

Book Review

**Creativity in Technology Education: A Review of
Explaining Creativity: The Sciences of Human
Innovation**

Pao-Nan Chou

Sawyer, R. K. (2006). *Explaining creativity: The sciences of human innovation*. New York: Oxford University Press. \$39.95 (paperback), 368 pp. (ISBN: 0195304454).

According to a recent study (Johnson & Daugherty, 2008), creativity is an emerging research topic in the field of technology education. Many technology educators will find this attention brought to creativity promising, like this reviewer does. Today, classroom instruction has started to shift from teacher-centered to learner-centered learning. As teachers in technology education programs, we all expect that students can think and behave in creative ways after completing our classes. The most difficult challenge technology educators confront is that creativity cannot be easily acquired. However, Sawyer's book, *Explaining Creativity: The Sciences of Human Innovation*, unveils the nature and mystery of creativity.

This book contains five topics: conceptions, individualist approaches, contextualist approaches, artistic creativity, and everyday creativity. The first topic, conceptions (Chapters 1-2), presents readers with an introduction to the history of creativity research and conceptions of creativity. The second and third topics, individualist and contextualist approaches (Chapters 3-9), are theoretical foundations that clearly delineate how scholars from different scientific disciplines engage in creativity research. The fourth topic, artistic creativity (Chapters 10-13), provides an example unit that describes the operation of creativity in various fields. On the last topic, everyday creativity (Chapters 14-16), Sawyer offers a clear path to understanding how to increase creativity in everyday life.

Sawyer begins by describing the relationship between creativity and art in history. In this discussion, Sawyer provides insight into two conceptions of creativity, rationalism and romanticism. The former is "the belief that creativity is generated by the conscious, deliberating, intelligent, rational mind" (p.15). The latter is "the belief that creativity bubbles up from an irrational unconscious, and that rational deliberation interferes with the creative process" (p.15). Sawyer

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argues that romanticism strongly affects thinking models, which leads to many “creativity myths.” For example, one of these myths is that creativity relates to unconscious minds. However, current scientific studies have dispelled this myth and confirmed that creativity mostly arises from “conscious, hard work rather than a sudden burst of insight” (p.18).

Next, Sawyer discusses several scholarly works that focus on creativity from two approaches, individualist (four disciplines) and contextualist approaches (three disciplines). In the individualist approach, personality psychology was the first trend for examining human creativity in the academic world. Personality psychologists attempted to employ measurements to assess an individual’s creativity. However, Sawyer contends that the methods personality psychologists used were unsuccessful, which in turn led to the emergence of cognitive psychology. As a cognitive psychologist, Sawyer proposes a four-stage creative model: preparation, incubation, insight, and verification. A challenging idea of Sawyer’s is that “creativity involves both problem solving and problem finding” (p.73). In addition to personality and cognitive psychology, the other scientific disciplines Sawyer mentions are biology and computer science. Although biologists use human brain functions to analyze creativity, Sawyer still considers that “biology is the smallest level at which we could explain creativity” (p.95). Regarding computer science, Sawyer argues that artificial intelligence technologies cannot imitate the human creative process.

Sawyer proceeds to examine, from a contextualist perspective, three scientific disciplines. First, sociologists contend that social groups strongly influence human beings’ creativity. Sawyer elaborates that “groups are more creative than individuals when they have worked together for a while; when they share a common set of conventions and knowledge” (p.121). Second, since cultural backgrounds guide thinking processes, anthropologists stress the importance of cultural creativity. Sawyer adds that “culture’s conceptions of creativity influence how you see creative works” (p.149). Last, historians use a technique called historiometry to identify specific creative patterns in historical events. Sawyer states that historiometry allows viewing “numeric relationships across historical periods” (p.158). For instance, historiometric data show that “each domain has a typical peak age of productivity, the age at which the most significant innovation of a career is typically generated” (p.162).

In later chapters, Sawyer’s analysis moves toward a practical discussion with less emphasis on abstract ideas. Sawyer discusses artistic and everyday creativity and attempts to apply theories into practical contexts. By using theories from individualist and contextualist approaches, Sawyer explains in detail the creativity phenomenon in the fields of visualization, writing, music, acting, science, and business. In the last chapter, Sawyer concludes the discussion by providing advice for those who seek to be more creative. For

example, Sawyer suggests developing “a network of close colleagues” (p. 310) with whom to share ideas; he also suggests exiting comfort zones.

Overall, this well-organized book is worth the investment of money and time. For technology educators, reading the book may provoke further interest in creativity, especially for creativity training. For researchers in the field of technology education, the theoretical foundations reviewed in the book may offer a clear understanding of what has been done in creativity research for different scientific disciplines. Additional research and discussion of creativity research will undoubtedly appear as a result of Sawyer’s work.

Reference

Johnson, S. D., & Daugherty J. (2008). Quality and characteristics of recent research in technology education. *Journal of Technology Education*, 20(1), 16-31.