USER RESEARCH:
THE CHALLENGES OF DESIGNING FOR PEOPLE

DALIA EL-SHIMY
UX RESEARCH LEAD, SHOPIFY
USER RESEARCH IS A CRITICAL COMPONENT OF USER-CENTERED DESIGN
A brief historical overview of user research

...and, also, of where UX comes from

Before 1950s

1950s-1960s

1960s-1970s

1980s-2000s

System reliability phase

System performance phase

User performance phase

Usability phase

How long would it function without failure?

How fast can it perform?

How fast can the user perform?

How easy is it to use?
Evaluating usability

Give your target users a series of repeatable **tasks**, then measure:

- Time to complete
- Task completion rate
- Accuracy
- Error rate
- Satisfaction
“WHAT OF TECHNOLOGY NOT FOR ACCOMPLISHING TASKS BUT FOR HAVING EXPERIENCES, FOR EXPRESSING ONE’S IDENTITY, FOR FLIRTING AND ARGUING AND LIVING?”  
[KAYE ET AL., 2007]
FROM TO TASK-BASED TO EXPERIENCE-BASED DESIGN
FROM USER-CENTERED TO PEOPLE-CENTERED DESIGN
THIRD-WAVE HCI
A brief historical overview of user research
(and, also, of where UX comes from)

Before 1950s
- System reliability phase
  - How long would it function without failure?

1950s-1960s
- System performance phase
  - How fast can it perform?

1960s-1970s
- User performance phase
  - How fast can the user perform?

1980s-2000s
- Usability phase
  - How easy is it to use?

2000s-Present
- User experience phase
User experience phase

- Personal, social, cloud, mobile computing
- Contexts are broader
- Technology is more pervasive
- Shift from the utilitarian/pragmatic to the emotional/affective
User experience evaluation

- **User testing methods**: Usability testing with think aloud, post-test questionnaires
- **Inspection methods**: Heuristic evaluation, cognitive walkthrough
- **Traditional research methods**: Surveys, interviews
- **Field methods**: Observations, diaries, A/B Testing
WE’RE REALLY GOOD AT EVALUATING TASKS... BUT LESS SO EXPERIENCES.
QUESTION 1:

What are some examples of interfaces where evaluating tasks might be more important? What about ones where evaluating experiences might be more important?
“EVALUATION HAS BEEN A DOMINANT THEME IN HCI FOR DECADES, BUT IT IS FAR FROM BEING A SOLVED PROBLEM.”

[MACDONALD AND ATWOOD, 2013]
SO WHY DO I CARE ABOUT THIS PROBLEM?
MUSIC TECHNOLOGY...?
SO WHY WEREN’T THESE INSTRUMENTS EVERYWHERE?
MUSIC-ORIENTED HCI
HOW COULD MUSIC TECHNOLOGY BENEFIT FROM USER-CENTERED DESIGN?
Distributed musical performance
Design goals

• Capitalize on computing technology inherent to the distributed context
• Increase the level of interaction between the distributed musicians
• Apply a user-centered methodology throughout the process
Key principles of usability

Early focus on users and tasks

Empirical measurement

Iterative design

User observations:

- 15 musicians over several months
- Focused on their interactions
- Uncovered the *what* and *how*
Key principles of usability

Early focus on users and tasks

Empirical measurement

Iterative design

User interviews:
• Non-leading interviews
• Based on loose prompts
• Uncovered the *why*

Creativity, enjoyment, self-expression, interaction
Key principles of usability

- Early focus on users and tasks
- Empirical measurement
- Iterative design
  - Iterative prototypes
  - One-feature at a time
  - Usability tests
USABILITY... FOR MUSIC?
Key principles of usability

Early focus on users and tasks

Empirical measurement

Iterative design

- Iterative prototypes
- One-feature at a time
- Usability tests
Task-based evaluation

- Time to complete
- Task completion rate
- Accuracy
- Error rate
- Satisfaction
“IT IS NOT ONLY UNDESIRABLE BUT IMPOSSIBLE TO DEFINE THE MUSICIAN’S TASK.”

[CARIOU, 1992]
Limitations

Feedback is narrow

Difficult to test small, iterative changes

Difficult to isolate novelty factor

Difficult to determine long-term impressions
How things actually turned out...

Early focus on users and tasks

Empirical measurement

Iterative design

Long-term deployment

Weekly sessions with a band:

• Preliminary discussion
• Formal A/B/A test
• Post-condition questionnaire
• Post-test discussion
• Recommendations
How things actually turned out...

Early focus on users and tasks

Empirical measurement

Iterative design

Long-term deployment

Participatory design

Artist residency
  • Lasted several months
  • Composer wrote several pieces
  • Actively involve all stakeholders
  • Collaboration becomes two-sided
User-centered design isn’t always clear cut

- There is no neat, linear, “one-size fits all” solution
- It’s not about following a process to the letter
- It’s about understanding the process well enough to be able to adapt it to different contexts
- For each context: determine what to evaluate and how to evaluate it
FROM ACADEMIA TO INDUSTRY...
The ecommerce platform made for you

Whether you sell online, on social media, in store, or out of the trunk of your car, Shopify has you covered.

