

DURABILITY TESTING

Teaching Guidelines

Subject: Science

Topics: The Nature of Science and Technology

Grades:

Knowledge and Skills:

- Can create a chart for the collection of experimental results
- Can present experimental results clearly in written form
- Can design an experiment which compares behavior or characteristics of classes of objects or subjects

Materials: A variety of cloth swatches, bleach, stain agent like coffee, paper and pencil

Procedure:

This activity is best done by students working in teams of 2 or 3.

Distribute the activity sheet and review it to ensure students understand what is needed.

The basic purpose of the activity is to give students experience in developing a scientific method of testing in which the variables are controlled as well as possible.

A poor test would be one which could not be duplicated exactly from one type of cloth to another, such as repeatedly dragging a piece of cloth over the edge of a table and visually comparing it to a cloth which had not been so treated. (This could be a good test if a method is proposed for always applying the same amount of force to the cloth as it is dragged over the edge.)

An example of a good test would be to measure exactly how much force was required to tear a piece of cloth, or to soak a cloth in an exact concentration of strong bleach (for example) for a specified period of time, testing its strength before and after.

Give students a schedule for working on this assignment and a due date.

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To: Quality Control Team

From: President

Re: Durability of fabric

Over the past 6 months I've been getting more and more complaints from our retailers, who are saying that the customers aren't happy with how long our clothes are lasting.

It's possible that something has changed in the material we are using, but whatever the problem is we need to do something about it.

What would really help is if we had some kind of standard procedure for testing the durability of the various kinds of cloth we are using. The procedure needs to be something simple but it also needs to be something that we can repeat exactly with different kinds of cloth. Only if the procedure can be repeated exactly will we be able to compare results from two different kinds of cloth.

We will also need to come up with some way to measure the results of the test. Does the cloth get thinner? How much area is worn? Does it change color?

What I would like you to do is come up with some standard tests and measurements that can be done with a piece of cloth to see how will it lasts under various kinds of wear and tear.

Then try this out on some different kinds of cloth.

If you come up with something that works then we will need to get it done in all of our plants, so I would like you to write it up carefully and completely so that someone else can do the tests just on the basis of what you have written.

You can use machinery in your tests if you want but you don't have to.

Get this done ASAP, could you? I want to be able to show the store managers that we are paying attention to their problems.

Thanks,

Eli