



An Introduction to

# Creativity & Innovation

METIRI  
*Group*

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# Understanding Creativity & Innovation


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The emergence of the Flat World economy provides the urgency and impetus for redesigning learning to align with 21st Century realities. According to Friedman, the renowned author of the Flat World, high tech innovation has resulted in globalization, which in turn has removed economic and political obstructions, enabling billions of young Chinese, Indian, and East European professionals to enter the world economy, essentially leveling the global playing field. At the heart of this phenomenon is the anticipated explosion of inventions and innovations that will fuel an increasingly healthy, global economy. Friedman contends that Americans with the right knowledge and skills can compete and excel in this new economy.

Creativity is defined at two important levels: that which is culturally significant, and that which is personally or organizationally significant. Both hold great value. Human social, emotional, and intellectual development has been driven by creativity. Perhaps more than any other human quality, creativity has left permanent and lasting marks on cultures worldwide – and it is at the very heart of the knowledge-based age. In order to be creative at the cultural or organizational level, one must first be an expert in that field, something few of students are at their young ages. Creativity in K-12 students is typically at the personal level.



Innovation is distinct from creativity in that it is a force for change. While innovation is linked to creativity, invention, and ingenuity, it is unique in its effect on a system – a ripple effect that takes on a life of its own, igniting new cycles of thinking, and thus transforming how we live, learn, and work.

	<p><b>Creativity</b> The act of bringing something into existence that is genuinely new and original, whether personally (original only to the individual) or culturally (where the work adds significantly to a domain of culture as recognized by experts).</p> <p>- NCREL &amp; Metiri Group, 2003</p>
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	<p><b>Innovation.</b> The process of thinking and acting creatively to solve an identified problem, with the outcome being a new process or product that acts as a catalyst for new cycles of development.</p> <p>- Learning Innovation and Technology Consortium, 2007</p>
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## Research on Creativity

What fosters creativity is often counterintuitive to the practices of many managers and business owners. According to Stanford professor Richard Sutton, these “weird” ideas work because they provide the company with three key things:

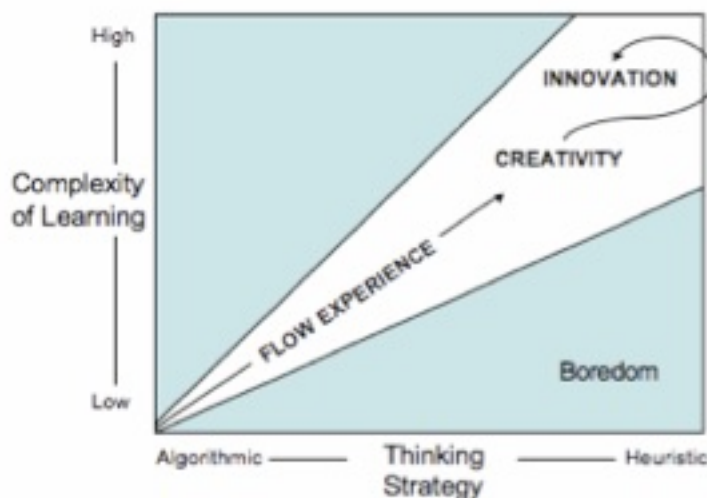
- an increase in the range of the company’s knowledge
- they cause people to see old problems in new ways, and
- they break from the past.

He also warns that creative environments are often “remarkably inefficient and terribly annoying places to work.”



This is due to the fact that creative persons often see the world from different perspectives, question everything, and lock onto a creative idea and stubbornly won't let go of it for anything. Note: that's how many of the world's innovations were developed. There is a myth that creativity is simply the generation of ideas. That doesn't account for the need to evaluate them, reflect on them, embellish them, review them – overall, a very complex process. Most creative people will tell you that creativity is not the “aha” moment you imagine, but instead 90% perseverance and hard work, and 10% inspiration. Did you ever wonder where the 40 in WD40 came from? It was the 40th iteration that finally worked!

So what does this mean for education? The answer is two-fold. First, it suggests that students should not be strangers to creativity and innovation. In fact, students should be encouraged to employ heuristics, lateral thinking and creative problem solving as students engage in critical thinking curricula.





