Facilitating Innovation and Creativity in a Team Environment

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Workshop Layout

• Welcome & Overview
• Innovation and Creativity
  – What are the key features?
  – How do we cultivate?
• Innovation and Creativity in a Team Environment
  – High performance teamwork
  – IDEO example
• Wrap-up and Next Steps
Session Objectives

• Participants will be able to describe key elements of:
  – Importance and features of high performance teamwork for fostering innovation and creativity
  – IDEO approach to innovation and creativity
• Participants will begin applying key elements to the design/re-design of a course, lab or class session or learning module

Innovation and Creativity

• Individually reflect on
  – Key features and how to cultivate innovation and creativity in a team environment
  – Record your ideas
• Turn to the person next to you
  – Exchange ideas
  – Develop a list to share with whole group
• Whole Group discussion
Guide to Increasing Innovation
Amabile & Khaire (2008)

- If you’re trying to enhance creativity:
  - Remember that you are not the sole fount of ideas
  - Enable collaboration
  - Enhance diversity
  - Map the stages of creativity and attend to their different needs
  - Accept the inevitability and utility of failure
  - Motivate with intellectual challenge
Prototyping is probably the single most pragmatic behavior the innovative firm can practice.

Innovation is more social than personal.

Design team failure is usually due to failed team dynamics (Leifer, Koseff & Lenshow, 1995).

It’s the soft stuff that’s hard, the hard stuff is easy (Doug Wilde, quoted in Leifer, 1997)

Professional Skills


Top Three Main Engineering Work Activities

**Engineering Total**
- Design – 36%
- Computer applications – 31%
- Management – 29%

**Civil/Architectural**
- Management – 45%
- Design – 39%
- Computer applications – 20%


Teamwork

<table>
<thead>
<tr>
<th>PERFORMANCE LEVEL</th>
<th>TYPE OF GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pseudo-group</td>
</tr>
<tr>
<td></td>
<td>Traditional Group</td>
</tr>
<tr>
<td></td>
<td>Individual Members</td>
</tr>
<tr>
<td></td>
<td>Cooperative Group</td>
</tr>
<tr>
<td></td>
<td>High-performing Cooperative Group</td>
</tr>
</tbody>
</table>

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14
A team is a small number of people with complementary skills who are committed to a common purpose, performance goals, and approach for which they hold themselves mutually accountable

• SMALL NUMBER
• COMPLEMENTARY SKILLS
• COMMON PURPOSE & PERFORMANCE GOALS
• COMMON APPROACH
• MUTUAL ACCOUNTABILITY

--Katzenbach & Smith (1993)

*The Wisdom of Teams*
Hackman – Leading Teams

- Real Team
- Compelling Direction
- Enabling Structure
- Supportive Organizational Context
- Available Expert Coaching

Team Diagnostic Survey (TDS)
https://research.wjh.harvard.edu/TDS/

Real Team

- clear boundaries
- team members are interdependent for some common purpose, producing a potentially assessable outcome for which members bear collective responsibility
- at least moderate stability of membership

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Teamwork Skills

- Communication
- Listening and Persuading
- Decision Making
- Conflict Management
- Leadership
- Trust and Loyalty
Group Processing
Plus/Delta Format

<table>
<thead>
<tr>
<th>Plus (+)</th>
<th>Delta (Δ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Things That Group Did Well</td>
<td>Things Group Could Improve</td>
</tr>
</tbody>
</table>

Team Charter

- Team name, membership, and roles
- Team Mission Statement
- Anticipated results (goals)
- Specific tactical objectives
- **Ground rules/Guiding principles for team participation**
- Shared expectations/aspirations
Code of Cooperation

• EVERY member is responsible for the team’s progress and success.
• Attend all team meetings and be on time.
• Come prepared.
• Carry out assignments on schedule.
• Listen to and show respect for the contributions of other members; be an active listener.
• CONSTRUCTIVELY criticize ideas, not persons.
• Resolve conflicts constructively,
• Pay attention, avoid disruptive behavior.
• Avoid disruptive side conversations.
• Only one person speaks at a time.
• Everyone participates, no one dominates.
• Be succinct, avoid long anecdotes and examples.
• No rank in the room.
• Respect those not present.
• Ask questions when you do not understand.
• Attend to your personal comfort needs at any time but minimize team disruption.
• HAVE FUN!!