Enter your email address

Get started

Try Shopify free for 14 days. No risk, and no credit card required.
The role of UX research

- Understand behaviours/needs/expectations around the product
- Make recommendations accordingly
- See those recommendations through
- Ask questions, find answers, share knowledge
- Encourage empathy across all disciplines
- It’s all about making sense of information to help people make decisions
The role of UX research

Research and Development

Engineering
- Development

Product
- Data

User experience

Content strategy
- Design
- Research
- Front-end development
How do UX researchers work with data scientists?
LET'S TALK ABOUT QUALITATIVE RESEARCH
Welcome back Elyse, and thanks for taking the time to fill out your journal today!

1. How’s your theme coming along?
   - I’m still working on it.
   - It’s ready to go live on my store.
Décor & Cie.

Red Velvet Cupcake

$2.75

$10 gift card

Shopping Cart

Dapper Gents
LET'S TALK ABOUT QUANTITATIVE RESEARCH
This is your chance to directly influence the upgrades we’ll make to Shopify over the next year. The more we understand what’s important to you, the better we can develop solutions to help you make sales and grow your business.

This survey will only take about 10 minutes. Complete the survey by Friday, March 11th for your chance to win an $800 Apple voucher.

* How would you describe yourself?  

- Shopify store owner
- Working for a Shopify store owner
- Shopify partner or expert
- Previously owned a Shopify store
- Did the free trial but never launched my store
<table>
<thead>
<tr>
<th>shop created at</th>
<th>shop name</th>
<th>shop permanent domain</th>
<th>theme name</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:22:46.060000</td>
<td>Sigma Beauty</td>
<td>sigmabeauty.myservices.com</td>
<td>debut</td>
</tr>
<tr>
<td>17:50:06.055000</td>
<td>Kayla Collection</td>
<td>kayla-collection.myservices.com</td>
<td>deb</td>
</tr>
<tr>
<td>08:23:50.665000</td>
<td>868 Apparel</td>
<td>868-apparel.myservices.com</td>
<td>main</td>
</tr>
<tr>
<td>20:25:11.000000</td>
<td>Drip Drop Water Testing</td>
<td>organogoldstore.myservices.com</td>
<td>main</td>
</tr>
<tr>
<td>15:06:35.000000</td>
<td>Organic Supply Co.</td>
<td>watersupplyco.myservices.com</td>
<td>main</td>
</tr>
<tr>
<td>06:34:12.000000</td>
<td>Gemelli Line</td>
<td>gemelliline.myservices.com</td>
<td>main</td>
</tr>
<tr>
<td>19:44:47.000000</td>
<td>Vanity Treasures</td>
<td>vanitytreasures.myservices.com</td>
<td>main</td>
</tr>
<tr>
<td>23:41:41.000000</td>
<td>Health2020</td>
<td>health2020.myservices.com</td>
<td>main</td>
</tr>
<tr>
<td>23:42:03.000000</td>
<td>Rhett Tucker</td>
<td>rhett-tucker.myservices.com</td>
<td>main</td>
</tr>
<tr>
<td>02:18:28.000000</td>
<td>Gardor Enterprise</td>
<td>gardor-enterprises.myservices.com</td>
<td>main</td>
</tr>
<tr>
<td>01:54:15.000000</td>
<td>Jane's Fashions</td>
<td>janeasonfashions.myservices.com</td>
<td>main</td>
</tr>
<tr>
<td>07:05:27.000000</td>
<td>Eve Yumps</td>
<td>eveyumps.myservices.com</td>
<td>main</td>
</tr>
</tbody>
</table>
Support Tickets Analysis

Number of support tickets for a chosen topic and period, with comparisons to an equal previous period, normalization by total number of customers, and as percentage of total support tickets.

- **Number of Tickets**
  - 14,583
  - +19.6%

- **Percent of All Support Tickets**
  - 7.04%
  - +1.7%

Number of tickets for this topic per week (last 6 months)
### Experiments Dashboard

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Confidence</th>
<th>Rel. Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>control converts higher than inline</td>
<td>69%</td>
<td>--</td>
</tr>
<tr>
<td>control converts higher than link</td>
<td>83%</td>
<td>--</td>
</tr>
<tr>
<td>inline converts higher than link</td>
<td>68%</td>
<td>--</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group</th>
<th>Conversion</th>
<th>Total</th>
<th>Observed rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>control</td>
<td>3,347</td>
<td>7,095</td>
<td>47.17%</td>
</tr>
<tr>
<td>inline</td>
<td>3,227</td>
<td>6,900</td>
<td>46.77%</td>
</tr>
<tr>
<td>link</td>
<td>3,167</td>
<td>6,830</td>
<td>46.37%</td>
</tr>
</tbody>
</table>

#### Lead to prospect conversion

![Conversion rate comparison](chart1.png)

#### Pairwise differences in conversion rates

![Difference in conversion rate](chart2.png)
SO HOW DO WE CHOOSE THE RIGHT TECHNIQUE?
QUESTION 2:
When do quantitative data and qualitative UX research best complement each other?
   a) During the early stages of a project
   b) During the later stages of project
   c) Both
Getting shit done

Idea  Think  Explore  Build  Launch  Tweak
Questions:

- What potential problems might we solve?
- How might we gather context on the problem?

