User Experience Research Methods in 3D: What to Use When and How to Know You’re Right

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Topics

• The User Research Landscape
• Qualitative Validity
• User Research Classes
• Desirability
• True Intent Studies
• User Experience and Strategy
How this got started

http://www.useit.com/alertbox/user-research-methods.html

Jakob Nielsen’s Alertbox, October 6, 2008:

When to Use Which User Experience Research Methods

By Christian Rohrer

Summary:
Modern day user experience research methods can now answer a wide range of questions. Knowing when to use each method can be understood by mapping them in 3 key dimensions and across typical product development phases.

The field of user experience, is blessed (or cursed) with a very wide range of research methods, ranging from tried-and-true methods such as lab-based usability studies to those that have been more recently developed, such as desirability studies (to measure aesthetic appeal).

You can’t use the full set of methods on every project, but most design teams benefit from combining insights from multiple research methods. The key question is what to do when. To better understand when to use which method, it is helpful to realize that they differ along 3 dimensions:

- Attitudinal vs. Behavioral
- Qualitative vs. Quantitative
- Context of Website or Product Use

The following chart illustrates where several popular methods appear along these dimensions:

Research methods by Data Source vs. Approach vs. Context of Product Use
The User Research Landscape: Three Dimensions of Methods

1. Attitudinal vs. Behavioral
2. Qualitative vs. Quantitative
3. Context of website or product use
Questions answered by research methods based on Data Source & Approach

Data Source

Attitudinal

Behavioral

Approach

Qualitative (direct)

Quantitative (indirect)

What people say

What people do

Why & How to fix

How many & How much

Why & How to fix

What people say

Qualitative (direct)

Quantitative (indirect)

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The Attitudinal vs. Behavioral Dimension

• Attitudinal Research
  – Understand, measure, or inform change of people’s stated beliefs
  – Often called “self-reported” data
  – Often relied on heavily in marketing departments
  – Example methods: Surveys, Focus Groups

• Behavioral Research
  – Understand what people do with minimal interference from the method itself
  – Example methods: Data Mining/Analysis, Eyetracking
The Qualitative vs. Quantitative Dimension

• Qualitative Research
  – Data typically gathered **directly** by observing the user
  – Researcher can ask follow-up questions, probe on behavior, and possibly adjust the protocol as the study progresses
  – Analysis of data is not mathematical

• Quantitative Research
  – Data typically gathered **indirectly** through a research instrument such as a survey or web server logs
  – Large amounts of data that can be coded and analyzes mathematically
The Attitudinal vs. Behavioral Dimension

• Mixed approaches
  – In the middle of the spectrum are the two most popular methods:
    • Usability lab studies
    • Ethnographic field studies
  – Though they often include a mix of attitudinal and behavioral data, they are generally best for understanding user behavior
Research Methods Landscape
Usability Lab Studies

• Participants are recruited for 1-on-1 sessions where they are given tasks and are asked to complete them using a prototype or the live site
• Participants think aloud as they complete the assigned tasks
• Researcher observes and notes their behavior
• Data often reveals usability issues, content issues, and users’ mental models
• Often done iteratively throughout the design process
Ethnographic Field Studies

• Participants are observed in their natural environment (most typically in their homes, offices, or wherever they use the product)
• Provides a deep understanding of their lifestyles, cultures, process, and work-arounds as a basis for better understanding their needs and problems
• Best if done early in the development process to help inform features and functionality
Research Methods Landscape

Data Source

Behavioral

Attitudinal

Qualitative (direct)

Approach

Quantitative (indirect)

- Usability Lab Studies
- Ethnographic Field Studies
- Focus Groups

mix
Focus Groups

• Participants are asked about their reactions to a product, service, concept, brand, or advertisement in a small group setting (usually 6-10 people)

• Pros:
  – Provides attitudinal data that is useful for marketing and brand issues
  – Can inform big picture product strategy
  – Useful to guide the construction of subsequent attitudinal survey

