Our key point: Your team can be more creative
Why do you care? Creativity increases productivity
Main takeaway: How creativity works and how you nurture it on your team
In 2000 my daughter worked as an intern on the TV show Malcolm in the Middle. Her job was to pamper the writing team. Their job was to create a script for each week’s show. They had 5 days to come up with and write 30 minutes of irreverent, award-winning comedy. The bar was set high from before Day One. The script for the pilot won an Emmy award.

The writers had their own work room. It had what you might expect – a conference table and chairs, a small kitchen setup. It also had a deep pile of brightly colored carpets, bean bag chairs and boxes full of toys. The refrigerator had some unusual items in it at all times. My daughter’s job was to fetch whatever manner of consumable any writer desired – lunch from a special restaurant, 20 year Scotch, Korean Tacos from the truck near Dodger Stadium. They were pampered because they had to be creative on a deadline.

Do you pamper your Agile teams like this? Likely not. But then they have a little more leeway in getting their work done – two weeks and a variable scope based on proven velocity. Do Agile teams need to be creative? Their goal is less open-ended than comedy writers but creativity is a great attribute for getting product down well. A successful team is going to be creative. The ideal Agile work environment is conducive to creativity – shared space, close collaboration, charts on the wall, good tools, clear goals. A team that does not feel creative is a team in need of a tune-up. Are their ways to promote, nurture and enhance creativity in Agile Teams? That is what we are going to explore.
Why should you care?

- Your team can be more creative
- Creativity increases productivity
- Knowing how it works makes it easier to achieve
- Creativity can be nurtured
- Teams can achieve a state of Group Flow
What is Creativity?
Would you like to be more creative?
Some common answers:

- Lack of talent?
- Lack of imagination?
- Lack of motivation?
- No time?
- Culture?
- Upbringing?
Most significant inventions are based on the ideas and work of many people.
Anyone can be creative given the right conditions.
Studies show that people under pressure will come up with fewer useful new ideas.
Are you
- right-brained or left-brained?
- creative or logical?
What defines a creative idea?

You tell us...

Some common answers:
- Useful
- Novel
- Feels new to me
- Did not previously exist
- Solves a problem

Creativity helps with
• Problem Solving
• Refinement of Product and Process
• Invention and Innovation
Creativity is a series of many small insights

Each builds upon the other.
How well did you work for you?

We overuse the wrong parts of our brains. It is better to create the right conditions for creativity.
Can creativity be learned?

To some extent it can. We will see some tools that help. But perhaps nurturing our innate abilities a better approach.
Using a single stroke, turn the Roman numeral seven, shown below, into an eight.

VII

If you get stuck, ask a partner for help

This one is easy. Our pre-frontal cortex can handle it with little access to long term memory.
Answer: VIII

From
http://web.mit.edu/2.009/www/lectures/2_projectAndCreativity.pdf
Exercise

Using a single stroke, turn the Roman numeral 9, shown below, into a 6.

IX

If you get stuck, ask a partner for help

This one requires a shift into language networks to find a match.
Answer: SIX
This one requires a shift from the previous two into a mathematical solution.
Answer: IX6, a mathematical expression
Creativity and Your Brain
Fact or Myth?
We use only 10% of our brain.
Left and right brain hemispheres are a bit different, but both are used all the time. The left brain is a specialist. The right brain is a generalist. They work together all the time.
Our brains have 3 general parts based on evolutionary progress.
- Old Brain (reptilian, autonomic, survival)
- Mid Brain (mammalian, limbic, emotion)
- New Brain (neocortex, language, speech, music, reasoning, thinking)
Most “Thinking” is Subconscious

Beeman 2004: 40% of word puzzles were solved using logical process. 60% were spontaneous insight (no logical progression).
The greater part of our brain is used for subconscious thought, which is faster. There is much more capacity, too.
The FedEx Logo has a symbol embedded in it that suggests forward motion.
If you do not see the symbol, note your emotional state while you look for it.
Here is a clue: “White space is not always empty.”

