

HCI: COGNITIVE WALKTHROUGH

Dr Kami Vaniea

Tutorial next week:

- Writing unambiguous questions and tasks.

**Today we will be practicing the
Cognitive Walkthrough method in class**

You need to setup TopHat

In addition to Cognitive Walkthrough we will be learning about:

- Personas
- A bit of survey design
- Interface flow

Cognitive Walkthrough

- A method that evaluates whether the order of cues and prompts in a system supports the way people process tasks and anticipate the “next steps” of a system.
- When to use it:
 - Initial evaluation of a system
 - Low budget
 - Walk-up-and-use systems or first-use situations
 - Access to HCI experts
- When to not use it:
 - Formal evaluation of your own system with you as an evaluator
 - Systems a user will use frequently

Stages of a cognitive walkthrough

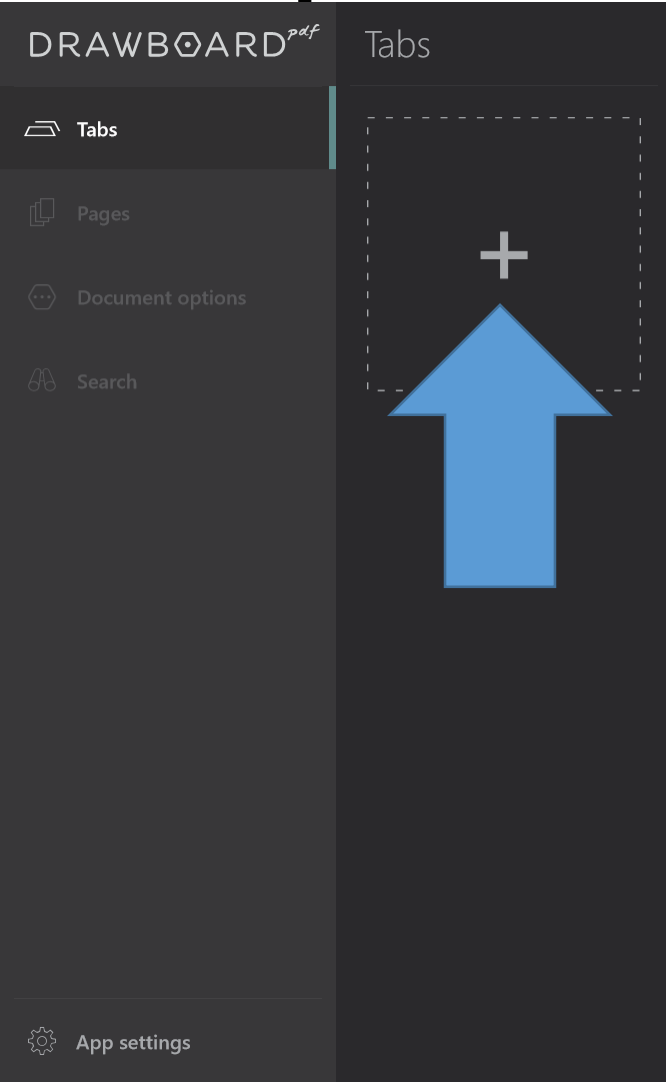
- Briefing session to tell experts what to do
- Evaluation period of 1-2 hours where:
 - Each expert works separately
 - Take one pass to get a feel for the product
 - Take a second pass to focus on specific features
- Debrief session in which experts work together to prioritize problems.

The four questions

1. Will users want to produce whatever effect the action has?
2. Will users see the control (button, menu, label, etc.) for the action?
3. Once users find the control, will they recognize that it will produce the effect they want?
4. After the action is taken, will users understand the feedback they get, so they can confidently continue on to the next action?

Task: Open the tasks lecture slides in DrawboardPDF.

