Innovation in Action: Beyond the Eureka Moment

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This is part two of our four-part innovation discussion. Here, we take a look at innovation in action.

Welcome to the PwC-KWHS Podcast Series for High School Educators on Business and Financial Responsibility. I'm Diana Drake, managing editor of Knowledge@Wharton High School, and today we are discussing innovation and the art of problem-solving. Talk of innovation is everywhere in the business world. To be an innovator is to position yourself on the path to a successful life and career. We tell our high school students that they need to be more innovative, but do they truly understand what that means and how it is related to problem solving? Do they understand that innovation requires critical thinking to see something in an entirely new light – and to possibly inspire real change? We will discuss these and other ideas to help provide high school educators with a framework of understanding for innovation, and to find ways to teach students to be innovative thinkers and problem-solvers.

We're excited to have two top experts in the field helping us to explore this important topic. Saikat Chaudhuri is an adjunct associate professor of management and executive director of the Mack Institute for Innovation Management at the Wharton School. Rob Shelton is global innovation strategy lead at PwC, and specializes in integrating innovation, new business models and new technologies into an organization's strategy and operations to create growth. Thank you both for sharing your insights today about innovation and the art of problem solving. During our discussion, we'll also be addressing questions from high school educators around the country.

Below is an edited transcript of the conversation.

Knowledge@Wharton High School: We've talked about some innovation basics. Now let's see innovation in action. We touched on this a little bit already, but I'd like to explore it some more. Some say that to shift society or to have an impact you have to introduce something novel. Is innovation all about those big radical changes? Or does it also define smaller changes?

Rob Shelton: It's clearly about a combination of small changes that help sustain and improve what we already have that's good. [And it's also about] big radical changes, which at the right time can add value and help make an impact in ways that people never envisioned. It's a combination of those, as opposed to either one or the other.

Saikat Chaudhuri: Let's explore a few examples. When we went from vacuum tubes to transistors, we were able to produce computers that actually fit on a desk and didn't take up an entire room. That allowed many more people and offices to utilize that technology, for example. So that's a radical type of improvement. But when you think about it, computers, and their generations over time, have incrementally developed as well. They're much faster and have much more storage than they used to. That has benefited us as well. We [also] see that in automobiles.

The other point I want to make is that at the organizational level — the company level — you need to sustain selling your existing products, making them really good, and even better, so that you can also then be able to invest that into the newer, more radical things on the horizon.

Shelton: That's a key point. Incremental innovation is not just small and insignificant. Sometimes it's vital. If you're in a corporation and you're making a project, a widget, or providing service, you need to make sure that you do a great job at it and continue to have revenue and profitability. That provides the capability to invest in looking for breakthroughs that might create the next new widget. The two are not only a spectrum of small on one side and midsize and then big. They're actually reinforcing each other, because a big breakthrough like development of personal computers, actually leads to then small incremental improvements as we make them mobile, as we improve their cost efficiency, as we add features and the like.

"There's a swing in any given technology and business model between the big breakthrough and the incremental improvements that follow, and then the next big breakthrough. It's a cycle."?

We manage that quite effectively in some places. In other places, we're constantly stuck in looking for incremental innovations and we can't seem to find our way to solving the bigger challenges and providing breakthrough innovations.

KWHS: In keeping with this theme of looking at examples of innovation in action, Saikat, what are some examples of technological innovation, especially in the financial sector?

Chaudhuri: In the financial sector, I can think of two or three. One is certainly the ATM machine, which I mentioned before. That completely changed the way we interact in terms of withdrawing our money and making deposits and so forth. But that was quite a few decades ago. Nowadays payment models are changing. Think, [for example], about a company like Square where any merchant can fairly easily allow credit card transactions to take place. I [also] think about all the mobile-based platforms. In deep parts of Africa, for example, where many regions are unbanked, people did not have [bank] accounts. They're able to now have bank accounts and conduct transactions based on purely the cell phone, ideally a smartphone, but it works on an SMS platform as well with text messages. That has revolutionized financial inclusion in terms of the impact.

KWHS: And Rob, what about some examples of innovation in the workplace?

Shelton: I think that we're making faster strides in some ways in the financial sector and other industries, but we are making changes in the workplace. The one that you can point to immediately is that people are allowed to work remotely

from home, improving their balance of life in many cases [and] cutting down effects on the environment from transportation. Also, people are working in a much more connected way. Sometimes that's a problem because we feel like we can never get away from our e-mail or the phone, but the truth is that there's a degree of collaboration. Sometimes videos and face-to-face meetings allow a much warmer, better type of working environment.

[There are] also changes to the workplace. As people have studied what it's like to work in a given environment, they have found that some environments are better: light and sunny, proper ventilation. And this is leading to changes where you start to find improved chairs and desks and working environments. I see multiple attempts to make the workplace a better spot to work.

I also see a redefinition of the workplace. As I said, [these include] working remotely or going to a small remote office and working with others. But the fact is that the workplace is changing along with other aspects of business. It's still a work in progress, but those are the things I would point to.

Chaudhuri: I can't resist jumping in on this one, [because] it relates to my research. The whole idea before was that innovation and R&D [research and development], especially in a corporate organization, might take place in one or two locations. We've been able to distribute all that effort across time zones, across countries, not only for labor cost reasons, but also to take advantage of unique conditions that may allow certain kinds of innovation to take place by leveraging technology.
"It's really exciting to witness the disaggregation, the distribution of the modern global firm that's able to leverage resources around the world in real time and around the country to be able to come up with things faster and better and hopefully also cheaper."?

KWHS: There's a lot of talk these days about the importance of teamwork and teaching high school students, for instance, to learn to work in teams. How does teamwork relate to the process of innovation?