• Cons:
  – Not appropriate for evaluating product usability
  – Imagining their interaction with the product
  – Predicting future behavior
  – “Group think”
  – Participants swayed by others
  – Cultural rules and social norms shape responses
Solomon Asch: Social Pressure and Conformity

Conclusion: Focus groups are susceptible to groupthink

Asch, 1956
Research Methods Landscape

Data Source

Behavioral

Attitudinal

Usability Lab Studies
Ethnographic Field Studies
Participatory Design
Focus Groups

Qualitative (direct)  Approach  Quantitative (indirect)
Participatory Design

- Participants are recruited to participate in small group sessions (4-8 participants) in which they complete exercises designed to help them express their cognitive, emotional, aspirational, and procedural ideas and issues.
- Often, materials are provided to allow participants to diagram and design ideal product experiences.
- The act of physically laying out words and images and the choice placement in a diagram enables participants to articulate their ideas more thoroughly than they can in a typical interview or conversation.
- Participants designs are used as an explanatory vehicle for their needs, not as actual design specs.
- Sessions require a lot of materials and preparation.
The Context of Product Use Dimension

- **Natural**
  - Goal is to minimize the interference from the study in order to understand users’ natural behavior and attitudes
  - Example methods: Ethnographic Field Studies, Intercept Surveys, Data Mining

- **Scripted**
  - Goal is to focus the insights by providing consistency between participants
  - Degree of scripting can vary widely
  - Example methods: Benchmark Usability Studies

- **De-contextualized / Product is not used**
  - Goal is to examine issues that are broader than usage or usability
  - Example methods: Brand or Cultural Behavior Studies

- **Hybrid Approaches**
  - Goal is to creatively combine product use during the study to meet the research goals
  - Example methods: Participatory Design
Research Methods Landscape

Behavioral

Data Source

Ethnographic Field Studies

Usability Lab Studies

Attitudinal

Qualitative (direct)  Approach  Quantitative (indirect)

Participatory Design

Focus Groups

Desirability studies

mix
Landscape of User Research Methods

Key for **Context of Product Use** during data collection

- **Natural use of product**
- **De-contextualized / not using product**
- **Scripted (often lab-based) use of product**
- **Combination / hybrid**
Typical Product Development Stages and Classes of Research

Understand
Goal: Inspire new ideas; discover opportunities; inform strategy

Conceive
Goal: Understand user goals and tasks; Improve/refine the design; reduce execution risk

Design

Develop

Launch

Strategize

Optimize

Assess

Key Q: What shall we do?

Key Q: How shall we do it?

Key Q: How well did we do?

- Ethnography
- Competitive analysis
- Feature/task analysis
- Develop/test concepts
- Market segmentation
- Brand strategy

- Usability inspections
- Participatory design
- Iterative design & testing (RITE, paper prototypes)
- Desirability studies
- Usability (lab) studies
- Ethnographic field studies

- “Tracker” surveys (CSAT, Health, Loyalty, NPS)
- Online User Experience Assessments
- Usability benchmarks
- Data mining analysis
- Live (A/B) Testing
- Qualitative insights
Qualitative Validity

Using the RITE method to improve products; a definition and a case study

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ABSTRACT
This paper defines and evaluates a method that some practitioners are using but has not been formally discussed or defined. The method leads to a high ratio of problems found to fixes made and then empirically verifies the efficacy of the fixes. We call it the Rapid Iterative Testing and Evaluation method – or RITE method. Application to the tutorial of a popular game, Age of Empires II, shows this method to be highly effective in terms of finding and fixing problems and generating positive industry reviews for the tutorial.
Key points – Medlock, et al., 2002

• Pointed the debate about “how many users are enough” in a very pragmatic direction
  – Focus should be on finding and fixing problems
  – Impact ratio = # problems found : # problems fixed

• Alternated design and research each day:

<table>
<thead>
<tr>
<th>MON</th>
<th>TUE</th>
<th>WED</th>
<th>THU</th>
<th>FRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usability Study – on v1 of design</td>
<td>Review of problems and re-design</td>
<td>Usability Study – on v2 of design</td>
<td>Review of problems and re-design</td>
<td>Usability Study – on v3 of design</td>
</tr>
</tbody>
</table>
Medlock, et al., 2002 (cont).

