Academic Versus Industry Mindset

Presented by Biomedical Engineering Calgary in partnership with the Reproduction and Regenerative Medicine Research Group

November 22, 2018
2:00 p.m. – 4:00 p.m.
Health Sciences Centre
Theatre 3

Dr. Eric Jervis
Principle Scientist
Research and Development
STEMCELL Technologies
Vancouver, BC

How are your graduate studies preparing you for a career? How is industry different from academic research? What skills will future employers look for that will give you a competitive advantage in your job search?

The reality is that most students miss great opportunities for developing skills that will be needed in industry because they have not considered what industry will be looking for. Dr. Jervis will present experiences and lessons learned as he moved from an academic position to an industry position. He will provide examples of skills that industry requires, and ways to gain these skills during graduate studies. Dr. Jervis will also review the new product proposal process at STEMCELL and discuss key challenges in going from an idea to a marketable product.

BME-Ignite-STEMCELL.eventbrite.ca

UNIVERSITY OF CALGARY
Biomedical Engineering

Cumming School of Medicine | Graduate Science Education | Professional Skill Development Program
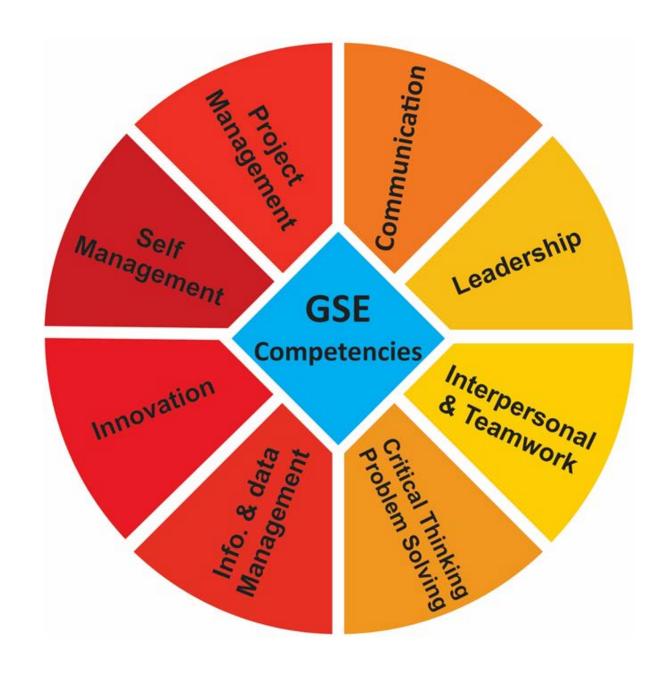
SYMPOSIUM: WHAT CAN YOU BE WITH YOUR GRAD DEGREE?

December 13, 2018
CSM Foothills Campus | Calgary, AB

https://cumming.ucalgary.ca/gse/proskills/symposium-what-can-you-be-your-grad-degree

Acknowledgements

GSE Professional Skills Development Office

- Sabrina Anderson

My Team

- Charlie Hsu

- Suman Nath

- Pooyan Naghsh

Faculty of Engineering

- Alex Bruton

Taylor Centre for Teaching & Learning

- Scholar Program

Thesis Statement
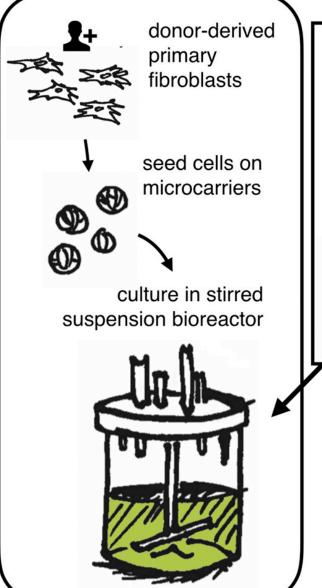
Visual Communication is an effective way for students to:

1. Engage community, and
2. Pursue inquiry-based learning,
3. Persuade others of their work's value,
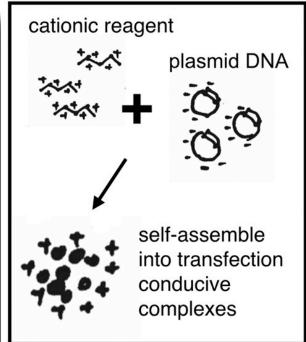4. Market themselves to potential mentors and employers.

Why is it Useful?

- Enhances
  - Thinking
  - Representing
  - Communicating
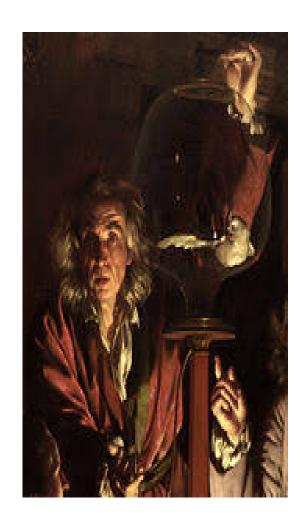- Helps create more compelling, usable products

What is Visual Thinking?

