

# Usable Web Design

*by* Rolf Molich

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# 11. Think aloud testing



Test the dialogue – just like you test the code

Every experienced webmaster knows that the first version of a website is full of syntactic and logical mistakes. The same is true of the user interface: Regardless of how careful you are in creating it, there will always be some serious and unexpected problems.

This chapter and the next describe some simple and effective techniques that can reveal these problems. In many cases, the techniques also give you an idea as to how you can solve the problems.

Specific behavior, not opinions

We know from experience that user opinions are rather worthless. The following techniques are therefore focused less on what users *think* — or, for that matter, what webmasters, sales people, and usability specialists think — and instead focus on how users actually *behave* in concrete, realistic situations.

Testing is necessary because, unfortunately, experience also shows that users do not tell us about problems without prompting. There are many reasons for this. Users might be thinking “it probably can’t be done differently” or “it’s most likely me who is stupid”. It might also be that the organization has demonstrated, either consciously or subconsciously, that criticism is unwanted.

Time measurements do not work here

We cannot typically measure task completion time (efficiency, one of the usability measures discussed in chapter 2) in connection with a test because test participants are not in their usual work situation and because thinking aloud delays their work.

Use a consultant      It is an advantage if you can get an expert consultant to help with the first tests because inexperienced test facilitators often make mistakes that can greatly reduce a test’s usefulness.

## 11.1 Overview

“Think aloud”      A think aloud test consists of 4–20 test sessions. Each test session involves one test participant, who should be a typical user of the website. During the test session, the test facilitator gives the participant 6–20 tasks. While test participants solve their tasks, they are asked to “think aloud” — that is, to say what they are thinking, what they are unsure of, what they expect the website to do, how they interpret error messages, and so on.

Think aloud tests are widely applicable. You can use them to test a beginner’s first meeting with a website, as well as to test a long-running website with experienced users to see if the site needs updating. You can use think aloud tests on an entire website or on selected pages. You can use them on prototypes and on websites that are in production.

Duration      A test session normally lasts 60–100 minutes.

Test tasks      If the object of the test is a bank’s website, the test participant might be a bank customer with a reasonable knowledge of the Internet. Example tasks might be:

- Find the telephone number and opening hours of the nearest branch.
- How much interest is paid on a child’s savings account?

Think aloud test      A think aloud test consists of the following steps:

1. Preparation:
  - Establish a good working relationship with the product team.
  - Prepare the test plan.
  - Set a time and place for the test sessions
  - Select and inform test participants.
  - Create test tasks.
  - Select a data collection method.
  - Run a pilot test and revise the test accordingly.
2. Test sessions:
  - Greet the test participant.
  - Ask the test participant about his or her expectations of the website.
  - Let the test participant solve the tasks.

- Discuss the test with the participant (debriefing).
3. Results communication:
- Analyze the data.
  - Discuss the results with the product team.
  - Report the results.
  - Follow up.

These steps are described in detail in the following sections.

## 11.2 Preparation

Test facilitator

Start by appointing a test facilitator.

Neutrality is key

Ideally, design and testing should be completely separate. The test facilitator should have a neutral relationship to the target website. You cannot test your own baby. However, in some situations, it is acceptable to let a member of the product team carry out a test. These include:

- The project has insufficient resources for an external test and there are no colleagues elsewhere in the organization that can help.
- The project uses frequent tests during development. There is no formal reporting, but the results will be implemented directly after the test.

For final testing and critical testing, you should always use an independent test facilitator.

A test facilitator should have experience being a test participant and be familiar with that role. Furthermore, test facilitators should carry out a test supervised by a skilled trainer once every 2–4 years to ensure that they have not picked up any bad habits.

### 11.2.1 Establish a good working relationship with the product team

If test results are not taken seriously, even a perfect test will not solve any problems. You need to “sell” the test results from the moment you decide to run a test.