• Classified issues into 4 categories:
  1. Obvious cause + obvious solution + quick implementation
  2. Obvious cause + obvious solution + slow implementation
  3. No obvious cause, therefore no obvious solution
  4. Due to other factors (test script, moderating problem)

• Validity = “the observation is evaluated against the knowledge and critical thinking ability of the observers”

• Solved category 1 problems between participants
  – Impact ratio in case study: 97% (30/31)

• Most usability studies formative, not summative
Qualitative Validity

How Many Users Are Really Enough...And More Importantly When?

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Sunnyvale, CA 94089 USA

ABSTRACT
While some practitioners have argued that five users are enough to conduct a usability study, others advocate larger sample sizes or formulas to determine the appropriate number. Although productive, this debate has largely ignored the distinction between formative and summative research leaving many practitioners unable to clearly articulate the circumstances that determine whether a small or large sample is required. This has led to an overemphasis of quantitative measures at the expense of qualitative insight and the specific practice of relying on numerous observations of a usability issue to establish validity. In our view, accounts of user difficulty that include a description of the problem along with its potential cause and impact do not require large sample sizes to drive meaningful design change. By addressing arguments central to this debate, we intend to clarify the appropriate uses of the usability study methodology and improve the credibility and impact of usability professionals in practical settings.

the appropriate number of participants for a study [23, 26]. What all such accounts have in common is the implicit assumption that a certain proportion of existing usability issues must be discovered to make a usability study worthwhile:

“A cost/benefit balance must be used to determine how many users should test a system. If more than necessary are used, the cost of extra users will outweigh the benefits of the knowledge gained. Conversely, too few test users may miss key problems that render a system close to unusable. A magic formula is needed to tell us that x users are needed to find y% of problems.” [26, p. 105, emphasis added]

While we consider this debate worthwhile, we feel that its applicability has been generalized inappropriately to all usability studies (regardless of their intended purpose) and has in the process clouded the value of the usability study.

Full paper available under “Publications” on my site: http://www.xdstrategy.com/pubs/
Qualitative Validity

How Many Users Are REALLY Enough?

What to Report: Deciding Whether an Issue is Valid
BY MICHAEL A. KATZ AND CHRISTIAN ROHRER

6 User Experience Volume 4, Issue 4, 2005

www.usabilityprofessionals.org
Key Takeaways

• The debate about “How many users are enough” has confused practitioners
  – Formative and summative not distinguished well
  – “How many” only relevant with summative
• Practitioners erroneously use mathematics to establish validity in a qualitative method
  – “Look for patterns & trends... throw away those with only one or two observations”
• What if 2 out of 6 have a problem? Is it valid?
Criteria for a Valid Usability Issue*

1. The participant is representative of the target users
2. The difficulty stemmed from a behavior that was reasonable, given the product domain
3. The problem can be clearly described
4. The impact can be clearly described
5. A rational account of the cause of the problem can be provided

*For formative usability studies, which comprise most usability research
Example: Yahoo! Personals*

*Courtesy of Jeralyn Reese of User Inspired (www.userinspired.com)
Looking to start a family...
(Active during the last 24 hours)

About Me

Gender: Man seeking a Woman
Location: Los Angeles, CA
Age: 44
Marital Status: Divorced
Body Type: Fit
Height: 5'11"
Eyes: Blue
Hair: Blonde
Ethnicity: Caucasian (white)
Sense of Humor: Zany and hilarious
Social Setting: Bubbly and outgoing

Send me a note:
Email Me!

Break the Ice for FREE!

Come back later:
Save Profile

Share profile:
Email to friend
IM to friend
Want to contact this person?

Looking to start a family...
Age 44
Los Angeles, CA

Subscribe now to email or instant message as many singles as you wish!

- 1 month for $19.95
- 3 months for $42.95 - less than $15/month!
- 12 months for $89.95 - less than $8/month!