- An approach to understanding, creating, and communicating
- A collection of visually-based concepts and methods
  - Information Visualization
  - Mindmaps
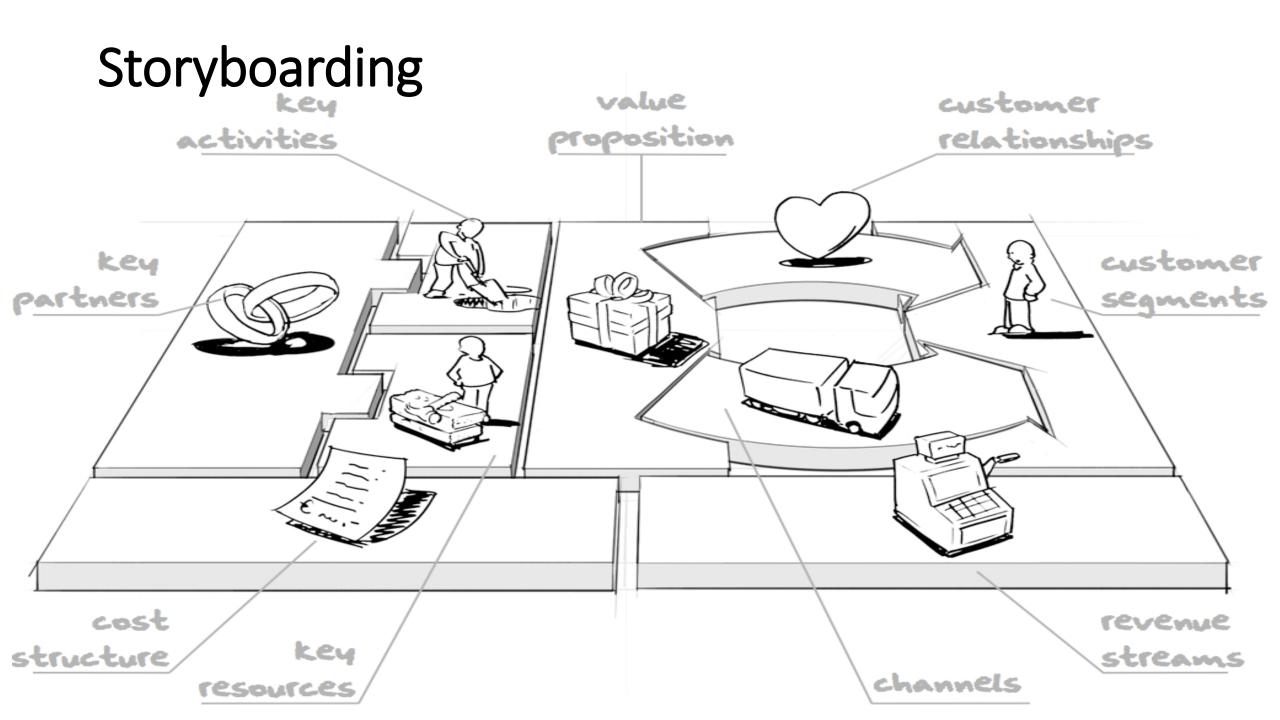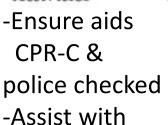 - Sequential visual representations

Science and Persuasion

SHOW
DON'T
TELL

Storyboarding

Storyboarding

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
-FSCD -PDD -Gov Alberta Disability Services	-Ensure aids CPR-C & police checked -Assist with paperwork	-Connect aids to families -Help families and aids with paperwork -Save families and aids time and energy.	-Families -Employees	-Families with an autistic child/teen/adult -University students/adults wanting steady work
	Key Resources -Insurance -Connection to key partners		**Channels** -Families via partners -Campus Ads -Social media -Website	

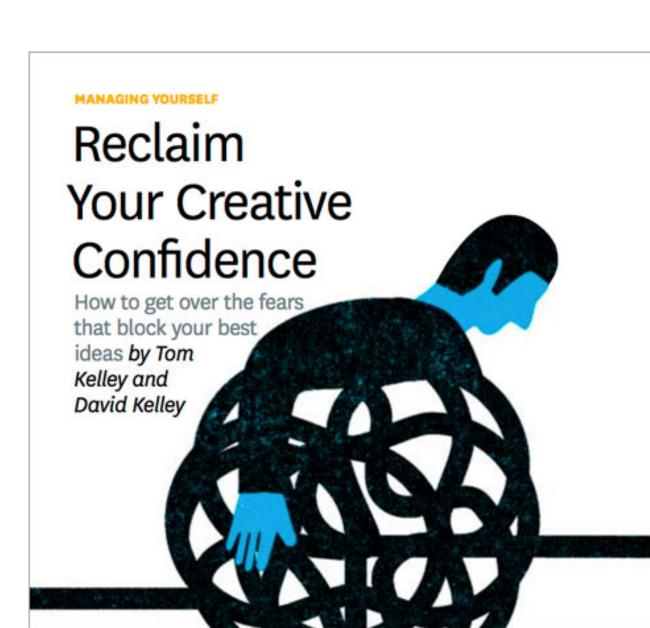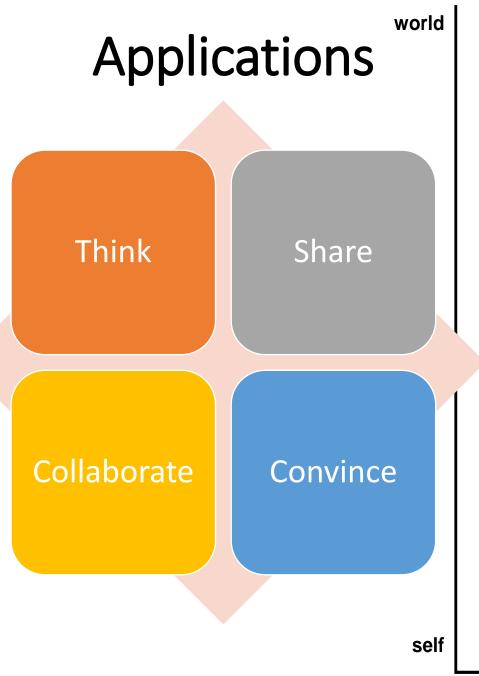| Cost Structure	Revenue Streams
-Business Training -Transportation -Computer, Internet, website -App Development	-Portion of wages -Base fee for use of service -Sale of App

Creative Confidence

Common creativity blockers:

1) Fear of the messy unknown,
2) Fear of being judged,
3) Fear of the first step, and
4) Fear of losing control.

MANAGING YOURSELF

Reclaim Your Creative Confidence

How to get over the fears that block your best ideas *by Tom Kelley and David Kelley*

Applications

Think

Share

Collaborate

Convince

world

self

informal

formal

- **InfoViz guidelines -** how to best communicate through spatial representations (Tufte, Kosslyn, others)

- **Sequential Art Concepts -** application of temporally based visual representations (e.g. Film, Comics)
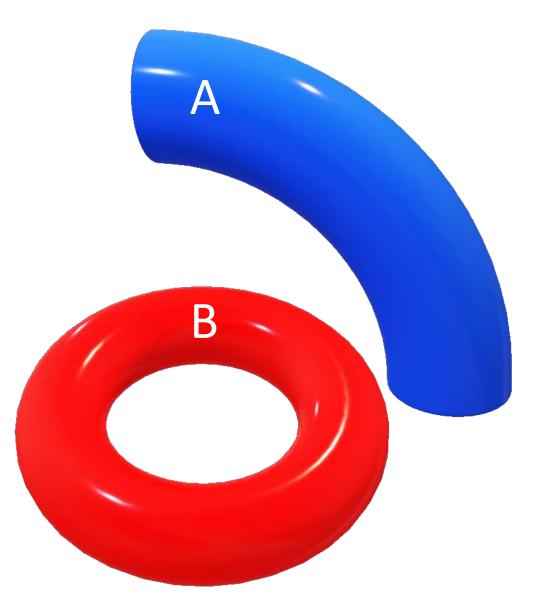
- **Mindmaps -** specific method for representing information

