

Conceptualizing Creative Thinking and Innovation

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by

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One of the most persistent myths circulating within western societies is that creative thought and innovation are restricted to geniuses (such as inventors and artists) working in isolation.¹ This perspective has endured partly because of the ways that creative thought has been conceptualized over time. From pre-history to the medieval era, creativity was regarded as supernatural – a process of external inspiration given voice through the work of the genius.² By the late 1700s, scientific inquiry began to distinguish between “talent” and “creative processes.” As systematic research increased over the 20th century, scholars distinguished between Big-C and little-c creative thinking. Big-C creativity is mainly manifested by an elite few who have significantly changed fields of inquiry or societies whereas little-c creativity is thought to reside in the everyday thought processes that characterize all human populations.³ In short, “we may not all be creative geniuses, but we all have the potential to be creative.”⁴

This paper outlines contemporary conceptions of creative thinking and innovation. In addition, it examines the varied ways in which researchers have probed these, the key components that have been identified and the nature of developmental stages across the lifespan. The paper closes with a brief discussion of implications for schooling.

Conceptualizing Creative Thinking and Innovation

In recent years, researchers have defined creative thinking as generating ideas that are “novel, appropriate, and of high quality.”⁵ Notably, creativity is not synonymous with originality. An idea may be new to a specific person within a specific context without being original within greater society. Creativity is further distinguished from mere novelty in that it must be appropriate to the context in which it is generated. For example, if a student writes a story when assigned to do a painting, the story – though novel – would fail the test of appropriateness. Researchers have also noted that creative processes are highly contextual.⁶ Therefore it is impossible to define precisely what constitutes “high quality.” Suffice it to say that one’s creative idea must be of value as judged within the context in which it is generated. Creative thought is also considered to be a continuum that spans from ideas that significantly transform an entire field or society (Big-C) to the multitude of creative thought processes that all individuals undergo in everyday life (little-c).⁷

Innovation, on the other hand, is the implementation of a novel idea into practice often on a larger social scale, such as the marketplace.⁸ As such, innovation and creative thought are interrelated. Indeed, innovation consists of both creative thought and imagination, but is seldom considered within the domain of school-aged students. This is due to the deep levels of understanding required for innovators to be able to move beyond the accepted norms of their given fields of work or study.⁹

Research on Creative Thought

The first wave of inquiry prompting modern conceptions of creativity was launched in 1950 with J. Paul Guilford’s proposed “structure of intellect.” Guilford argued that models of intelligence had placed too much emphasis on “convergent” thinking, which is the marshaling of information to arrive at one correct answer. He

proposed that thinking was also “divergent,” expanding on existing knowledge in interesting and unforeseen ways.¹⁰ Since that time, creativity – and in particular divergent thinking – has been probed by researchers working from multiple disciplinary perspectives including psychology, education, history, the arts, sociology, anthropology, and business). Approaches have been predominantly “psychometric” (to measure and define creativity); “experimental” (to measure outcomes from creativity-promoting interventions); “historiometric” (to create biographies and case studies of Big-C creators/innovators); and “biometric” (to measure cerebral activity).

In recent years, scholars have acknowledged that creative thought is context specific. This has raised the question as to whether creativity is also culture specific.¹¹ Researchers working in culturally diverse contexts around the globe have determined that although there are culture-specific manifestations of creative thought, there also appear to be components that may be universal.¹²

Key components of Creative Thought

The components of creative thought identified by researchers include:

- making connections; envisaging what might be; exploring/playing with new ideas; reflecting critically on ideas, actions, and outcomes, questioning and challenging; building on subject area and interdisciplinary knowledge; risk-taking
- valuing creativity; imagining; demonstrating curiosity,¹³
- tolerating complexity,¹⁴
- open-mindedness¹⁵
- thinking divergently¹⁶
- demonstrating willingness to disagree often characterized by questioning and challenging¹⁷
- making unusual connections as illustrated, for example, by metaphors and/or analogies¹⁸

Developmental Phases

Researchers have identified three phases in the development of creative thinking. The *pre-conventional* phase is experienced by children up to ages six to eight. This phase is characterized by spontaneity and concrete visual displays. The *conventional phase* pertains children aged nine to 12 and is characterized by a diminishment of creative thought that researchers as early as the 1960s dubbed the “grade 4 slump.”¹⁹ At first, it was hypothesized that the slump might result from overly-conservative learning experiences. Nevertheless, international studies have revealed a universality to the slump prompting researchers to attribute it to children’s increasing awareness of and response to societal conventions due to maturation.²⁰ Children at this phase tend to be “more sensitive to conventions. They tend to react to peer pressure more than any other time; their art becomes highly representational and realistic; and they stick to the rules in their games rather than making them up as they go along.”²¹ In addition, during this phase, students find it difficult to work with non-literal language such as idioms and metaphors.

