



# Assignment 2A

IC1007 HT17-1

Human-computer Interaction: Principles and Design

Group 11

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## 1 Introduction

In this assignment a cognitive walkthrough evaluation is performed on the SL website (<http://sl.se/en/>). In section 2, the method which is followed in the evaluation is described. Section 3 shows the results of the evaluation. Lastly, section 4 summarizes the findings and discusses what they mean for the website.

## 2 Method

Cognitive Walkthrough is a technique used by evaluators to inspect the learnability and understandability issues in a user interface. The purpose is to allow targeted user groups to interact with the design of the interface under realistic condition and meticulously go through several tasks presented either in form of a mock-up paper, a working prototype or a fully developed interface (Wharton).

The four inputs that need to be defined for the process are:

- 1) “Who will be the users of the system?”
- 2) “What task(s) will be analysed?”
- 3) “What is the correct action sequence for each task?”
- 4) “How is the interface defined?” (Wharton).

For each task performed the evaluator must answer the four following questions concerning usability:

- 1) “Will the people using the system try to achieve the right effect?”
- 2) “Will they notice that the correct action is available?”
- 3) “Will they associate the correct action with the effect that they are trying to achieve?”
- 4) “If the correct action is performed, will people see that progress is being made towards the goal of their activity?” (Benyon, 2014).

Subsequently, if the task does not manage to meet the criteria then there is a usability problem that needs to be addressed at a later stage (Benyon, 2014).

## 3 Evaluation

### 3.1 Defining the Input to the Walkthrough

#### 3.1.1 Who will be the user of the system?

The user will be a student who does not speak Swedish and has no experience with the Stockholm transportation system. He is a KTH student so he does have experience in using the internet. He has a sprained ankle which stops him from walking more than 200 m at a time., although the walking restriction is only approximate.

#### 3.1.2 What task will be analysed?

The task is for the user to find a route from Kista to Skansen, leaving earliest at 15:15 on Friday, with the restriction of maximum 200 m walking distance.

What is the correct action sequence for the task?

1. Type “Kista” in the “From station/stop/address” field under “Plan your trip”.
2. Type “Skansen in the “To station/stop/address” field.
3. Select “Depart earliest” from the drop-down menu in the third field of the form.
4. Choose Friday 15:15 in the drop-down menus which appear.
5. Click on the “More options” menu to expand it.

6. Expand the “Walkway” form by clicking on it.
7. In the drop-down menu which has appeared, select “200 m”.
8. Click the “Search” button.
9. When the left menu has finished loading, scroll down the page to see routes.
10. Choose an appropriate route and click on it to see the route in detail.

#### 3.1.3 How is the interface defined?

The interface is already implemented, so all information about how it is defined is available in the implementation, <http://sl.se/en/>

## 3.2 Walking Through the Actions

#### 3.2.1 Type “Kista” in the “From station/stop/address” field under “Plan your trip”

The user will know what effect to achieve because it is a vital part of his original task. He will know that the action is available because he can see the form called “Plan your trip” with several fields to fill in and buttons to click, clearly meant for communicating where he wants to go etc. He will know that the appropriate action to do is to type the station’s name in the first field because the interface provides a label (mock text in the first field) saying “From station/stop/address”. If the user performs the correct action he will know that the system’s status is being changed towards his goal because once he has started typing “Ki...”, “Kista” will appear as a suggestion in a drop-down menu. Once he selects that, “Kista” will appear in the field and the cursor will move to the “To station/stop/address” field.

#### 3.2.2 Type “Skansen” in the “To station/stop/address” field

The user will know what effect to achieve because it is a vital part of his original task. He will know that the action is available because he can see the form called “Plan your trip” with several fields to fill in and buttons to click, clearly meant for communicating where he wants to go etc. He will know that the appropriate action to do is to type the destination’s name in the second field because the interface provides a label (mock text in the second field) saying “To station/stop/address”. If the user performs the correct action he will know that the system’s status is being changed towards his goal because once he starts typing “Ska...”, “Skansen” will appear as a suggestion in a drop-down menu. Once he selects that, “Skansen” will appear in the field. This will tell the user that his input is received and that he should continue filling in the form.

#### 3.2.3 Select “Depart earliest” from the drop-down menu in the third field of the form

The user will know what effect to achieve because it is a vital part of his original task. He will know that the action is available because he can see that the next field reads “Depart now” and that there is an expand downwards icon next to it. There aren’t many alternatives to what could be in that expansion other than the option to choose to depart at a different time. The user will know that this is the appropriate action because he will understand that he doesn’t want the field to say “Depart now” as he wants to depart later, and there are no other obvious ways to interact with that field entry. Once he clicks on the expand button he will see “Depart earliest” and “Arrive at” as alternatives. All other options but “Depart earliest” seem wrong so the user will select that. After having selected “Depart earliest” some additional fields will appear which look like a time should be entered. This is a part of the user’s original task and thus it will tell him that he is on his way.