The subscription plan you choose will automatically renew using your credit card until you decide to cancel. Please see additional terms on the next page.

Start Now!
A Valid Issue?

1. Was the participant representative?
2. Was behavior leading to difficulty reasonable?
3. Was the problem clearly described?
4. Was the impact clearly described?
5. Could a rational account of the cause of the problem be provided?
A recent example on eBay

1. eBay Search: “Webkinz sea horse”
2. [Search Results Page]: <Click lowest auction>
3. [Listing page]: <Enter bid>
4. [Confirm bid]: <Click Confirm Bid>
5. [Bid Confirmation]: “You’ve just been outbid!”
   1. Main options: Increase Bid; Back to item desc; My eBay; Ask Seller Q; View seller’s other items
6. <Back> <Back> <Back> to Search Results Page
7. Repeat from step 2
Desirability

Definitions and Research
Desirability as a contrast with Usability and Utility/Usefulness

• Usability – Can the product be used?
• Utility/Usefulness – Does it meet a need?
• Desirability – [multiple meanings]
  – Is it enjoyable?
  – Do I want to use it?
  – Is it aesthetically pleasing?
  – Does it evoke a positive emotional response?
  – Does it move toward our target brand attributes?
A simple model of User Experience

A good UX, at its core, must be **useful**…

Functionally, people must be able to use it…

The way it **looks** must be **pleasing**…

The boundary of User Experience?

These support the overall **brand experience**

Research can and should be conducted at all of these layers
Desirability Studies

• Based on Microsoft Product Reaction Cards
• At the end of a usability study or other session where the participant interacted with the design, participants are presented with 118 product reaction words on cards.

<table>
<thead>
<tr>
<th>Accessible</th>
<th>Desirable</th>
<th>Gets in the way</th>
<th>Patronizing</th>
<th>Stressful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appealing</td>
<td>Easy to use</td>
<td>Hard to use</td>
<td>Personal</td>
<td>Time-consuming</td>
</tr>
<tr>
<td>Attractive</td>
<td>Efficient</td>
<td>High quality</td>
<td>Predictable</td>
<td>Time-saving</td>
</tr>
<tr>
<td>Busy</td>
<td>Empowering</td>
<td>Inconsistent</td>
<td>Relevant</td>
<td>Too technical</td>
</tr>
<tr>
<td>Collaborative</td>
<td>Exciting</td>
<td>Intimidating</td>
<td>Reliable</td>
<td>Trustworthy</td>
</tr>
<tr>
<td>Complex</td>
<td>Familiar</td>
<td>Inviting</td>
<td>Rigid</td>
<td>Uncontrollable</td>
</tr>
<tr>
<td>Comprehensive</td>
<td>Fast</td>
<td>Motivating</td>
<td>Simplistic</td>
<td>Unconventional</td>
</tr>
<tr>
<td>Confusing</td>
<td>Flexible</td>
<td>Not valuable</td>
<td>Slow</td>
<td>Unpredictable</td>
</tr>
<tr>
<td>Connected</td>
<td>Fresh</td>
<td>Organized</td>
<td>Sophisticated</td>
<td>Usable</td>
</tr>
<tr>
<td>Consistent</td>
<td>Frustrating</td>
<td>Overbearing</td>
<td>Stimulating</td>
<td>Useful</td>
</tr>
<tr>
<td>Customizable</td>
<td>Fun</td>
<td>Overwhelming</td>
<td>Straight Forward</td>
<td>Valuable</td>
</tr>
</tbody>
</table>

• Provides participants with a vocabulary to better describe their experience with the product
• Quantitative Adaptation
  – A large sample of respondents are sent an online survey where they review screenshots of the design and choose from the list of 118 product reaction terms
Case Study: Yahoo! Personals

Desirability Study*

*Courtesy Jeralyn Reese and Michelle Reamy
Case Study: Yahoo! Personals Desirability Study

- 3 proposed visual design directions
- Quantitative Desirability Study
  - Participants recruited for an online survey through email
  - Presented with proposed design direction (between subjects) and asked to associate product reaction terms with design
  - Another group was asked which product reaction terms they would want in an online personals website
Case Study: Yahoo! Personals Desirability Study