In order to be creative students need to develop a cognitive style that enables deep complex thinking, an openness to new, possibly radical ideas, creativity heuristics (techniques), intrinsic motivation, self-directedness, a preference for the complex, an upbeat, positive approach to evaluation of problems. Research suggests that the two states of mind: generative and non-generative, cannot exist simultaneously.

Likewise, teachers can build cultures that foster creativity and innovation by promoting many of the aforementioned student characteristics, modeling a tolerance for failure, providing tools for experimentation, limiting overt evaluation of student work, assisting the student to process the outside evaluation of their work in a way that doesn't kill the creative idea, provide teams with free choice for some tasks, encourage students to see things through new lenses, perhaps by taking on a different persona for a day, assisting students in dealing with peer pressure, appreciating non-conformist behaviors, modeling the spread of innovation within and beyond the school community. A research study with college students found that simply setting the expectation that creativity would be valued, resulted in an increase in the number of creative projects.



# Profile of a Creative Student

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Students Who Are Creative (small C):

- Exhibit innovation and risk-taking
- Produce original, unique, and cogent ideas, phrases, and products
- Exhibit expertise in at least one domain
- Take risks and excel despite mistakes
- Are Intrinsically Motivated:

- Exhibit curiosity, inquisitiveness, wonder, and excitement
- Are flexible and adaptable
- Become immersed in challenging learning for intrinsic reasons
- Tolerate ambiguity well and respond with spontaneity and ingenuity
- Exhibit Complex Personalities

These students are often:

- Energetic, yet able to quietly contemplate ideas
- Divergent thinkers, yet able to think convergently at appropriate times
- Playful, yet disciplined and able to persevere
- Imaginative, yet rooted in reality
- Extroverted, yet able to be introspective
- Passionate and committed to learning, yet analytical and objective
- Driven and aggressive, yet sensitive
- Rebellious, yet able to operate within traditions



Caveat: While students may be personally creative, that is no guarantee that the student will be able to be creative within a group or organization. The former requires a learning environment that promotes creativity within strong teaming and collaboration. The latter requires a learning environment that promotes and encourages creativity among individuals as valued members of the organization (see Williams & Yang, 1999).

NOTE: When the student is also asked to reflect thoughtfully on the implications of their thinking into other domains, far transfer of learning (or innovation) can also occur.



# Strategies

## For Scaffolding Creativity

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Those who successfully foster creativity and innovation recommend creating an organizational culture:

- In which changes to methods and practices (through innovation) is positively viewed
- Where mistakes that arise from innovation are not punished, but rather seen as an opportunity to learn
- Knowledge is managed so as to encourage its free flow across different expert cultures
- Where diversity of perspective is highly appreciated and ideas from everyone, from the person in the mailroom to the engineer, are taken seriously since the fringe often provides the new ideas
- Time is allocated to reflect on and learn from past mistakes to build new knowledge
- Innovative knowledge communities are nurtured





**In addition, specific classroom strategies include to:**

- Value and model creativity. It is contagious. Encourage questioning and curiosity. Listen to their questions and the things they wonder. Ask them interesting questions like: How could you make the sky a different color?
- Establish an environment that promotes intrinsic motivation among students about their work and their ideas, and their projects. Focus on the joy of learning and student development of competence and knowledge. Avoid competition.
- Encourage autonomy by avoiding control and respecting the child's individuality.
- Provide opportunities for students to engage in challenges with ill-structured problems. In challenging situations, multiple behaviors compete and interconnections are realized.
- Provide an incubation period after an ill-structured, or essential question is posed to allow for generative creative thinking prior to analytic/non-generative thinking in the production of the idea. Encourage students to capture and preserve their ideas as they occur, without judging them.
- Provide opportunities for students to broaden their horizons. The more diverse your knowledge, the more interesting the interconnections – and the more creative the ideas.
- Create a learning environment that surrounds students with interesting and diverse things, people, and ideas.
- Foster apprenticeship-like experiences to develop the language of thought required for creativity within a genre.

**The factors that stifle intrinsic motivation and creativity include:**

- Constant evaluation
- Surveillance
- Reward
- Competition
- Restricted choice
- Extrinsic orientation toward the work



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