#### 3.2.4 Choose Friday 15:15 in the drop-down menus which appear

The user will know what effect to achieve because it is a part of his original task to choose Friday at 15:15 as the earliest departure time. He will know that the action is available because the newly appeared fields take a day and a time as input. The user will associate filling these fields in as the correct action to do since he has expanded from the field in which he chose to “Depart earliest...” Once he has entered the

desired day and time, the fields will remain visible and filled in. This is enough to tell the user that his preference is taken into account, which is what he was trying to accomplish with this action.

#### 3.2.5 Click on the “More options” menu to expand it

What’s left for the user to input at this point is that he cannot walk more than 200 m. It is not obvious that expanding “More options” would allow this action. It is however reasonable to assume that the user will guess that he should try this. The user might not have any experience of Stockholm, but he does probably realize that most people are fine with walking more than 200 m and thus he would assume that place to give this type of unordinary input is not very visible, which would lead him to look under “More options”. Furthermore, all other things to interact with in the form seem wrong. When the user has expanded “More options” he will see five items in a menu, one of which reads “Walkway”, which would tell him that he is on the right path towards his goal.

#### 3.2.6 Expand the “Walkway” form by clicking on it

The user will know what effect to achieve (expansion of the form) because there is a plus icon on the right of the field which symbolizes that there is more to be seen in this menu item. When he hovers over the item, his cursor will look like a pointing finger, which he will recognize as the conventional “click” symbol, since he is a student in a technical university and thus has worked with computers before. What the user is trying to achieve at this point is to input his walking restriction to the system. Expanding a menu item called “Walkway” associates to this goal. Upon completion of the task, the user will see a new field marked with a distance appear, which will signify to him that process is being made.

#### 3.2.7 In the drop-down menu which has appeared, select “200 m”

The user will know what effect to achieve because it is a vital part of his original task, namely to select 200 m as walkway. It is not obvious that the “200 m” option means less than 200 m, as he hopes, but since the other options (longer distances) seem wrong, he will select this. The user will notice that the correct action is available because the field is a simple drop-down menu with 4 easily distinguishable options. When the option is selected, the text on the right side of the menu item “Walkway” will go from “No changes” to “Change”. This is sufficient feedback to indicate that the user’s input has been received by the system.

#### 3.2.8 Click the “Search” button

Now the user has filled in all the desired input. He will know that the next thing to do is to somehow submit the form. The “Search” button at the bottom of the form is very visible and it is the obvious thing to click to submit the form. Its label could have been “Submit”, but since the user is in fact making a search in the system by submitting the form, “Search” also seems intuitive. When the “Search” button is clicked, the form will fade and a loading bar will appear over it, after which the page will change. The user will know his submission is being processed.

#### 3.2.9 When the left menu has finished loading, scroll down the page to see routes

When the form has finished loading, the items that were previously under it will change and a header will display the rout (something like Kista -> Skansen). At the same time the map at the center of the page will change and display the rout. The map will show only one possible route at one specific time (the first one) with no information about intermediate stops etc. It will grab the user’s attention and he will try to interact with it. When he has realized that he cannot interact with the image, he will look around a bit and notice the items on the right. Scrolling down to see them, he will recognize them as routes and know that his search has been successful.

#### 3.2.10 Choose an appropriate route and click on it to see the rout in detail

The user will want more detailed information about the routes, such as which the intermediate stops are. He will recognize the plus icon which he has just recently seen in the form, and understand that he

can click the item to expand it. When expanded, the item will show detailed information about the route, with accordance to the user's expectations.

The suggested routes actually show a little over 200 m walkway but we assume that the user will not try to solve this problem. A walking restriction is approximate and the walkways given by the site are not exact but based on some addresses in a database. For these reasons we assume that the user will be satisfied enough with the results.

## 4 Conclusion

A cognitive walkthrough of the SL site has been performed by four evaluators. The user of the system is described as a student with no experience of the Stockholm transport system who has a walking restriction of 200 m. The evaluators have walked through the user's task of finding an appropriate route from Kista to Skansen on Friday after 15:15, with his walking restrictions in mind.

The evaluation shows that the described user will be able to successfully complete the task. The different iteration steps of the walkthrough however show that the user may experience that the different actions have different difficulty. The hardest action to figure out is walkthrough step 9: When the left menu has finished loading, scroll down the page to see routes. This task is made difficult by the big map in the centre of the page grabbing the user's attention, rather than the place where he is supposed to look. It is suggested that this part of the site is redesigned.

## References

- C. Wharton et. al. "The cognitive walkthrough method: a practitioner's guide" in J. Nielsen & R. Mack "Usability Inspection Methods" pp. 105-140.  
D. Benyon. (2014). "Designing Interactive Systems" pp. 219-220.

## Appendix

### Peer Review for Group 14

- To get a higher grade; the report is missing a clear and concise description of the Cognitive Walkthrough method.
- To get a higher grade; the report does not present any recommended solutions to the problem presented under the discussion/conclusion headlines.
- To get a higher grade, each interaction step should be supported by references to the literature.
- Under the headline "1.3 Correct Action Sequence" it should be specified what the evaluator(s) should type in the "From" and "To" fields. The same goes for the time of departure.
- Interaction step four doesn't explicitly answer the four questions; will the user try to achieve the affect the subtask has? Will the user notice that the correct action is available? Will the user understand that the wanted subtask can be achieved by the action? Does the user get appropriate feedback?