

Brainstorming

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Agenda

- Defining the Term
- Why do brainstorming?
- Preparing to brainstorm
- Secrets of successful brainstorming
- Impediments to successful brainstorming
- Helpful tricks and techniques

What is Brainstorming?

- “The ***unrestrained offering*** of ***ideas*** by ***all members*** of a group to seek solutions to problems.” (*Webster’s New World Dictionary*. 1987)
- ***Unrestrained offering:***
 - no judgment
 - ‘offered’ to the group
 - go for quantity!
- ***Ideas:***
 - thought, mental concept, or image
 - could also be an opinion or belief
 - doesn’t have to be proven or backed up with fact or analysis
- ***All members***
 - everyone contributes, but not necessarily in order
 - leader responsible for ensuring equal opportunity

Why do Brainstorming?

- Generate new ideas
 - alternative ways of achieving a stated goal
 - innovative design
 - different approaches
- Identify new opportunities
 - new products to meet identified needs
 - new uses for specific technologies
 - new technologies
- Solve ambiguous or complex problems
 - troubleshooting - identify avenues to explore
 - different approaches



Why Do Brainstorming?

- Innovation and industry



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Why Do Brainstorming?

- Innovation and Today's World



INNOVATION IN CANADA • INNOVATION AU CANADA



What Innovation IS NOT ...

- New



- The latest 'buzzword'

Out of the box ...
New paradigm ...
Push the envelope
Win-win ...

- An accident



- A black art



What Innovation IS ...

- Critical to the success of companies
- Key to the success of professionals
- Customer Focused
- Collaborative
- A culture
- A mindset
- A process



Preparing to Brainstorm

- Identify the problem ...
 - Focus on needs, not solutions
 - Problem statement should be focused on current need
 - Problem statement should be broad enough to allow new ideas
 - Examples:
 - Bad – “Develop ways to improve pilot performance in high speed, high performance aircraft.” (unfocused – where do we start?)
 - Better – “Improve visibility through cockpit windshield in high speed, high performance aircraft.”
 - Bad – “Design a windshield wiper that will work at high speed and high altitude.” (narrow – assumes the solution.)
 - Good – “Develop a means of removing precipitation from aircraft at high speed and altitude.”
 - Will require deep knowledge (through experience, research, etc.) of customer/client need
- Explore the world of options, solutions, and alternatives, both related **and unrelated** to your problem area

7 Secrets of Successful Brainstorming*

1. Sharpen the focus
 - Well honed problem statement
 - Focus on customer/client need
2. Playful rules
 - Go for quantity
 - Encourage wild ideas
 - Be visual
3. Number your ideas
 - Keep track
 - Motivation
4. Build and jump
 - “What are other ways to xxx?” (build)
 - “Let’s switch gears and think about xxx now.” (jump)
5. The space remembers
 - Write the flow of ideas down in a medium that is visible to the whole group
 - Cover the walls with paper so that you don’t have to erase or take copious notes
 - Advantages of physical space.
6. Stretch your mental muscles
 - Warm-up exercises
 - ‘homework’ before beginning
7. Get physical
 - Sketch, mindmapping, diagrams, stick figures
 - Bring in ‘show and tell’ items
 - Get up and move!

* From: Kelley, T. and Littman, J. (2001) the art of innovation: lessons in creativity from IDEO, America’s leading design firm. New York: Doubleday.

Impediments to Success (or, “6 ways to kill a brainstorm”)*

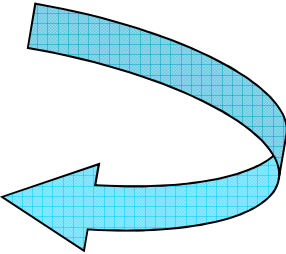
1. The ‘boss’ gets to speak first
 - Bosses tend to set the agenda and the constraints on ideas
 - Rule: you’re only allowed if you’re NOT the boss!
2. Everybody gets a turn
 - Going around the group in order stifles the creative process
 - Leader should encourage participation, but naturally
3. Experts only please
 - Invite people from other areas (do you have friends in other majors who might have some ideas?)
4. Do it off-site
5. No silly stuff
 - Kills the fun, and also perhaps some creative paths
6. Write down everything
 - Rapid scribing of the ‘high points’ of the ideas is all that’s needed
 - Too much attention to detail bogs you down

* From: Kelley, T. and Littman, J. (2001) the art of innovation: lessons in creativity from IDEO, America’s leading design firm. New York: Doubleday.

