Session 16

Test It!

Prototyping

In This Session:

A) **User Testing**
   (90 minutes)
   - Student Handout

B) **Evaluation and Revision**
   (60 Minutes)
   - Student Handout
   - Student Reading

Being an engineer requires trial and error! Students learn this as they continue with the design process: Step 8, Build a Solution Prototype and Step 9, Test, Evaluate, and Revise. As they develop working prototypes, students test and evaluate the prototypes for function, feasibility, safety, and aesthetics, and make modifications. This process of testing and modification continues until they have a final working prototype. In the first activity, *16A: User Testing*, students gather feedback from users as they try out their ideas on an audience. In *16B: Evaluation and Revision*, they consider the feedback from the user testing and prioritize the revisions.

Supplies
None

Session 16, Activity A
User Testing

Goal
To get user feedback on function, appeal, and value of the product.

Outcome
To know if the product does what it is supposed to do.

Description
Developing a product does not happen in a vacuum. It is important to remember that the goal is to develop something that others will use. In this activity, students conduct user testing to determine their next steps.

Supplies
None

Preparation
Invite a variety of people to participate in user testing. Ideally, you will ask students to characterize a typical user of their product (as they did in *8A: User Profile*) and invite people who represent these users.

Review user testing rules for Intel ISEF-affiliated fairs if students are participating in a fair, www.sciserv.org/isef/students/wizard/index.asp*.

Procedures
User Testing Techniques

1. Ask students to refer back to *8A Handout: User Profile* and *11B Handout: Meeting Needs Through Design*. Have them look at the user characteristics and scenarios that they created. Ask them if this has changed, and if so, who their user is now.

2. Explain that they will conduct user testing to see how their product is received by others.

3. Remind them that when they talk to users, they will need to step away from their personal involvement and understanding of the product and focus on the user. They should listen carefully to what people say, jot down notes, and then decide which comments seem helpful and valid, and which do not.

4. Testing more than one prototype is preferable because the comparison helps people see what they like and what they don't.

5. Explain that the best feedback comes when the designer is as invisible as possible. They can give the user the minimum information necessary and then let the user try the prototypes. The designer should step back and observe.

16A: User Testing (continued)

6. After giving the user time to use the product, designers may ask questions. Be sure that these questions are objective and do not contain any biases. Another strategy is to have the user verbalize what he or she is doing and thinking while trying out the product.

User Testing Strategies

1. When observing, designers should look for:

    - What does the user do with this product?
    - What are the user's perceptions of the product?
    - How successful or unsuccessful does the user think the product is?
    - How does it meet or fail to meet the user's needs?
    - How safe is the product?

2. When interviewing, designers can ask the following questions:

    - What do you like and dislike about this product?
    - What do you think this product should do?
    - What could be done to make you want to use this product more?
    - What do you think of the way this product looks (the aesthetics)?
    - Is this product efficient, safe, and comfortable to use? If not, how could it be improved to make it more ergonomic?
    - What do you see as some problems with this product?
    - What can be done to solve these problems?

3. If students are participating in Intel ISEF-affiliated fairs, be sure that they understand the user testing rules. They can look at the ISEF Rules Wizard, www.sciserv.org/isef/students/wizard/index.asp*. This site indicates specific instructions and safety precautions for testing on humans or nonhumans, the testing location, types of testing, groups to be tested, and chemicals involved in testing.

4. Conduct user testing.

Wrap Up
Discuss how students will use the feedback from the user testing.

Follow With
In *16B: Evaluation and Revision*, students analyze the feedback from their user testing and plan their next steps.

User Testing

User testing will help you to know if your product does what you want it to do. For example, does it work the way it is supposed to? Do people like the way it looks? It's best to conduct user testing with people whom you think will be using this product and have more than one prototype (if possible) for them to compare.

In order to make the user testing most useful, answer the following questions and select appropriate people to do the user testing and appropriate conditions to conduct the testing.

