surprise & delight

design thinking in creative practice and theory

one man’s view

NSF Workshop on Synergies Between Creativity and Information Technology, Science, Engineering, and Design: defining a research agenda
2,3 November 2006 @ Arlington, VA

Larry Leifer
Professor (ME), Founding Director, Stanford Center for Design Research
Founding Member, Hasso Plattner Institute of Design at Stanford
surprise & delight ?
are we making progress?
design thinking

experiential

integrative

need & empathy driven

insight based
Hasso Plattner Institute of Design at Stanford
OUR INTENT: CREATE THE BEST DESIGN SCHOOL. PERIOD.

- Prepare future innovators to be breakthrough thinkers & doers
- Use design thinking to inspire multidisciplinary teams
- Foster radical collaboration between students, faculty & industry
- Tackle big projects and use prototyping to discover new solutions

STANFORD DESIGN SCHOOL
the team
the opportunity

“expanding the role of multidisciplinary research and teaching... is one of Stanford’s biggest opportunities (John Hennessy)”
the breakthrough

The Power of Design

A tiny firm called IDEO redefined good design by creating experiences, not just products. Now it's changing the way companies innovate.

BY BRUCE NUSBAUM

CE0 Tim Brown (left)
Founder David Kelley
intense collaboration
extreme product based learning, “design learning”
a culture of prototyping that accelerates discovery
students as experts

reverse mentoring
students engaged and confident about creating their own innovation process
DESIGN THINKING

ANALYTIC THINKING
what do we know from 
**design-thinking-research**

? 

**lessons learned from instrumenting design activity**
the power of observation
Tang ‘89, video interaction analysis
canonical findings
recent IT study
the importance of mediation  
(Tang’89)

<table>
<thead>
<tr>
<th>Function</th>
<th>Text Activity</th>
<th>Draw Activity</th>
<th>Gesture Activity</th>
<th>Total</th>
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<tbody>
<tr>
<td>Store Knowledge</td>
<td>40</td>
<td>19</td>
<td>1</td>
<td>27%</td>
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<tr>
<td>Express Ideas</td>
<td>2</td>
<td>63</td>
<td>33</td>
<td>43%</td>
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<tr>
<td>Mediate Interaction</td>
<td>0</td>
<td>21</td>
<td>46</td>
<td>30%</td>
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<tr>
<td></td>
<td>19%</td>
<td>46%</td>
<td>35%</td>
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</tbody>
</table>
the attention time constant
(Baya'97)

6.4 seconds
design information fragment duration across six activity categories
(2 each = receptive, expressive, search)
creative content matters

noun-phrases in formal documents predict awards in peer-reviewed design competitions

(Mabogunje, PhD’96)
iterative questioning cycles
Eris’02

Design Concepts C1, C2, C3, C4, C5...

Divergent Thinking

Convergent Thinking

Design Requirements

Design Decisions & Specifications

GDQ

DRQ

DRQ

GDQ
iteration rate drives performance

Eris’02

design team performance score

better

combined rate of DRQ+GDQ (questions/hour)

DRQ = deep reasoning question
GDQ = generative design question
field research case

electronic arts corporation
programming teams in networks

does game programmer activity predict product code performance?

Reiner’05
features of the computer games industry

- Multidisciplinary Teams of 75 to 200 people
- Producers, Designers, Artists, Engineers, Testers
- Most assets tracked in a database repository
- Word docs, 3D models, animation data, 2D art, audio, source code
- Yearly, “Fast Track” development cycles
- High performance teams
- Industry-wide recognition, high review scores
- Innovative, patented tech reused by other teams
- Sales quadrupled+ in last three years
concurrent editing as a social network

Node = Person
Arc = Concurrent Edit
Arc weight = Num Concurrent Edits
Red = Top 5 Collaborator
Month & Milestone Indicators
1 Second = 1 Day
Working Solo

[SoNIA website: www.stanford.edu/group/sonia]
Surprise not delight
an equation for success

\[ i_e = mc^x \]

innovation = minds in communication
radical, relevant, & rigorous
working creatively together