

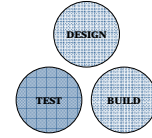
Think Aloud Protocol

Jon Kolko
Savannah College of Art & Design

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Overview

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



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Think Aloud : Where We Left Off

	Think Aloud Protocol	Heuristic Evaluation	Cognitive Walkthrough	Model Human Processor	GOMS	Experiment	Competitive Analysis
User	X					X	
Heuristic		X	X				
Hard-Data				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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Think Aloud

- The basics:
 - Take your prototype
 - Show it to real users
 - Have them use your prototype, and ..
 - .. have them think out loud while they use it.
- (it really is that easy)

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Think Aloud : Background

- Developed by Allan **Newell** & Herb **Simon** at CMU in 1972
- Newell & Simon wanted to understand how people solve problems; needed to understand the sequence of thoughts people experience as they work through a problem.
- Ultimate goal was to simulate human problem solving with Artificial Intelligence
- Developed experiments where one set of participants "verbalized their thoughts as they went about a task" and the other set did not

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Think Aloud : Why It Works

- No effect on thought sequences, as long as there is no introspection:
 - Without affecting the outcome of a task, people can successfully verbalize **WHAT** they are doing but not **WHY!**
 - Specifically, people can verbalize the contents of working memory.**
 - When the information is not linguistic (ie, when it is visual), this will slow down the task, but will not alter the validity of the task
- Formally called the Think Aloud Protocol (a Protocol is a standard procedure for regulating data transmission – in this case, the tasks a person is completing)

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Think Aloud : How To Do It : Before

- Before running a think aloud session:
 - **Develop a prototype**
 - Can be of any fidelity – even paper!
 - **Develop tasks** that represent typical user goals
 - Our scenarios are a great place to start
 - There must be a complete path through the interface to solve these goals (don't give the user impossible tasks, it's mean)
 - Print these tasks, one to a page
 - **Schedule sessions** with users that match our Personas
 - 2-8 users, one per session
 - **Organize yourself** – get video camera, batteries, audio camera, tapes, pens, etc.

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Think Aloud : How To Do It : During

- While running a think aloud session:
 - Get written consent to tape
 - Start taping ☺
 - Explain to the user:
 - .. who you are & what you are doing
 - .. **that you are testing your interface, and not testing them**
 - .. **that they can quit at any time**
 - .. that you won't be able to help them
 - .. that you require them to continue talking, and you will remind them to "please keep talking" if they fall silent
 - To simply verbalize what it is they are doing, as they are doing it
 - Verify that the user understands the tasks (have them read the tasks aloud too, and ask if there are any questions)

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Think Aloud : How To Do It : During

- While the session is running:
 - **Take good notes!** Don't rely on your video or audio tape
 - If the user falls silent for more than three seconds, prompt them "please keep talking"
 - **Do not help the user** complete a task (if the user asks for help, explain that you cannot help, and prompt them to try what they think is correct)
 - **Don't defend your designs!** This is not a critique of your design skills; don't even mention that they are your designs.
 - **Be thoughtful – these are real people!**
 - Watch for signs of frustration; recommend a break if you notice the user getting particularly upset.
 - Remember that the user can quit at any time

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Think Aloud : How To Do It : During

- While the session is running, do not say things like:
 - *Please explain what you are doing*
 - *Note any design problems you see*
 - *Tell us if you have any suggestions*
 - *Why are you doing what you are doing*
- By asking questions like this, we call into play Mediated Processes, such as cognitive processes, which can disrupt the information state and alter the data! (ie, we lose track of the actual task process)

We will talk more about cognitive processes when we do GOMS and Model Human Processor.

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Think Aloud : How To Do It : After

- After the session:
 - Determine the critical incidents that occurred:

By an incident is meant any observable human activity that is sufficiently complete in itself to permit inferences and predictions to be made about the person performing the act.

To be critical, an incident must occur in a situation where the purpose or intent of the act seems fairly clear to the observer and where its consequences are sufficiently definite to leave little doubt concerning its effects (p. 327).

Such incidents are defined as extreme behavior, either outstandingly effective or ineffective with respect to attaining the general aims of the activity (p. 338).

Flanagan, (1954), Psychological Bulletin, 51 (4), 327-358.

- A Critical Incident can be either Bad or Good

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Think Aloud : How To Do It : After

- Some (not all) criteria for identifying a Bad Critical Incident:
 - The user articulates a goal and cannot succeed in attaining that goal within two minutes
 - The user articulates a goal, tries several things and explicitly gives up
 - The user articulated a goal and has to try three or more things before finding a solution
 - The user does not succeed in the task
 - The user expresses surprise
 - The user expresses some negative sentiment, either about the interface or about their own skills
 - The user makes a design decision

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Think Aloud : Presenting The Findings

- Document your findings, using a spreadsheet:

#	Related incidents	Priority of the incident	Description of the incident	How the incident was found	Good or Bad	Potential solution to the incident, if Bad
	List the #s of any incidents that are related	1 = highest priority (huge usability flaw) 4 = lowest priority (minor usability flaw)	A summary of the incident; include quotes from the user	Detail the steps the user took to create this incident		Hypothesize several solutions to the problem
EXAMPLE	none	1	User could not log in after trying four or five different things: <i>"Well, I really just don't see any way to log in. I give up. I feel so stupid"</i> (User did not notice the log in icon)	On page #12B, User clicked on the image of a computer, but that took them to the statistics area of the site; they tried logging in to the administrative section, but didn't see the icon for regular-user login	Bad	Change the icon to a word or phrase ("Click here to login") or simply move the log in information to the first page

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Wrap Up

- Real Users
- Real Tasks
- Using a Real Prototype

.. Coming up: How to test without users

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