Most children recoup their creative inclinations during what is termed the *post-conventional* phase, which encompasses children aged 12 to adulthood. “Here they are aware of conventions but choose in a mindful way, for themselves, which conventions

are appropriate for them, and which are not.”²² By about the age of 40, creative thought begins to decline over time.

Creativity and Schooling

Two main lines of scholarly inquiry are relevant for educators and educational researchers: domain specificity versus generality and the fostering of creativity. Researchers tend to agree that “creative ability is not a fixed capacity; rather it can be improved through interventions. Indeed, research studies show that both domain specific and general educational programs make a considerable improvement in creative capacity.”²³ But researchers are still vexed by the following question: Would people who are creative in one domain (such as drama) necessarily be creative in another (such as language arts)? If so, creativity can be enhanced using general methods only. If, on the other hand, creativity is domain-specific, then particular creativity enhancing strategies must be employed within specific subject areas to facilitate students’ creative thinking. In light of findings that creative thinking skills tend not to be given high priority in schools,²⁴ researchers are encouraging educators to foster creative thought in pupils using both domain-specific as well as general approaches.

Arthur J. Cropley’s synthesis of research findings indicates that certain general teaching methods can foster creative thinking. These include:

- i) discovery learning – working alone or in small groups to work out connections or patterns²⁵
- ii) play learning – for example, acting out and elaborating on literary passages or scenes from plays; creating and demonstrating new games/ activities
- iii) problem solving – open-ended science questions/ experiments
- iv) learning via structural analysis – breaking something down into component parts to determine rules/ principles (such as rewriting Macbeth as a comedy)²⁶

To support creativity more generally, teachers can

- i) encourage students to learn independently
- ii) have a cooperative learning style
- iii) motivate students to learn factual knowledge, so that they have a solid base for divergent thinking
- iv) delay judging students’ ideas until they have been thoroughly worked out and clearly formulated
- v) encourage flexible thinking
- vi) promote self-evaluation
- vii) take students’ questions and suggestions seriously
- viii) offer students opportunities to work with a wide variety of materials and under many different conditions
- ix) help students to learn to cope with frustration and failure so that they have the courage to try the new and unusual
- x) develop a classroom atmosphere that is tolerant of unexpected answers, questions, suggestions, and so forth²⁷

To this list, some researchers would add that it is imperative to allow sufficient time for children to investigate their interests, although this is difficult given increasingly crowded mandated curricula.²⁸

For some observers, facilitating creative thought in schools is a matter of riding the societal wave shifting us from manufacturing to knowledge economies. Others have noted that the drive to improve learning through more meaningful, personalized approaches dates back to ancient times. Either way, interest in creative thought is currently experiencing a worldwide “renaissance of interest.”²⁹

Notes

¹ It is important to note that western perspectives are not universal. For example, First Nations societies have tended to view creativity more in terms of “the psychological, emotional, and spiritual dimensions of human expression” than of “concrete products.” See Rita L. Irwin and J. Karen Reynolds, “Creativity in a Cultural Context,” *Canadian Journal of Native Education* 19, 1 (1992): 91.

² John Dacey, “Concepts of Creativity: A History,” in *Encyclopedia of Creativity, Volume 1*, ed. Mark A. Runco and Steven R. Pritzker (San Diego, CA: Academic Press, 1999), 321. See also, Gadi Alexander and Yakir Shoshani, “Dialectic Explication of Creativity” in *Engaging Imagination and Developing Creativity in Education*, ed. Kieran Egan and Krystina Madej (Newcastle-Upon-Tyne, UK: Cambridge Scholars Publishing), 17 and Jonah Lehrer, *Imagine: How Creativity Works* (Toronto, ON: Penguin, 2012), XVII.