Agree on the test's aim beforehand

Before you carry out a test, you should agree with management and the product team responsible for the website what the results will be used for. Write down the agreement in a test plan (see page 131, “Prepare the test plan”). Many technically successful tests ultimately fail because there was no clear agreement on what the results would be used for. Problems can also arise if the people

responsible for implementing the results are not involved in testing and thus consider the results foolish.

Sell the test to the project team

Here are some specific things you should do:

- Take the time to explain the test to the product team. Many IT people do not know what a usability test is.
- Turn the product team members into your allies by explaining to them what *they* get out of the test: Praise from users, fewer change requests, and fewer development hours wasted on unused features.

Let the project team advise on test tasks

- Encourage the product team to become actively involved in creating the test tasks. This forces the product team to see the website from the users' viewpoint. This is often a new and instructive exercise for product team members. All test tasks should be reviewed and approved by typical users and the test facilitator.

- Let the product team draw up the test participants' user profile (that is, their qualifications).

- Encourage the product team to watch the test sessions. Everyone should watch at least two test sessions. Serve drinks and snacks to create an informal atmosphere. Schedule the test sessions at times convenient for the product team.

The project team should observe the test

- Ask the product team to take notes during the test. These notes can be the basis for the report. (For more information on this, see page 146, "How to reach consensus about results".)

### 11.2.2 Prepare the test plan

Write a short test plan that can serve as a type of requirements specification for the test.

The test plan should be one- to two-pages long and describe:

- The test's goal
- The website or website section that the test will cover
- The user profile for test participants
- The purpose of the results

### 11.2.3 Set a time and place for the test sessions

Duration:  
60–100 minutes

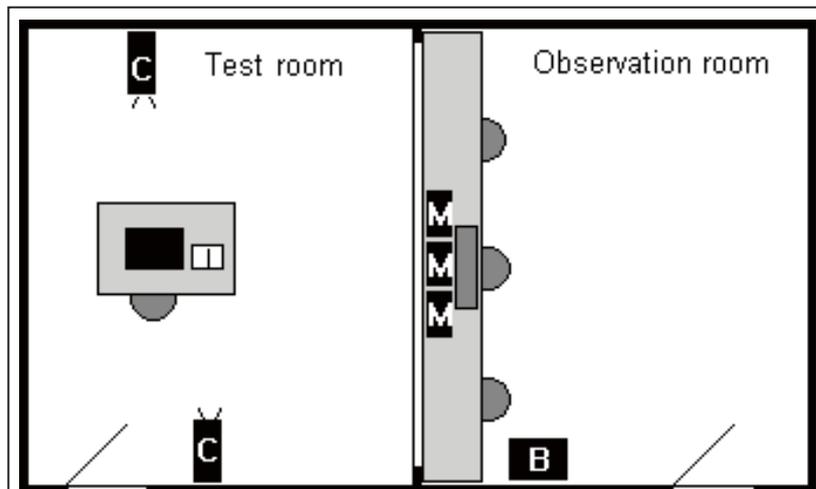
A usability test session typically lasts 60–100 minutes, which includes time to greet and debrief participants. It is a good idea to hold test sessions at two-hour intervals. This gives the test facilitator time to unwind and gives people watching the tests time

to check their email, etc. It also allows time for any needed equipment adjustments.

Many qualified test participants can only take part in test sessions after work. For this reason, you might have to test between 4.00 p.m. and 8.00 p.m.

#### Selecting a test location

If the test cannot be carried out at the user's normal workplace, hold the test somewhere that does not appear overly technological. Too much equipment (screens, video cameras, cassette recorders, microphones, etc.) can stress test participants.



**Usability Lab:** Video recording a usability test is easiest in a usability lab, which can be set up as shown in this diagram.

The cameras (C) in the test room show the test participant's face, the keyboard, and the documentation. The observation room is separated from the test room by a soundproofed wall with a one-way mirror, so the observers can see the test participants, but test participants see only a mirror image of themselves. The monitors in the observation room (M) show camera pictures and the mix that is filmed. The large screen on the wall (B) displays the picture on the test participant's screen.