Adapted from Boeing Aircraft Group Team Member Training Manual
Ideo's five-point model for strategizing by design:
- Hit the Streets
- Recruit T-Shaped People
- Build to Think
- The Prototype Tells a Story
- Design Is Never Done

http://www.stanford.edu/group/dschool/big_picture/our_vision.html
The Innovation Journey

The innovation journey is a nonlinear cycle of divergent and convergent activities that may repeat over time and at different organizational levels if resources are obtained to renew the cycle, p. 16.

IDEO – Deep Dive Video

ABC News
Nightline - 7/13/99

Available From
ABC News Store
www.abcnews.com


IDEO - “The Deep Dive”

IDEO has been identified as America’s Leading Design Firm.

IDEO’s special ingredients:
- Teams
- Culture
- Methodology

IDEO - “The Deep Dive”

Viewing Perspectives:
- Teams
- Culture
- Methodology
- Videographer
“THE DEEP DIVE”
Five Days at

IDE

Components of IDEO process

- Creation of “Hot Teams”
- Brainstorming
- Rapid Prototyping
- Observing & Listening from Customers
- Thinking of products in terms of *verbs*, rather than *nouns*
IDEO's Teams

Named “Hot Teams.”
Multidisciplinary.
Group leader is assigned based on their abilities to work with groups.

Seven Secrets for Better Brainstorming

1. Sharpen the focus
2. Playful rules
3. Number your ideas
4. Build and jump
5. The space remembers
6. Stretch your mental muscles
7. Get physical
Playful Rules

- One conversation at a time
- Stay focused on the task
- Encourage wild ideas
- Go for quantity
- Be visual
- Defer judgment
- Build on the ideas of others

IDEO’s Culture

- Employees design their own working areas.
- Employees have interest and skills to work with a wide range of people.
- No hierarchies.
Build Your Greenhouse

- Building Neighborhoods
- Think Project, Think Personal
- Building Blocks
- Inspiration from Adversity
- Prototype Your space
- Create a Team Icon

- Watch Your Body Language
- Simple Team Space
- Hierarchy is the Enemy of Team Space
- Give Your Workers a View
- Tell Stories
- Make Your Junk Sing

Areas of Congregation
- Lounge / Common Area
- Mainstreet
  - Forced Interaction
- Need for Privacy
  - Quiet Areas
  - Individuality
Five steps to IDEO’s innovation

- Understand the market/client/technology/constraints
- Observe real people in real situations
- Visualize new-to-the-world concepts & ultimate customers
- Evaluate & refine prototypes
- Implement new concept for commercialization

IDEO’s Method

Observation | Brainstorming | Prototyping | Implementation

- user desirability
- business viability
- technical feasibility

insights and opportunities

implementation

www.ideo.com
Ideo Brainstorming

- One Conversation at a time
- Quantity is key
- Use Visual Aids early
- Aggregation of Ideas

1. Duration: Limit Time to an Hour
2. Don’ts: No Presentations, Nor a time to poll employees, and not about swanky retreats.

How to Kill Brainstorming

- The boss speaks first.
- Everybody gets a turn
- Experts Only – diversity trumps expertise
  - Kelley’s Rule: 1 person who can build things, 1 with customer experience, and a sci-fi nerd.
- Off Site
- No Silly Stuff
- Document Everything
IDEO’s Innovation Methodology

ABSTRACT

OPPORTUNITY AREAS

BRAINSTORMS & IDEATION

INSIGHTS

PROTOTYPING

SYNTHESIS

LEARN

OBSERVATIONS

FORMATIVE RESEARCH

EMPATHIC RESEARCH

REFINEMENT

PROPOSITIONS

IMPLEMENTATION

DO

REAL

START HERE!

