

How to Build an Innovative Mindset

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In January 2021 I joined the Great Resignation and took an early retirement from the University of Minnesota (UMN). I had spent 12 years there teaching social entrepreneurship and managing environmentally-related projects. Prior to that I spent 29 years working in various engineering and strategy roles, both at a small Silicon Valley company and at Honeywell, a large multinational company. I also founded two nonprofits with a focus on teaching students applied problem solving. Over that time, I led large project teams and taught or coached thousands of people around the world, from elementary to graduate school students to professionals of all stripes. This helped me develop a mindset and approach to complex problem solving. This essay will share what I've learned about what works.

Plenty of good articles discuss frameworks, toolsets and canvases. For both teaching and my own work, I settled on a core set of design thinking, theory of change and value proposition tools, along with a healthy dose of communication skills. But in this essay I'll reflect on the more holistic and "mindset" aspects of working on wicked problems. I will focus on university students, but others -- practitioners, mentors and teachers of entrepreneurship, change making, innovation and leadership -- can learn something too.

Be yourself. Just a bit better.

Your path itself is one of the lessons. Some lessons start early in life. Students should realize it's important to be who you are, and retain your childhood curiosity.

I started my work life with chores on the farm where I grew up, in northern North Dakota, before I even started school. My first job was picking eggs. I was about five or six and my older sister taught me to look not only in the obvious place (the nests in the chicken barn), but also in the barn and hay bale stacks. I was literally thinking out of the box from the get-go. I learned a lot growing up on a farm – obvious things like perseverance and responsibility. But close behind that was innovation, which may come as a surprise.

Both my parents were always trying new things. My dad would try different breeds of cattle or chickens or sheep, and my mom was always trying new things in the garden or the kitchen. I realize now that some classic farming behaviors – doing what needs to be done, having the curiosity of trying something new to see if it works, and dealing with setbacks – created a mindset that I've had to this day.

The attributes above are obviously relevant to entrepreneurial education, but how do you teach them? Curiosity, like empathy and perseverance, are not attributes we can really teach, but we can create situations to help develop these traits. I did this by creating "guardrails" for a problem. Give students a higher-level problem, such as providing clean water in a community, then help them with some contacts and research to start with, and then let them explore. In school students are generally given the problem and are asked to produce the answer. In entrepreneurial education, it's reversed. Students need to develop a problem statement, but they need some guidance in getting to a good problem statement and plausible answer or intervention.

Be Curious.

An important, and teachable skill, is asking good questions. If you're curious when you talk to other people about what they're doing, they will usually tell you so much more. "Tell me more," as one of my colleagues always said in interviews. When you travel, whether it's across town or to the other side of the world, if you are observant you will always learn something. Innovation is taking an idea from one place and using it in another. I can't think of a better way to make innovation work than by being curious. Design thinking approaches work very well for this. But look to other professions, like policy and public health, that have similar techniques. Get students out to interview people. You have to set the expectation and make sure the people being interviewed understand that these are students. Be especially careful with possible ethical issues, especially



if working with vulnerable or underserved communities. Students may need to interview a proxy instead: someone who works with the community of interest.

In the end, be who you are. Just push yourself to be a little better. If you want to focus on a particular field like chemical engineering or public health, then work on building those skills, but continue to be entrepreneurial. Your chance will come. If you aren't an extrovert, maybe you need a partner who is. I personally felt more comfortable being the designer and experimenter, not the public spokesman. Help students realize that skills like resilience and empathy are gained in all aspects of their life; in other words, don't compartmentalize them.

Be inclusive in your team building.

I received an electrical engineering degree from North Dakota State University. After graduation in 1979, I moved to Silicon Valley. An early mentor there told me he had the philosophy of hiring people smarter than him, staying out of their way and letting them do their thing. He was talking about people with superior science and technical knowledge, but I came to learn that this philosophy goes beyond that. It could encompass differences in culture, thought, ethnicity, geography, and many other realms. A diverse team with diverse ideas can also help identify the implicit bias that may exist in the problem the team is working on. The point of the team is to get something done and have some impact on the world. If you want to have impact, you're better off being in a room filled with people smarter than you and focusing at once on a common objective.

The most important way to teach this to students happens well before the first day of class. This can be hard to do, but it's extremely important to open the enrollment to a range of student majors. I was part of a strategy team that recommended that the University of Minnesota create a Grand Challenge Curriculum. This idea was ultimately adopted and is now run out of the Provost's office. This helps make the courses visible across the university. Even if you can't assign the course to a specific college or major, you can connect to diverse partners inside and outside the university. These can be business partners, community organizations or a range of people who can give students different perspectives. Students tend to see the same students from their major in class after class, it's so important to mix it up.

Students outside the business school can be turned off

by the term "entrepreneur." A public health student, for example, may be committed to starting a clinic for an underserved population, but they may never consider themselves an entrepreneur and would be unlikely to take a course from the business school. I had a student once tell me business was evil but she knew that her model for a locally sourced farmer's market for her hometown had to be financially sustainable. You don't have to be an entrepreneur but you do need to be entrepreneurial. You can create courses around a challenge, like climate change, and teach the same entrepreneurial approaches.

You can accelerate this in class by having contacts outside the classroom whom students can talk to. Many people, no matter where they live or what they do, are willing to spend 30-60 minutes having a call with students. Role-playing exercises can also help students see the problem from a different point of view.

