

# THE CREATIVITY GAP:

## RESTORING CREATIVITY TO SCHOOLS AND INDUSTRY

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Everyone is born creative, but I believe that creativity is often educated out of students at school. Although classes may attempt to teach writing and art, they are actually only teaching conformity. Children are bursting with ideas, but the moment they go to school, they begin to lose the freedom to explore, take risks, and experiment. Instead, they spend their childhoods learning the artificial skills of passing exams and giving teachers only what they expect.



By the time children grow into adults, they have been conditioned to conform. We spend our days in meetings and talk about being innovative, but we rarely know how to begin. As the world continues to advance, businesses without creativity at their core will fail. To stay innovative and competitive, America must continue

to attract the world's sharpest minds and invest in the further development of its creative sector, because where creativity goes, talent flows — and innovation and economic growth will follow. Creativity is the most powerful competitive advantage an organization can have, which is why companies need to hire employees who know how to foster new ideas and inspire fresh thinking in others.

We must expose the myth that the creative person is a unicorn, that creativity is something mysterious and elusive that cannot be taught. We are not talking about high art here;



we are talking about empowering people to use their imaginations. Not everyone can be Beethoven, Dickens, or Monet, but everyone can sing, write, and draw.<sup>1</sup>

One reason Silicon Valley is a creative hotbed is because it is populated by young adults who slipped through the educational net. These “mavericks” challenge the system and take risks with little concern about what others think. We need more of these rebels and innovators.

Traditionally, creatives who are promoted into the ranks of leadership have not always fared well. This too must change. We need more creative leaders, people who are both business-minded and creative. Most importantly, we need

creative people in the boardroom. Only when corporations begin to effect change from the top-down will the world of business become more innovative – filled with bigger, bolder, and more exciting concepts and solutions for future generations.<sup>2</sup>

## **MYTHS & REALITIES**

Unfortunately, schools were never designed to teach creativity to children. The education systems in the U.S. and many other countries are based on the 19th-century Prussian model. Children were taught to obey, not to challenge the status quo or think creatively. The system worked well for blue-collar workers, people who stood on production lines in factories. But in a world driven by search engines, this antiquated system must be transformed. There is no real reason why creativity can't be reintroduced into commonly used curriculum if schools understand the nature and importance of creativity in educational success, workforce readiness, and an improved quality of life for all students.

By definition, creativity involves discretion, choice, intrinsic motivation, and originality based on personal experience.

Interestingly, these aspects are also associated with a generally higher quality of life. Innovation, invention, discovery, imagination, decision-





Defining creativity may seem counterintuitive if we believe it only involves allowing your imagination to run without guardrails. However, psychologist Dr. E. Paul Torrance described creativity as “a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, and disharmonies; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies: testing and retesting these hypotheses and possibly modifying and retesting them; and finally communicating the results.”<sup>4</sup> Author and education pioneer Sir Ken Robinson defines creativity as “the process of having original ideas that have value,” that creativity is “applied imagination.” He mentions two other concepts at the root of creativity: *imagination*— the ability to recall things not present to our senses —and *innovation* —putting new ideas into practice.<sup>5</sup>



In Graham Wallas' *The Art of Thought*, early research on the creative process identified four stages: *preparation*, *incubation*, *illumination*, and *verification*. Preparation involves collecting materials and conducting research on the topic. Incubation is the quiet, reflective time when we let all the information “marinate” while we take a walk or engage in other pursuits. Illumination is the “aha” moment when a promising idea emerges, followed by the verification stage during which time we test the idea and make sure it works.<sup>6</sup>

Psychologist and author Mihaly Csikszentmihalyi studied the lives of over 90 eminent creative producers and thinkers to



find common links. He discovered that the creative personality has no template, that everyone is different, but everyone has the capacity to be creative.

Circumstances change as we approach each new creative venture, and we must be adaptable. Csikszentmihalyi summed up his findings by presenting ten pairs of antithetical traits that highly creative people experience with equal intensity and without inner conflict, referring to these pairs as dimensions of complexity.<sup>7</sup>

1. Creative individuals have great physical energy but become extremely quiet when resting, which could lead others to think that they are ill or unhappy.

2. Creative people can be highly intelligent and naive at the same time.
3. Creative people are often disciplined and playful at the same time, indicating they are simultaneously responsible and irresponsible.