- **Vizability -** methods for understanding and communicating

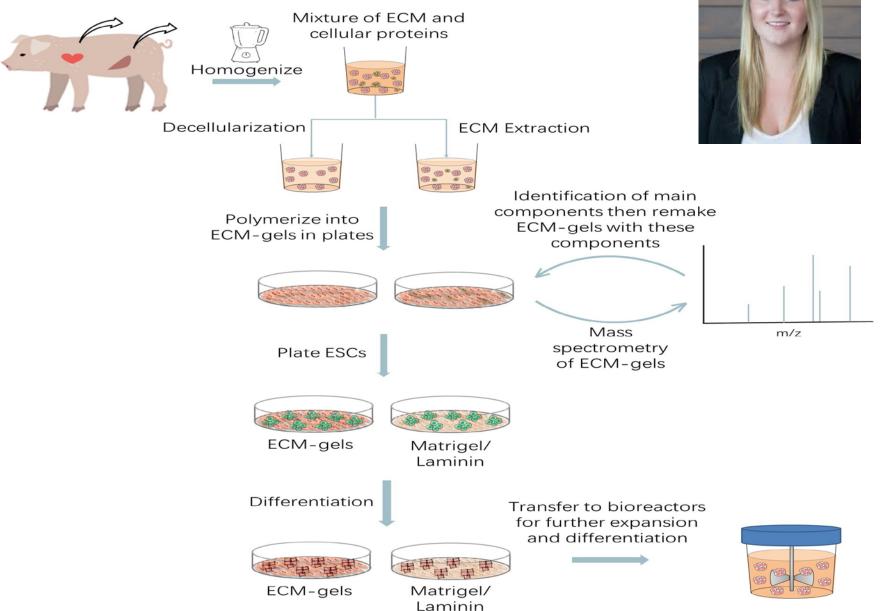# Vizability

- Attribute
- Parameter
- Local
- Global

Mind (Concept) Mapping

Storyboarding Research
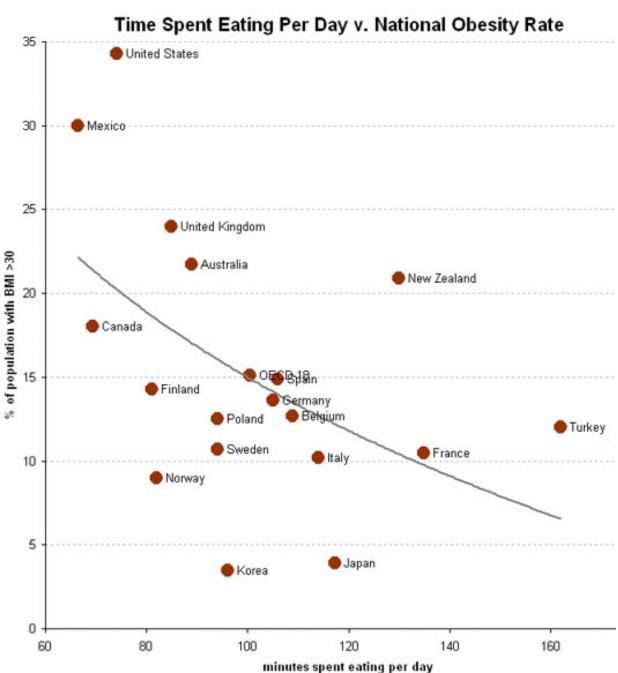
Infographics

"If the statistics are boring, then you've got the wrong numbers."

Tufte 2009

Time Spent Eating Per Day v. National Obesity Rate

y-axis: % of population with BMI >30 (0 to 35)
x-axis: minutes spent eating per day (60 to 160)

Data points:
- United States
- Mexico
- United Kingdom
- Australia
- New Zealand
- Canada
- OECD-18
- Spain
- Finland
- Germany
- Poland
- Belgium
- Turkey
- Sweden
- Italy
- France
- Norway
- Korea
- Japan

Graphical Integrity
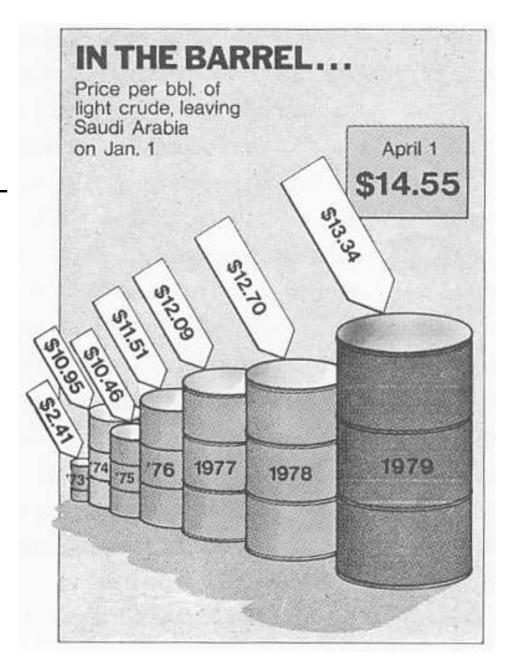
- $Lie\ Factor = \dfrac{size\ of\ effect\ shown\ in\ graphic}{size\ of\ effect\ in\ data}$

Should be ~ 1

< 1 = understated effect
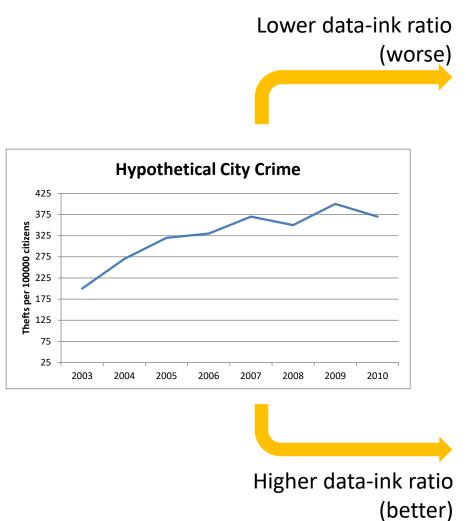
> 1 = exaggerated effect
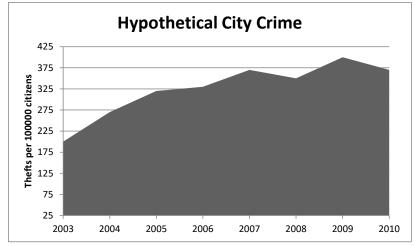
$$LF = \frac{4280\%\ (change\ in\ volume)}{454\%\ (change\ in\ price)} = 9.4$$

