Discussion Points

• Creativity Primer with exercise
• The Neuroscience of the Creative Process
• How to Promote Creativity in your life- general examples
# Summary: The Creativity Gap

Unlocking creative potential seen as key to economic and societal growth

But globally less than half describe themselves as creative

Only 1 in 4 people feel that they are living up to their creative potential

| Workplace Creativity Gap: There is increasing pressure to be productive rather than creative at work | People spend only 25% of their time at work creating |
| Globally, Japan is regarded the most creative country, except by the Japanese | Universal concern that educational system is stifling creativity |
| Americans express strongest concern that they’re NOT living up to their creative potential | Americans believe the US is the most creative |
Creativity is a skill which can be actively enhanced

- Certain people are predisposed to be more creative, but anyone who can learn and comprehend can be creative
- There is time for creativity (break out of task-centric mindset)

The more ideas you generate, the higher the quality the final solution. Quite often, the highest quality ideas appear at the end of the list.
Iconoclasts: people defying common beliefs or practices

- Bill Gates, Steve Jobs, Jonas Salk, Walt Disney

- iconoclasm is not an all-or-none phenomenon
Being Creative = Unlearning Behaviors

- George Land’s 1968 study: measuring creativity over time
  - 5 year olds – 98% are creative
  - 10 years – 30%
  - 15 years – 12%
  - Adults – 2%
- Creativity can become stifled by our task focused behaviors—historically schools promoted memorization of facts, moving towards guide on the side vs. sage on the stage
- Creativity can be re-learned (you can “unlearn” uncreative habits)
  - Experiment and explore
  - Question and upend assumptions
  - Use imagination
  - Synthesize information
  - Get new inputs
Essential and Desirable Attributes

**Essential**
- being open-minded
- a willingness to take risks
- communication skills for explaining ideas
- persistence and tenacity: a determination to see your idea through

**Desirable**
- specific technical ability
- analytical skills to back up ideas and show why they are useful
- shaping skills to make ideas workable
Creativity- Not just creative arts

- Widely variable meaning to individuals.

- In general, creativity is the ability to generate new ideas, make new connections between ideas, and solve problems.
Use the circles as a starting point for drawings. Draw for 2 minutes.
The Guilford Measures: measuring a person's creativity

Fluency
- how many responses

Flexibility
- how many types of responses

Originality
- the unusualness of the responses

Elaboration
- the detail of the responses
Use the circles as a prompt for drawing. Draw for two minutes.

<table>
<thead>
<tr>
<th></th>
<th>Anna</th>
<th>Benji</th>
<th>Carol</th>
<th>Darlene</th>
<th>Eric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face</td>
<td>Face</td>
<td>Wheel</td>
<td>Wheel</td>
<td>Bomb</td>
<td>Face</td>
</tr>
<tr>
<td></td>
<td>Face</td>
<td>Ball</td>
<td>Ball</td>
<td>Balloon</td>
<td>Face</td>
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</tbody>
</table>

highest fluency most responses
highest flexibility most types of responses
highest originality most unusual responses
highest elaboration most detailed responses
Originality
 Fluency
 Flexibility
 Elaboration
 Tolerance of Ambiguity
 Resistance to premature closure
 Divergent thinking
 Convergent thinking
 Risk Taking
 Intrinsic motivation
 Extrinsic motivation
WhatIf! Creativity Behaviors

**PLAYFULNESS**
Getting people in a great mental space to have ideas

**INTUITION**
Not taking things at face value

**CURIOSITY**
Challenging assumptions every day

**BRAVERY**
Having the courage to try something that you haven’t tried before
Neuroscience
Our thoughts

- Neuroscience is discovering how we process our thoughts (neural imaging)
- Positron emission tomography (PET)
- Functional Magnetic resonance imaging (fMRI)
• Creativity and imagination begin with perception
• Imagination is perception in reverse
  Same neural circuits
• What we see through our eyes does not alone tell us what we see
• Our brains interpret these signals based on our experience

Experience modifies the connections between neurons
New experiences
Visualize the sun setting at the beach
Now imagine something that you have never actually seen
To think creatively, you must develop new neural pathways and break out of the cycle of experience-dependent categorization.
Our brain’s job is to help us to become more efficient at processing information:

New stimuli - host of neural network

by 6th time

subset neural activity noted
Neural pathways can be reprogrammed. Novel stimulus needed-- new piece of information or unfamiliar environment.

radical change = greater insights
to an extent...

- Develop strategies to reduce our instinctive fears and tendencies to think in conventional ways

- Seek out novel experiences and attempt to feel a degree of comfort with them
Creative Techniques
Generate new ideas

• Come up with new ideas
• Break out of fixed thinking
• Think beyond current or obvious solutions
• Build upon existing ideas
• Generate new inspiring/surprising ideas
Divergent → Convergent Phase

- Define your problem
- Employ divergent techniques
- Cluster or categorize
- Employ convergent techniques
Define your problem

• Define problem in one concise sentence and be tangible
  • Start with ‘how’ or ‘invent’
Use divergent techniques

- “ThinkPak” deck and “Thinkertoys” book
- WhatIf methodology from “Sticky Wisdom” book
- http://creatingminds.org/tools/tools_all.htm

- SCAMPER
  - Substitute something
  - Combine it with something
  - Adapt something to it
  - Modify-Magnify it
  - Put it to some other use
  - Eliminate something
  - Revers or Rearrange it
Cluster and Categorize Ideas

• Clarify and elaborate upon initial ideas
Converge Ideas

- Voting
- Concept screening
- Six thinking hats

<table>
<thead>
<tr>
<th>COLOURED HAT</th>
<th>THINK OF</th>
<th>DETAILED DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>White paper</td>
<td>White paper</td>
<td>The white hat is about data and information. It is used to record information that is currently available and to identify further information that may be needed.</td>
</tr>
<tr>
<td>Fire and warmth</td>
<td>Fire and warmth</td>
<td>The red hat is associated with feelings, intuition, and emotion. The red hat allows people to put forward feelings without justification or prejudice.</td>
</tr>
<tr>
<td>Sunshine</td>
<td>Sunshine</td>
<td>The yellow hat is for a positive view of things. It looks for benefits in a situation. This hat encourages a positive view even in people who are always critical.</td>
</tr>
<tr>
<td>Black hat</td>
<td>A stern judge</td>
<td>The black hat relates to caution. It is used for critical judgement. Sometimes it is easy to overuse the black hat.</td>
</tr>
<tr>
<td>Green hat</td>
<td>Vegetation and rich growth</td>
<td>The green hat is for creative thinking and generating new ideas. This is your creative thinking cap.</td>
</tr>
<tr>
<td>Blue hat</td>
<td>The sky and overview</td>
<td>The blue hat is about process control. It is used for thinking about thinking. The blue hat asks for summaries, conclusions and decisions.</td>
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<table>
<thead>
<tr>
<th>Criteria</th>
<th>Score</th>
<th>Comment</th>
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</thead>
<tbody>
<tr>
<td>New</td>
<td>7</td>
<td>Similar ideas have been used before</td>
</tr>
<tr>
<td>Useful</td>
<td>5</td>
<td>Not sure if the sucker will hold well</td>
</tr>
<tr>
<td>Feasible</td>
<td>9</td>
<td>Cheap and easy</td>
</tr>
</tbody>
</table>
“If you think creative thinking is a mysterious gift, you can only sit and wait for ideas. But, if creativity is a skill you ought to learn it.” ~Edward de Bono


Open Discussion