4. Creative minds move between a spectrum of fantasy and imagination but retain a firm grounding in reality.
5. Creative individuals can be introverted and extroverted, expressing both traits simultaneously.
6. Creative people are naturally humble and extremely proud in a childlike way.
7. Creatives are distinctly individual, undeterred by the barriers of authority or the rules of others.
8. Creative individuals seem rebellious but are traditional as well as cutting edge.
9. Creative people are deeply passionate about their work, but they can be extremely detached and objective when discussing it.
10. Creative people are highly open and sensitive, which exposes them to pain but also allows them to feel intense happiness.<sup>8</sup>

While these definitions provide insight into creative personalities, creativity is also about fresh thinking and making critical judgments about whether your project has value. This original thinking is about being able to judge critically if the work in process is taking the right shape or is worthwhile. Creative work often passes through phases, a dynamic process that can involve making new connections, crossing disciplines, and using metaphors and analogies.

Being creative is not just about letting your imagination run wild. It also involves refining, testing, and focusing. However, creativity is not the opposite of discipline and control. It involves understanding the real dynamics of



creative work, a growing mastery of skills and concepts. However, creative work can always progress forward without mastery of any specific skill.<sup>9</sup>

While detailed knowledge of a single area once guaranteed success, today the top rewards go to those who can operate with equal assurance in different realms. Author Dan Pink describes these people as “boundary crossers.” They develop expertise in multiple areas, speak different languages, and find joy in the rich variety of backgrounds, expertise, and human experience.<sup>10</sup>

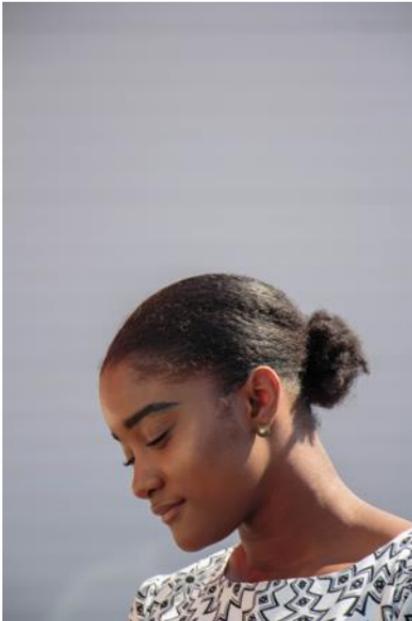
In her book *Your Creative Brain*, Dr. Shelley Carson, a Harvard-based researcher on creativity, describes the seven “brainsets” or functions of creativity, based on findings from neuroimaging and her own research. According to Carson, creative individuals can switch between different brain states, depending on the task at hand.

- *Absorb*: The brain is open to new experiences and ideas; it is receptive to more information and the environment within (usually unconscious) thought processes. The individual views the world in a nonjudgmental manner, and everything fascinates and attracts the individual’s attention. He/she is receptive to insights and experiences that can lead to many exciting creative ideas.
- *Envision*: This is the mindset of imagination in which a person can think visually, seeing and manipulating objects in the theater of the mind. An individual uses the mental format of possibilities to envision not just how things are but how things could be.
- *Connect*: This brainset addresses divergent thinking, in which a person generates multiple uncensored solutions to open-ended problems, allowing connections between objects or concepts that are



very different. Because the ability to combine distant bits of information into new and useful ideas is the essence of creativity, this brainset is one of the most useful creative tools. The ability to generate multiple solutions is combined with an increase in positive emotion that also provides motivation to remain engaged in creative pursuits.

- *Reason:* A person consciously manipulates information in the memory to solve problems in a



logical and sequential way. The brain generates ideas, then plans and makes decisions about how to execute these ideas. Although the trial-and-error method may be slower and require more effort than generating ideas from the Absorb, Envision, or Connect mindsets, reason-generated

ideas can be just as creative. This is the brainset in which Thomas Edison worked as he invented the electric lightbulb.

- *Evaluate:* In this state, one consciously judges the value of ideas, concepts, products, behaviors, or individuals. This analytical mental activity is necessary for deciding which creative idea is worth

pursuing; it also encourages the monitoring of creative projects to make sure they continually meet the criteria for usefulness.

- *Transform*: In this state, a person finds him/herself in a self-conscious and dissatisfied state of mind.

Many highly creative writers, artists, musicians, performers, and scientists have



transformed the negative energy generated in this state into great works and great performances. Even though an individual is vulnerable in this brainset, he/she is also motivated to express in creative form the anxieties and the hopes that we all experience.