Source: http://www.mediawork.ch/meme/category/visual-literacy/

About Us

IDEO helps companies innovate. We design products, services, environments, and digital experiences.

“Head in the sky...” IDEO’s teams, culture, and methodology are the special ingredients that fuel our approach to innovation and design. We begin with a deep exploration of business, nuanced, and technical factors. Observe. Brainstorm. Prototype. Repeat.

Point of View. Essence. Heart. “...ess.” Whatever you call it, it’s there: a shared mind set, the place where the efforts of our problem-solving engine converge. Expressed in a visible and tangible way, it informs and inspires the design process.

“...feet on the ground.” What’s a good idea worth if it can’t be realized? IDEO’s world-class designers and engineers ensure that the power of the vision is preserved in the journey from concept to final production.

www.ideo.com
Innovation Resources

Additional Perspectives on Innovation:


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Innovation Resources


Team Decision Making Exercise

• Team Decision Making
  – Ranking Task
• Team-Based Learning Assessment Formats
  – Individual Reflection and Review
  – Process Observation
  – Group Processing – Plus/Delta

Teamwork Skills

• Communication
  • Listening and Persuading
• Decision Making
• Conflict Management
• Leadership
• Trust and Loyalty
Formal Decision-Making Approaches

<table>
<thead>
<tr>
<th>Objective</th>
<th>Deterministic</th>
<th>Stochastic</th>
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<tbody>
<tr>
<td>Multiple</td>
<td><strong>Ranking</strong></td>
<td>MAUT</td>
</tr>
<tr>
<td></td>
<td>AHP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SMART</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>B/C</td>
<td>Decision Tree (EV)</td>
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<tr>
<td></td>
<td>LP</td>
<td>Simulation</td>
</tr>
<tr>
<td></td>
<td>Optimization</td>
<td></td>
</tr>
</tbody>
</table>

Team Decision Making – Ranking Tasks

- Typically “survival” tasks
  - First was Moon Survival, “Lost on the moon” developed by Jay Hall for NASA in 1967
  - Many survival tasks available – desert survival, lost at sea, winter survival, …
- Individual followed by team ranking
- Different decision-making conditions in each team
Team Member Roles

- Observer/ Process Recorder (non participant role)
- Facilitator/Time Keeper
- Task Recorder
- Skeptic/Prober

<table>
<thead>
<tr>
<th>Action</th>
<th>Name 1</th>
<th>Name 2</th>
<th>Name 3</th>
<th>Name 4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributes Ideas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describes Feelings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encourages Participation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summarizes, Integrates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checks for Understanding</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relates New To Old Learning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gives Direction To Work</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>52</td>
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</tbody>
</table>
Team Decision Making…
The New They'll Never Take Us Alive!!

The top fifteen causes of death in the United States in 2003 in alphabetical order. The data are based on an annual review of death certificates. Your task is to rank them in decreasing order of number of deaths caused each year. Place the number 1 next to the one that causes the most deaths, the number 2 by the next, and so forth.

To Group Members: TASKS
1. Individually determine the ranking.
2. Determine one ranking for the group.
3. Every group member must be able to explain the rationale for the group’s ranking.
4. When your group finishes (each member has signed), (a) record your estimated number of fatalities in the U.S. for each, and then (b) compare your ranking with that of another group.