The observers sit with the facilitator in the observation room. They can also sit in a separate room (not shown on this diagram). Alternately, the facilitator can sit with the test participants in the test room so that it seems more natural for test participants to think aloud.

## Location

Usability tests can take place:

- In the test participant's home.  
Although rarely used, this option is helpful if the surroundings need to be as natural as possible for the test participant.
- At the test participant's workplace.  
This option is suitable if test participants are busy and do not have time to get to the test location. Although this kind of test might disturb the participant's colleagues, it gives a realistic impression of the environment in which the website is used.
- In a meeting room at the test participant's workplace.  
This option is suitable if the test participants are busy and do not have time to get to the test location.
- In a meeting room at the product team's workplace.  
This option is the easiest way for the product team to observe test sessions. They can even come and go as it suits them if they observe the test from a neighboring room.
- At a specially equipped usability lab or usability test center (see the diagram on the previous page).  
This option is good if you need to video record the test, but is inconvenient for test participants and the product team.

### 11.2.4 Select and inform test participants

#### Determine user groups

The test facilitator and the product team create an overview of the user groups to be tested. You can use this user group overview as a starting point, since (ideally) the website should be tested by all user groups. In practice, however, a test rarely covers more than the primary user groups and in many cases, there are only resources to test one user group.

#### Where to find test participants

The participants in a think aloud test could be:

- Your own acquaintances (work colleagues, friends, and family)
- The company's employees
- People supplied by a marketing bureau
- Temps from a temporary employment agency

The facilitator should ensure that the people tested are representative of typical users in terms of age, experience, and motivation.

#### Voluntary test participants

If you only use voluntary test participants, your test results might be skewed as such participants are usually highly (and unrealistically) motivated and open. Temps from a temp agency

can be useful if they belong to the user group; they are also available during office hours.

The number of test participants

Test a minimum of four users from each user group. My experience has shown that six test participants is the optimal number. If you use fewer test participants, you can easily overlook important problems. If you use more than six participants, you will find that the seventh and eighth test participant mostly repeat what has previously been said.

Assess test participants based on their answers to specific questions

Test participants are not always good at assessing their own qualifications. It is therefore important that you ask potential test participants specific questions that are only answerable if they belong to the target user group.

Examples of such questions regarding Web experience are:

- What is the *Back* button in the browser for?
- What is the name of the browser you use?

Overqualified test participants

Test participants can also be overqualified. In many tests, it is inappropriate to use test participants who have tried to develop their own websites. When selecting test participants, you should ask control questions that only overqualified test participants can answer. For example, people who can answer these questions might be unsuitable test participants:

- What is an HTML tag?
- There is a 600-line text on your browser. How can you find all the places where the word “insurance” appears in this text?

A user’s disinclination to participate in a think aloud test should of course be respected. Unfortunately, users rarely say that they do not want to participate. Rather, they typically show their disinclination by making repeated excuses for not being able to participate (too busy, other appointments etc.). The test facilitator should be aware of this.

Inform test participants

It is quite natural for test participants to experience doubt about what will happen during the test. It is a good idea to demystify the test by sending accepted participants a brief letter that explains the test’s goals.

In the letter, emphasize that it is the website and not the user who is being tested. See the example on the next page.

Example of a letter to a test participant:

“We’re testing the website, not you”

**Dear Eric Smith.**

Thank you for agreeing to participate in a test of the new website for the insurance company Selandia.

The aim of the test is to find out if the website is easy and comfortable to use. The aim is **not** to assess you or your skills.

The test will take place on  
**Wednesday 28th July at 4.00 p.m.**  
at

**Selandia  
Bygmarken 4  
4000 Roskilde**

Please go to the reception and I will meet you there at the agreed time.

The test requires no preparation from you.

The test lasts around 90 minutes.

Demystify the test.  
Explain what will happen

I will facilitate the test. I work for the independent company DialogDesign. During the test, you will be asked to carry out a number of specific tasks using Selandia’s website. While you carry out these tasks, you should “think aloud”. That means that you should verbally explain what you are unsure of, what you think works well, what you think works poorly, etc. By doing this, we are better able to understand the parts of the design that cause problems for users and figure out how these problems can be corrected.

