Innovation & Brainstorming

"The best way to a good idea is to have lots of ideas." - Linus Pauling
Clarification

**discovery**

*Discovery* is finding something that already exists that no one found before.

- **elemental fluorine**
  - 1886 - Henri Moissan

**invention**

*Invention* is creating something that has never existed before. Not a product, but a technology.

- **“teflon”**
  - 1938 - Roy Plunkett

- **PTFE**
  - polytetrafluoroethylene

**innovation**

*Innovation* is the application of new ideas or the combination of existing items in a novel way. This is product design.

- **non-stick pan**
  - 1954 - Marc Gregoire
Quiz!

1. What is your name?
2. What is your age?
4. List as many uses as you can for a paper clip.
Alternative Uses Test
J.P. Guilford 1967

a measure of divergent thinking
The best way to have a good idea is to have a lot of ideas.
-Linus Pauling

**Quantity vs. Creativity**

quantity of ideas vs. creativity of ideas per subject

$R^2 = .82$

“The creative idea score”

total number of ideas

kudrowitz and wallace, 2010

The best way to have a good idea is to have a lot of ideas.
-Linus Pauling
Improvisation Games
(mednick 1962)

**Associative Theory**

Cyrus McCormick

Mechanical Reaper
**Associative Theory**

Right, Posterior Superior Temporal Sulcus (PSTS)
- processing novel metaphors in poetry (Gorana et al 2008)
- novel connections between unrelated words (Mashal et al 2007)
- RH equivalent of Wernicke’s area - linguistic creativity (Flaherty, 2005)

Right, Anterior Superior Temporal Sulcus (ASTS)
- “Aha!” Experience (Jung-Beeman 2004)
Humor
Humor can be dissected, as a frog can, but the thing dies in the process and the innards are discouraging to any but the pure scientific mind. –E.B. White

Incongruity Theory

Superiority Theory

Release Theory
Humor, incongruity theory of
a two stage mode of joke appreciation by Jerry Suls

Where does the general keep his armies?

- tents?
- army base?

In his sleeves.

In an army base.

“armies” has two meanings

No surprise
No laughter

Puzzlement
Confusion

Surprise

Find rule that makes ending follow from set-up

Is rule found?

Yes

Laughter

No
Association Mapping
Association Mapping

Biopsy Needle ➔ Form: long thin tube ➔ Finger Trap
Crossing Products

sometimes the most powerful ideas come from simply combining two existing ideas nobody else ever thought to unite. Most inventions and breakthroughs come from reassembling existing ideas in new ways. - pink

"Reese’s Peanut Butter Cup Theory of Innovation"
Crossing Products

gutenberg's printing press

=  

+  

grapes
Crossing Products

"the enscribe" whiteboard table
Crossing Products

The Strumbone: the guitar played like a trumbone
Crossing Products

“Someone who is relaxed, happy, in a pleasant mood, is more creative” - Donald Norman

Crossing Products

Write down the name of three products

Exchange
Types of Ideation

**Free Form or Intuitive Methods**
- Group Writing: Brain Writing, Brain Sketching, Collective Notebook, Pin Cards, KJ Method, Trigger Sessions
- Free Writing
- Brainstorming

**Structured or Logical Methods**
- Morphological Analysis
- Attribute Listing
- Potential Problem Analysis
- TRIZ
- ARIZ
- ASIT
- SCAMPER
- MORPHOLOGICAL ANALYSIS
- ATTRIBUTE LISTING
- POTENTIAL PROBLEM ANALYSIS
- FRD PARRC

**New Perspectives or Intuitive Techniques**
- Lateral Thinking
- Challenging Assumptions
- Negative Boundary Relax
- Brainstorm Reversal
- Exaggeration
- Rolestorming
- 6 Thinking Hats
- Super Heros
- Disney Method
- Progressive Revelation
- Laddering

**Associations or Logical Techniques**
- Provocation
- Bunches of Bananas
- Excursions
- Brutethink
- Analogies
- Force Fit
- Focal Objects
- Mind Mapping
- Free Association
- Association Mapping
Brainstorming

To generate LOTS of Ideas.... quickly.
Brainstorming

“In short: there are no rules. And here they are.”
— Scott McCloud, Making Comics.

1. Defer Judgement.

NO EVALUATION

people become self conscious

If at first, the idea is not absurd, then there is no hope for it.”
—Albert Einstein

evaluation = left brain
creativity = right brain

Switch Left Brain to Silent Mode

evaluate later

silly ideas are good

transcranial magnetic stimulation
Brainstorming

"In short: there are no rules. And here they are."
— Scott McCloud, Making Comics.

yes 1. Defer Judgement. NO EVALUATION
and 2. Build on ideas
3. Encourage wild ideas
4. Go for quantity
**Brainstorming**

Problem statement

5-9 people

20-40 minutes

Room/situation

1 facilitator and lots of paper

Bounded Ideation Theory

Brainstorm Sketching

Quick and Clear

Draw Big and Bold

Label

Brief Pitch

Record

Repeat
Brainstorm Assistance
dopamine

- Goal-directed behavior
  - Dopamine
  - Slow action, emotion, thought

- CREATIVE DRIVE
  - Mania, psychosis

- CREATIVE BLOCK
  - Depression, abulia

- ABNL FRONTAL ACTIVITY:
  - halting, rigid thought, depression

- ABNL TEMPORAL ACTIVITY:
  - facile, loose speech & ideas

Alice Flaherty
Brainstorm Assistance
improv warmup

36% more ideas!
Brainstorming Challenge
IPM (pp)
ideas per minute per person

>1.0 ipm (pp)

8 people,
10 min = 80 ideas
Sorting Ideas

KJ-Method, Snowball Technique, or Affinity Diagrams

multi-voting
## Pugh Charts

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<th>Ring Shank</th>
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Logistics

Tomorrow - Theme Introduction

Friday - Children’s Museum, 5:30
Read the intro document on Website

Bring design notebook to both

For Next Wednesday:
- Black Prismacolor marker or Pentel Sign Pen
- UniBall ONYX Micro black pen (Snap Off Utility knife (OLFA))
Questions?