<table>
<thead>
<tr>
<th>Product or Activity</th>
<th>Ranking</th>
<th>Number of Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accidents</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Alzheimer's disease</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Blood poisoning</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Cancer</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Heart disease</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Influenza and Pneumonia</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Kidney disease</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Liver disease</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Lung disease</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Parkinson’ disease</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Pneumonitis</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Stroke</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>Suicide</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Product or Activity</td>
<td>Ranking</td>
<td>Number of Fatalities</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>---------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Accidents</td>
<td>5</td>
<td>105695</td>
</tr>
<tr>
<td>Alzheimer's disease</td>
<td>8</td>
<td>63343</td>
</tr>
<tr>
<td>Blood poisoning</td>
<td>10</td>
<td>34243</td>
</tr>
<tr>
<td>Cancer</td>
<td>2</td>
<td>554643</td>
</tr>
<tr>
<td>Diabetes</td>
<td>6</td>
<td>73965</td>
</tr>
<tr>
<td>Heart disease</td>
<td>1</td>
<td>684462</td>
</tr>
<tr>
<td>Hypertension</td>
<td>13</td>
<td>21841</td>
</tr>
<tr>
<td>Influenza and pneumonia</td>
<td>7</td>
<td>64847</td>
</tr>
<tr>
<td>Kidney disease</td>
<td>9</td>
<td>42536</td>
</tr>
<tr>
<td>Liver disease</td>
<td>12</td>
<td>27201</td>
</tr>
<tr>
<td>Lung disease</td>
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<td>126128</td>
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<tr>
<td>Parkinson's disease</td>
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<tr>
<td>Pneumonitis</td>
<td>15</td>
<td>17457</td>
</tr>
<tr>
<td>Stroke</td>
<td>3</td>
<td>157803</td>
</tr>
<tr>
<td>Suicide</td>
<td>11</td>
<td>30642</td>
</tr>
</tbody>
</table>

**US Mortality Causes - 2003**

<table>
<thead>
<tr>
<th></th>
<th>Product or Activity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Heart disease</td>
<td>684462</td>
</tr>
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<td>2</td>
<td>Cancer</td>
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<td>Stroke</td>
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<td>4</td>
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<td>Accidents</td>
<td>105695</td>
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<td>6</td>
<td>Diabetes</td>
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<td>Influenza and pneumonia</td>
<td>64847</td>
</tr>
<tr>
<td>8</td>
<td>Alzheimer's disease</td>
<td>63343</td>
</tr>
<tr>
<td>9</td>
<td>Kidney disease (Nephritis/nephrosis)</td>
<td>42536</td>
</tr>
<tr>
<td>10</td>
<td>Blood poisoning</td>
<td>34243</td>
</tr>
<tr>
<td>11</td>
<td>Suicide</td>
<td>30642</td>
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<tr>
<td>12</td>
<td>Liver disease</td>
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</tr>
<tr>
<td>15</td>
<td>Pneumonitis</td>
<td>17457</td>
</tr>
</tbody>
</table>
Postdecision Questionnaire

1. How understood and listened to did you feel in your group?
   Not at all  1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9  Completely
2. How much influence do you feel you had in your group’s decision making?
   None 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9  A great deal
3. How committed do you feel to the decision your group made?
   None 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9  A great deal
4. How much responsibility do you feel for making the decision work?
   None 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9  A great deal
5. How satisfied do you feel with the amount and quality of your participation in your group’s decision making
   Dissatisfied 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9  Satisfied
6. Write one adjective that describes the atmosphere in your group during the decision making

Group Processing
Plus/Delta Format

<table>
<thead>
<tr>
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<tbody>
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</table>
Team Decision-Making Process

- **How**
  - Individual
  - Mathematical
  - Consensus
  - Iterative – H, M, L
  - Both ends toward the middle

- **Assumptions/Biases**
  - Family/Friends
  - News
  - Youth
  - Geographic location

Methods of Decision Making
*(Johnson & Johnson, 1991)*

1. Decision by authority without discussion
2. Expert member
3. Average of member’s opinions
4. Decision by authority after discussion
5. Majority control
6. Minority control
7. Consensus

See Table Summarizing Characteristics – Smith (2007), p. 46