Criterion D: Evaluating

Strand 1: Design detailed and relevant testing methods, which generate data, to measure the success of the solution

End of year 1	End of year 3	End of the course
Students should be able to:		
• with guidance, **design simple tests** to evaluate the solution against the requirements of the design specification.	• with limited guidance, **design tests to evaluate the solutio**n against the requirements of the design specification.	• design **a wide range of effective tests to evaluate the solution** against the requirements of the design specification (including expert appraisal, user trials, field testing and user observation).

Testing methods

❖ An **effective and authentic measure** of a design solution means that the student has **tested against every aspect of the design specification**. These tests can be classified as follows.

i. **Expert appraisal**

❖ A person considered **an expert in the use of similar products** is presented with the solution, given time to interact with the solution and then interviewed on aspects of its success. The expert has knowledge and skills that allow him or her to make judgments on the success of the solution. The expert may be the client.

ii. **Field trial**

❖ A *field trial* is a **test of the performance of a solution under the conditions and situation in which it will be used.** For example, an interactive information point (developed in HTML) for a museum exhibit may be tested by the exhibit visitors in the museum, structured as a user trial or user observation.

iii. **Performance testing**

❖ The **performance of a solution is tested under the conditions in which it would normally be used.** Quantitative data is collected through a variety of tests such as:

✔ destructive tests assessing impact strength or flammability

✔ cyclic tests

✔ measurement of physical properties such as weight and size

✔ timed tests for web pages to load

✔ ease of navigation through an interactive story, game, or website.

iv. **User observation**

❖ The **user is presented with the solution and is set a task to achieve with little or no guidance**. The user's interaction with the solution is observed and recorded.

v. **User trials**

❖ The **user is presented with the solution and guided on how to use it**. The user is asked questions as he or she interacts with the solution or is given a survey to complete. User trials may include focus groups.

❖ The design of interview or survey questions needs to be targeted to draw out responses that assess the solution against the specification.

Collecting data

❖ Both types of data collected through testing are considered primary sources of data.

❖ *Qualitative data* deals with quality and **is data gathered as descriptions**. This data tends to be subjective and can be converted to a numerical value, for example, "I like the overall shape of the solution, it fits my hand well, I would give it a 9 out of 10 for comfort" or "The layout of the webpage looks intuitive, it looks easy to navigate and the use of negative space makes it clear. I would rate the clarity of the page as 8 out of 10."

❖ Tests that can be used to obtain qualitative data include:

✔ using a questionnaire to find out if the target audience likes the look of a product

✔ surveying students to find out which parts of a video game they found too easy, and which were too difficult

✔ working with a taste panel to find out if a target audience likes a food product

✔ interviewing an expert after he or she has interacted with a solution

✔ performing a user trial by giving a toy to children to play with and observing reactions.

❖ *Quantitative data* deals with quantity and is gathered as definite values, **typically a numerical value**. This data is objective and can be measured, for example, "All information in the database has to be a maximum of 3 clicks away" or "The overall cost of the materials can be no more than €45."
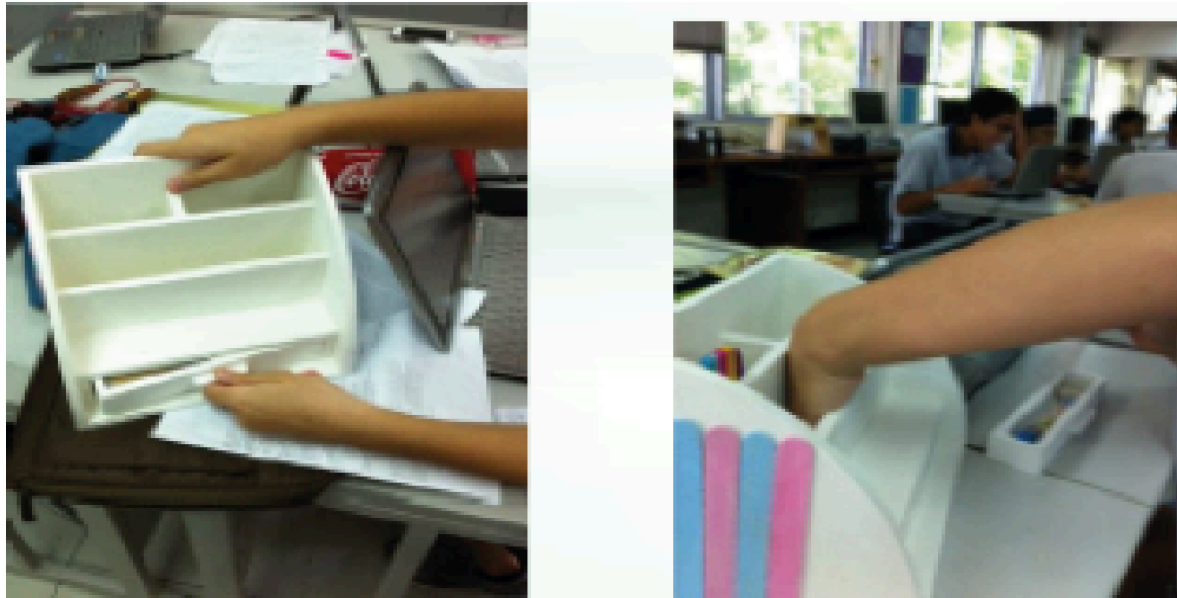
❖ Tests that can be used to obtain quantitative data include:

✔ timing users who are tasked with finding a particular piece of information on a website

✔ measuring a product to ensure it is the correct size and within weight limits

✔ beta-testing interactive media to find bugs

✔ running performance tests to determine the strength of a product

✔ checking the capacity of a storage device

✔ counting the number of hits on a website over a set period.

✔

From the surveys, I can conclude that my product met most of my design specification. My product has three sections for putting different writing utensils and all sections are at least 11cm deep. Every section can store more than 20 pencils and I have a drawer that can put more than 3 erasers. My product is made from plywood and is joined well using glue and nails. I finished my product in time (10 create classes). For my fourth design specification (The design theme must be aesthetically pleasing to a female teenager around 14 to 16 years old, the color theme will be plain solid color), 6 people said it looks excellent and 5 said it looks good. Some like its simplicity and they said that the color theme and popsicle sticks make the product looks pretty. However, some also say that it is a little bit too plain and not very attractive.

What most students like about my product is its function and how it can store many stationary. They also like the design: circular form and decorations (popsicle stick).

What they said can be improved id the drawer because it looks a bit small, and it did not fit well, therefore it is hard to pull out. They also said I should make each section less deep and wider because it is quite hard to pull the pencils out. They also said to change the color theme from white to yellow or add more color in the front (because it is too simple).

Feedback from users' example