³ Mark A. Runco and Robert S. Albert, “Creativity Research: A Historical View” in *The Cambridge Handbook of Creativity* (New York, NY: Cambridge University Press, 2010), 12.

⁴ Mark A. Runco, “Creativity and Education,” *New Horizons in Education* 56, 1 (2008): 13. This is the case across various social and ability boundaries. See, for example, Meng-Jung Liu, Wei-Lin shih, and Le-Yin Ma, “Are Children with Asperger Syndrome Creative in Divergent Thinking and Feeling? A Brief Report,” *Research in Autism Spectrum Disorders* 5 (2011): 294-298.

⁵ Robert J. Sternberg and Todd I. Lubart, *Defying the Crowd: Cultivating Creativity in a Culture of Conformity* (New York, NY: The Free Press, 1995), 2; Robert J. Sternberg and Todd I. Lubart, “The Concept of Creativity: Prospects and Paradigms, in the *Handbook of Creativity*, ed. Robert J. Sternberg (Cambridge, UK: Cambridge University Press, 1999). See also Jonathon A. Plucker and Ronald A. Beghetto, “Creativity,” in the *Encyclopedia of Educational Psychology*, Vol. 1 (Los Angeles, CA: SAGE, 2008), 194 and Howard Gardner, *Creating Minds* (New York, NY: Basic Books, 1993).

⁶ Robert J. Sternberg, *The Triarchic Mind: A New View of Human Intelligence* (New York, NY: Viking Press, 1988); Todd Lubart, “Cross-Cultural Perspectives on Creativity,” in *The Cambridge Handbook of Creativity*.

⁷ Anna Craft, *Creativity in Schools: Tensions and Dilemmas* (London, UK: Routledge, 2005), 19.

⁸ Arthur J. Cropley, “Definitions of Creativity,” in *Encyclopedia of Creativity*, Vol. 1, 519; Craft, *Creativity in Schools*, 20; Michael A. West and Tudor Richards, “Innovation,” in *Encyclopedia of Creativity*, Vol. 2, ed. Mark A. Runco and Steven R. Pritzker, (San Diego, CA: Academic Press, 1999), 45.

⁹ Craft, *Creativity in Schools*, 23-28. A period of approximately 10 years of intense study is thought to be necessary for proficiency in disciplinary norms. See also Robert Boostrom, *Thinking: The Foundation of Critical and Creative Learning in the Classroom* (New York, NY: Teachers College Press, 2005).

¹⁰ Cropley, “Definitions of Creativity,” 520 and Mark A. Runco, “Divergent Thinking,” in *Encyclopedia of Creativity*, 577.

¹¹ Research also indicates positive correlations between creativity and culturally diverse experiences. See Todd Lubart, “Cross-Cultural Perspectives on Creativity,” in *The Cambridge Handbook of Creativity*, 275. In conceptualizing creativity, Ken Robinson defines culture as “a community’s overall way of life, including its patterns of work and recreation, morality, intellectual practices, aesthetics, belief, economic production, political power and responsibility.” See *Out of Our Minds: Learning to Be Creative* (Oxford, UK: Capstone Publishing, 2001), 167.

¹² Lubart, “Cross-Cultural Perspectives,” 267. See also Craft, *Creativity in Schools*, 87-101.

¹³ Craft, p. 55. Re: knowledge, see also Carl Bereiter and Marlene Scardamalia, “Education for the Knowledge Age: Design-Centred Models of Teaching and Instruction,” in the *Handbook of Educational Psychology*, ed. Patricia A. Alexander and Philip H. Winne (Mahwah, NJ: Laurence Erlbaum Associates, 2006), 695-713 and Emily C. Nusbaum and Paul J. Silvia, “Are Intelligence and Creativity Really So Different? Fluid Intelligence, Executive Processes, and Strategy Use in Divergent Thinking,” *Intelligence* 39 (2011): 42.

¹⁴ Franck Zenasni, Maud Besançon, and Todd Lubart, “Creativity and Tolerance of Ambiguity: An Empirical Study,” *The Journal of Creative Behavior* 42, 1 (2008): 61-73.