IN THE BARREL...
Price per bbl. of light crude, leaving Saudi Arabia on Jan. 1

April 1 $14.55

$13.34
$12.70
$12.09
$11.51
$10.46
$10.95
$2.41

'73 '74 '75 '76 1977 1978 1979
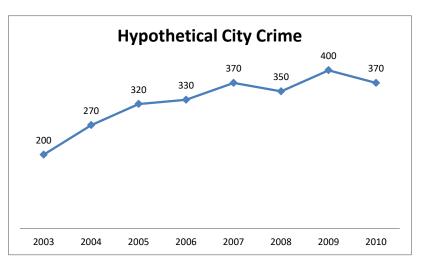
Graphical Integrity

The Process of Visual Thinking

LOOK   SEE   IMAGINE   SHOW

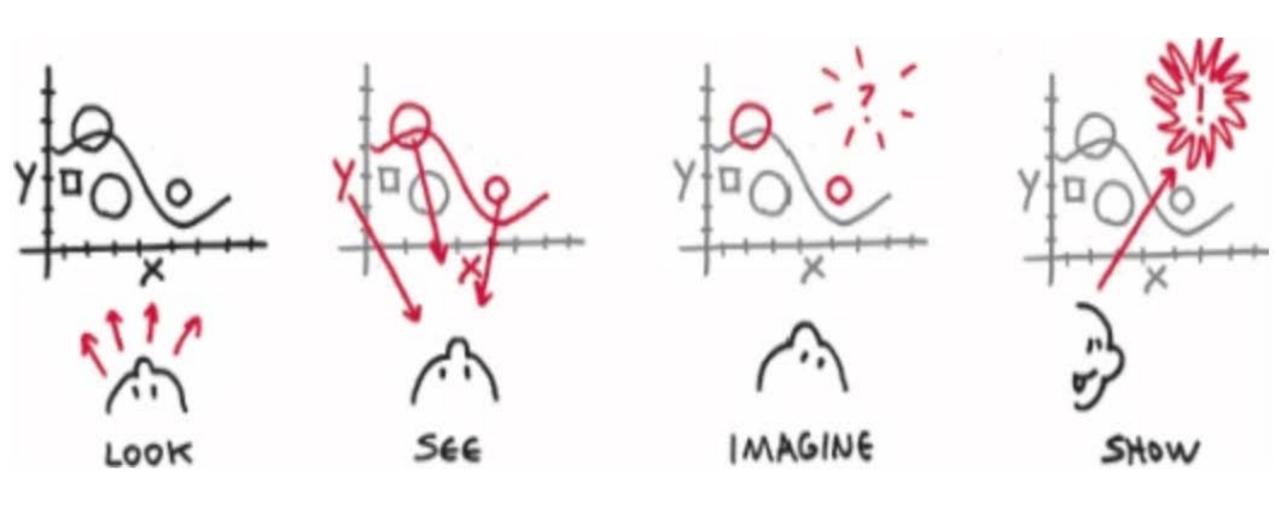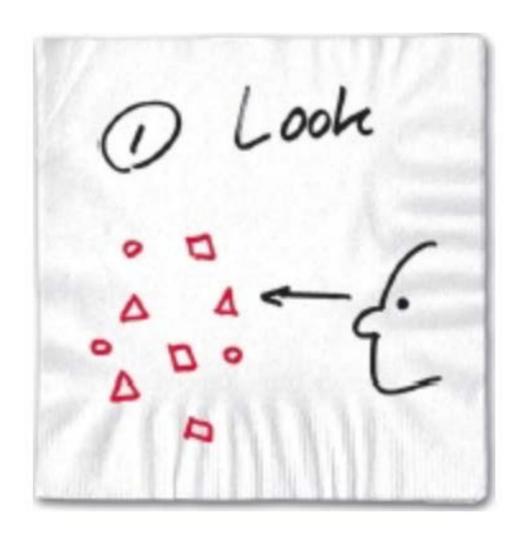# Activities
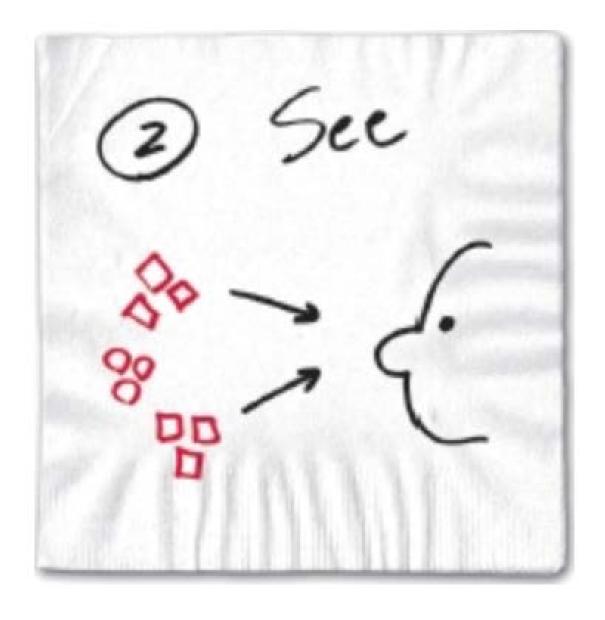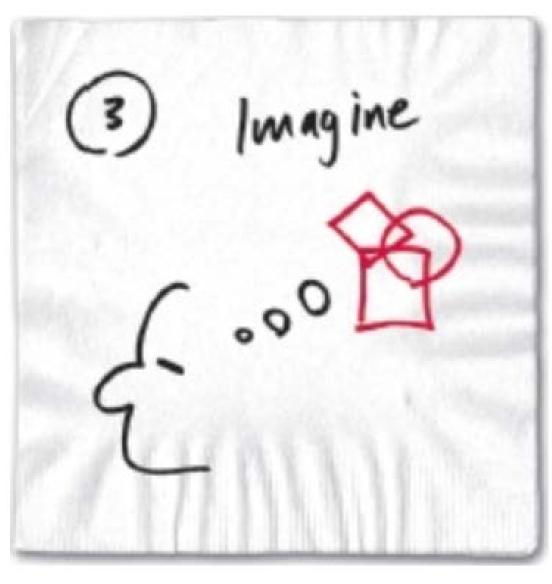
- Scan across the whole landscape. Build a big picture; note that there are forests and trees... and leaves, as well.
- Find the edges and determine which way is up. Establish the limits of our view and the fundamental coordinates of the data in front of us.
- Make an initial pass at screening out the noise; separate the visual wheat from the chaff.