- *Stream*: This is the brain state of “flow,” in which thoughts and actions begin to stream in a steady, harmonious sequence. In this brainset, a person may improvise to produce creative material, such as narrative writing, jazz improvisation, sculpting, painting, or even the revelation of scientific discovery.<sup>11</sup>

The brain maintains a duality of systems that constantly introduce flexibility into our thinking and then try to stabilize our thinking. The brain evaluates new stimuli and then decides on the optimal degree of flexibility or stability

to pursue, a cycle happening three times per second. To reach that perfect state of brain balance it helps if the creator is feeling flow and what athletes call “being in the zone.” It’s an automatic, effortless, but highly concentrated state in which all the practice and knowledge leading up to that moment comes pouring out in perfect harmony. Musicians and artists describe this same sense as flow, which can appear out of nowhere, yet often diminishes if it is forced. Research has shown that there is a switch away from the lateral prefrontal lobes responsible for monitoring and self-censoring— say, when jazz musicians are improvising —that allows the creative student to generate ideas more freely.



## WHAT KILLS CREATIVITY

Psychologist Teresa Amabile's research has identified the main creativity killers:

- *Surveillance*: Hovering over students, making them feel as if they are constantly being watched while they're working
- *Evaluation*: Making students worry about how others judge what they are doing
- *Competition*: Putting students in a win/lose situation in which only one person can come out on top
- *Overcontrol*: Telling students exactly how to do things and forbidding any exploration
- *Pressure*: Establishing grandiose expectations for a student's performance.<sup>12</sup>

Students (and teachers) often stop trying because they are afraid of making mistakes that may be embarrassing. However, if we do not take chances and make mistakes along the way, we fail to learn, let alone do anything unusual or innovative. In creative problem-solving, a mistake is an experiment to learn from, valuable information that offers guidance about what to try next. Research suggests that creative people make more mistakes than others, but they also make more attempts than most people. They spin out more



ideas, come up with more possibilities, and generate more schemes. They win some, they lose some, and eventually, they triumph.<sup>13</sup>



The U.S. public education system, however, functions in a creative vacuum by necessity. Teachers, who must instruct dozens of students at once, must establish order, uniformity, and obedience in the classroom in order to function as has been mandated. Right answers become paramount as time, budgets, and standardized testing are prioritized. Students learn that they must not only produce correct answers on their first try, but they also learn

to fear and avoid experimentation, the creative process, and even the possibility of mistakes that could lead to innovation.

This constant preparation for testing has suppressed uniqueness and originality in both educators and students, suffocating creative potential. Students have few opportunities for group work or discussions designed to help students learn and collaborate with others. Districts have decreased or eliminated instruction time on non-tested subjects such as the arts, social studies, science, physical

education, and foreign languages. This contraction not only narrows students' minds, but also gives them few opportunities for finding or expressing their individuality and cross-pollinating across different subjects or fields.<sup>14</sup>

In 1968, George Land and Beth Jarman conducted a research study to test the creativity of 1,600 children from ages three to five who were enrolled in a Head Start program. This was the same creativity test Land developed for NASA to help select innovative engineers and scientists. The test required subjects to look at a problem and come up with new ideas. These responses were used to assess a person's creative capability.

The assessment worked so well that Land re-tested the same children at 10 years old and again at 15 years old (a longitudinal study). The results were published in his book *Breaking Point and Beyond*. The proportion of people who scored at the "Genius Level" were:

- Among 5-year-olds: 98 percent
- Among 10-year-olds: 30 percent
- Among 15-year-olds: 12 percent



When Land issued the same creativity test to 280,000 adults (with an average age of 31), only 2 percent scored at the “Genius Level.”

These results demonstrate how a biological process (nature) can be and is influenced by societal changes (nurture). Scientific studies show that the human brain is attuned to recognize patterns based on what previously worked, making these mental pathways stronger and these connections more efficient every time they are used. As we age, our most-used memories and habits are continually reinforced. However, this same process also makes it harder to generate creative ideas, as they force the brain to process all new information again.<sup>15</sup>



When children are very young, they are often encouraged to use their imagination, draw, dance, and create stories. But once elementary school begins, the emphasis shifts to rote learning and reciting facts. Tests and exams grade

you on being able to give the right answers to specific questions. As we get older, the importance of these exams also grows.<sup>16</sup>

Hugh MacLeod said it this way: “Everyone is born creative; everyone is given a box of crayons in kindergarten. Then when they hit adolescence,



they take the crayons away and replace them with dry, uninspiring books on algebra and history. Being suddenly hit years later with the creative inspiration, there is a quiet voice telling you, ‘I’d like my crayons back, please.’”

## **THE CREATIVITY CRISIS**

Today, the creative sector of the U.S. economy employs more than 30 percent of the workforce and accounts for nearly half of all wage and salary income (some \$2 trillion), practically as much as the manufacturing and service sectors combined. Research has tied the creative process to innovation, invention, discovery, imagination, and even intelligence.