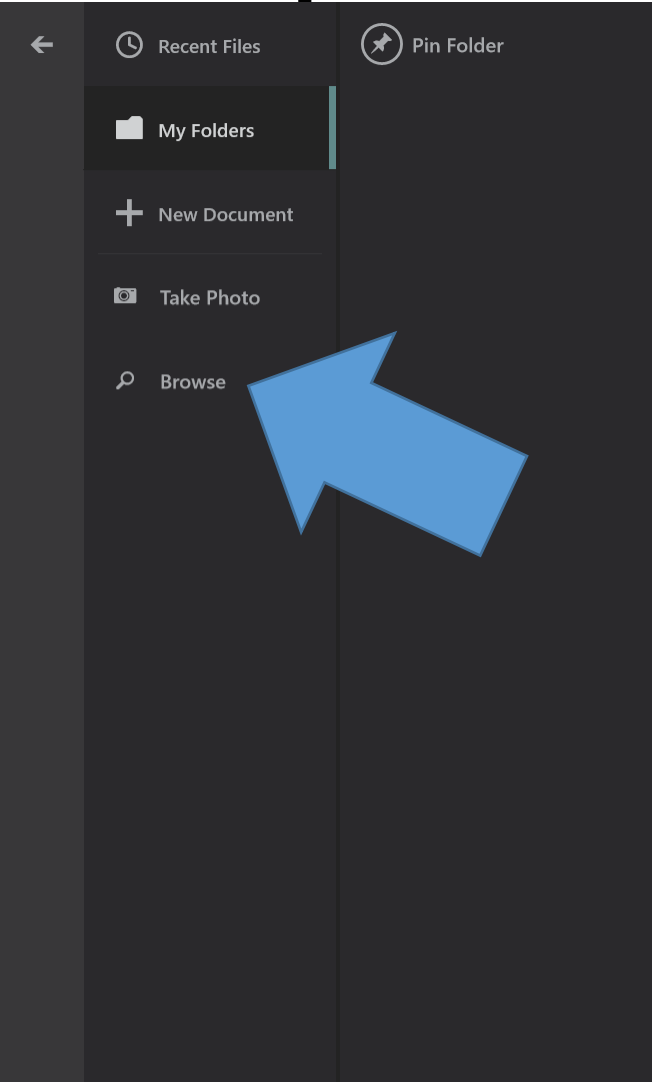
Step 1



Recent



Step 2



No Pinned Folders

You can pin folders here for quick and easy access to all your documents.

Let's get started.

 Select a folder

Step 3

This PC ▾ Downloads

Go up Sort by name ▾



Lecture07_heuristics

10/11/2017 10:12 PM

643 KB



Screenshot-2017-10-11 Trip Sum...

10/11/2017 6:01 PM

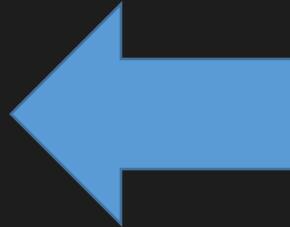
108 KB



Lecture07_tasks

10/11/2017 10:17 PM

2.87 MB



Open

Cancel

Step 4

This PC ▾ Downloads

Go up Sort by name ▾



Lecture07_heuristics

10/11/2017 10:12 PM

643 KB



Screenshot-2017-10-11 Trip Sum...

