and the creativity techniques she uses.

Classroom Activities

- 1) How would your gifted students organize the academic day to make maximum use of creative activities to be done in class? Would they lengthen the traditional class time, or do something else like combine subjects? How would they prefer to be taught?
- 2) How would your students feel about doing more hands-on activities in class, where they had to build models and such?
- 3) If your school has shop classes or home economics classes, how do the students feel about these? Do they feel a connection or benefit between switching the academic day between head and hand activities? Do they look forward to such classes?
- 4) Have your gifted students interview their parents and grandparents about how they think school should be taught? How was their academic day when they went to school? What were their experiences and opportunities for creativity?
- 5) Postulate that the moon becomes a habitable place in our solar system and is populated and made into a productive habitat. Have the students develop a story or timeline for how the moon advances, and becomes a society unto itself. Discuss how this might impact relations with Earth. After having done this, let the students read Robert Heinlein's class science fiction novel, "The Moon is a Harsh Mistress" and see how it compares to what they envisioned.
- 6) The early settlers of America had to make due with what they had available in the new land, making them quite creative. In fact, many times their lives depended upon their creative instincts. Discuss this in class and try to envision how such an inventive spirit can be made to flower again in modern day

America. Talk about the inventive efforts of Benjamin Franklin, Thomas Jefferson, Eli Whitney, and others.

7) Have your gifted students design a list of activities that are required to completely paint the classroom. This task is to get them familiar with planning and organization...and which as I mentioned earlier, leads to being able to see both the forests and the trees. Students should list typical things like:

- Move desks and furniture out of the room or out of the way.
- Protect windows and other areas with masking tape and paper covers.
- Lay down floor mats and covers so paint does not stain the floor.
- Prepare walls and ceilings for painting—by scraping and patching.
- Apply first coat of paint.
- Apply second coat of paint.
- Remove floor mats/covers and tape and papers.
- Restore room to original arrangement.

After this, perhaps give the students another more complicated task so they can see how complicated planning and organization can become and why some good advance thinking saves a lot of mistakes later.