1. Who will be the users of your product? Refer back to your characterization from *8A: User Profile* and *11B: The Perfect Fit: Meeting Needs Through Design.* Note if this has changed or not.

2. Where will they use your product?

During user testing you will probably want to ask questions, observe the user, and listen to the user explain what he or she is doing while trying out the product.

Sample Questions

1. What do you like and dislike about this product?

2. What do you think this product should do?

3. What could be done to make you want to use this product more?

4. What do you think of the way this product looks (the aesthetics)?

5. Is this product efficient, safe, and comfortable to use? If not, how could it be improved to make it more ergonomic?

6. What do you see as some problems with this product?

7. What can be done to solve these problems?

Additional Questions
Write your own questions in your design notebook.

Observations

1. What does the user do with this product?

2. What are the user's perceptions of the product?

3. How successful or unsuccessful does the user think the product is?

16A Handout: User Testing (continued)

    4. How does it meet or fail to meet the user's needs?

    5. How safe is the product?

Additional Observations
Add other observations to your design notebook.

Other Notes
What else will you be looking for?

Session 16, Activity B
Evaluation and Revision

Goal
Evaluate feedback from user testing to plan changes to the prototype.

Outcome
Students will have conceptualized and prioritized changes to their prototype.

Description
Students plan their modifications based on the valuable feedback from user testing.

Supplies
None

Preparation
None

Procedures

1. Students should use the chart on the handout to categorize and prioritize the feedback they received from their user testing.

2. Next, have them plan which revisions they will make and how they will make these changes.

3. Students can get feedback from their peers and/or mentors in planning their next prototype.

4. They should consider additional materials they will need and make any necessary changes to their budgets.

5. Check in with each student to ensure they are on track.

6. Remind them to continue work on their prototypes at home.

Wrap Up
Review the charts and discuss what changes are realistic.

Have students read *16B Reading: Meet a Project Manager*.

Follow With
Session 17, *Fairly There*, helps students and facilitators make presentation decisions.

Prototype Materials

Handout: Session 16, Activity B

Now that you have feedback from your user testing, you need to organize the information in order to figure out which suggestions you will incorporate into your revisions. Make a chart in your notebook. After completing the chart, decide which revisions are most feasible and what your process will be.

Priority - Decide how this problem ranks.

H = High Priority
M = Medium Priority
L = Low Priority

Problem - Describe the problem.

Criteria - Decide what type of change it is:
- Functional
- Safety
- Aesthetics
- Feasibility
- Other:

Revision - Describe what changes would be needed.

Priority	Problem	Criteria	Revision

Meet a Project Manager
Reading: Session 16, Activity B

Michael Moon
Project Manager
ZIBA Design

Introduction
My name is Michael Moon, and I'm one of ZIBA Design's project managers. I've been here about four years, working in both the research and interactive groups before becoming a dedicated project manager. My role can be summed up as "the guy who makes sure our work makes it to market."

A Typical Day
As a project manager I work with the project team to create a schedule, set deadlines, and define deliverables. I'm also the clients' main contact, working with them to understand their needs and making sure we can meet them. At the end of the day, it's my job to make sure that projects finish on time and on budget, while maintaining the high quality of work ZIBA Design is known for.

Background
My background is not typical for someone in this industry. I studied at Cornell University, majoring in English, economics, and political science. Though this is not the recommended education for someone seeking a job as a designer or engineer, the breadth of my studies, combined with a lot of exposure to technology growing up, allowed me to apply my skills to user research and design planning, as well as to developing the structures behind Web sites and computer applications.

Favorite Things About Job
The best part about my job is seeing the projects I've worked on make it onto store shelves, into product catalogs, and onto the Web. Because we put so much effort into understanding the way people work, what they need, and the kind of experiences that can improve their lives, seeing our work making a difference is the ultimate reward.

About ZIBA Design
ZIBA Design is an international design firm that has designed products from many global companies, including FedEx, Microsoft, Intel, Fujitsu, Black & Decker, Sony, Pioneer North America, Dial, and Clorox. www.ziba.com*