

What is innovation, and how can we awaken its dormant traits and cultivate them?

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What innovation is and how it can be cultivated are two of the compelling questions raised in a paper exploring the potential for fostering innovation in students in the new issue of *Technology and Innovation*, Journal of the National Academy of Inventors.

"Relatively little is known about how we can cultivate innovative thinking," said paper lead author Victor Poirier of the Institute for Advanced Discovery & Innovation at the University of South Florida (USF), "and even less is known about how we can help individuals use and improve their innovative powers."

According to the authors, innovation can be defined as "the introduction of something new and different" that is created by inspiration and creativity. Innovation, they said, is "critical to improvements in how we live" and provides "social value." The beginning of the innovative process is usually associated with "a fragmented inspiration" that is further developed by "joining with other fragmented thoughts to finally arrive at a creative inspiration."

The authors pointed to six key characteristics of innovation:

- The timing of an innovative idea;
- The environment in which the idea is formulated and developed;
- The time to develop an idea or inspiration;
- The time and organizational environment that allows for idea cross-fertilization;

- Learning from errors; and
- The development of an idea in one field that can be adapted in another.

While education may not be able to create innovative traits in individuals, education may be able to improve the ability of individuals to better utilize the traits of creativity and innovation they already possess. However, how do we cultivate innovative thinking processes and unleash the creative powers of the individual? And, by what processes can educators help individuals to better utilize their innovative traits?

"It takes a village," explained Poirier, pointing out that Thomas Edison's Menlo Park was an environment in which a variety of minds and skills came together to achieve innovative processes. Innovative industries such as Bell Labs, Xerox, Apple, and Google, as well as many of the federal government's laboratory systems, such as NIH and NASA, are examples of creative environments that foster innovation collaboratively.

Innovative processes do not always create something new, said the authors. Sometimes they greatly improve something already in existence or help to solve a problem. Motivation, persistence, and goal setting may also be keys to this process.

"Contrary to the view that inspiration is purely mystic or divine, [it] is best viewed as an interaction between one's current knowledge and the information one receives from the world," suggested the authors. "We do not need to try to create innovative characteristics; rather, we simply need to show individuals how to cultivate innovative thought."

The first step in encouraging and nurturing [inspiration](#) and innovation, said Poirier, is to identify the characteristics and traits that can be fostered and developed through education. These include: abstract thinking and problem solving; a desire to 'fill gaps'; motivation;

creativity; curiosity; taking risks with no fear of failure; a positive attitude; persistence and passion; dissatisfaction with what exists; open-mindedness; and vision.

These characteristics can be foundational to an educational process aimed at unleashing the creative and innovative potential that students possess. Therefore, as Poirier explains, our goal is "to develop an educational process whereby we could show individuals how to fully utilize the [innovative] traits they have, [and] awaken traits that are dormant."

The authors acknowledged that there may be roadblocks or resistance to this process from both students and faculty, as there are many who think that innovative thinking is something inborn in the individual and cannot be learned. However, the potential rewards—including an increase in innovative production—are substantial and warrant meeting and overcoming these challenges.

To that end, Poirier and his co-authors are part of a team at the University of South Florida involved in an experimental training program in [innovation](#). They anticipate future publications in which they will report on the results of those efforts.

More information: *Technology and Innovation* [DOI: 10.21300/18.4.2017.319](#)

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