10/11/2017 6:01 PM

108 KB



Lecture07_tasks

10/11/2017 10:17 PM

2.87 MB



Open

Cancel




1/31

HCI: TASKS AND SUBTASKS


Dr Kami Vaniea



Task: Delete a node from a mindmap



MINDLY
ORGANIZE YOUR
INNER UNIVERSE


 **Mindly (mind mapping)**
dripgrind
Everyone

UNINSTALL OPEN

In-app purchases

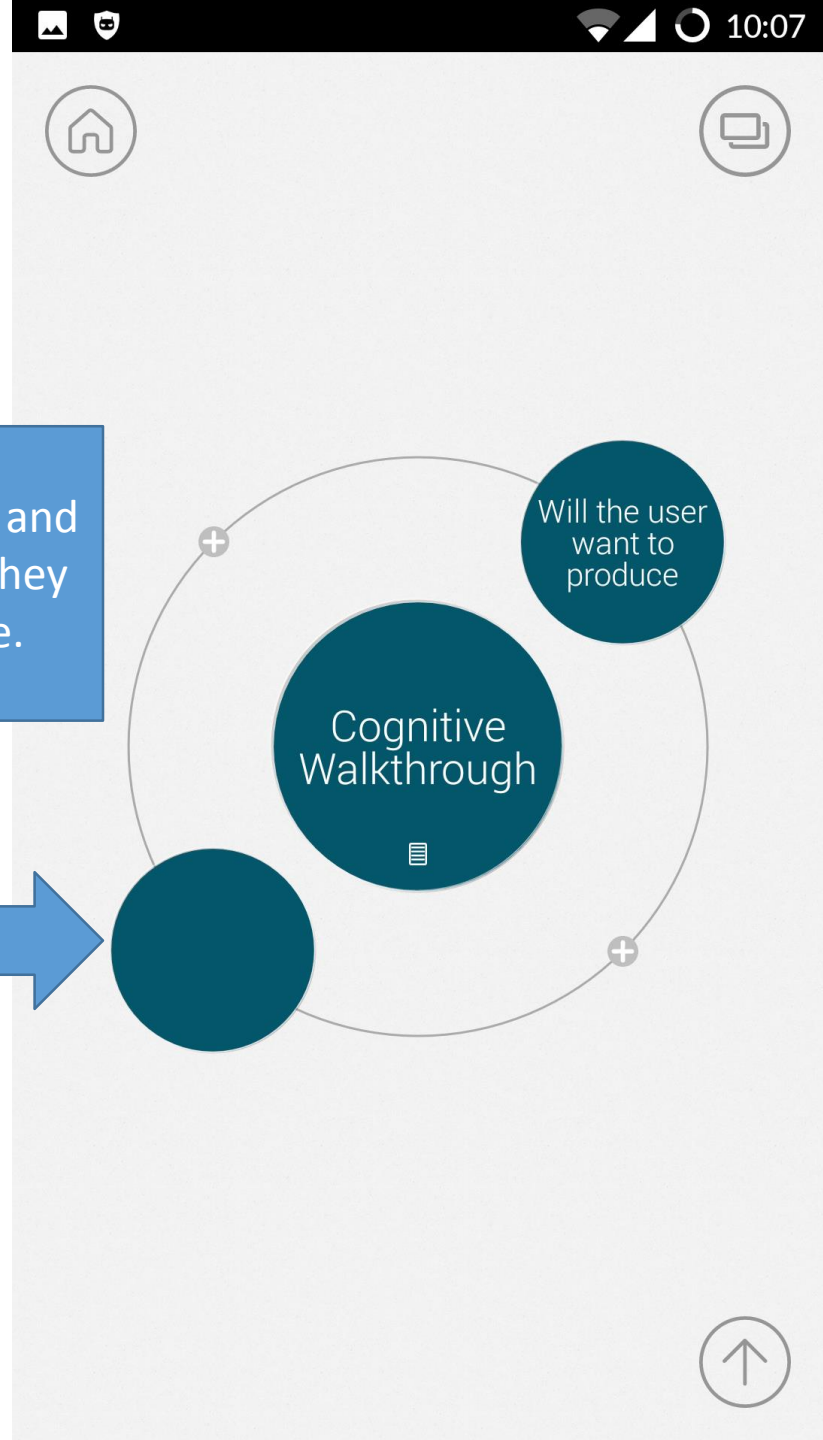
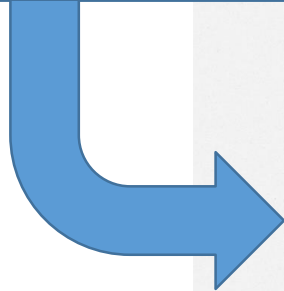
1 MILLION Downloads 4.6 ★★★★★ 19,073 Productivity Similar

Mindly helps to organize your inner universe.