Think like a designer.

Most of my years as an engineer were spent working with various design teams around the world, creating better design processes for complex systems. Since the company where I worked made control systems for everything from thermostats to refineries to avionics systems, I had an opportunity to work with an amazing variety of people. Although I didn't use the term, I was practicing design thinking.

Because thinking like a designer serves so many useful purposes for so many kinds of groups, in 1999 I founded High Tech Kids, a nonprofit focused on K-12 STEM education programs. High Tech Kids is still running strong, having served about 100,000 students, and helped me learn how to distill design and problem-solving techniques for non-engineers. Dealing with the many issues around K-12 education started my thinking of applying design thinking to more than the technical problems I had worked on in the past.

Just this past spring I was teaching an undergraduate climate policy class and helped an architecture major understand approaches to policy by applying her budding design skills. We compared policy to architecture by viewing it as a process of understanding how people want to use the resulting "space" and what matters to them. So a policy creates a virtual space or system that the public values and uses, not unlike an actual building.

Think holistically.

Around 2000, during the globalization trend, I went to work for the global engineering group within Honeywell and spent considerable time in India and China. Watching India firsthand while it was undergoing such massive growth changed my outlook on the world in so many different ways. The big question that still sticks with me is this: How do we, as a global society, help lower-income countries develop, without using resources and increasing emissions at the pace Western countries did (and still do) during their development? Every person in the world should be able to improve their life, but there's no way the world can sustain itself using resources at the rate the West has.

At that time, social entrepreneurship was coming into vogue and I dove into understanding how to create businesses that were sustainable financially and also had a positive social or environmental impact...doing well and doing good. Thinking about this vision, along with my corporate and High Tech Kids experiences, led me to leave the corporate world and co-create the Acara Institute. Acara's mission was to help university students create social ventures. In effect, Acara was a social venture teaching and incubating social entrepreneurship. Like most ventures, we had a rocky path but eventually ended up as part of the Institute on the Environment at the University of Minnesota. Our core mission of teaching and helping social entrepreneurs has thrived. I had the privilege to teach social entrepreneurship in 10 countries and work with hundreds of entrepreneurs globally. Over the years this also led to teaching Grand Challenge and climate courses helping students be entrepreneurial in their approach to complex environmental and public health problems.

Social entrepreneurship, teaching it and doing it, helped solidify a mindset and approach of applying the rigor of a value proposition while using design thinking and the idea of a "theory of change" to take into account all the contextual complexities. People naturally think this way, but school can drive students into a silo. Get students out of that silo. Work on the problems students care about. Help them understand how to apply entrepreneurial frameworks to these complex problems and to be rigorous in measuring impact.

The importance of empathy and cultural intelligence again comes to the fore. Get out of the classroom or the office. Talk to people. Observe things. Understand the

problem from other people's perspectives and viewpoints. This is a part of design thinking but it goes beyond that. It should include structural equity issues. You should connect them with the right people but also encourage them to make their own contacts. Use social media to follow people in the area of interest. We used the funding we might normally use for a teaching assistant to pay stipends to community contacts, here or abroad. Focus on real projects. For many years we did projects in India and East Africa. One benefit was it pushed students out of their comfort zone and really forced them to dig deep to understand. It forces them to think like a beginner.

Balance reality and idealism.

Being a changemaker or teaching changemakers requires a certain amount of cognitive dissonance. You need to be patient and understanding but balance that with taking initiative.

Teaching experiential project-based courses is always a balance between optimism and criticism. It's true in research projects or impact-focused projects, and it's true in the classroom as well. Entrepreneurial projects never go in a straight line. You have to learn to work through the chasm, which you can do in a semester-long course. This helps students experience working through ambiguity and learning to decide when you know enough to define a problem and propose a solution. Coaching at this point is critical.

Don't be afraid to fail.

In our Grand Challenge courses and other courses based around entrepreneurial thinking we stress this to students all the time. Initially it freaks students out but eventually they come to terms with it. The point is to try something, learn from it, and go on. Students come to realize the grade is in the process if you allow them time to fail and get through the "this sucks and I am an idiot" phase.

Obviously you have to be very careful with ethical issues here. Students are students. You can't educate students on the backs of community members. And remember that the ability to fail without repercussion is a privileged thing, so be sure to have these discussions.

Treat students as colleagues.

As a senior project manager I had a team that did most of the work, and I provided direction and coaching.

That's how I treat my project-based courses. It takes a while for students to get used to but it makes for a powerful learning experience. It also allows a more engaging style of teaching where students feel like they are part of a solution. It's the most consistent positive feedback I get from students. It creates a deep and lasting learning experience for them. And to be honest, it's more enjoyable for me.

Be Kind.

There is a quote from Philo of Alexandria - "*Be kind, for everyone you meet is fighting a hard battle.*" Between the pandemic and the widening awareness of structural racism, we have all learned this more than ever. But it's always been true and it's important to keep in mind as you work with colleagues, students and others. You never know what is going on behind someone's calm facade.

In the end, teaching is another form of changemaking. As in all changemaking endeavors, you should not only fight for the things you are passionate about but also help make others passionate about it too - and leave them with structures and processes so that they can continue without you.