

# Consumer Products

---

## Product Research Techniques and Usability Testing

### Nature of Consumer Products Research

---

- Past common design practice was to concentrate on product appearance and consumer preference issues
- Companies have become sensitive to the need for easy-to-use products demanded by the marketplace.
- Recent focus on usability testing prior to sending products for manufacture.

## Informal Techniques

### ■ Focus Groups

- Small groups (usually 3-5) of typical users assembled in a room to discuss a concept for a new product or to examine the methods of operation of a prototype of a new product.
- Participants are recruited using a screener based on an inclusion criteria or demographic requirements for the product
- After hands-on exposure to the product, a moderator directs the discussion and gets feedback from the participants.

## Informal Techniques

### ■ “Rapid Fire” Review Technique

- Used to understand the process by which product appearance opinions are formed about whether or not it is easy to use
- Participants view slides of products presented briefly (approx. 2 s), and then asked to rate each product (usually 10-pt scale) based upon its perceived ease of use and jot down one or two word associations.
- The slides are presented a second time and participants discuss why they gave a product a certain rating.

## Informal Techniques

---

### ■ Voice of the Customer

- Quality Function Deployment (QFD) approach

Step 1. Large scale survey of end users of existing products to determine what they like as well as what aspects they feel could be improved upon. These requirements formed the basis for a design guide for the product.

Step 2. Competing products are put through a series of in-house tests to determine how well they rate against the features and capabilities outlined in the design guide.

Step 3. Usability testing is conducted with a large number of typical end users.

## Informal Techniques

---

### ■ One-Person Research

- Conducting usability sessions directly in the consumer's home or workplace.
- The target user is observed from the first step of opening the package all the way through the use of the product.
- Participants are asked to rate (10-pt scale) the ease of completing the task and asked for their opinions regarding the design of the package, instructional materials, overall design of the product, etc.

## Formal Techniques

- Two or more different product design alternatives are subjected to a usage evaluation by a test population
- Different versions are created in prototype form, with some aspects of each being manipulated as the independent variable and performance measurement as the dependent variable
  - One-Person Research
  - Two-Person Research
    - Two participants use the product together

## Usability

- Refers to how well an individual can interact with a product or operate a piece of equipment.
- Usability is achieved when one makes effective use of a product's full potential and does so willingly.
- Usability vs. Functionality
  - Functionality refers to what a product can do while usability is tied to how the functionality is implemented.

# Usability Testing

- Define the multiple attributes of usability
  - Ex. Learnability, throughput, flexibility, durability, consistency, maintainability, etc.
- Determine the method to measure/assess the attribute
- Establish criteria to gauge performance on each of the attributes
  - Planned level, worst case, optimal level, current level

## Sample Attribute Specification Table

Attribute	Measuring Concept	Measuring Method	Planned Level	Worst Case	Optimal Level	Current Level
Learnability	On-line Tutorial	Completion Time	2 hrs	3 hrs	1 hr	4 hrs
Flexibility	Change Default Values	Number of Errors	<3	>6	0	4
Intuitiveness	Use of Help	Frequency of Access	5	>10	2	7
Likeability	Attitude Survey	Likert Scale	5 Positive	<4 Negative	7 Very Positive	3 Negative

## Error Analysis

---

- Examine the types and frequencies of problems users encounter
- Determine the sources of the errors
- Decide how to address the problem areas.  
A Pareto diagram may be used to facilitate this process.

## Test Subjects

---

- Who are the users?
  - Test subjects should be drawn from a pool of representative intended users
- How many?
  - The greater the number of subjects, the more confidence you can have in the results.
  - Oftentimes, it will be a compromise between thoroughness and available resources

# Tools & Instruments

---

- Keystroke records
- Video records
- Eye Movement tracking
- Think Aloud Protocols
- User surveys and Checklists