Shelton:
"Innovation is at its heart a team sport"?
. We sometimes think of innovation as something where one person has a moment of insight, and then it's all over and it happens. The reality is that innovation has many stages. The idea is part of it, [then comes] improving the idea and making it real. Bringing it to reality takes a whole bunch of people. The most successful innovations are ones where teams work together and collaborate. There's technology, there's the business model, there's user interface, there's all kinds of things that have to come together. I see this in my work all the time.

One of the problems that crops up over and over again is that folks trying to innovate don't necessarily collaborate well. They might do alright in their own teams, but if they try to collaborate with an external partner who might be critical to making this happen, they're not as good as they should be. I often think they needed to have been taught better –through experience, through training, through hands-on collaboration — to be better at partnering. The reality is, as Saikat pointed out, that everyone's working in broader systems, sometimes spread around the world. Outside of any company are partners that you need to deal with these days. I like to point out [that there are] a billion IQ points outside of any organization that, [when tapped into], can be a huge benefit to the innovation you're trying to undertake. I see collaboration at the heart of innovation. It's an area where we frankly need to do a better job.

Chaudhuri: Eureka moments are rare. Taking a eureka moment — the invention — and making it into an innovation [involves] so many complexities and uncertainties. It's very hard for anyone to do by [himself or herself]. The whole ecosystem matters more than ever. That's why you see platforms. Android is a platform, for example, around which a number of different vendors produce apps or phones. That's the way we make progress.

KWHS: Lily de la Torre-Shu, a teacher at String Theory High School in Philadelphia, wants to better understand how employees should balance innovation and creativity with following orders from superiors. Does the workplace encourage boundless innovation?

Shelton: The answer is no. There are very few places that say, "Go crazy!" There are a few that try that out, but it's difficult. The flip side of that is workplaces encourage innovation, but you have to figure out what types of innovation would best suit the situation. There are some places where the small incremental innovation is exactly what you should be aiming for. And those are usually pretty well accepted. But sometimes [there are] opportunities to make significant changes: the breakthrough innovation. Getting permission to do that is a good thing, and you need to do it beforehand. Trying to force an innovation on an organization, or bring into the organization the innovation you've created, will not always be easy if it challenges the way things are done.

Something happens in organizations when they're given a major change, a breakthrough innovation. I call it organizational antibodies. They come out and try to stop the change. They [don't have bad intentions], it's just that this is a change that feels uncomfortable. So the organization will try to maintain a status quo. What we want to create are organizations — businesses and organizations across all aspects in government, in education and the like — that are more open to innovation. That's where the focus is these days. It is in understanding how to tap into the talent that exists and channel the innovations in ways that [don't] threaten the organization or the business, but actually enhance it. These days, many places are not as open to innovation as they need to be.

Chaudhuri: I have a few reactions to this question. It's a very important one. I like the word "balance" because it's very important to have a balance between some form of hierarchy to be able to implement and at the same time encourage new things to bubble up in an organization. It's interesting because firms like Facebook, Google and even Amazon [have had] a start-up environment for a long time, which is important. But the problem [starts] when you have $30 billion, let's say, in revenue. You've got 10,000 or 20,000 employees, you've got a lot of revenue to protect and you've got to maintain certain quality standards. You will have chaos if that is a purely creative, open environment where everybody does whatever he or she feels like. You need to have some scale. You need to have some replicability, some reliability and some structure around it. Yet at the same time, that very structure creates a challenge because it leads to inertia. The more structure and process you put in, the harder it is to be creative.

I like where Rob was heading with this. Basically, you need a balance at the macro level, but also then tailor your part of the organization to what you're trying to do. The part of the organization that does more exploration work, the new things, needs a bit more autonomy. The part of the organization that is in the process of thinking of improvements, or quickly scaling up a product or sales, needs to be a bit more in that hierarchical mode to be efficient. It's a trade off between efficiency and effectiveness in many ways. And that balance needs to be maintained to be successful in the long run.

Shelton: You're absolutely right. Getting the balance right is one of the challenges. Companies or organizations in general, for a long time, have been highly focused on incremental innovation. It's served them well. But there's a recognition that [companies] need to embrace innovation more broadly and to do more breakthrough innovation. Folks are trying to bring that about. But breakthrough innovation isn't done exactly the same way as incremental innovation. The people, the processes, the location and organization vary because, as Saikat said, if you are working on small incremental improvements, you need a hierarchy and a focus on efficiency so that you don't waste time or money [and you are able to] make the improvements. But if you're looking for a breakthrough, you have to handle that in a way that allows folks to be insulated from the day to day and explore new opportunities and options.

We have seen very positive and successful examples over the past 10 years of organizations that have been able to do that — this duality of being able to maintain the incremental but also foster effective breakthrough innovation. This is one of the major areas of focus these days for an awful lot of organizations.

KWHS: Thank you both for this great discussion about innovation and the art of problem-solving.

For the full podcast (about 60 minutes) on "Innovation and the Art of Problem-solving," please visit the KWHS educators' professional development *page.*

Questions

Saikat Chaudhuri talks about innovations that have revolutionized the financial sector. What are they? What does he mean by "financial inclusion?"

Rob Shelton explains that innovation is at its heart "a team sport." What does he mean by this? Further explore this idea of teamwork in the workplace and why it is important, particularly in light of the fact that innovation is much more about collaboration than invention. Discuss the relationship between innovation and collaboration with your classmates, possibly in teams, and present your findings. How might you build your collaboration skills?

Research innovation in action at companies, both large and small. Can you find examples of incremental innovation, as well as breakthrough innovation?

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