

Both Ends of the Curve: Teaching Average, Gifted and Special Education Students in the Same Classroom

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I am a privileged fellow, being able to have worked in industry as an engineer/inventor for almost four decades; and at the same time, to have worked with classroom teachers to bring the excitement of STEM-based design challenges into the classroom. Now in retirement, I am working with teachers and publishing resource books for them at the national level. What I have to say here is based strictly on anecdotal and observed behavior gathered when engaging middle school students – my favorite audience. I believe there is an interesting opportunity to explore and utilize the similarities between gifted/talented and special education students.

Both Ends of the Curve

The holy grail of the educational world is the bell curve, the statistical bedrock of IQ testing, with its cherished quartiles and such. At the high end of this curve are the G&T students, while at the low end are the special education students – both to my way of thinking being underfunded, neglected, and under-appreciated. It takes guts and leadership to defend both of these groups of students, and like with most large organizations, leaders are in very short supply. It is so much easier and politically safer to address the “big hump” in the middle – thus the one size fits all educational system that chafes and irritates its teachers and customers.

My experience tells me both ends of the curve may present great opportunities for creativity and innovation, but these two powerful forces for economic growth are generally not appreciated in the education community. If paired together, G&T and special education students might produce some interesting and revolutionary new product ideas. I have taught average students, gifted & talented, and special education students, and here is what I say when they are engaged in design challenges: 1) The average students move off the dime relatively easily, getting some ideas out on the table, willing to risk failure and try again; 2) G&T students are more reticent to try – for risk of failure – and are prone to over-analyze, proposing complex solutions and stalemating among themselves; and 3) special education students are wild cards, often surprising the “hell” out of me with daring, out-of-the-box ideas, and a willingness to try again.

Over the years I have been doing this, I ask teachers to compose teams of students with a mix of average, G&T and special education students so the teams can experience some success and students can learn from each other. This strategy usually works out fairly well. It is quite similar to my project management days in industry – making sure I had the right combination of folks on a new product development team.

For the special education students there seems to be a playful fearlessness about the activity – almost as if they don’t know what they don’t know, so they have nothing to lose. It is not a minimum sum grade-based activity for them. Some just need a little more time to figure it out, but they do. In comparison, the gifted students, who by strong conditioning, are looking for the “right answer”.....which does not exist in open-ended design challenges. G&T students see the activity as just another grade-based event. In the vernacular, “The dim bulbs glow and the bright ones dim”... when hands-on activities are undertaken. How about a combination of G&T and special education students? I believe there is common ground to be explored and capitalized upon. How might they be put together for periods of time to “teach” and influence each other?

Let’s start with the similarities I have observed within these two groups of students:

- Marked differences in emotional and academic intelligence (within each group and between them)
- Have radically different (perhaps non-rational at first thought) learning styles
- Time to process information varies greatly
- Impatient with status quo
- Highly opinionated
- Like music, poetry, and writing
- Are intelligent in ways we cannot yet statistically measure
- Tend to be social outliers, yet can be overly kind and understanding

- Animal lovers
- Socially concerned for the underdog
- Highly aware of environmental concerns

Certainly this is not a hard and fast list of similarities, and I readily admit they are limited to my experiences. But I have visited many schools in the course of 40 years...so there is some credence to my observations. What would happen if these two groups of students interacted once or twice a week at first, or maybe in special after-school invention activities? I think this should be explored. Here are some socially relevant, human interest design type challenges I would propose these two groups cooperatively undertake:

- Design a robot to assist handicapped or home-bound people
- Compose and present a play about "being different"
- Create a website/clearinghouse website that would allow for adopting or rescuing animals
- Design a solar system or attached greenhouse for the school
- Create a variety of games that could be built and used at a school fair to generate money for charity; create a miniature golf course
- Design low cost housing for under-developed, resource limited countries
- Design a hospital robot that could assist nurses, deliver supplies, and bring the doctor's presence to patient bedsides

This is not an exhaustive listing of possible design challenge ideas, but meant to represent the kinds of design challenges I believe these students would enjoy jointly undertaking. Engage your students at both ends of the curve to develop their own ideas for design challenges. Think of the incredible array of topics for consideration like electric vehicles, nanotechnology, special smart phone apps to help people or be used for health diagnosis, etc.

Let us not forget, some of these students may not go to college, for a variety of reasons. Is it not our responsibility to address that possibility and equip them as best we can for a productive and responsible life? I am convinced that design challenges and real-world problem solving multiply student learning non-linearly, greatly leveraging comprehension and motivation. Both types of students can benefit enormously from self-esteem booster projects like these.

Epilog

A great deal of our technology-driven world was brought into focus by people who did not go to college (just type in "did not go to college" on an Internet search and be ready for some big surprises). Obviously, such people did change our world and learned without formal schooling. Thomas Edison, the man responsible for 25% of all the jobs on the planet was considered "retarded" by his little school room teacher, and later home schooled by his mother.

Why not have these two groups of students explore how people overcame odds to make major contributions to the world and helped people? Have them study such people on the Internet and visit the school library to learn more from your librarian/media specialist. Did you know there were U.S. Presidents who never went to college? Who were they and how did they make their contributions? Here are a few names of famous people from all walks of life to get you started. Some of them went to college for a few years but did not finish: -Steve Jobs -Bill Gates -Dean Kamen -Irving Berlin -Ray Bradbury -Mark Twain -Walt Disney -Michael J. Fox -Ben Franklin -Thomas Edison -Henry Ford.

Have students look at various professions and how many people within that profession did not go to college. For even more fun, let them redesign school so it is more interesting and conducive to bringing out the best in students.

There is huge potential at both ends of the curve, and it may go to waste if not addressed. These students can grow up and change the world just because they think differently. Look at our American history of technological development. Reasonable, average people do not generally shake the country to its core. They tend to be improvers of what has already been developed. The paradigm busters tend to be unconventional thinkers, icon smashers, and rebels – people who are generally not afraid to change things. Think of Steve Jobs as the misfit designer, the stone-thrower; but also the guy who put Apple on the map, and high speed telecommunications in the hands of many people.

I think both ends of the curve can be powerful and valuable adjuncts to our world that include visionaries for making leaps in our economy. It is time we stop calling them geeks and nerds and losers. It is time we start thinking more seriously about them. The real purpose of education is to help people realize their potential.... not categorize them.