Activities
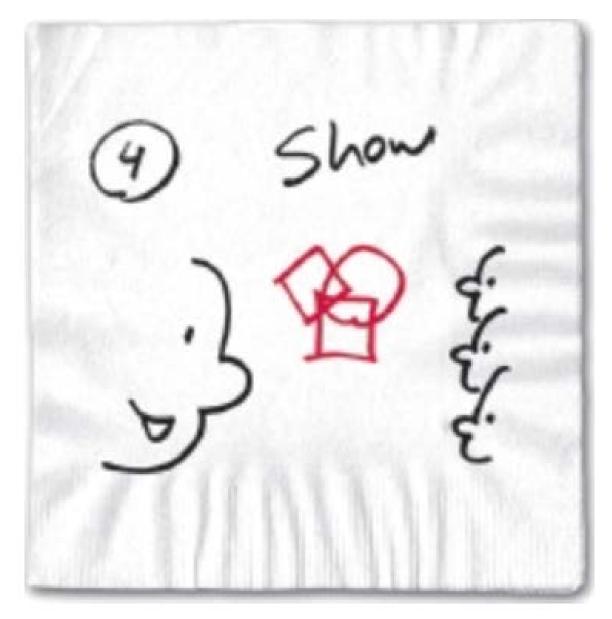
- Filter for relevance: Actively select those visual inputs worth another look and dismiss others. (Then later go back and check again.)
- Categorize and make distinctions: Separate the wheat into different categories by type.
- Notice patterns and clump creatively; identify visual commonalities among inputs, and larger commonalities among categories.

Activities

- Close your eyes to see more: With all visual inputs fresh in the mind, look with your eyes closed and see if new connections emerge.
- Find analogies: Ask, "Where have I seen this before?" and then imagine how analogous solutions might work in this new situation.
- Manipulate the patterns: Turn pictures upside down, flop them left to right, switch coordinates to turn them inside out. See if something new becomes visible.
- Alter the obvious: Push visual ideas by finding multiple ways to show the same thing.

Activities

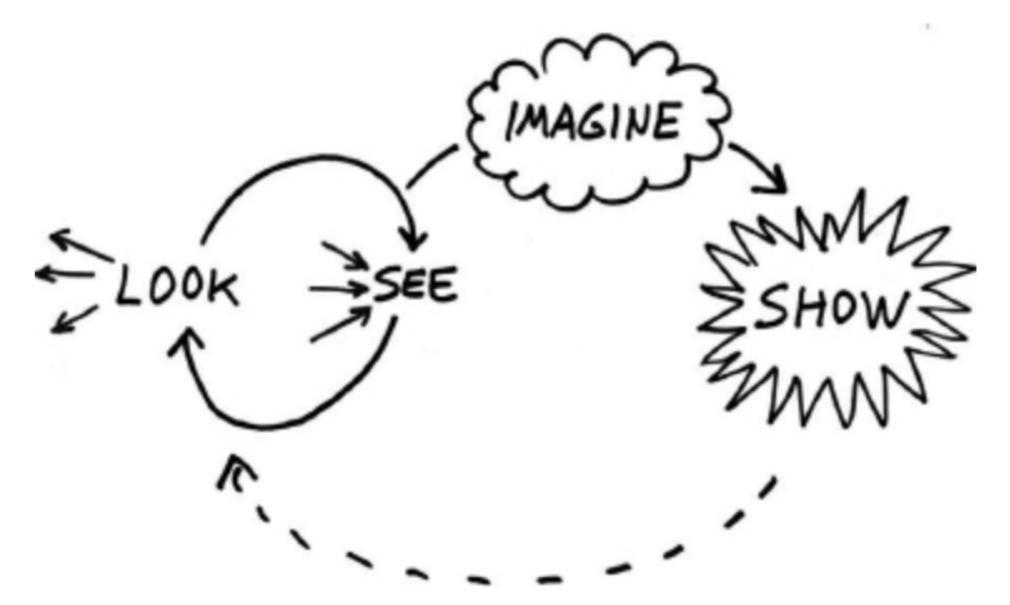- Clarify your best ideas: Prioritize all visual ideas so that the most relevant come to the top.

- Nail things down: Pick the appropriate visual framework and get your ideas down on paper or up on the board.

- Cover all the W's: Make sure that *who/what*, *how much, where* and *when* are always visible; let *how* and *why* emerge as the visual punch line.

Visual Thinking Loop

How About a Little Persuasion?

- Elements of Presentation

- Persuasion & Argument

- The 5 P's
  - Plan
  - Prepare
  - Practice
  - Positivity
  - Presence
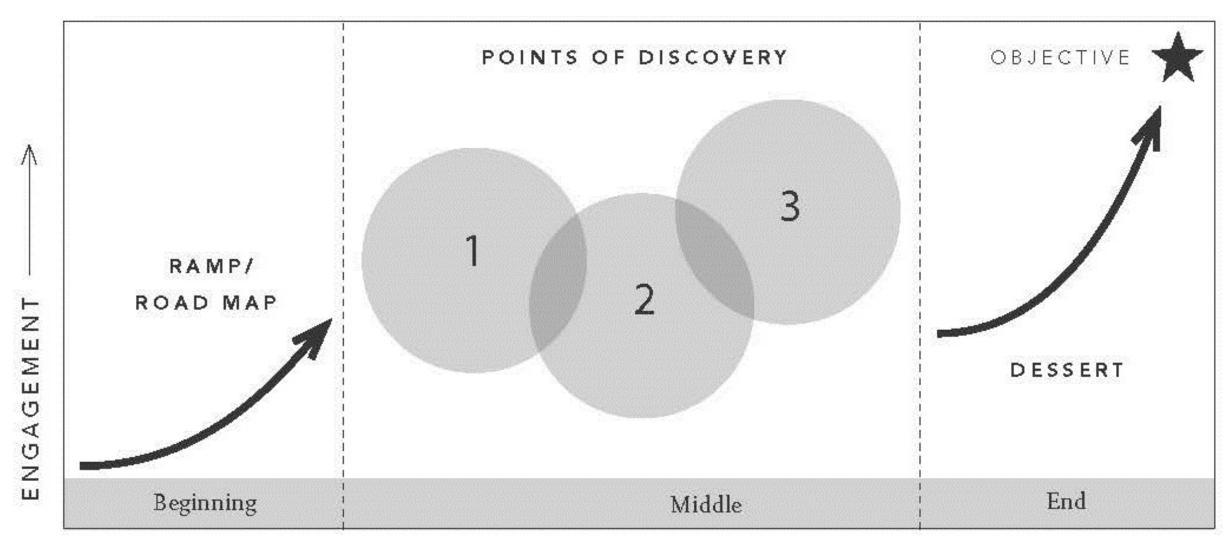
As We Speak

