



Heart of the Matter

rainbow

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community
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Educating the Innovation Generation Part 3: *What Discourages Innovation?*

In the first of this three part series, we defined innovation as creative problem solving that is useful. We gained perspective on the new generation of students, and learned that innovation will be required of 21st Century students entering the work force. In fact, some posit that innovation will be required to save the human race, given the grave circumstances we find ourselves in, with issues such as global warming, diminishing natural resources, and the growing divide between the rich and poor.

In Part II we explored Tony Wagner's concepts in his book *Creating Innovators: The Making of Young People Who Will Change the World*, in which he defines Play, Passion, and Purpose as the three qualities people, schools, and work place environments need to have in order to encourage innovation. In this third part, we will discuss barriers to innovation, and then in Part IV we will look at one particular school, Rainbow Community School, which has designed an educational program that encourages innovation.

What impedes innovation?

Unfortunately, the test-driven curriculum of public and prep schools does the exact opposite of encouraging innovation-- one of the reasons the United States' educational rankings, internationally, continue to sink in relation to other countries that embrace innovation. We are so stuck in a culture of conventional achievement that the educational system lags decades behind culture. As a society, we are quickly moving through the Information Age into the Age of Innovation, yet the educational system is still in the dark ages of the Industrial Revolution, the age during which the "factory model" of public education was created, which is the format schools are still structured around over 100 years later. Innovation happens in the US *despite* the educational system, certainly not because of it.

An obsolete educational system

Our educational system is called the "factory model" for two reasons. One, it operates much like a factory – a top-down, hierarchical system

designed for efficiency and mass production rather than for human quality of life or innovation. Second, within the factory model, people are educated in such a way to prepare them for “factory life” – either as a line worker or a manager.

As we saw in Part I, large bureaucracies are extremely slow to change, and there is perhaps no bureaucracy larger than the US school system. A factory-model system is not highly adaptable because it is *complicated*, rather than *complex*. To understand the difference, think of a watch. A watch is a *complicated* piece of machinery with many moving parts. However, when one piece breaks, the whole thing is broken until it is fixed. An organization is *complex* if it is more akin to a living organism rather than a machine. It is *adaptable*. When one piece breaks, the rest of the system self-organizes to adapt and keep functioning, or, in a truly innovative system, it re-organizes itself to function *even better* after adapting. Some say our educational system is broken. Sagutra Mitra, winner of the TED Award of 2013 for his talk on Self Organized Learning Environments, says it isn't at all broken because it actually functions well; he says our educational system is simply *obsolete*.

Consider this: Half of all that is learned in the first year of a tech degree is obsolete by the *third* year. We have to prepare students for jobs that don't yet exist and to solve problems we don't yet have. Clearly, we need an educational system that is highly adaptable.

The factory model is also incredibly wasteful, partly in terms of unsustainability, but especially when one considers the massive amount of wasted human potential. There are thousands of talented, caring teachers and administrators who have to temper their greatness in order to fit into the system. There are millions of children who are in the prime of their learning life – ready to be invigorated and imaginative, who sit bored and distracted in class. Many of these children are considered a “broken” piece in the machine and therefore have to be “fixed.” Most of the world's greatest innovators throughout history did not fit into the system, yet today's highly creative or highly kinesthetic individuals are, sometimes at high cost, “re-programmed” to *fit*, rather than to flourish. We will never know how many great ideas, great learning moments, or great lives were wasted at the cost of the system.

The entire premise of management in a factory-based educational system is around behaviorism. The principle of behaviorism was a break-through in early psychology, a field that was born around the same time as the industrial era when the public school system was becoming established. It is a rewards and punishment philosophy, which was highly effective many decades ago. The promise of extrinsic rewards would encourage students to complete an assignment on time, for example, and the fear of punishment would keep them behaving. The long term strategy was that continually holding out a carrot would encourage students to strive to become “managers,” with the promise of power and wealth; and the fear was that if you weren't smart enough or behaved well enough you would be stuck on the factory line, or worse yet, a criminal or a pauper.

