Thinking Outside of the (Tool) Box

A review of

Tools for Innovation: The Science Behind the Practical Methods That Drive New Ideas

by Arthur B. Markman and Kristin L. Wood (Eds.)


Reviewed by

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Tools for Innovation: The Science Behind the Practical Methods That Drive New Ideas is a unique text, providing empirical and theoretical review of methodology for promoting innovation in business, government, and engineering. The book is a collection of chapters edited by Arthur B. Markman, a cognitive psychologist, and Kristin L. Wood, a mechanical engineer. Their cross-disciplinary commitment to studying innovation and creative decision making led to a collection of multidisciplinary chapters by authors from the fields of psychology, engineering, computer science, information science, and consumer behavior.

The editors’ goal is to reframe the research and applied paradigm of the innovation process that creates novel solutions to practical problems. The major reframes are the following:

1. Advocating for interdisciplinary research to develop and test tools for innovation;
2. Placing particular importance on the value of research on innovation for basic cognitive sciences, in acknowledgment of the value that applied behavior has on informing the basic scientific process;

3. Clarifying current understanding about what makes creativity and innovation work and about potential ways to generate tools that promote innovation.

The working definition of innovation used by the editors is important to understand at the outset (see pp. 4–6). The editors acknowledge that not all contributing authors share agreement with this definition, but it does help define a context for thinking about how the collection works together to inform practical and empirical applications of innovation and creativity, and developing tools to support them.

The definition contains three parts. First, an innovation must be novel and original, not previously known or developed by anyone in the field. Second, an innovation must be goal oriented, specifically seeking a solution to a real problem. Third, the innovation must be practical. That is, the innovation must address a real problem by providing a useful solution.

I take the space to repeat this definition because it does function as the authors intend: It provides the framework for thinking about how to apply the issues raised in this book. As I first read the text, my initial thoughts were of frustration that the research described generally is limited to business and technological innovation. (Examples are most often from engineering and design and relate to tangible consumer products or specific technological applications.)

My experience with the frustration of social science innovations (see Sarason, 1996) led me to see all the limits of the research and theories espoused in this book. Innovation is seriously lacking in social sciences (child welfare, education reform, psychological and psychiatric treatment), and the process of innovation does not match well with the techniques, tools, and organizational processes described in the chapters of *Tools for Innovation*.

Then a second read and some reflection on the opening definition helped explain why innovation in social organizations, such as schools, is difficult and is not a direct fit to the application of these ideas. In reference to the second element of the definition, it is difficult to establish agreement on the problem and goal (Perrow, 1986). With respect to the third element, inertia of the system makes applications of innovative solutions impractical (Sarason, 1996).

Despite many attempts at innovation and reform, public education still operates in the same basic framework as it has since the era of industrialized public education. Teacher-directed passive learning, with an emphasis on task completion (often in the form of worksheets) still dominates, even for innovative programs such as dual-language instruction (Fitts, 2009; Ray, 2008). Decades of impassioned and practical innovation (see Nathan, 1983, for one example) to break the schooling mold are ignored and quietly go into
obscurity. Even standard alternatives, such as the Montessori method, have remained largely unchanged, deferring to decades-old theory rather than integrating a creative theory with innovate approaches of the modern day.

My additional reflection on the concepts in this book brought about some new optimism: specifically involving the main thesis that new advances are extensions of previous iterations and that the thought process involved is grounded in the ordinary ones used in everyday interactions and problem solving. Thus, there indeed can be generalized relevance of the concepts and data in this book for social organizing (such as in the fields of health care and education). In fact, in education, some of the favorite change strategies involve thinking outside the box and unimpeded brainstorming, neither of which is supported by the research cited in this text.

Instead, this collection of interdisciplinary research finds innovation to be dependent upon analogical reasoning, application of design principles (specifying the relationships among objects without excessive focus on the objects themselves, p. 12), and an ability to combine concepts from different domains (such as engineering and psychology). The field of education typically overuses concepts from cognitive psychology and underutilizes concepts from social and organizational psychology. However, this is an instance in which drawing from the concepts of this book, which are grounded in cognitive psychology, could lead to some meaningful solutions and innovation in education.

The challenges in social organizations are getting past the habitual searching for problems to apply predetermined solutions (Perrow, 1986) and engaging in a dynamic of cross-disciplinary learning (Pennington, 2008; Sarason, 2004). In the abstract, the specific technological and conceptual findings of this text could help generate innovative and productive approaches to social organization, and education in particular. Tools for Innovation has particular value for those in business and industry, but also for practitioners in organization development and training. I would also strongly recommend this book for education administrators and policy makers.

References