How To Make Your Point And Have It Stick

· Overcome Your Fear of Public Speaking

· Learn the Secrets of High Performance Communication

· Win Over an Audience with Your Voice

· Make Difficult Conversations Easy

Peter Meyers and Shann Nix

https://cumming.ucalgary.ca/gse/home/how-about-more-persuasion-our-research-seminars

Classic Research Talk
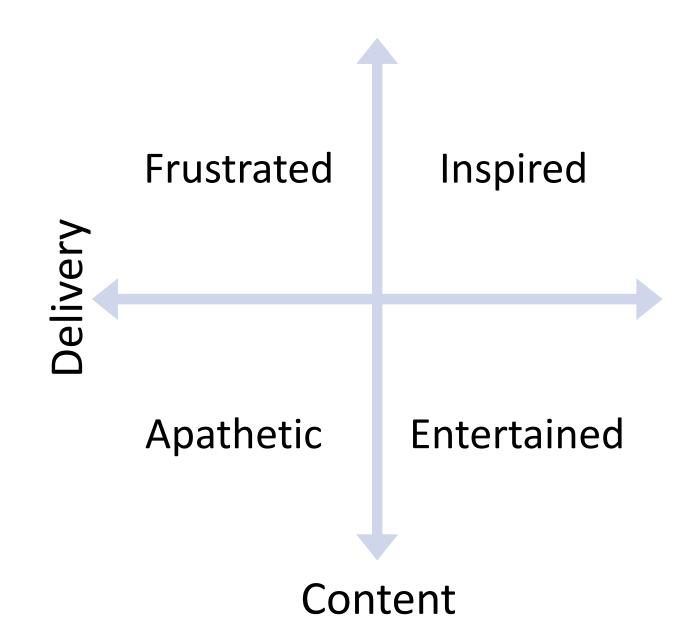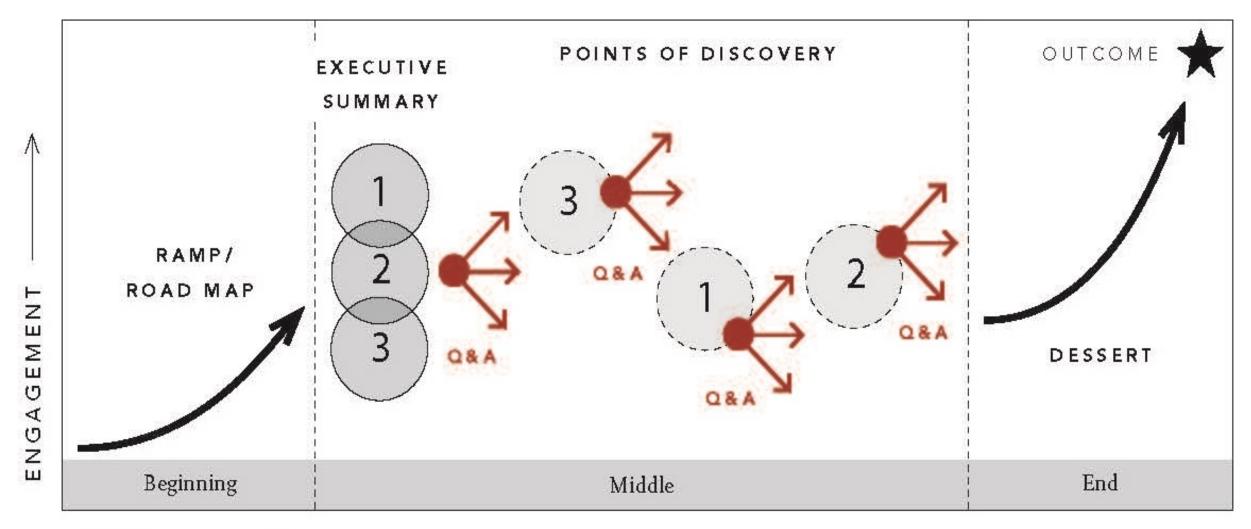
Performance Grid

- Audience daydreams, performs other tasks, pretending to listen

- Audience interested but having difficulty staying focused

- Audience is engaged but dismisses the event as superficial

- Ideas Moved into Action

Frustrated   Inspired

Delivery

Apathetic   Entertained

Content
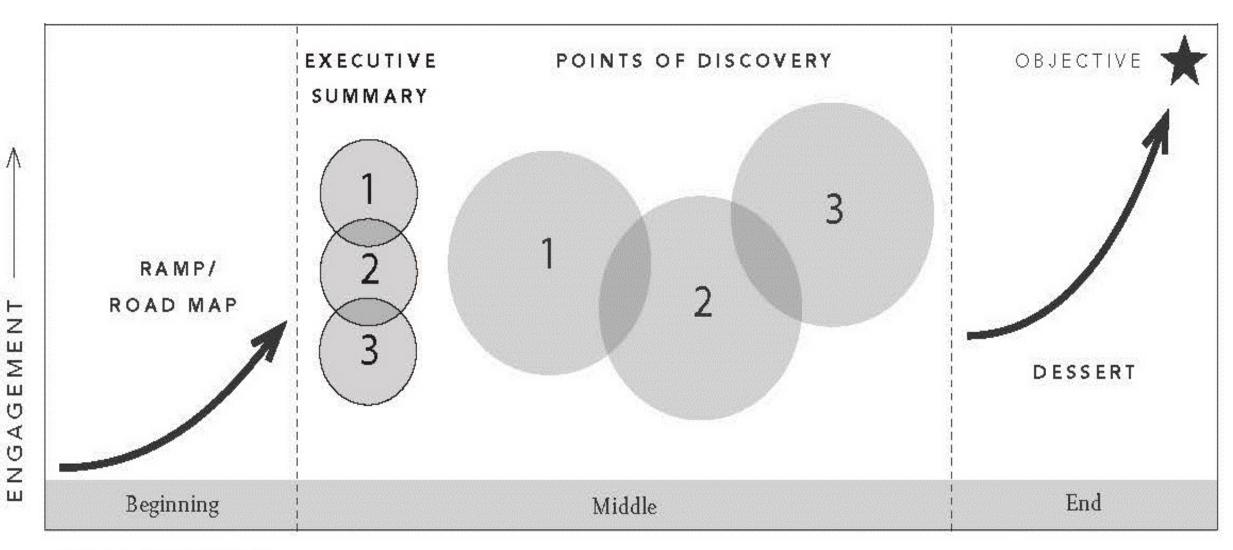
Thesis Statement

3 Minute Thesis

Title that hints at the underlying issue or question and is formatted in "sentence case"

Name(s) here[1,2]
[1]Institute, [2]Department, University of Calgary

UNIVERSITY OF CALGARY

Introduction

Less is More

Results 1

Less is More

Thesis Statement

(Graphical Abstract)

Results 1, 2, 3

Results 2

Less is More

Conclusions

Less is More

Methods

Less is More

Other Results

Less is More

References

Acknowledgments

Contact Information

Persuasion vs. Argument

- Persuasion involve tactics to move people to a position, a belief, or a course of action
- Argument is a specific kind of persuasion based on the principles of reasoning
- It involve establishing a claim and then proving it with the using logical reasoning, examples, and research.

