

Cognitive Walkthrough

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IDUS315 - HCI | 1

Overview

- Where we left off
- Underlying principles
- How to do it
- Presenting the findings

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Cognitive Walkthrough : Where We Left Off

	Think Aloud Protocol	Heuristic Evaluation	Cognitive Walkthrough	Model Human Processor	GOMS	Experiment	Competitive Analysis
User Heuristic	X		X			X	
Hard-Data		X	X	X	X	X	
Market Defined							X
Speed	Fast	Medium	Medium/Slow	Slow	Slow	Slow	Fast
Cost	Cheap	Cheap	Cheap	Cheap	Cheap	Expensive	Cheap
# of users required	2-8	0	0	0	0	20+	0
# of evaluators required	1-2	2-8	2-8	1-2	1-2	1-4	1-2
Developed by	Newell & Simon from CMU	Jakob Nielsen (useit.com)	Based on Lewis & Polson's CE + info processing model	Card, Moran & Newell	Card, Moran & Newell	Social Psychology as a field	Business & Marketing as an org structure

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Cognitive Walkthrough : Underlying Principles

- How do we solve problems in unfamiliar situations?

We learn by exploration:

- We determine what sort of controls we have available to perform an action
- We select the control that makes the most sense to make progress towards a goal
- We perform the action using the control
- We evaluate the result of our action see if we made progress

(Lewis & Polson)

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Cognitive Walkthrough : Underlying Principles

- Cognitive Walkthrough focuses solely on **ease of learning**
- People learn interface elements & functionality only when they need the particular piece of functionality
 - (not training)
 - (not manuals)
- We attempt to create a credible story of what a **novice** user would do

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Cognitive Walkthrough : When To Use It

- CW is great for evaluating **walk up and use systems**:
 - Kiosks**
 - ATMs
 - Phone Booths
 - Digital environments
 - Websites intended for **infrequent use by novice users**
- CW is not so good for evaluating:
 - Complex** software packages, like Photoshop or Alias
 - Websites intended for **everyday use by expert users**
 - Handheld digital devices (such as cell phones, pagers, or palm pilots)

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Cognitive Walkthrough : How To Do It

1. Prepare your starting data
2. Walk through the tasks, preparing a **credible** story for each individual step
3. Record critical information – specifically, failures

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Cognitive Walkthrough : How To Do It

1. Prepare your starting data
 - **Identify your users** (personas work great here!): explore their skill levels with both technology and the problem domain
 - **Prepare your prototype** (this works on any level of fidelity)
 - **Prepare sample evaluation tasks** (scenarios work great here!): determine the important goals the users will have
 - **Identify the action sequence ideal for completing the tasks:** Determine the step by step actions the user ideally *should* take to complete the task. Every step should be explicitly listed.

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Cognitive Walkthrough : How To Do It

2. Walk through the tasks, preparing a credible story for each individual step.

Ask the following questions, for each step, while looking at the interface: create a **credible story** based around these questions:

- Will the user try to achieve the right effect?
- Will the user notice that the correct action is available?
- Will the user associate the correct action with the effect that user is trying to achieve?
- If the correct action is performed, will the user see that progress is being made towards their goal?

Record any additional assumptions you make along the way.

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Cognitive Walkthrough : How To Do It

- 2a. Walk through the tasks, preparing a credible story for each individual step. *(continued)*

Will the user try to achieve the right effect?

The user of the system has an end goal in mind, but needs to accomplish various tasks to complete it. Will they even know to perform the specific steps along the way?

- The user wants to print a document. Will they know that they first need to select a printer?
- The user wants to manipulate an object on the screen. Will they know that they first need to change to "manipulation" mode?

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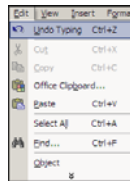
Cognitive Walkthrough : How To Do It

- 2b. Walk through the tasks, preparing a credible story for each individual step. *(continued)*

Will the user notice that the correct action is available?

Is the option visible and on the screen, or at least in a place the user will likely look?

