Ideation

Innovation

"The best way to have a good idea is to have lots of ideas." - Linus Pauling
Welcome to your teams!

wednesday PM
- camel
- crocodile
- goose
- hedgehog

thursday AM
- hippo
- koala
- llama
- lobster

thursday PM
- meerkat
- moose
- narwhal
- ostrich

friday AM
- panda
- squid
- t-rex
- tiger
Welcome to your team!

Team PANDA!
Everyone on team panda...
Team communication

 MIT TOY LAB + slack

coming soon!
Team communication

team email list format:  
200b-animal@mit.edu

200b-tiger@mit.edu
And now... a refresher on **play!**
Who is the customer?
What is play?
What is the opposite of play?

Quiz results
The customer is both the child who will play with the toy and the person or parent who buys it for them.

- Riley Terando

Quiz results
Who is our Customer?

- **Product Use**
  - User
  - Purchaser
  - Producer
  - Retailer

Influence on Product Selection
What is play?

Play is the process of using items, ideas, and creativity to entertain oneself.

- Yaseen Alkhafaji

Play is a state of mind.

Quiz results
What is the opposite of play?

Chore  work = IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII

Boredom = IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII  IIII

Quiz results
What is the opposite of play?

“A process where the end result is more appreciated than the process” - Jessica Yen

“Being sad and doing nothing” - Jenny Chen

“Being super angsty” - Annetoinette Figueroa

Quiz results
What is the opposite of play?

The opposite of play is clean-up time. It brings immense sadness, but results in clean carpets.

- John Graham
What is the opposite of play?

Quizzes!
- Peter Williams

Quiz results
Quiz!

1. What is your name?
2. What is play value?
3. What’s the difference between innovation and invention?
4. What is creativity?
5. Write a caption for:
Play Value

Potential for Play
Developmental Benefits, Variety, Motivation

Play value is what makes a toy fun!

As a designer, you want to create Play Affordances
Invention and Innovation

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

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

PTFE
polytetrafluoroethylene
Product design

Why not invention?
Creativity

The use of imagination to create original ideas.
Creativity in Design

novel and useful!
Neurological Analysis
Neurological Analysis
Right hemisphere and creativity

Music, visual art, language, perception
Neurological Analysis
Right hemisphere and creativity

Right, Posterior Superior Temporal Sulcus (PSTS)
Processing novel metaphors in poetry (Gorana et al 2008)
Novel connections between unrelated words (Mashal et al 2007)
Linguistic creativity (Flaherty, 2005)

Right, Anterior Superior Temporal Sulcus (ASTS)
“Aha!” Experience (Jung-Beeman 2004)
Ideation techniques

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
- Potential Problem Analysis
- TRIZ ARIZ ASIT SCAMMPER

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

Associations Techniques
- Provocation
- BruteThink
- Bunches of Bananas
- Force Fit
- Mind Mapping
- Free Association
- Excursions
- Association Mapping
Associations can be used to generate concepts based on linking ideas and finding new relations between connections.
Associations and Humor

Non-obvious connections

Making the incongruity congruent

Why was 6 afraid of 7?

...because 789
Cartoon Caption Test
New Yorker, caption contest 2008

“can you please pass the cow”
-bennett ellenbogen

things in the image

things related to coffee

things related to milk

relate back to boardroom meeting
“let me start by welcoming you all to narcoleptics anonymous”

-mike worth
Association Mapping

Form
Round
Flat
1-3 cm dia
Association Mapping
Association Mapping

Column → Functional requirement: Structural support → Bone
Association Mapping

- **Names of Coffee**: joe, java
- **Types of Coffee**: black, decaffeinated, espresso, latte
- **Actions Related to Coffee**: sipping, spilling, staining, drinking, burning, break
- **Things that go in coffee**: milk, cream, dairy, sugar, stirrer, coffee beans, water
- **Products Related to Coffee**: coffee maker, mug, coffee machine, grinder, tea
- **Properties of Coffee**: caffeine, diuretic, hot, acidic
- **Places Related to Coffee**: dunkin donuts, starbucks, kitchen, south america
- **Served with Coffee**: donuts, breakfast, newspaper

Quotes:
- “breaks will no longer be dictated by time to finish your coffee”
- “who ordered from Java the Hutt?”
- “the sink’s full again”
- “is this the decaf?”
- “the crullers will be here shortly, as soon as they take the door off the hinge”
- “coffee sales have been soaring”
- “where’s the bathroom?!”
Association Mapping

- Function
- Environment
- Name
- Motion
- Used With
- Materials
Association Mapping

Heats
Burns
Smokes
Counts down
Pops!

Function

Fire
Bulb
Wood burning tool

Motion

Environment

Name

Materials

Used With

Materials

Used With
Association Mapping

- Function
- Environment
- Name
- Motion
- Used With
- Materials
Association Mapping

Name: Leaves
Name: Cup
Name: Kettle

Motion: Bread
Motion: Bagels
Motion: Coffee
Motion: Tea

Used With: Materials

Bread
Bagels
Coffee
Tea
Innovation is the application of new ideas or the combination of existing items in a novel way.
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Crossing products is a strategy to generate innovative ideas.
Crossing Products
Crossing Products

+         =
Crossing Products

+          =

![Image](image-url)
Crossing Products
Crossing Products
Crossing Products

Write down the name of three products

Exchange
Cross your 3 products with a **pencil** to make a new **TOY PRODUCT!**
Crossing Products

Write down the name of three products

Exchange

lamp
Cross your 3 products with a lamp to make a new TOY PRODUCT!
Crossing Products

my top **pencil** cross-product is: ______________________

- [ ] fantasy
- [ ] construction
- [ ] sensory
- [ ] challenge

and it could become: ________________________________

- [ ] fantasy
- [ ] construction
- [ ] sensory
- [ ] challenge
Crossing Products

my top lamp cross-product is: _______________________

and it could become: ______________________________
the secret theme is...

lab this week!
Pull Toys!
Pull Toys?
Teething Toy!

3 months plus

shapes to chew
easy to grasp
hardwood (maple)
no finish
Pull Toy?
Push Toy!

6 months plus (sitting)

cause and effect
hand grip

food safe finish
Wheelies!
Pull Toy?
Push Toy!

- Hand grip
- Food safe finish
- Hardwood (birch)
- Heavier construction

8 months plus (crawling)
Wheelies!
aluminum shaft and press nut
Pull Toy!
Pull Toy!

14+ months (toddler)
pull string
hardwood (walnut)
steel axels!
Push or Pull Toys
Pull or Push Toys

Wood blank sizes

- 0.75” x 7.5” x 10”
- 0.75” x 5.5” x 10”
Pull or Push Toys

Wood types

white pine
softwood, easy
dents and splits fairly easily

poplar
hardwood but soft!, easy
does not split easily
Pull or Push Toys

here’s wood!

splits along fibers!

longer, aligned fibers split more easily than shorter, interwoven fibers!!

does not split across fibers!!!
Pull or Push Toys

Rats (&$**!), it split

may the grain be with you!

choose the right wood
avoid short grain!
Pull or Push Toys

More wood types!

- Cherry (hardwood)
- Maple (hardwood)
- Black walnut (hardwood)
- Red oak (hardwood, long fiber (splits))
Pull or Push Toys

Avoid shapes with hard to sand areas
2 hours!
For Next Week

You’ll need a design notebook!

Unruled

‘Diary’ sized or Larger
Next Class is Tuesday!

Theme
Innovation & Ideation

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