Over a decade ago, Richard Florida, director of the Martin Prosperity Institute at the University of Toronto’s Rotman School of Management, published his first book explaining how creativity is emerging as a common element shaping America’s geography, its communities, and the economy. In his book *The Rise of the Creative Class: Revisited*, Florida reveals how the United States has reached a Creative Age that will be the driving force behind its economic stability. Florida believes that creativity has penetrated every aspect

of Americans' lives and created a new kind of class. He mentions how he noticed younger researchers looking at not only arts and culture, science and engineering, but also at the transformation of barbershops or butcher shops or distilleries or microbreweries across the country. With ten years of research to document it, Florida has monitored occupations, careers, and the United States Bureau of Labor Statistics, specifically focusing on jobs that use creativity in work. His conclusion: Two key skills underlie creative work: cognitive or analytical skills (the ability to process information to acquire knowledge) and social skills (the



ability to manage people to form a business or manage an entrepreneurial enterprise). These two skill sets are really the ones that distinguish the creative class (which Florida says includes about 40 million Americans are members).

Florida indicates the real challenge for our future: “How do we now expand the creative class, which has, say, 35 percent of our workforce and in some cities and metros nearly half? There are the creative class areas and the places that are falling further behind. Even though they offer lower housing prices and many times attractive living, it appears the economic benefits—the concentration of these creative class

jobs, the ability to pursue it in your career, all the other things that people want—those are in certain areas more than others, so we have this society that’s dividing by class and by community. That’s really what worries me. I talk in the last chapter of the book about the need to build a new creative compact, a social compact of our time that can extend the Creative Age and creative economy to more Americans, can upgrade those service jobs, can make manufacturing stronger, make sure people have opportunity, make sure that cities are strengthened, but that’s hard.”<sup>17</sup>

Hard, indeed. Current research shows Americans today generate not only fewer ideas and solutions to open-ended questions or challenges, but also fewer unusual or unique ideas than

Americans decades ago generated. The significant declines in out-of-the-box thinking skills (elaboration and simplicity) indicate that Americans think less in depth

with less focus, and they think less critically and in more black-and-white terms.



## **CREATIVITY RENEWED**

Author Sir Ken Robinson suggests that to engage and succeed and provide well for our students in the future, education must develop on three fronts. First, it should foster diversity

by offering a broad curriculum and encouraging individualization of the learning process. Second, it should foster curiosity through creative teaching, which depends on high-quality teacher training and development. Finally, it should focus on awakening creativity through alternative didactic processes that put less emphasis on standardized testing, thereby giving the responsibility for defining the course of education to individual schools and teachers. Robinson emphasizes that we can only really succeed if we recognize that education is an organic system, not a mechanical one. Successful school administration is a matter of building and nurturing a helpful climate rather managing a rigid system of command and control.<sup>18</sup>

The ability to see things in a fresh way is vital to the creative process, and that ability rests on the willingness to question all assumptions. The idea is to develop the habit of paying

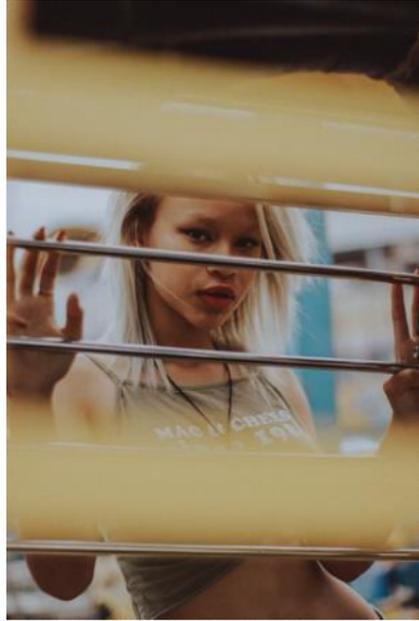


attention to your own creativity. The more you experience your own originality, the more confidence you develop. Eventually you will develop a greater

trust in this attribute and embrace it when you are confronted with problems. Paul MacCready, inventor of the Gossamer Condor — the first human-powered airplane to fly a mile — says, “To design the Condor, I had to pretend I’d never seen an airplane before. If you have too much

knowledge of what didn't work in the past and what you think can't work, then you just don't try as many things."

In a school where creativity is valued and promoted, teachers act as mentors to support the individual interests of each child and introduce them to new ideas and possibilities. Traditional testing would have to be eliminated to avoid implicitly teaching students that failure is bad and that there is only one right answer.



