

**Changing Education –Thoughts about Creating and Inventing Tomorrow’s Schools**

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“Education is only a ladder to gather fruit from the tree of knowledge, not the fruit itself.” Albert Einstein

**Introduction**

All teachers and students should take an interest in how the academic day will be re-invented as a result of the incredible changes going on in educational technology, telecommunications, distance learning, and hand-held devices. How do your GT students see their classroom and school changing? As users of educational technology and services, how might they want to be taught in the future? How does this change the relationship between teacher and student, teacher and teacher, student and educational resources, and how they do homework?

Make sure students engage this topic, understanding how today’s classroom came into existence and for what reasons and motivations. Take your students back 140 years to when public schools first came into their own. What was the world like then? What kind of economy powered our nation? Research and discuss what motivations changed schools, and the effect of technological development upon schools. Does the business world and life after graduation serve to motivate changes in the classroom? Don’t forget the impact of a globally competitive world. What role did automation and flexible manufacturing have upon the academic day?

Education is a very big concern for all nations. Is STEM/STEAM just another part of the academic day, or is it meant to be something everyone studies – thoroughly integrated into the fabric of the academic day – the backbone if you will? Where is our concept of school headed?

**A Possible Future Scenario for School**

Why not consider a studio experience every day for all GT students where they immediately apply their lessons learned – even if they do not fully understand the entire lessons? This is not harmful, but immensely helpful as it will inculcate within them a healthy expression for application. Humans do this all the time, and they have done so for many centuries. Ancient engineers did not understand the laws of physics and such before they built the pyramids, buildings like the Parthenon, great sailing vessels, gothic cathedrals, and the famed Roman roads and water delivery systems.

So how about we re-structure the academic day? Have some recitation style classes in the morning, and students will work in team-based studios in the afternoon. . . . . working on open-ended design challenges using multi-disciplinary thinking, and multi-faceted problem solving paradigms. This would give them half-a-day, every day, integrating their curriculum. Morning recitation teachers would be involved as mentors and team teachers in the afternoon activities.

For grades 1-5, teachers would still teach distinct subject matter as they do now. Team-based design challenges would be conducted every month or so to start the studio inculcation process. For grades 6-12, the full-blown morning recitation and afternoon studio format are implemented. For grades 6-12, it might look like this with subject matter clusters that expand on the commonalities between the subjects being discussed:

-Monday: Science, Math, Music, Art -Tuesday: History, Geography, Sociology, Civics -Wednesday: Language Arts, Writing, Public Speaking -Thursday: Creativity, Invention, Technology, and the Economy -Friday: Music, Art, Design, Entrepreneurship.

Art has been taught in studio format “forever,” and art should be integrated into design challenges too. Budding artists should be team members, bringing their ability to visualize into play, especially where teams are designing new products.

History oriented and language arts students are also valuable team members for they can provide historical expression, and the ability to communicate one’s ideas and conceptions in both written and oral form. History/sociology also hold the keys to understanding how man’s natural inventive and entrepreneurial capabilities have changed the world, impacting our cultural/civilizational fabric. The author believes this alone is powerful motivation for a highly integrated school curriculum.

“STEM is not just a part of the curriculum for the gifted. It is the curriculum!” -Dr. Maurice Fisher Publisher, Gifted Education Press

Going further, this new school paradigm should attempt to solve important problems we have at present:

1. “Math-o-phobia” is a serious concern in most schools with both teachers and students experiencing it. Early in grades 1-5, students should be immersed in the “fun and joy” of math to experience its pervasive influence in our lives. The use and perspective of math in all courses must be taught by all teachers. The high paying and important leadership jobs in the global economy are totally suffused in mathematics. It is essential that students be immersed in math...and teachers hired and kept on staff based on their abilities to understand and demonstrate this to their students. A student lost to math by 4<sup>th</sup> or 5<sup>th</sup> grade will never be recovered. Therefore, grades 1-5 are crucial for retaining a student’s interest in math. Teachers in the early grades must be math competent and versatile; able to show how math is important and highly relevant to the world.

2. Creativity, imagination, and invention are natural human characteristics. Modern brain-based research has confirmed this. We are a species programmed to handle and deal with complexity. Children want to make connections between things (subjects). Lesson plans and curricula should be implemented that foster and celebrate these characteristics, through independent and team-based activities throughout the K-12 experience. Children are also highly facile and need to be able to manipulate materials and build things – to express themselves in 3-dimensions. There must be opportunities to do this, and plenty of them.

3. STEM/STEAM should not be taught as if it were a separate subject: not included under career and technology education, nor in AP courses, or lumped with robotics activities after school, nor in any other admixture/hybridization of subject matter. STEM/STEAM should be the spinal column of education, an education geared around the practical and meaningful solution of problems, where the traditional subjects enable this process and content taxonomy. This taxonomy portends: an end to the “pizza-pie-subject” model of the academic day, and a major revamping of how teachers are taught to teach. Teaching STEM/STEAM any other way is flat-out wrong!

4. Education does not exist as though it were some never-never land between childhood and the grown-up world. It should be the conduit to productive citizenship and employment. School-to-work is the operative term here and the school of tomorrow should have liberal doses of career exploration. It should also have role models from the grown-up world who are engaged during regular school hours to talk to students and conduct classroom activities that enlighten and enhance student understanding of what will be expected of them. This includes students becoming thoroughly familiar with how our economy works, the role of capitalism as a powerful force for good in the world, how closely tied capitalism is to our freedoms, and to be creative in the first place.

5. Entrepreneurship and new product development are the very basis of our economic progress. They are often so foreign to the modern classroom that students have almost no idea how new products affect them and the world. The study of inventors, entrepreneurs, and innovators can easily be justified as links between science, history, and economics and would powerfully reinforce the school-to-work linkage.

With the growing popularity of Massive Open On-line Courses (MOOCs), why can’t students engage these resources as regular educational activities – learning at home and having those lessons refined via Socratic teaching methods by their teachers?

Students should also regularly experience panel discussions among varieties of professions, looking for both similarities and differences between how people think, create, design, and solve problems. Why not have students attend evening seminars, along with their parents, to hear engaging, timely, and topical discussions...if for nothing else but to get into the habit of appreciating that learning is continuous, life-long, and not always found in a traditional classroom setting.

Think of the huge human resources available through business and professionals that could be brought to bear in local schools. This practical problem solving experience would be a giant help in the afternoon studio activities. Can you see a place for working world and retired people in your school? Can you see how such interactions help students understand how working folks are always in a state of learning just as they are in school?

“Let us think of education as the means of developing our greatest abilities, because in each of us there is a private hope and dream which, fulfilled, can be translated into benefit for everyone and greater strength for our nation.”

- John F. Kennedy