Answer: a right-pointing white arrow between the E and x.
Working memory is limited in capacity and processing is slow due to complexity and energy demand of the neocortex. Long term memory is vastly larger and information is compressed and coded, allowing for faster access and searching. The hippocampus is the brain organ that manages movement of information between the two types of memory.
What is happening in the neural circuits. When we take in new information, our brain looks for existing maps that match the concepts or experience. If one is found, the map is reinforced. If none is found, an “impasse” occurs. This feels frustrating. If we try really hard to “understand”, our prefrontal cortex uses up a lot of energy and we get tired. If, instead, we can relax and think about something else – or do something physical that is not related, our subconscious brain continues to look deeper for matching maps. If it finds none, it creates a new map to represent the new information. This is called “learning”.

Brain Circuits
This model comes from David Rock’s 2006 book. It is called ARIA, an acronym for the 4 stages.
1. Awareness of a dilemma – a problem to be solved, we show concern. We are stuck in an impasse.
2. Reflection – staring into space while watching internal processes. Outer world has gone dim so unconscious can go to work.
3. Insight – “aha!” A new connection has been made between our existing networks that can accommodate the dilemma
4. Action – Energy rises and we want to do something about the problem.
During the impasse, our energy is low. If we can relax and reflect, our alpha waves increase. These are the low-amplitude waves that we experience when at rest like watching TV. When the impasse is overcome, there is a burst of gamma waves – high amplitude, high energy waves associated with excitement. We experience the energy to take action. It is short-lived, though, so it is best to act quickly.
This exercise facilitates the ARIA model. By explaining the challenge in words, the language and speech processing centers of our brains are activated, bringing more neural maps into use. By reducing it to 5 words, the prefrontal cortex has less to do to hold on to the concept, opening up channels to our subconscious. Then the use of words evoking deep thinking and intuition help to activate our deeper search mechanisms to draw upon our vast mental resources.

Here are some sample questions:

- If you stop and think deeply, do you think you know what you need to do to resolve this?
- What quiet hunches do you have about a resolution, deeper inside?
- How close to a solution are you?
- Which pathway to a solution would be best to follow?
Individual Creativity
Here are some common ones:
- Smart Guy and follower syndrome
- Know-it-all
- Silos
- Brainstorming
- Group think
- Critical thinking

-More
Physical: poor health or diet
Personality: cynicism, critical outlook, pessimism, conservative, controlling
Emotional: fear, lack of faith
Group: distrust, disagreement, disrupted flow, conflict
Perspective: rigid, narrow, controlled, logical
Environmental: time pressure, external reward
Our Top 5
Impediments to Creativity

✓ Too much detail in goal
✓ Too open-ended a target
✓ Command and control
✓ Noisy, stressed mind
✓ Yes, but...
✓ High Pressure

This is our list.
Studies show that pressure does not help. The old phrase “Necessity is the Mother of Invention” is more true in the long run than in the short run.
To be creative, we need to have our basic necessities taken care of and feel safe to speak in the presence of our collaborators.
Intrinsic Motivation

• autonomy
• mastery
• purpose
• and a sense of progress

These are from Dan Pink in Drive. Also http://www.ted.com/talks/dan_pink_on_motivation.html. David Rock has a similar model SCARF for groups.
Eustress = good stress.
The prefrontal cortex needs just the right amount of stress to be at peak performance. That means the right balance of dopamine and norepinephrine (noradrenaline).
How to Nurture It
Relax
One type of creativity can spark others
Remember a related experience
Ask questions
View, touch related objects
Do something simple to warm up
It actually helps to tell yourself and your collaborators to “Be creative!”
Visual stimulation helps – think colored sticky notes and drawings.
Physical, tactile, body-in-motion activities use more of the brain by a factor of a billion compared to working alone with a computer.
R: What a cute doggy.
R: Mark, does your dog bite?
M: No, he is pretty mellow.
R: Hi doggy.
D: Rowf
R: Ouch. I thought you said your dog didn’t bite?
M: That’s not my dog.

Morale: the solution space may be different from what you assume.
Avoid lightpost effect – looking for your lost keys where the light is brightest rather than where you last had them.
How many experiments did Edison make before he found the right filament for the electric light? What if he had stopped at the first “failure”? Experiments tell us if our hypothesis is correct. We take action accordingly. Therefore “failure” is simply one type of knowledge acquisition.
We think more creatively when we are having fun. Recall the TV Show writers room. For more, see http://www.ted.com/talks/tim_brown_on_creativity_and_play.html
Let your subconscious do the heavy lifting. And sleep for integration.

