Fostering Creativity

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Medical simulation professionals, artists, writers, mathematicians, and physicists depend upon creativity to produce useful output (new ideas or physical works). My own definition of creativity is:

Creativity is the process of exploring connections between disparate things.

As stated, creativity is a dynamic *process*. It is a pathway to something, not an end in itself. Compare creative thinking with linear thinking. Linear thinking leads us to a known goal; creative thinking leads us into uncharted territory.

The output of the creative process can be innovation or renovation. By innovation I mean creating completely new works as opposed to renovation which involves appropriating existing works and building upon them. Originality is a highly prized, though not an essential, element of creative activity. If you choose to appropriate/renovate an existing work you must avoid plagiarism; that is taking the core of the work and reusing it without modification or attribution.

Suggestions for fostering creativity

- Dreaming and sleep can invigorate the creative process. (see "Sleep inspires insight" by Ullrich Wagner et al, Nature, January 2004, Volume: 427, Pages: 352-355).
- Solutions to difficult problems are often found at the junctions between disciplines. Going beyond your normal boundaries can inspire the creative process. Richard Feynman, the theoretical physicist and Nobel prize winner, was famous for this. He drummed, painted, taught himself how to open safes and remained inquisitive all of his life (see "Surely you're joking, Mr. Feynman: Adventures of a Curious Character" by Richard P. Feynman, 1985).
- Tell a story: Mathematicians working on difficult problems often cast a problem as a story. One famous example is the classic Party Problem created by Paul Erdős and based on the work of Frank P. Ramsey. Using a story gives you a chance to play with the problem and pick out the salient parts. A story is easy to change and restructure.
- Visualize the problem. Translate the abstract into concrete visual terms. Compare it to something you're familiar with. How big/small is something? What color is it, or what color do you imagine it to be?
- Take a walk. A change in scenery and less immediate pressure to solve the problem will help to clear your head and give your mind a chance to wander. Former Canadian Prime Minister, Pierre Elliott Trudeau (1919-2000) credited a "long walk in the snow" with his decision to step down as Prime Minister in 1984.
- Collaborate. Others can provide unique insights, fresh ideas and new twists on existing works. If you are part of a team involve the entire team in your creative quest.
- Act on instinct. In his book "Blink" (2005) author Malcolm Gladwell shows how some of the best decisions are a result of not thinking; the decision is made in an instant without any in-depth analysis.
- Immerse yourself in popular culture. How we express our ideas in a work or how we interpret a work depends upon our culture. Popular culture is often used as a shorthand for communicating thoughts and ideas.
- Sketch. Inventors have used drawing and sketching to envision, explore, record and develop new ideas. (see "When an Inventor's Pencil Meets Paper" by Arthur Molella, American Heritage's Invention & Technology, Volume: 23, Issue: 3, Fall 2008, page 48) Carry a pencil and bound blank book with you to record your ideas.
- Extrospection versus introspection. Introspection, looking within ourselves for inspiration, does work but is limiting in creative endeavors. Extrospection, looking outward, gives us a broad source of raw material to work with and can lead us in new, unexpected directions.
- Work in parallel fields. Sometimes the technical side of the art can sometimes lead the artist astray. Substitution of technique for creativity is often seen in photography (e.g. cross-processing). If you're a photographer, sketch, paint and write. By doing so you'll often see the problem in a new light, disassociated from the technology.
- Don't use chemical help. Drugs, including alcohol, interfere with our senses and can cloud our thinking. Even the caffeine in a strong cup of coffee may be enough to jolt you out of a creative reverie. Dulling our senses leads to introspection and a muting of the ability to think in a broader context.
- Don't stop. Try as many ways to solve the problem as possible. Generate ideas then sort and recombine.
- Have confidence in your personal vision. As Walt Whitman said: "Every soul has its own language."
