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Engaging Your Gifted and Talented Students in STEM Programs: Head and Hands andHeart

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When you attempt to engage your gifted and talented students in unstructured team-based problem-solving or project based activities, current wisdom says to enable their heads and hands in a STEM-like classroom gestalt. Remember also, you must engage the heart, before you enable the head and hands. You must capture their "intellectual souls" first, so you can totally empower and enable the rest.

As silly as it may seem, your G&T students must be given permission to use their skills, whether acquired or innate. Years of rigid school routine has drilled them repeatedly about what is acceptable in class. As a teacher, it is your job to set them into motion, giving them confidence to strike out in teams and practice leadership.

Let's explore some of the "intellectual soul" stuff I am referring to.

–Preface assignments of projects and teams with discussions and lesson plans that show how technological advances and applications of technology have contributed significant improvements to quality of life around the world.

In our modern world, 70% of the annual economic growth of a mature nation is generally due to technological advances. Study the evolution of technological advances and how they have:

- Improved life in both developed and developing countries
- Created new industries and jobs
- Spurred economic growth
- Helped bring about peace through prosperity
- Made great strides in health and safety concerns
- Improved the quality of the environment.

Capturing the spirit of excitement through the historical perspective of how technology can be man's best friend will show your gifted students how they can be part of this incredible legacy by participating in team-based design and problem-solving.....harnessing technology in the service of humanity. This can be very appealing and productive for young gifted students who are socially aware of world events and problems facing underdeveloped nations. Fire your students' passion—help them understand the significance of applying technology for everyone's benefit. Pronounce them just as important as the great innovators that went before them. Make sure they understand their ideas and investigations can matter.

Show how folks who were not considered inventors/innovators changed the world for the better. Search this information out as case examples. Look at how game companies use young folks to design and invent new games. What young folks in your state invented things that went on to become new products and/or the basis for new companies? Try researching this on U-tube. Convince your G&T students they are each forces for good in the world!

–Invite role models into your class to talk to your gifted students.

Nothing convinces young minds than someone who has done what they are trying to do. This is high-octane gasoline for your students. Local inventors can spend an hour or so with the students to re-live with the inventor what it took to actually develop and implement his invention(s). What was the process he used and how close was it to what the students are doing?

The inventor can discuss the trials and tribulations experienced with trying to do something new. What did he do when he needed help? What resources was he able to tap into? How did he handle failure? What did it feel like when he experienced success?

An inventor who can bring actual samples of their invention into the classroom is probably the best way for G&T students to see the relevance of what the inventor was trying to accomplish. Classroom props are absolutely powerful in tying young gifted minds to something physical and real.

–Orient your gifted students to want to solve “relevant” problems—panoramic problems that are timely, broad in scope, and visible in today’s world.

The problems can be national or international. No G&T students can resist a chance to show their concerns for doing good things. Involve the class in selecting problems they feel are important. Identify a list of world-class problems and concerns that teams of students would like to tackle. Let your students select who they would like to team-up with and what problems they as a team will address.

This is all about getting the student teams to own the problem....to summarize in writing:

- What the problem is
- Why it should be solved
- Benefits of the solved problem
- Their plan for solving the problem

Consider this their compact and commitment with you—a spiritual contract bonding them to the project....a heart and soul commitment.

–Give students permission to fail and try again.

Abolish the testing paradigm mentality that has infiltrated and so horribly poisoned real learning. All invention, new product development and problem-solving, always involves lots of learning on-the-flyadapting to changing situations as new information becomes available. Just as the problem being considered morphs and changes in the minds of the solvers as they learn more about its intricacies, so do the techniques being used to resolve it. Problem solving is highly fluid and all G&T teachers must prepare students to cope with and accept it as such. The time-honored nostrum of “given this-find that” is so yesterday. School is supposed to be about exploration—thus the need to break a century old tradition of overly simplified problem-solving.

The greatest inventor of them all, Thomas Edison, always credited his mother for his success. According to Tom, she imbued him with four basic life-long tenets which he followed with a passion:

- Learn from failure—always try again
- Never stop learning
- Read all literature
- Learn from books as well as from others

All in combination made his life rich and rewarding; and unleashed a technology-driven economic philosophy that is still expanding and providing tremendous good around the world.

–Encourage students to be self-actualizing.

It is OK for G&T students and team members to go ahead and try new ideas and approaches to solving problems. They do not have to check everything with you first. Their project plans dictate how they should proceed.

This is another unfortunate left-over of the traditional academic day, where absolutely everything must be approved by the teacher before it can be executed. You have seen the students constantly ask “Now what?” “Is this OK?” or “What do I do next?” This kind of stultifying thinking neutralizes the liberated thinking of team-based projects. Empower your G&T students to get up out of their chairs and make something happen. This is often tougher than it seems for the students have had six years of this hand-holding by the time they reach your middle school class—having little experience with being intellectually on their own. It is up to you to break this paradigm and bury it. Help them discover the joy of doing something on their own.

Editor’s note-

Check out Harry’s best-selling books at www.giftededpress.com.