Ohlsson in Rock p 79 says to deliberately do something else to stop conscious processing at impasse.

Zimmer: When your mind wanders, the brain’s default network (self referential thought) is working with its executive control system (prefrontal cortex) to reach distant goals. New ideas may emerge and be surprising.
Create 30 circles.
In 60 seconds, see how many you can turn into a picture.
Going fast helps us to keep from editing ourselves (judging quality or cleverness) which slows us down. But the time pressure may reduce our creativity, too. So try 120 seconds.
Group Flow
Can a team be creative?

This is a picture of the band Paul McCartney was in before Wings. ;-) Were they creative? Musicologists are still trying to figure out how they did what they did in many of their melodies.
Famous Collaborations

- J.R.R. Tolkien and the Inklings
- Jobs and Wozniak
- Lennon and McCartney
  ... and Harrison and Starr
Wright Brothers were not the first
Fulton was not the first
Edison was not the first
Ford was not the first
Darwin...
Flow for individuals is defined by Mihaly Csikszentmihalyi (Cheek-sent-me-high) in *Flow: The Psychology of Peak Performance*

Characteristics:
- energizing
- engaging
- use your strengths
- do something slightly out of the ordinary
- many new but safe neural connections are made
- major driver of happiness
- happiness -> neurotransmitters -> right balance -> cycles

It is described for groups in Group Creativity by Keith Sawyer
Common, agreed-upon goal
Enables focus so one can know if we are approaching a solution
Basketball (clear goal) vs. Jazz/improv (create good performance)
Clear objectives, problem-solving or “innovate”, problem-finding goal (post-it, Elixir strings)
Divergent – that’s generate as many ideas as possible, widening the solution space
Convergence – pruning the ideas

Right kinds of topics (not assembly or silo tasks)
Better for evaluating than for creating ideas
Use proven patterns
- Have a structure
- facilitate
- pairing works well
- free-form with no judgement
- focus on quantity
- filter
Engage people from other domains to help see patterns and results that you cannot see due to familiarity. We edit reality to match what we already know and believe.

New people in new environments

Lehrer – Wired 1/10 The Neuroscience of Screwing Up
- quiet, open, curious, receptive mind
- focused but not stressed
- jazz metaphor
- not defensive, intrusive, argumentative
All members in sync
Whole is greater than sum of parts
Ideas build on each other
Equivalent skill levels
No one in charge
Know other members strengths and weaknesses
All share tacit knowledge (music, rule of improv, domain, tools)
Plus conventions, customs and unwritten rules
Many Perspectives

- Innovation Games™
  - Six Hats
  - Agile Games/
    Tasty Cupcakes
  - Scamper
  - Thinker Toys

http://www.sxc.hu/browse.phtml?f=download&id=1284819

- Innovation Games™ [www.innovationgames.com](http://www.innovationgames.com)
- Edward de Bono’s Six Hats technique [www.debonogroup.com](http://www.debonogroup.com)
- Agile Games discussion group [www.agilegames.org](http://www.agilegames.org)
- ThinkerToys (Book) [http://creativethinking.net/](http://creativethinking.net/)
Group creativity technique made popular by Alex Faickney Osborn in the late 1930s.

Rules usually applied:

• Collect as many ideas as possible from all participants with no criticisms or judgments made while ideas are being generated.
• All ideas are welcome no matter how silly or far out they seem. The more ideas the better, because at this point you don't know what might work.
• Absolutely no discussion during the brainstorming activity. Talking about the ideas will take place after brainstorming is complete.
• Do not criticize or judge. Don't even groan, frown, or laugh. All ideas are equally valid at this point.
• Do build on others' ideas.
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- Creativity can be nurtured
- Teams can achieve a state of Group Flow
These are the awards won by Malcom in the Middle over its history. Can your team do this well? Now you know some ways to help them.
References

- David Rock, Your Brain at Work
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