Structure of an Argument

- ✓ Introduction
- ✓ Thesis Statement
- ✓ Background Information
- ✓ Reasons and Evidence
- ✓ The Opposing View and the Refutation
- ✓ Conclusions

INFLUENCE + PERSUASION
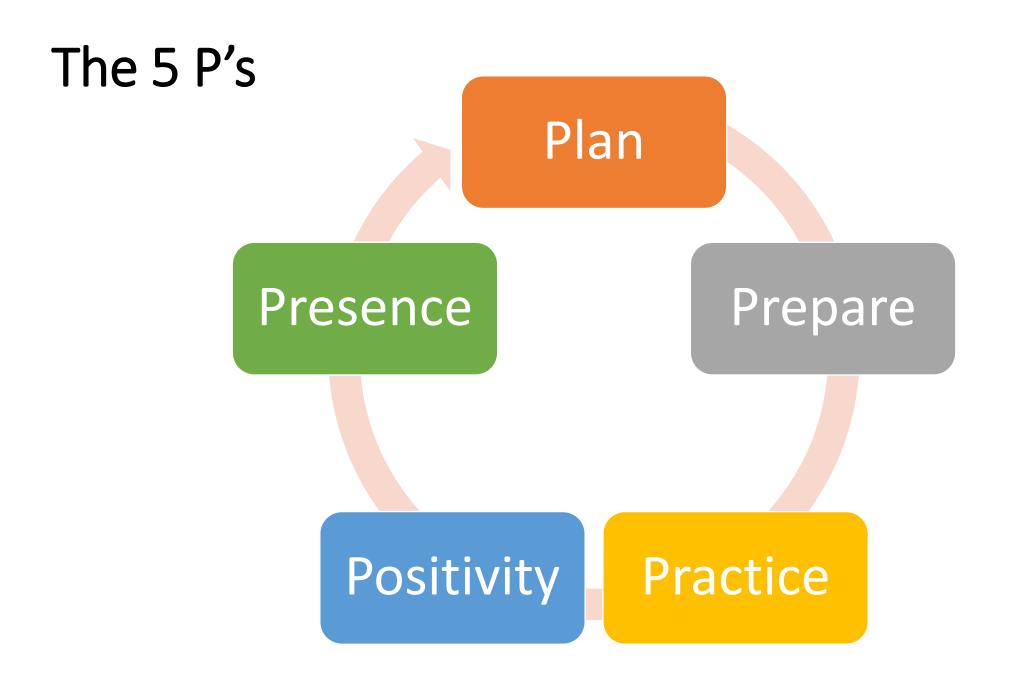
How to influence + persude others in ethical, effective + sustainable ways   *by Steven Martin*

6 universal principles

Work life   personal life

www.discoveryinaction.com.au

©

RECIPROCITY

people are most likely to give back when what's given is unexpected + personalised

Give → You receive

Its not what you do but HOW

?! op you ?!

power to those who give FIRST →

→ obligation

SCARCITY

people want things that are rare/unique + difficult to obtain

UNIQUE

What will I miss out on?

Losses loom larger in our minds

LOSS   GAIN

Loss is a motivator

AUTHORITY

Expertise + credibility matter

TRUST

The Messenger matters!

Encourage someone else to introduce you + your expertise before you speak

DEGREE

TRUST - quickly?
Present a small drawback or weakness about your case before you present your compelling case

LIKING

people are more likely to say 'yes' to people that they like

Take time to exchange info + find similarities + draw attention to them

Complement people
Co-operate

Coming early to meetings to get to know people + build connections helps the 'business' get done better + quicker

BEWARE

Can work for both desirable + undesirable behaviours!

Share good bits about what others are doing

CONSISTENCY

people want to live up to the commitments they make

Look for people to make small commitments - a step on road to change

voluntary   active   effortful   public

SOCIAL Proof

People want to align to what others are doing

also called CONSENSUS

don't focus on poor practice as people may think OK to copy!

Based on work of Robert Cialdini

The 5 P's

Plan

- What is your goal?
  - Best approach to reach goal
  - Limitations
- Start With Your Conclusions
  - Start and end well
  - Framework/Outline

WHO'S LISTENING?

STEP 1 – OUTCOME: *By the end of the conversation, they will...*
decide to/agree to

In order to achieve this they need to...
know

feel

STEP 2 – RELEVANCE: *Why should they care?*

STEP 3 – POINT: *What's your message in one sentence?*

CLASSIC NARRATION STRUCTURE

| RAMP: *From purpose* | POINTS OF DISCOVERY: *From Know* | DESSERT: *Story* |

Know Your Audience

Audience awareness is essential
- What is their position?
- How committed are they?
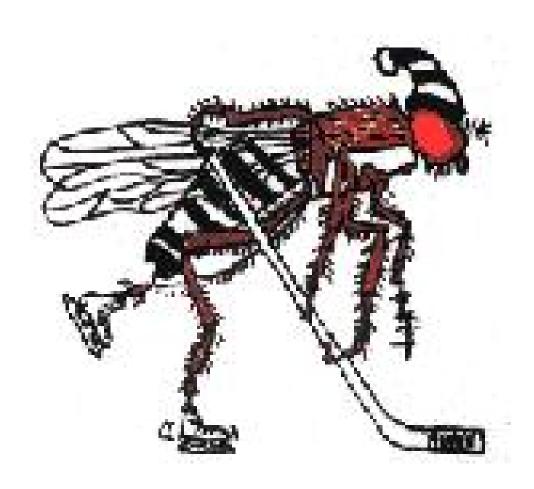- Will they consider other views?
- What will their objections be?