Update: For more details, see Christian’s blog entry on Desirability Studies at:
http://www.xdstrategy.com/blog/
Case Study: Yahoo! Personals

Single Female, 25-45 Demographic: "Select Top 5" Responses receiving votes by at least 10% of users
Visualizing results: Attribute reporting
Visualizing data: Paired opposites

<table>
<thead>
<tr>
<th>Unexciting</th>
<th>Exciting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ordinary</td>
<td>Unique</td>
</tr>
<tr>
<td>Confusing</td>
<td>Easy to understand</td>
</tr>
<tr>
<td>Annoying</td>
<td>Pleasing</td>
</tr>
<tr>
<td>Forgettable</td>
<td>Captivating</td>
</tr>
<tr>
<td>Indifferent</td>
<td>Passionate</td>
</tr>
<tr>
<td>Uninspiring</td>
<td>Inspiring</td>
</tr>
<tr>
<td>Cluttered</td>
<td>Clean</td>
</tr>
</tbody>
</table>

Not at all useful

Useful

Unfriendly

Friendly

Uninteresting

Interesting

Makes me feel unsafe

Makes me feel safe

Confusing

Easy to understand
Is this really
“Desirability?”
<table>
<thead>
<tr>
<th>Feature</th>
<th>Percentage</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional want</td>
<td>~28%</td>
<td>&quot;The extent to which users like, prefer or want to use a system.&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;The ‘wow’ factor: product has cutting edge features or functions and users feel a connection to it.&quot;</td>
</tr>
<tr>
<td>Goes beyond expectations</td>
<td>~8%</td>
<td>&quot;Going beyond the basic needs&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;Products that appeal emotionally through design, functionality and price simultaneously.&quot;</td>
</tr>
<tr>
<td>Useful</td>
<td>~10%</td>
<td>&quot;Usefulness (meeting needs) can create desirability.&quot;</td>
</tr>
<tr>
<td>Aesthetic</td>
<td>~7%</td>
<td>&quot;Aesthetics - gets you attention and makes you look/feel good.&quot;</td>
</tr>
<tr>
<td>Cultural/Community</td>
<td>~10%</td>
<td>&quot;Makes you feel like a part of something bigger.&quot;</td>
</tr>
<tr>
<td>In demand</td>
<td>~7%</td>
<td>&quot;The more demand, the more desire.&quot;</td>
</tr>
<tr>
<td>Seductive</td>
<td>~5%</td>
<td>&quot;Sexy.&quot;</td>
</tr>
<tr>
<td>Usable</td>
<td>~7%</td>
<td>&quot;The UI is simple and easy to use.&quot;</td>
</tr>
<tr>
<td>Usability</td>
<td></td>
<td>&quot;When the interface is invisible.&quot;</td>
</tr>
</tbody>
</table>
Desirability Definitions (cont.)

- “The outcome of pursuing what I call the ‘integrative aesthetic experience’ - an authentic balance of sensual style, mythical storytelling, practical utility, and technical performance.”

- “Too much overlap with usability and usefulness. I prefer either (1) Enjoyable or (2) Emotionally engaging.”

- “It comes down to the attributes you want to measure; otherwise it will just generate noise.”
True Intent Studies

• A type of “online user experience assessment” for websites
• Measures users’ initial intent + brand affinity, shows behavior/site usage, measures “success”
• First case study published at UPA 2003 by Jeff Schueler and Scott Kincaid of Usability Sciences Corporation (USC)
• Now offered by online user experience consulting firms, including USC and Keynote
Landscape of User Research Methods

Key for Context of Product Use during data collection:
- Natural use of product
- De-contextualized / not using product
- Scripted (often lab-based) use of product
- Combination / hybrid

- Behavioral
  - Qualitative (direct)
  - Quantitative (indirect)
- Attitudinal
  - Qualitative (direct)
  - Quantitative (indirect)