Today's students aren't buying it! This is completely mystifying politicians, educators, and parents. The system of behaviorism is *so engrained* in the psyche of almost anyone over the age of 35 that it is hard to relate to this very different generation. As we learned in Part I and II, Millennials and younger generations of students are more intrinsically motivated than previous generations. As one dad put it, “Both of my children had good grades, but the learning was much more important to them. They didn't see the value in doing something just to get a better grade. Five points extra credit – why bother?” There is no *meaning* in five extra credit points: this generation inherently strives to have **purpose** in their lives, and they want to study things they are personally **passionate** about. These kids just want to *experience learning*. Ironically, it's baffling!

Almost everything about the underlying structure of the conventional educational system is the opposite of play, passion, and purpose. (Again, this is not meant to criticize individual schools or educators, many of who try to include play, passion, and purpose in their programs, despite the format of the system.) Behaviorism is a fear-based approach. Fear is the worst emotion to have in a learning situation because it lights up the lower fight/flight/freeze parts of the brain and shuts down the cerebral cortex.

Enter the importance of play, which lights up all areas of the brain. Unfortunately, play has been removed from the conventional educational system – both play as open-ended imaginative play time and recess; and play as a dynamic way of allowing children to construct meaning. The industrial model is based on work. Somehow, a logic arose that learning is work, therefore, it shouldn't be fun.

The Millennials' demand to have play, passion, and purpose in their lives, often strikes people of older generations as selfish. But Wagner's research puts the millennial innovators he studied in a very different light: "They are ambitious—sometimes even appearing obsessed. But unlike some well-known older entrepreneurial innovators, they seem less ego-driven. I was struck by the lack of arrogance or pretense...though all are quite self-aware and self-confident, which are vital qualities for innovators, none struck me as narcissistic."

The longer the US persists in maintaining and ramping up the industrial era model of education, the more it slips behind. *Newsweek's* cover article on "The Creativity Crisis" and John Kao's book, *Innovation Nation; How America Is Losing Its Innovation Edge, Why It Matters, and What We Can Do to Get It Back,* both highlight the crisis our lagging educational system is creating for our economy compared to more successful countries, such as Finland. Finland continues to outrank and outscore every country in every subject. It is widely agreed that it is the most successful educational system in the world. Finland is also ranked is one of the most innovative countries.

What are kids in Finland doing before the age of 7 while their US counterparts are trying to learn how to read and write? The answer to this is one reason behind Finland's phenomenally successful educational system: *They play.* They attend preschools (meaning pre-first grade) that provide opportunities for them to play and experiment with different materials, social situations, imaginative scenarios, and so on. Finnish children have two more years of playing than US children – giving them countless more hours at practicing creativity and innovation.

Finland doesn't teach reading until the age of seven when children are developmentally ready. Most kids by the age of seven can learn reading quickly and easily with little stress. In the US, by the age of seven, kids have struggled to learn how to read and associate reading with "work," diminishing their motivation to read for the joy of learning. Once learning is associated with stress and self-consciousness, the ability to learn is squashed. As a result, by the age of 15, Finnish readers are far, far ahead of their US counterparts in reading, even though they began reading later. Also, in Finland, there are no required standardized tests *until high school.* In contrast, by the age of eight, US students are well-conditioned to

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~Ken Robinson.

prepare for the test, which will essentially punish them for wrong answers. From that point on, making mistakes is associated with failure. The moment a child becomes afraid to fail, deep, authentic learning ends. As author and international advisor on education, Ken Robinson, says, "If you're not prepared to be wrong, you'll never come up with something original."

