AGENDA

1. Problem Solving

2. Product Dissection

3. Homework #1 review

4. Preliminary Product Proposal
Structured Problem Solving

Issue: How do we create a comprehensive solution to complex open-ended problems.

Approach:

1. Define the Problem
2. Plan the approach (steps) to solving the problem
3. Implement the Plan → Get results
4. Analyze Results and Draw Conclusions
5. Learn from / Generalize the results
Example: improve the home computer

Step 1: Define the Problem

Home computers are underutilized.

Step 2: Create a Plan

1. Assess the existing home computer with respect to people's needs and generate recommendations.

2. Identify the different types of computers used at home (desktops, laptops, tablets, phones). Select one to focus on.

3. Determine user needs for the selected type of computer.
   - personal experience
   - survey friends
   - internet research
(4) Assess how well existing products satisfy the identified user needs.

(5) Create a table with recommendations for improvement:

<table>
<thead>
<tr>
<th>Customer need</th>
<th>Assessment</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Step 3: Implement the plan

Step 4: Analyze results & draw conclusions

Are existing products doing a good job of satisfying user needs?

Do we have a viable alternative?
Step 5: Learn from, generalize the results
- improve the process
- apply the insights to other products

PRODUCT DISSECTION

Motivation: Before we can create new products we need to understand the existing products.

what does the product do? Function
How does it do it? Form

Step 1: Get familiar with the product.
(a) "play" with it, use it
(b) internet research
(c) study documentation
- "howstuffworks.com" provides basic information
(2) Determine Function & Form

Function: verb-noun combination that indicates the purpose of the product

Example: Apple MacBook Pro Laptop

Main function: Provide Mobile Computing

Sub-functions:
- Inputs Information
- Processes Information
- Displays Information
- Provides Mobility
Form: Physical configuration of the product that realizes the functions

Examples for MacBook Pro:

- Intel i7 processor
- Retina Display
- Aluminum Chassis
- Lithium Battery
- Keyboard

(3) Create a structured diagram of the relationships between the functions and the form ("realization") of the product.
FAST diagram

Function Analysis System Technique