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Why this STEM Stuff is Important

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Let's examine to whom and why this STEM stuff is important.

In the G&T Classroom

STEM is meant to engage students in a very powerful way—combining content and process. It should exemplify what is meant by "integrating the curriculum."

Working in a STEM team-based setting promotes:

-Better overall problem-solving skills -Increased student confidence and self-esteem -Mastery of a life-long method/process for solving any kind of problem -Planning, researching, organizing, and executing project activities -Learning how to ask meaningful questions and draw conclusions -Evaluating problems from multiple viewpoints—360 degree problem solving -Better understanding of collaboration among students -Engendering potential multiple solutions/selecting the best solution -Ownership and leadership of the problems being addressed -Creativity and new idea generation -Improved written and oral presentation skills -Reductions in "math-o-phobia" (hopefully) -Diversity in thinking and ideas -Respect for others and their thoughts -Self-actualization and leadership -A drive for self-learning -Relevance in the classroom.

STEM teaches G&T students how to solve problems in an inter-disciplinary and multi-dimensional manner, which leads to better and more complete solutions, higher quality solutions, to meaningful problems.

The key in a good STEM program is to make sure the classroom activities and design challenges are driven by content and subject standards—sometimes referred to as "content driven design challenges."

For the Future of G&T Students

Collegiate learning is most definitely done in team-based settings; and STEM introduction in middle school is a terrific entrée into this paradigm, with hopefully more practice in high school. Since college paves the way to a productive professional career, STEM helps promote the key skills needed in a globally competitive world:

1. Analyze Information; 2. Convert Information to Knowledge; 3. Sell New Ideas to Management; 4. Communicate Concepts Clearly and Succinctly; 5. Plan for Timely Implementation; 6. Be a Team Player; 7. Use Multi-dimensional, Integrated Problem Solving; 8. Seek Learning Opportunities.

Companies are hungry for people who can convert information into new strategic products and services with which they can compete. Application rules in the business world, and STEM teaches the application process. In the work-a-day world it is not just about what you know….but about what you can do with what you know, and how fast you can do it! STEM is high-octane fuel to feed the fast-paced, unforgiving, highly competitive, global economy. Remember,

Information and Knowledge are **Tactical.** Application is ***Strategic.***

Some recent words from Google about how Google hires people……..
"We're less concerned about grades and transcripts and more interested in how you think. We're likely to ask you some role-related questions that provide insight into how you solve problems. Show us how you would tackle the problem presented--don't get hung up on nailing the "right" answer."

We might be headed for a post GPA world, where employers are less concerned about where and how you obtained knowledge, and more concerned with how you apply it; and how you must always be in a constant state of learning new things. This is where the STEM philosophy of solving problems shines. This is also the exact philosophy Thomas Edison used to create his many new products, and what guided him when hiring his incredible staff.

Here is an example of how STEM can rumble down through the years. 70% of our annual economic growth is technology-based. Edison died in 1931, and today his accomplishments are still 10% of the annual American economy….about $1.6 trillion a year due to Edison; and some economists believe Edison is responsible for ¼ of all the jobs on the planet. Edison is the great granddaddy of STEM; and STEM is a huge force for economic and social good on the planet.

STEM can certainly lead to above average salaries and compensation. STEM-literate workers could make $75,000-$150,000 a year. The average U.S. worker makes about $46,000 a year.

According to college presidents in New Jersey, there were somewhere between 800,000 and 1,000,000 high tech jobs that went unfilled last year because of a lack of STEM-based skills and capabilities. STEM knowledge and experience is an important way to remain employed.

For G&T Teachers

STEM has been shown to help students with special education needs by allowing them to engage in a way that uses both heads and hands, thus instilling confidence and self-esteem where little may have existed before. This author has worked with many special-ed students and constantly notices how they can exceed all expectations when engaged in design challenges—often leaving high performing students struggling to keep up. STEM is a powerful option for engaging special ed students and those disaffected. G&T teachers…..use this option early and often to bring that special student into the mainstream.

Where the hide-bound traditions of the classroom and the "rules of the academic day" reign supreme, STEM is like fresh air cleaning out the cobwebs of rote learning, allowing students to go where few have gone before. Open-ended problem solving, learning as one goes along—exactly how it is in the business world—will bring students to their feet, literally getting them up from their chairs and interacting. This allows the G&T teacher to empower students to fail, and re-learn, re-shaping their approaches until they zero-in on the solution to problems…and along the way, learning so much from each other. Take a deep breath G&T teachers—enjoy the cool invigorating breeze!

STEM also empowers you to show parents what their gifted children can do. Display their design projects around the school. Invite parents in to see these projects. Get some PR in the school newsletter or websites. Let the students do the advertising of their work. They are the best ambassadors of the value of STEM.

A STEM classroom helps develop and transform teacher skills, converting them from the "sage on the stage" to a Socratic style; and one that is amenable to sharing a classroom with other content experts as design projects grow and mature.

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STEM can benefit lots of people. We touched on a few of the most important aspects here. Explore what other schools have developed and gained experience from with their own STEM programs. Work the Internet and certainly consider attending conferences and seminar. By all means write an article about your G&T experience and contribute to the knowledge base. Tie this into how STEM thinking is a powerful socio-economic force that can solve searing problems like world hunger, environmental crises, and alternate energy production.

Editor's note-

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