Helpful Tricks and Techniques

- Customer needs tool
- ‘Lens Smashing’
- Mind-mapping
- affinity diagrams
- Others?

Customer Needs Tool

<p>1. What is the customer need?</p>	<p>2. How would they describe it in their own words?</p>	<p>3. Is there another way to phrase it?</p>
<p>8. What new technologies can or need to be developed to meet this need?</p>		<p>4. How are they meeting this need today?</p>
<p>7. What products or services can we develop right now to meet the need?</p>	<p>6. What products or services are available that can be adapted to meet this need?</p>	<p>5. What products or services are readily available to meet this need?</p>

'Lens Smashing'

- Bringing two disparate pieces of information together as a catalyst for starting ideation.
- Example:

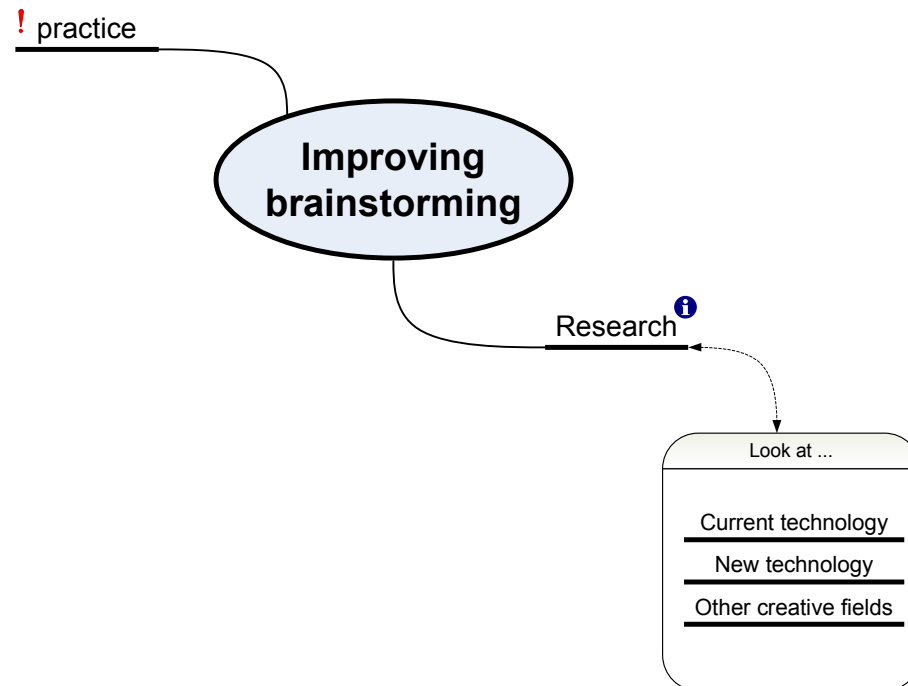
Problem statement: Improve engineering students' ability to brainstorm new product ideas.

Observation #1: engineering students know a great deal about analysis of systems.

Observation #9: toy manufacturers develop and sell a million new products every year.

Mind-mapping

- Way of generating ideas that allows them to 'build' off of each other.
- Visual representation of how ideas fit together, where they came from, etc.
- Allows for later organization.
- Example:



Affinity Diagrams

- Organize individual observations, ideas, questions, etc. into common themes.
- Provides an opportunity for the group to explore specific themes or classes of ideas more thoroughly
- ‘Affinity’ refers to the degree of commonality within the set
- Steps
 - Write each observation, idea, question, etc. on a separate post-it note.
 - Organize similar items together into groups
 - Does everyone agree on the affinity of each item in each group? If not, reorganize until all are satisfied.
 - Label each group with a descriptive title (‘air-based approaches’, ‘chemical approaches’, etc.)
 - Organize groups together into larger groups

Others?