“We’re testing the website, not you” (again!)

The test may sound like an exam but please remember that if anyone is being tested, it is the people who have made the website and not you. If you cannot use the website, it is the problem of the website designers.

Anonymity

DialogDesign guarantees your anonymity. Outside parties are only informed of your approximate age and job, but not your name or address.

One or two employees from Selandia may want to observe the test to gain a first hand impression of users’ opinions of the website. These employees have been given strict instructions to remain passive during the test.

Compensation

In return for your time, you will receive a gift. You can choose between six bottles of good red wine or a gift voucher for \$50 to spend at a major store.

If you have any questions, please contact me at the telephone number below.

Kind regards  
DialogDesign

Rolf Molich

#### Video recording

If you want to video record test participants during the test, it is important that you inform them of this in the letter. Some test participants do not want to participate in tests where they are being filmed.

If you have produced written background on the website or if you expect test participants to read some user documentation in advance, attach those materials to the letter. Experience shows, however, that few test participants actually have time to read the documentation before the test — just like in real life!

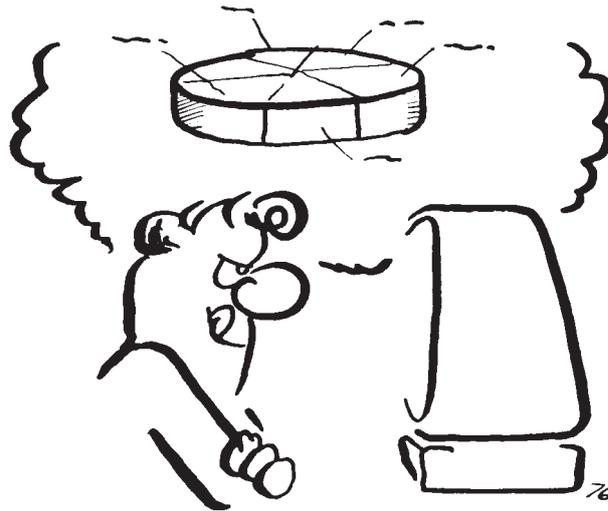
#### Interesting experience

Almost all test participants think that participating in a usability test is interesting. They get an opportunity for working with new and exciting technology. As one test participant explained to me: “It is rare that someone wants to listen to me uninterruptedly for 90 minutes”.

#### Reusing test participants

It is easier to persuade a person who has previously participated in a test to come to a new test than to find a completely new test participant. Therefore, if you carry out many usability tests, it is a good idea to make a note of who participates in tests and their qualifications.

### 11.2.5 Create test tasks



#### Realistic tasks

The think aloud technique demands that a number of realistic tasks are created which the test participants then have to carry out using the website.

The test facilitator creates the tasks. The test facilitator should invite the product team to help with this to increase the product team's active commitment to the test as described on page 130.

Be critical of the user tasks

The test facilitator must ensure that typical tasks are tested on the website. The tasks must be based on users' needs, not on the website's menu points. You should create the tasks without looking at the website; one of the test's aims is to find out if the website can do the jobs that users need to do. You might start with the user tasks identified in the analysis phase (see page 44), but remember that the product team may have overlooked or underplayed tasks that are important to users.

If friends or acquaintances are typical users, get inspiration from them about the test tasks. Let a couple of them look through and comment on some proposed tasks. Doing this ensures that the tasks are easy to understand and realistic.

Hidden clues

The tasks must stick to some simple rules, such as not containing hidden clues. See the box "Unfortunate test tasks" below.

Scenario

You can link tasks together in a scenario. This is a story that gives a realistic angle on the task. For example, the scenario might be that the user wants to change insurance companies and needs to get an offer from the company that owns the target website.

Holistic testing

Users judge a website on the total experience. If it is an online shop, this total experience includes payment, confirmation, information on any delivery problems, and receipt of the goods.