¹⁵ Gary Davis, “Barriers to Creativity and Creative Attitudes,” in the *Encyclopedia of Creativity, Vol. 1*.

¹⁶ Arthur J. Cropley, “Education,” in *Encyclopedia of Creativity*, Vol 1, 633. See also Runco, “Developmental Trends,” 577;

¹⁷ E. Paul Torrance, "Reflection on Emerging Insights on the Educational Psychology of Creativity," in *The Educational Psychology of Creativity*, ed. John Houtz (Cresskill, NJ: Hampton Press, Inc., 2003).

¹⁸ Thomas B. Ward, Steven M. Smith, and Jyotsna Vaid, *Creative Thought: An Investigation of Conceptual Structures and Processes* (Washington, DC: American Psychological Association, 1997), 14-18.

¹⁹ Torrance, "Reflection on Emerging Insights," 277. See also, D.N. Perkins, "The Nature and Nurture of Creativity," in *Dimensions of Thinking and Cognitive Instruction*, ed. Beau Fly Jones and Lorna Idol (Hillsdale, NJ: Lawrence Erlbaum Associates, 1990), 424.

²⁰ Robert R. McCrae, "Consistency of Creativity Across the Life Span" in *Encyclopedia of Creativity*, Vol. 1, 383. See also Mark A. Runco, "Fourth Grade Slump," in *Encyclopedia of Creativity*, Vol. 1.

²¹ Mark A. Runco, "Developmental Trends in Creative Abilities and Potentials," in *Encyclopedia of Creativity*, Vol. 1, 540.

²² Runco, "Fourth Grade Slump," 744.

²³ Ugur Sak and Ozge Oz, "The Effectiveness of the Creative Reversal Act (CREACT) on Students' Creative Thinking," *Thinking Skills and Creativity* 5 (2010): 33. See also Berenice Bleedorn, *An Education Track for Creativity and Other Quality Thinking Processes* (Lanham, MD: The Scarecrow Press, Inc., 2003) and Tolga Erdogan, Recai Akkaya, and Sibel Çelebi Akkaya, "The Effect of the Van Hiele Model Based Instruction on the Creative Thinking Levels of 6th Grade Primary School Students," *Educational Sciences: Theory and Practice* 9, 1 (2009): 181-194.

²⁴ See, for example, Sharon Morgan and Jill Forster, "Creativity in the Classroom," *Gifted Education International*, 14 (1999): 29-43; Lynn Newton and Douglas Newton, "Creative Thinking and Teaching for Creativity in Elementary School Science," *Gifted and Talented International* 25, 2 (2010): 111-124; and Warren R. Lett, *Creativity and Education* (Melbourne, AU: Australia International Press, 1976). More problematic is the finding that few children "are typically afforded systematic opportunities to develop their creative potential in schools and classrooms. Moreover, this inequity is particularly pronounced for culturally diverse students" who tend to be under-represented in gifted education programs, particularly in the United States. See Ronald A. Beghetto, "Creativity in the Classroom," in *The Cambridge Handbook of Creativity*, 448.

²⁵ Maud Besançon and Todd Lubart found, for example, that the Montessori method is effective in promoting creativity. See "Differences in the Development of Creative Competencies in Children Schooled in Diverse Learning Environments," *Learning and Individual Differences* 18 (2008): 381-389.

²⁶ See Cropley, "Education," 641.

²⁷ *Ibid.*, 637.

²⁸ Johnathan S. Feinstein, *The Nature of Creative Development* (Stanford, CA: Stanford University Press, 2006).

²⁹ Craft, *Creativity in Schools*, 3. See also Bernie Trilling and Charles Fadel, *21st Century Skills: Learning for Life in Our Times*, (San Francisco, CA: Jossey-Bass, 2009), 3-6. See also Centre for Educational Research and Innovation, *Personalising Education: Schooling for Tomorrow* (Paris, FR: OECD, 2006); Anthony Betrus, "Individualized Instruction," in *Encyclopedia of Education*, 2nd edition, ed. James W. Guthrie (New York, NY: MacMillan, 2003), 1129 and Keiran Egan, *An Imaginative Approach to Teaching* (San Francisco, CA: Jossey-Bass, 2005), 211.

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