Creative learning would be more effectively promoted when students are allowed to actively engage in their creative pursuits as opposed to being confined to a classroom organized around uniformity.<sup>19</sup>

## **MAXIMIZING CREATIVITY IN THE CLASSROOM**

Due to advances in creativity research, creative potential can now be measured. However, it is not as obvious or objective as actual creative behavior. As mentioned, every student has creative potential. In fact, one finding (Scoring Divergent Thinking Tests with a Semantics-Based Algorithm) is that students earning the highest grades are sometimes more concerned about correct answers than original ideas, and

often students earning only moderate grades have outstanding creative potentials that are not apparent in their schoolwork, indicating that grades are not necessarily correlated with creativity. Clearly, the ideal is to help students to fulfill and express their creative potential while learning what the curriculum is designed to convey. This is one way that the educational system needs to strike a balance, appreciating and nurturing both creative and academic talents.

Generating different ideas is more important to creativity than many people realize, partly because of the free-flowing



nature of coming up with many ideas, no matter how ridiculous, and because this gets the idea out of the brain, making space for the next idea.<sup>20</sup> When this is allowed and the environment encourages brainstorming, there is no one correct answer--there are many possibilities. This is what allows divergent and original thought—the openness to explore, play, experiment, and think for oneself.<sup>21</sup>

Also, many examples of illustrious creative people show an abundance of work. Picasso created over 10,000 works of art, always developing his process and looking for new ways to

express his ideas. Often, the number of pieces produced is a strong predictor of creative achievement. The process of putting ideas to paper allows the creator to react to it in new ways. The ability to inhibit the first thing that comes to mind to get to the higher-hanging fruit in the cognitive tree is one of the cornerstones of creative achievement.<sup>22</sup>

One of the most important parts of creativity is its connection to emotions and the visceral parts of the brain. Neuroimaging experiments demonstrate that we use the very same neural systems to feel our bodies as to feel our relationships and our creative inspiration. To develop ideas that can be considered creative, the brain must be both stable and flexible at the same time, a balancing act performed every second of every day.<sup>23</sup>



When researchers asked children what learning aspects made them feel most creative, the answer was the freedom of not choosing right and wrong answers. Indeed, freedom to explore and practice without a specific goal in mind is a key element in the development of creative competence. Teachers must be permitted to cultivate these behaviors by introducing them to students, explaining that the more they do it, the better they will become at it.

Some administrators are moving in that direction, allowing teachers to loosen the rules, giving students choice, and

celebrating ideas and behaviors that challenge the status quo. However, without a drastic reimagining of the structure within which educators work, true creativity will be hard to find in school.<sup>24</sup> Because noncognitive qualities like curiosity,



self-control, and optimism are often described as skills, teachers eager to develop these qualities in their students naturally treat them like the skills that we already

know how to teach, such as reading, analyzing, and calculating. As the value of noncognitive skills has become more widely acknowledged in the workforce, demand is growing for a curriculum or a textbook or a teaching strategy to guide us in helping students develop these skills.

Campuses everywhere are starting to ignite with the conviction that everyone is creative and can learn to be even more creative. Traditional academic disciplines still matter, of course, but as content knowledge evolves, educators are talking more about “process skills,” strategies to reframe challenges and extrapolate and transform information, and to accept and deal with ambiguity. As creative studies appear on course lists and as credentials, and while creative study offerings are new options in business, education, digital media, humanities, arts, science, and engineering programs across the country, perhaps crossing the creativity gap in public and private education is not as impossible as it sounds.

*Chad Robert Stewart has 20 years of experience as a global strategist, marketing consultant, creativity specialist, financial analyst, and prolific writer. Born in Newport Beach, California, Chad's possesses expertise in the areas of global strategy, film and media production, innovative education, and international marketing. Founder of the prestigious Devonfield L.L.C., a comprehensive company dedicated to the highest quality in film production, publishing and education, Chad has consulted for Cisco Systems, Moen, PepsiCo, Pratt-Whitney, and Royal Bank of Scotland. He earned a bachelor's degree in British Literature and European History from Brown University and an M.B.A. from Boston College. He is currently pursuing an M.S. in Advanced Management and a Ph.D. in Education and Business Strategy at the Peter F. Drucker and Masatoshi Ito Graduate School of Management at Claremont Graduate University. Now based in San Diego, Chad is a strong supporter of education and the arts and sits on the board of Horizon University. Chad is an adjunct professor at the Fermanian School of Business at Point Loma Nazarene University and is a past president of the Board of Directors of the San Diego Ballet. Chad enjoys world travel, writing, reading, riding, swimming, sailing, tennis, and the arts. Learn more about Chad's series of young adult novels, which begins with Britfield and the Lost Crown, at [Britfield.com](http://Britfield.com).*

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