HOW TO FOSTER INNOVATION

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The UN sustainable development goals are hard. All will require change…in our practices, techniques, infrastructure, and education. All will require innovation! Indeed, the ninth goal explicitly seeks to foster innovation. But all the goals will require it. Achieving better industry will require innovation. Making clean water available everywhere will require innovation. Clean and affordable energy including natural gas will require innovation. So the most important resource we have is people!

If the most important resource we have is people, then the most important technology we need is tools to make people into innovators. This is a special responsibility for us as educators of young people. Let me offer some basic tools supported by research that can help us to build innovators.

First, we must develop creativity in people, individually and in groups. A creative person has a store of raw information AND the ability to combine it in novel and useful ways. So we need to encourage diverse experiences. Narrow disciplinary specialization can be complemented by a larger education in teamwork. Not everyone has the same information, expertise, approach, or perspective! Diversity of thought drives innovation. Imagination is not the monopoly of a particular age group, profession, or nationality.

Innovators must understand user needs from observation and experience, not just analysis at a distance. Rather than viewing the problem of water supply from a distance, visit the site, know the people and their problems, observe carefully. Then cooperate though "ideation" or idea generation. Encourage contributions from all areas and levels of experience. Formal techniques exist like brainwriting and brainstorming that complement informal sessions.

Perhaps the most important rule in this process is to separate creating from judging. Sometimes in our classrooms or corporate offices we are too quick to judge. An important principle is to generate many ideas, then choose the best ones. Let creativity reign using the right side of our brains, individually and collectively, then critique those ideas with the left side of our brains.

Teamwork requires trust and spirit. Time spent building these is time well spent. Whether it is pizza or shashliks, shared meals and fellowship, coffee and conversation, all these can build the trust necessary for people to feel comfortable sharing ideas. This is money well spent. Innovation is a team sport!

Reaching these goals with specific innovations will require social experiments. Like any experiment, social experiments take time and effort, and they are rarely done right the first time. What meets the needs, what works, what can be done quickly, safely, and economically has to be discovered. Take feedback from stakeholders—customers, policymakers, suppliers and companies. Feedback from users is essential to insure that the innovation is truly meeting the needs for which it is intended.

A few examples from history can illustrate. "Fail fast and break things" was the motto of Facebook in its early days. Thomas Edison said: "The light bulb did not have 1000 failures but it did take 1000 steps to produce." And the first Nike waffle soled shoe took 33 iterations. Fail fast, fail cheaply, and learn!

Reward risk taking and tolerate failure. This is in many ways the hardest, because our inclination as individuals and organizations is different. Organizations exist to replicate products, processes, and services efficiently with a minimum of resources. Leadership sets direction, monitors tasks and performance. Deviation is "wrong."

But innovation requires deviation—we only learn from differences. Ideas come from anywhere and anyone. Resources are used IN-efficiently. Social experiments are costly in terms of money but they are essential, even a bargain when treated as a purchase of information – information that cannot be obtained in any other way.

Taking risks requires special rewards for people. Too often we require an unbroken series of successes for an individual's career. We need to be more tolerant of honest failure, and judge by lessons learned rather than achievement alone. In Silicon Valley almost everyone has had a failure of some kind, and yet it is viewed as a chance to learn rather than a permanent setback. The only failure is the failure to learn, and the failure to share that learning!

Projects might fail but people are not failures when learning occurs.

These techniques are counter intuitive; they struggle against our biases in favor of the individual, in favor of the present, in favor of what currently is done. BUT these principles work! They have been used in corporations and entrepreneurial ventures, they are entering universities, governments, and charitable organizations, where they can be equally successful. Everyone can learn to be an innovator, AND

The future belongs to the innovators!