Creativity

What it is, What it isn’t, and How to Get More of it

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Quick Quiz!

How many people worked as smartphone designers in 2007?

Practically none, and they were all locked in Steve Jobs’ basement.
Service jobs: hair stylist, home health aide

Usually sales and office work

What's a dark factory?
The 21st Century ...

- ... is clearly proving to be a brave new world where skills and talents that previously helped us achieve success need to be rethought.

- The importance of creativity as a student outcome is clear.
Creativity helps us ...

- Solve big problems (Big C Creativity)
  - Global warming
  - Terrorism
  - Trade
  - Diplomatic confrontations
  - Military confrontations
  - Disease
Creativity helps us …

- Solve little problems (little c creativity)
  - Traffic on the way to work
  - Lost on vacation when you do not speak the language
  - Personal problems
  - Making dinner with the wrong ingredients
Creativity helps us ...

- Solve workplace problems (pro creatively)
  - Improving performance of a medical device
  - Producing an effective piece of art
  - Developing new strategies for completing important tasks
  - Meeting client needs
Little c becomes Big C (sometimes)

- Vijay Kakkar (1937-2016)
- Two patients died after routine surgeries.
- Complications from blood clots.
  - Cause 80% of fatal heart attacks and strokes.
- Began administering blood thinners before surgery to prevent post-operative clots.
- Estimated he saves ~300,000 lives/year.
- Essentially wiped out post-operative deaths from blood clots.
Colleagues didn’t believe his theory that blood clots were causing these post-operative deaths.

- Had to conduct extensive research to convince medical profession.

- Once he did that, no one would believe his proposed solution
  - Only 1 of 6 heparin companies would support his work.

- He was persistent and kept gathering support for his work.

- Again: 300,000 lives saved PER YEAR.
We’re pretty sure little $c \rightarrow$ pro $c \rightarrow$ Big $C$

… but don’t have a great sense of how

That probably doesn’t matter for most of us.
CONVENTIONAL WISDOM IS THAT WE DO NOT HAVE GOOD DEFINITIONS AND THEORIES, WE CANNOT MEASURE CREATIVITY, & WE DO NOT KNOW HOW TO INCREASE CREATIVITY.

ALL OF THESE ASSUMPTIONS ARE INCORRECT!

MAJOR ADVANCES IN THEORIES
MAJOR ADVANCES IN ASSESSMENT/MESUREMENT
MAJOR ADVANCES IN INTERVENTIONS
Five Examples

- Productivity
- Groups
- Constraints
- Enhancement
- Definitions
Simonton’s chance-configuration theory: The more ideas, the better.

But also: The more ideas, the more bad ideas.

“… biographies of famous scientists tend to edit out their mistakes, we underestimate the degree of risk they were willing to take. Biographies of Newton, for example, understandably focus more on physics than alchemy or theology. Newton made three bets. One of them worked. But they were all risky.”

Paul Graham, 2017

http://www.paulgraham.com/disc.html
“It is amateurs who have one big bright beautiful idea that they can never abandon. Professionals know that they have to produce theory after theory before they are likely to hit the jackpot.”

Francis Crick
Example: Creative Productivity

Especially for women. Why?
Example: Creative Productivity

Especially for women. Why?

Anne Enright

Judit Polgar

Julius Plücker

Alexandre Dumas

Eleanor Maguire

Saoirse Ronan

Liam Neeson

Judit Polgar

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Saoirse Ronan

Julius Plücker

Alexandre Dumas

Eleanor Maguire

Anne Enright
Example: Creative Productivity

20 25 30 35 40 45 50 55 60 65 70 75 80 85 90

Age

Toni Morrison: 40
Mark Twain: 41
Marcel Proust: 43
Henry Miller: 44
J.R.R. Tolkien: 45
Raymond Chandler: 51
Richard Adams: 52
Annie Proulx: 57
Laura Ingalls Wilder: 65
Frank McCourt: 66
Harriet Doerr: 74
Creative Productivity ...

- Young people face the same issues.
- An ambitious, talented young person can be seen as a real threat to a parent, teacher, professional, etc.
- They need mentors and champions.
Big Takeaway!

- Age can bring experience.
- As long as it is tempered with a tolerance for ambiguity, it can only help to enhance creativity.
- But age and experience aren’t a necessary condition for creativity.
Example: Group Work

- Working in groups on one problem solving task almost always depletes creativity.
  - Probably due to social pressures and cognitive fixation.

- Big push in several fields to find ways to improve creativity of groups, with some promising results.
  - e.g., Alternating tasks within groups appears to help increase creativity.

Why?
Example: Group Work

- Alternating group and individual work helps reduce social pressures.

- Group work and collaboration are not the same thing.
Big Take-away!

• Groups can be more creative than individuals, but it’s neither common nor easy.
• Dyads may work better than teams.
• Provide students with a range of teaming options.
• Teach them to work smartly and flexibly in groups.
Example: Constraints

- Generally accepted that constraints are bad for creativity.
- But how often in life do you work without constraints?
  - Many of the most creative things you’ve done have resisted the advice of others.
- Draw a 1 Euro coin
- Amabile Replication Example
When Dean Ip was in school, women were actively discouraged from pursuing scientific careers.

“I chose to follow my heart and have never looked back.”
“It helps me focus on what’s important.”
Constraints ...

- Learn how to work creatively within the constraints imposed both by yourself and others.

- When working with others, use sensible constraints and make sure that your expectations are clear.
“There is great freedom within constraints.”

Michael Fassbender, famous Irish actor
Big Take-away!

• CONSTRAINTS ARE NOT GOOD OR BAD.
• THEY FORM THE LIMITS OF ONE’S REALITY.
• BUT THEY ARE CHANGEABLE AND IGNORABLE.
Example: Our Model of Creativity Training

- Address attitudes and beliefs about creativity
- Introduce creativity techniques in context when students are ready to use them psychologically
- Introduce a proactive approach to interacting with and modifying the environment
- After opportunities to transfer, revisit process
Big Take-away!

• Enhancing creativity is largely about attitude.
• Encouraging creativity has a big effect.
Creativity is the interaction among aptitude, process, and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context.

Plucker, Beghetto, & Dow (2004)
Big Take-away!

- Creativity can and should be defined.
- Saying it can’t or shouldn’t is a ploy.
- Doesn’t matter (that much) what your definition is, just have one.
- Trojan horse it if you have to.
21st Century Skills

Creativity
"If you could make only two recommendations ..."

- Modeling
- Articulation
Thank you!

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