The Demands of Globalization

Another area in which Finland has become a world leader, in addition to education and innovation, is in globalizing its culture. It has, with open arms, accepted a vast influx of immigrants --- one of the reasons its school system has adapted to a structure that allows for multi-cultural acceptance and prepares students for the global economy, where they will be working with people from all over the world. It is purposefully preparing Finnish students for the "new market," where, according to economist Frank Levy of MIT and Richard Murnane of Harvard, "certain jobs – so-called rules-based jobs, governed by deductive rules and easily recognizable patterns—are easily taken over by computers, or outsourced to workers in another country, or both." Levy and Murnane point out that the jobs that will not be taken over by computers are jobs that require "uniquely human skills, intellectual and emotional capabilities that include the ability to perform 'expert thinking' and to manage 'complex communication' tasks." For this reason, Levy and Murnane denounce standardized testing or other educational techniques that do not help students develop "expert thinking" or "complex communication" skills. They predict that societies such as the United States, whose educational system now revolves around

standardized testing, will decline in their ability to compete in the global economy. Finland's lack of emphasis on testing opens up time and resources for teachers and learners to focus on preparation for the new millennium, rather than preparation for the test.

Race to Nowhere and Doing School

The film "Race to Nowhere" documents the lives of several students, teachers, and families who have suffered from the achievement culture of our educational system. In the film, Denise Clark Pope, the author of "Doing School" explains that early on, children learn how to get by in school, so that even high achieving students aren't deeply learning the material or learning how to think, but merely going through the motions for the single goal of achieving high grades.

Parents and students can get so caught up in this race that they are petrified of making any mistakes, leading to cheating and pathological behavior. In the film, a high achieving middle school student named Devon committed suicide after receiving an F on a Math Test. I myself recall a very promising classmate from high school killing himself after receiving his first C in college. These are horrific and dramatic examples, but we need to talk about them because the deaths of these children demonstrate the death of learning in our educational culture.

I have seen parents terrified that if their 3rd grader isn't exactly at a 3rd grade level in Math, for example, they are going to suffer later in life. It isn't uncommon for parents who are in this type of panic to request additional standardized testing measures to know *precisely* where their nine year old ranks nationally. We have been so conditioned to our educational culture, that even though a teacher is highly trained and clearly capable of knowing what a child needs, many parents can't help but feel they need a standardized test to make sure the school and teacher is accountable. "Standardized" is a key term. Once again, harkening back to the Industrial Revolution which is so ingrained in our culture, people fall back on this notion that each child should be "standardized" along the conveyor belt of education, so that all the parts fit together to make a final, standardized product by the end of 12th grade. Do we really want 3.4 million US children graduating each year to be the exact same, standardized products? Does this really sound like a formula for developing a sustainable, satisfying culture? What happens when a real-life problem

arises that isn't the same as what was on the test? It certainly isn't a formula for innovation.

Looking again at Finland, as a nation they have a very different educational goal than America. Where the US' goal is "The Race to the Top," Finland's goal is about each child receiving a satisfying education. They actually want each child and each school to be *different*. In America, children with learning differences have diagnoses. While this is helpful in many regards, it seems to be the only way that children's differences are recognized and accepted. This approach overlooks the more nuanced observation that children who have a weakness in one area, have brilliance in others – often directly proportionate to their challenges. For example, a dyslexic child may be a genius scientist or an autistic child may be able to conceptualize three-dimensional drawings from any angle. If the educational system over-emphasizes "fixing" weaknesses, it can diminish the brilliance – watering down the potential for innovation. One of the gifts of systems-thinking and innovation, is "both/and" thinking. It *is* possible to help children improve on their weaknesses without diminishing their strengths, and the key is *passion*, allowing children to focus on learning things that they are passionate about. The most difficult part is assuring parents that it will be okay. I empathize with parents who are so scared by the system they grew up in, that they unwittingly pass this stress on to their children, further inhibiting their struggling child from being successful.

There are many talented, caring people in education who work to improve the curriculum and methods within the system, but they don't have the power to completely redesign it – that is in the hands of politicians. Unfortunately, politicians are notoriously the farthest behind; they represent one of the least innovative sectors of society. Therefore, it is small, grassroots, entrepreneurial schools able to work outside the system who are creating innovative models of education that harness the powers of play, passion, and purpose to encourage innovative students. In Part IV, let's take a look at one of these schools, Rainbow Community School, in Asheville North Carolina.

A full list of references for the "Educating the Innovation Generation" series was published in Part I.