- The user wants to navigate to the homepage, but the navigation bar is hidden until the user mouses over it
- The user wants to use the 'edit and replace' option, but its hidden in the menu



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Cognitive Walkthrough : How To Do It

- 2c. Walk through the tasks, preparing a credible story for each individual step. *(continued)*

Will the user associate the correct action with the effect trying to be achieved?

If an icon is used, is it an accurate representation of the action?

Is the label worded in a way that the user expects?



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Cognitive Walkthrough : How To Do It

2d. Walk through the tasks, preparing a credible story for each individual step. *(continued)*

If the correct action is taken, will the user see that progress is being made towards their goal?

Is there any feedback showing that the user selected the right option? Are the terms or graphics used during the feedback effective? Is the next logical action presented successfully?

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Cognitive Walkthrough : How To Do It

3. Record critical information – specifically, failures

Failures: At every step, if you can't create a credible story that answers all four questions, the step fails. Record it.

Additional Assumptions: Any time you assume that the user has a certain skill, record it.

Design Ideas: If you determine a fix for a certain failing step, record it.

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Cognitive Walkthrough : Let's Try It

• Wilbur wants to find out what community message options Yahoo has available that discuss the subject of HCI topics. Our assumptions:

- Wilbur is familiar with general PC technology and Windows software (pointing, clicking, dragging, etc)
- Wilbur is familiar with Internet Explorer
- Wilbur has used Yahoo before for simple web searches, but never participated in any community aspects

• Our prototype is a simple set of screens captured from Yahoo.com

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Cognitive Walkthrough : Let's Try It



Step 1: The user must click More Yahoo!... in the center

Will the user try to achieve the right effect?

Will the user notice that the correct action is available?

Will the user associate the correct action with the effect that user is trying to achieve?

If the correct action is performed, will the user see that progress is being made towards their goal?

Cognitive Walkthrough : Let's Try It



Step 2: The user must click on Community on the left panel

Will the user try to achieve the right effect?

Will the user notice that the correct action is available?

Will the user associate the correct action with the effect that user is trying to achieve?

If the correct action is performed, will the user see that progress is being made towards their goal?

Cognitive Walkthrough : Let's Try It



Step 3: The user must click on Message Boards

Will the user try to achieve the right effect?

Will the user notice that the correct action is available?

Will the user associate the correct action with the effect that user is trying to achieve?

If the correct action is performed, will the user see that progress is being made towards their goal?

Cognitive Walkthrough : Let's Try It



Step 4: The user must click Options to search by subject

Will the user try to achieve the right effect?

Will the user notice that the correct action is available?

Will the user associate the correct action with the effect that user is trying to achieve?

If the correct action is performed, will the user see that progress is being made towards their goal?

Cognitive Walkthrough : Let's Try It



Step 5: The user must click the Subject radio button, type the word HCI, and press Search.

Will the user try to achieve the right effect?

Will the user notice that the correct action is available?

Will the user associate the correct action with the effect that user is trying to achieve?

If the correct action is performed, will the user see that progress is being made towards their goal?

Cognitive Walkthrough : Let's Try It



Step 6: There are no results found.

:P

Cognitive Walkthrough : Presenting the findings

- Document your findings, using a spreadsheet:

#	Task & Step #	Related Problems	Priority of the problems	Description of the problem	Potential solution to the problem
		List the #'s of any problems that are related	1 = highest priority (huge usability flaw) 4 = lowest priority (minor usability flaw)	A summary of the problem, illustrating where the credible story breaks down	Hypothesize several solutions to the problem
EXAMPLE	1, Step 1	none	3	User was looking for the words "Community", "Message Boards", or "Discussions"; these words are not present on the homepage. "Messenger" is present on the homepage, but takes the user to the Yahoo IM client. It is far-fetched to assume that the user will see and understand that they need to click "More Yahoo..." to continue.	Label that section "Community" instead of "Connect"; include a link for "Message Boards"; remove most of the homepage content and list overall categories instead of trying to list anything and everything

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Wrap Up

- Used to determine the ease of learning a new interface
- Best for walk up and use systems
- Tell a credible story
- At each step, would the user be able to successfully explore to the next step?

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