Qualitative

- Existing research
- Observations, interviews, diaries, internal workshops

Quantitative

- Existing data
- Establishing facts, confirming/disproving assumptions
Questions:
- What are the root problems?
- What are the biggest challenges we might focus on?

Qualitative:
- Profiles/segments/personas
- Interviews, co-design/participatory workshops

Quantitative:
- Quantify how big are the segments that would benefit from this product
Questions:
• How might we be scrappy and effective when testing assumptions and hypotheses?

Qualitative:
• Lo-fi prototype testing
• Clickable mockups

Quantitative:
• Define success metrics and baseline for those project success metrics
Getting shit done

**Questions:**
- Can people use what we’re building?
- Is what we’re building addressing the initial problems and goals?

**Qualitative:**
- High-fidelity usability tests
- Diary studies

**Quantitative:**
- A/B tests,
- Instrumentation and reports setup
- Beta testing
Getting shit done

Questions:
- Are people using it in the way we thought they would?
- Did we successfully solve the problem we identified?

Qualitative:
- Forums/social media monitoring
- Open-form feedback forms

Quantitative:
- Monitor success metrics
- Populate reports
Getting shit done

Questions:
- What incremental improvements might be worthwhile?
- What revisions should we make to our roadmap?

Qualitative:
- Retrospectives
- Post-mortem
- Analysis of support tickets

Quantitative:
- More A/B tests and experiments
- Monitor reports
QUESTION 3:

How might you map the various stages of Shopify’s GSD process to your own course project?
<table>
<thead>
<tr>
<th>Phase</th>
<th>Question</th>
<th>Qualitative</th>
<th>Quantitative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idea</td>
<td>What potential problems might we solve?</td>
<td>Existing research, observations, diaries</td>
<td>Establishing facts, confirming assumptions</td>
</tr>
<tr>
<td>Think</td>
<td>What are the root problems?</td>
<td>Interviews, co-design/participatory workshops</td>
<td>Quantify segments</td>
</tr>
<tr>
<td>Explore</td>
<td>How might we test assumptions</td>
<td>Lo-fi prototype/mockup testing</td>
<td>Define success metrics, measure baselines</td>
</tr>
<tr>
<td>Build</td>
<td>Can people use what we’re building?</td>
<td>High-fidelity usability tests, diary studies, beta tests</td>
<td>A/B testing, instrumentation, reporting</td>
</tr>
<tr>
<td>Launch</td>
<td>Are people using it in the way we thought they would?</td>
<td>Forums/social media monitoring</td>
<td>Monitor success metrics, more reporting</td>
</tr>
<tr>
<td>Tweak</td>
<td>What improvements might be worthwhile?</td>
<td>Analysis of support tickets, retrospective</td>
<td>More A/B tests, more reporting</td>
</tr>
</tbody>
</table>
WE ACTUALLY CALL THIS MIXED METHODS RESEARCH.
Mixed methods research

“An approach to research in the social, behavioural, and health sciences in which the investigator gathers both quantitative (close-ended) and qualitative (open-ended) data, integrates the two, and then draws interpretations based on the combined strengths of both sets of data to understand research problems.”

[Creswell, 2015]
**Strengths**

**Qualitative**
- Provides detailed perspectives
- Captures the voices of the participants
- Captures complex phenomena
- Is based on the views of the participants, not the researcher
- Appeals to people’s enjoyment of stories
- Adapts to context

**Quantitative**
- Draws conclusions for large numbers of people
- Is relatively efficient when it comes to data collection and analysis
- Investigates relationships within data
- Appeals to people’s preference for numbers

**Weaknesses**

**Qualitative**
- Has limited generalizability
- Studies few people
- Is subject to the researcher’s biases
- Is time-intensive when it comes to data collection and analysis

**Quantitative**
- Is impersonal
- Does not record the words of the participants
- Provides limited understanding of the context of participants
- Is largely researcher driven
SO... WHAT DOES ECOMMERCE HAVE TO DO WITH MUSIC?
The same rules apply...

- There is no neat, linear, “one-size fits all” solution
- It’s not about following a process to the letter
- It’s about understanding the process well enough to be able to adapt it to different contexts
- For each context: determine **what** to evaluate and **how** to evaluate it
THANK YOU!

DALIA@SHOPIFY.COM
Interested in an internship at Shopify?

• Keep an eye out on shopify.com/interns

• We hire for our four Canadian offices: Montreal, Toronto, Ottawa, and Waterloo

• Posts for summer internships will go out in January

• “Developer intern” is for any RnD development disciplines: data engineering, data analytics, infrastructure, front-end development, backend development, security, and mobile

• UX roles are posted separately