Even if the screen dialogue is good, the customer service can be poor. Unfortunately, many tests stop at the point where the test participant has to pay. This means that an important part of the experience is lost. Can the test participant work out how to pay? Is the test participant able to find the delivery date? How does the test participant perceive the electronic newsletter and tips about special offers?

Revealing personal data

There is an ethical problem associated with holistic testing: Can you ask test participants that you have never met before to enter their private address and use their credit card to pay for goods as part of a test? Even if you offer to refund all costs?

No "jokes" or spelling errors

Tasks must be realistic. "Humorous" tasks are out of place. Remember that websites are for busy people. Respecting your test participants also means that you must ensure that your test tasks are written in good English with no spelling errors.

## Examples of test tasks

Following are a set of tasks that I have used several times in courses to test the website of the Danish State Railways (DSB) [www.dsb.dk](http://www.dsb.dk).

- 1 Find DSB's website.
2. You need to go from Hoje Taastrup to Aarhus on Friday for a meeting. The meeting starts at 12.30 p.m. and it takes about 15 minutes to get from the station to the meeting by taxi. When should you leave Hoje Taastrup?
3. How much does a return ticket cost?
4. Can you make a seat reservation for the trip on the website? If yes, do it and have the reservation sent to your private address.
5. You want to visit family in Faaborg. When will you arrive if you leave Kbh at 8.00 a.m.?
6. You live in Kolding and are considering taking a job in Odense. Print out the complete timetable for the line Kolding-Odense.

The first task is standard for all of my tests. It is obviously a disaster if users cannot even find the website.

Task 5 is realistic but complicated to actually perform on the website. The site does not know the abbreviation Kbh, which is commonly used for Copenhagen. It also has problems explaining to users that Faaborg is no longer served by trains, only buses.

### Written tasks

You must give the tasks in writing. This limits the facilitator's influence during the test. Each task should be written on a separate piece of paper. Hand out the tasks one at a time so you can conclude the test at any time without the test participants feeling uncomfortable that they did not finish all tasks.

### The first task should be easy

The first task should be so easy that the test participant can do it in just a few minutes. This is a psychological trick to de-stress participants: They experience easy success and unconsciously feel "this isn't so bad after all". Warning: It can be difficult to create a task that first-time users can definitely do in just a few minutes. Hint: The task should be much simpler than you think!

### Closed task

Tasks can be closed — that is, specified exactly:

- *Rent a car in group B from the airport in Nice, France. You will pick up the car in the airport on the 25th March at 1.00 p.m. and return it exactly one week later.*

## Open task

Tasks can also be open—that is, loosely defined so that test participants can determine the details:

- *Do you have any plans to go abroad? Where and when? Rent a car that fulfils your requirements at your destination.*

Here are two more examples of open tasks:

- *Go into [www.cdskiven.dk](http://www.cdskiven.dk). Buy a CD for yourself and one for a friend. We will pay the bill of up to \$50, including postage.*
- *Tell me what you were looking for and show me what you did the last time you were on [www.rejseplanen.dk](http://www.rejseplanen.dk). (A route planning tool)*

When you use open tasks, test participants will probably choose quite different goals, including some you had not thought of. Therefore, you will only see some of the problems once.

Test participants are often more motivated when doing open tasks because such tasks are more relevant to them.

Remember to ask the test participants which task they want to do before they start working on an open task. In the test report, list the specific task that each test participant selected.

A good set of tasks contains both open and closed tasks.

### Types of test tasks

There is more than one type of test task. Here is an overview, with examples from a website selling household appliances:

1. Find a fact:  
*What does the Samsung microwave M1753 cost?*
2. Carry out a personal assessment:  
*Would the Samsung M1753 microwave oven meet your needs?*
3. Compare facts:  
*Find the cheapest microwave that can hold a standard size pizza.*
4. Comparative personal assessment (open task):  
*Find the microwave oven that best meets your needs.*

The first type of test task is easy to create; test tasks 2–4 are often more realistic from a user's point of view.

Note that the answers to tasks 2 and 4 depend on the test participant. A good test task does not necessarily have one answer.