Style	Audience Says	You Say
AUDITORY	Did I hear you right? Sounds exciting. That's music to my ears. Your message rings true to me. Talk me through this…	Use auditory metaphors: "music to my ears" Respond with words like "hear," "sounds," "rings true…" Focus on what people said and what it sounds like.
VISUAL	We are seeing eye-to-eye. I'm not sure I see your point. The future looks bright. It appears as if we have a long road ahead of us.	Draw a picture or use an image to make a point. Respond with words like "see," "looks," "catch sight of…" Use visual metaphors. In stories, describe what you see in the environment.
KINESTHETIC	I feel like we are getting somewhere. It seems like a rough road ahead. He's carrying a heavy load. Let's get a handle on this. Can we smooth this out?	Use feeling metaphors: Respond with words like "feel," "sense," "intuit…" In stories, describe texture. Get them on their feet and use an active exercise.
DIGITAL	Let me show you how we came to this… We have three options. This makes sense because… We can double our returns with 10% more resources.	Show a graph. Give numbers and facts. Use language that quantifies. Go in chronological order, use sequence and logic to organize thoughts.

Prepare

Make It Interesting!
- Informative
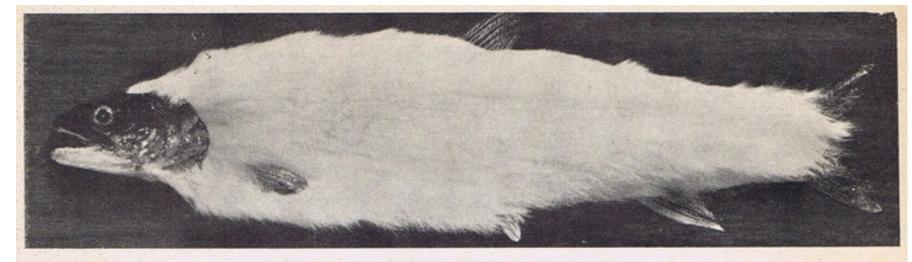- Fun
- Lecture/Discussion/Activity
- Audience Interaction

"Your brand is what other people say about you when you're not in the room."

~Jeff Bezos

Anchor Story

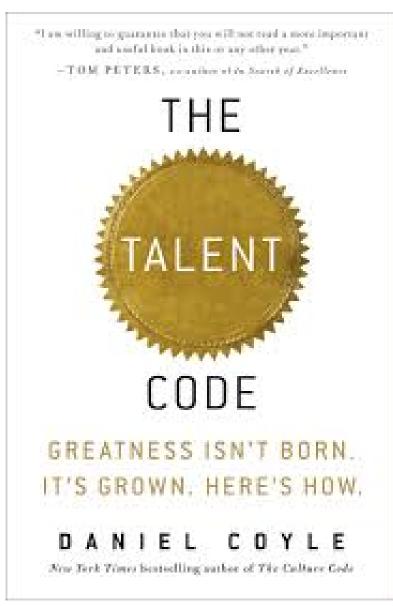**FUR BEARING TROUT**
Very Rare

CAUGHT WHILE TROLLING IN LAKE SUPERIOR OFF
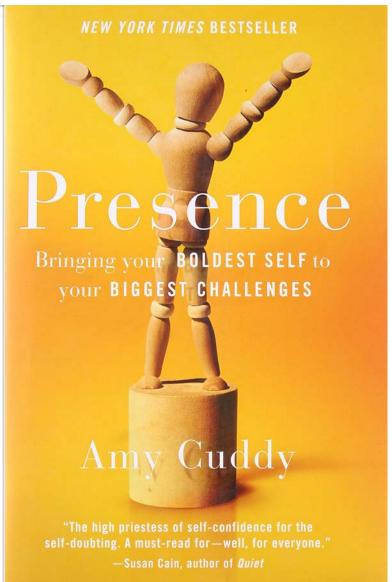GROS CAP, NEAR SAULT STE. MARIE, DISTRICT OF ALGOMA

It is believed that the great depth and the extreme penetrating coldness
of the water in which these fish live, has caused them to grow their dense
coat of (usually) white fur.

Mounted by ROSS C. JOBE, Taxidermist of Sault Ste. Marie, Ontario

anchoring-a-simple-storytelling-trick-to-make-data-approachable-and-memorable
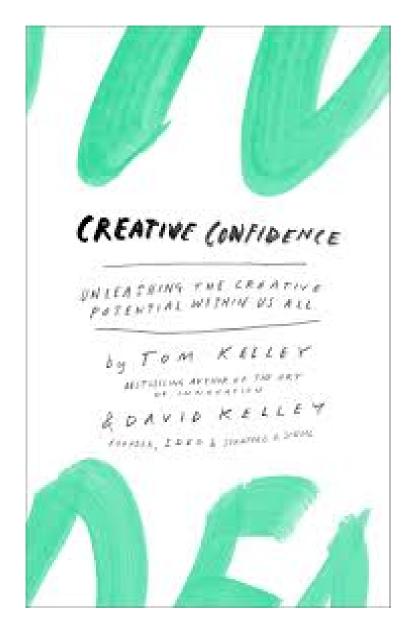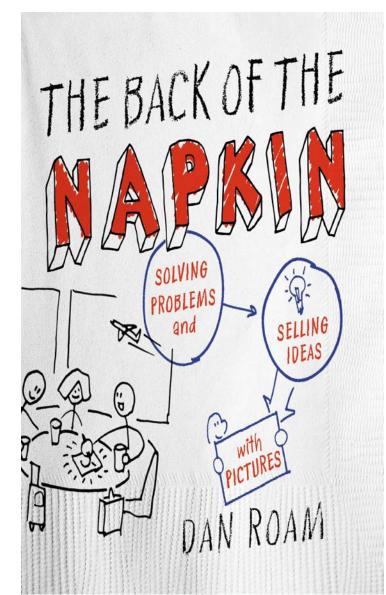
Practice, Positivity, Presence

Articles
1) Power posing, imposter syndrome & the giver-taker spectrum
2) The 5 P's to destress the thesis defense
3) TOYFing the PhD candidacy exam

Questions

CREATIVE CONFIDENCE

UNLEASHING THE CREATIVE POTENTIAL WITHIN US ALL.

by TOM KELLEY
BESTSELLING AUTHOR OF THE ART OF INNOVATION

& DAVID KELLEY
FOUNDER, IDEO & STANFORD D. SCHOOL

THE BACK OF THE NAPKIN

SOLVING PROBLEMS and SELLING IDEAS

with PICTURES

DAN ROAM

As We Speak

How To Make Your Point And Have It Stick

· Overcome Your Fear of Public Speaking

· Learn the Secrets of High Performance Communication

· Win Over an Audience with Your Voice

· Make Difficult Conversations Easy

Peter Meyers and Shann Nix