- Data Source
  - Mix
- Approach
  - Mix
“True Intent” or “Natural User Intent & Success” Studies

1. Upon site entry, random sample of users asked for:
   - Intent
   - Demographics
   - Brand affinity

2. Clickstream data in between

3. Upon site exit, ask users for:
   - Success (perceived)
   - Brand affinity
   - Next Steps
   - Suggestions

Data Set: Entry-Exit Paired Surveys + Clickstream data
Visit intent varies across site types: Example from E-Commerce site

<table>
<thead>
<tr>
<th>Visit Intent</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gather product information</td>
<td>31.9%</td>
</tr>
<tr>
<td>Pricing &amp; comparison shopping</td>
<td>20.3%</td>
</tr>
<tr>
<td>Purchase a product or service</td>
<td>10.1%</td>
</tr>
<tr>
<td>Other</td>
<td>9.7%</td>
</tr>
<tr>
<td>Customer self-service or support</td>
<td>8.9%</td>
</tr>
<tr>
<td>Use the site as an information resource</td>
<td>8.3%</td>
</tr>
<tr>
<td>Browse the site</td>
<td>4.8%</td>
</tr>
<tr>
<td>Get coupons, giveaways, or enter sweepstakes</td>
<td>4.5%</td>
</tr>
<tr>
<td>Contact/communicate with the company</td>
<td>1.5%</td>
</tr>
</tbody>
</table>

n = 6,750 sessions
E-Commerce: Visit Success Varies by Intent

Gather product information
Pricing & comparison shopping
Purchase a product or service
Other
Customer self-service or support
Use the site as an information resource
Browse the site

42%  46%

28%  50%

55%  33%

31%  52%
True Intent Studies in Practice

• Can be tricky to do well
  – Sampling should be random
  – Recruitment difficult because downloads (to capture data) great affect drop-off rates

• Larger websites have bigger barriers
  – Lots of bureaucracy
  – Security and code efficiency concerns
  – High traffic can bring down consultant’s site
  – Need an executive champion or it won’t happen
    • Great when ask, “Why do people come to the site?”
User Research and Strategy
Making User Experience Strategic

Strategize → many ideas → version 2.0 → the idea → Assess

Research
- field studies
- focus groups
- participatory design
- diary studies
- usability
- desirability studies
- surveys
- A/B testing

Design
- business visualization
- personas
- sketches
- wireframes
- color & imagery exploration
- UI analysis
- visual design
- interactive prototypes
- content strategy
- sample copy
- editorial guidelines
- Design patterns and visual architecture

UX
The ecosystem of insight generation

Strategists

Data review: Facilitate consumption of insights

Researchers

Data creation: Conduct or direct research

Analysts

Data manipulation: Analyze data sets

How does each of these influence decision-making?
Design Thinking: Analysis and Creativity

Foundations of User Centered Design (UCD)
- Combining the best of left-brain and right-brain thinking
- Injection of user insights into the design process
- Iterative cycles of analysis and creation

Research & Analysis
Anthropologists, Psychologists
Understand users & needs
Usability & Desirability
Before/after design

Design & Creativity
Designers, Engineers
Design, build systems
Informed by insights
Before/after analysis

Research for Design
- Inspiring design innovation (ethnography)
- Informing design direction
- Assessing design solutions

Design for Research
- Articulating early concepts to evaluate
- Designing conditions for experiments

Opinion: UX Professionals can and should cross the line.
Design Thinking

• AG Lafley (CEO of Proctor & Gamble) on types of thinking:
  – **Inductive**: Based on directly observable facts
  – **Deductive**: Logic and analysis, typically based on past facts
  – **Abductive**: Imagining what could be possible.
    • A method of reasoning in which one chooses the hypothesis that would, if true, best explain the relevant evidence.
    • Abductive reasoning starts from a set of accepted facts and infers their most likely, or best, explanations.
References


• Schueler, J. and Kincaid, S. Gathering ROI and Visitor Success Rate Directly from Site Visitors. *Usability Professionals Association, Scottsdale, AZ, June 2003.*

Thank you and Questions

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