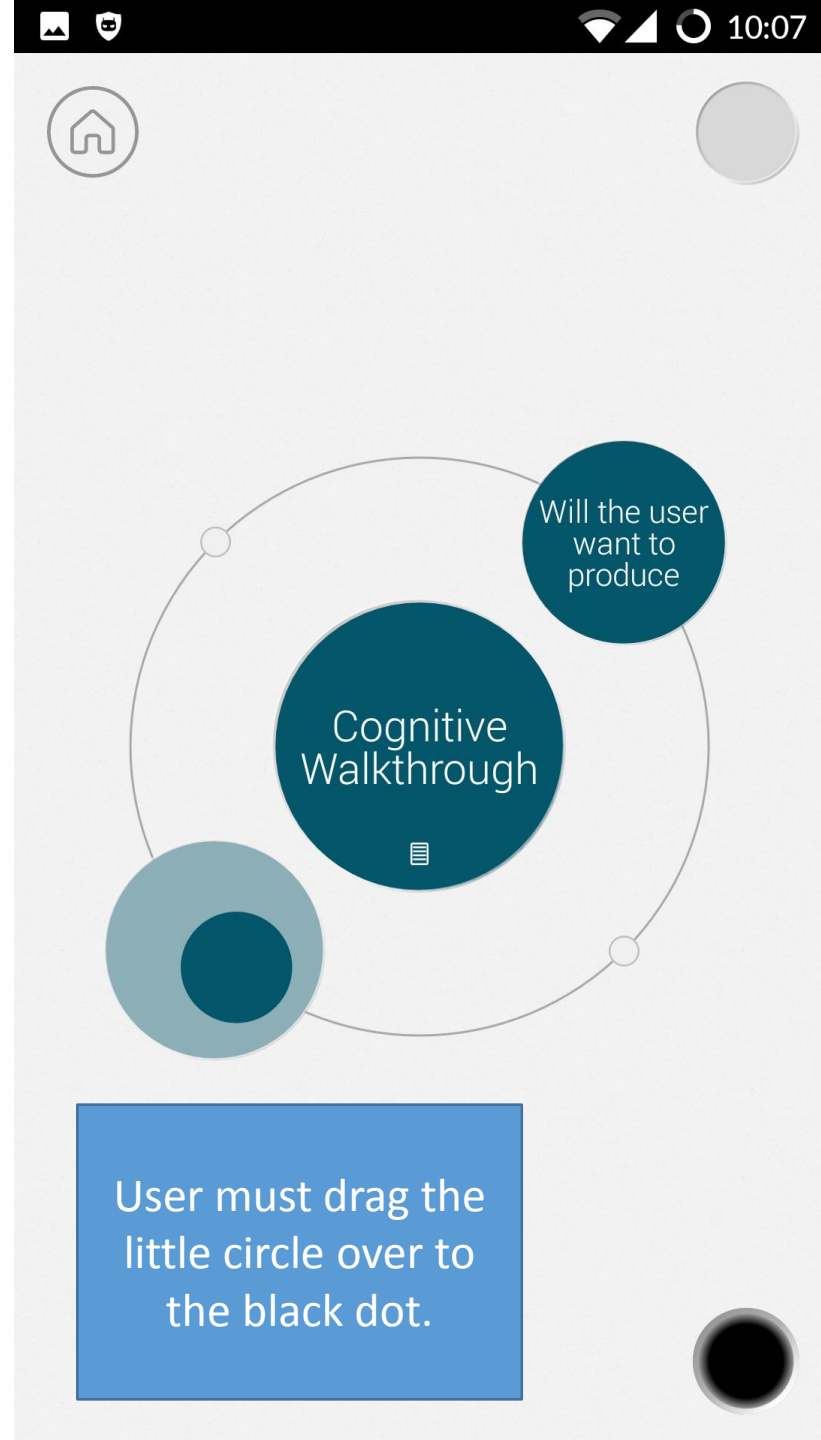
 **WHAT'S NEW**
High quality image attachment support

Step 1

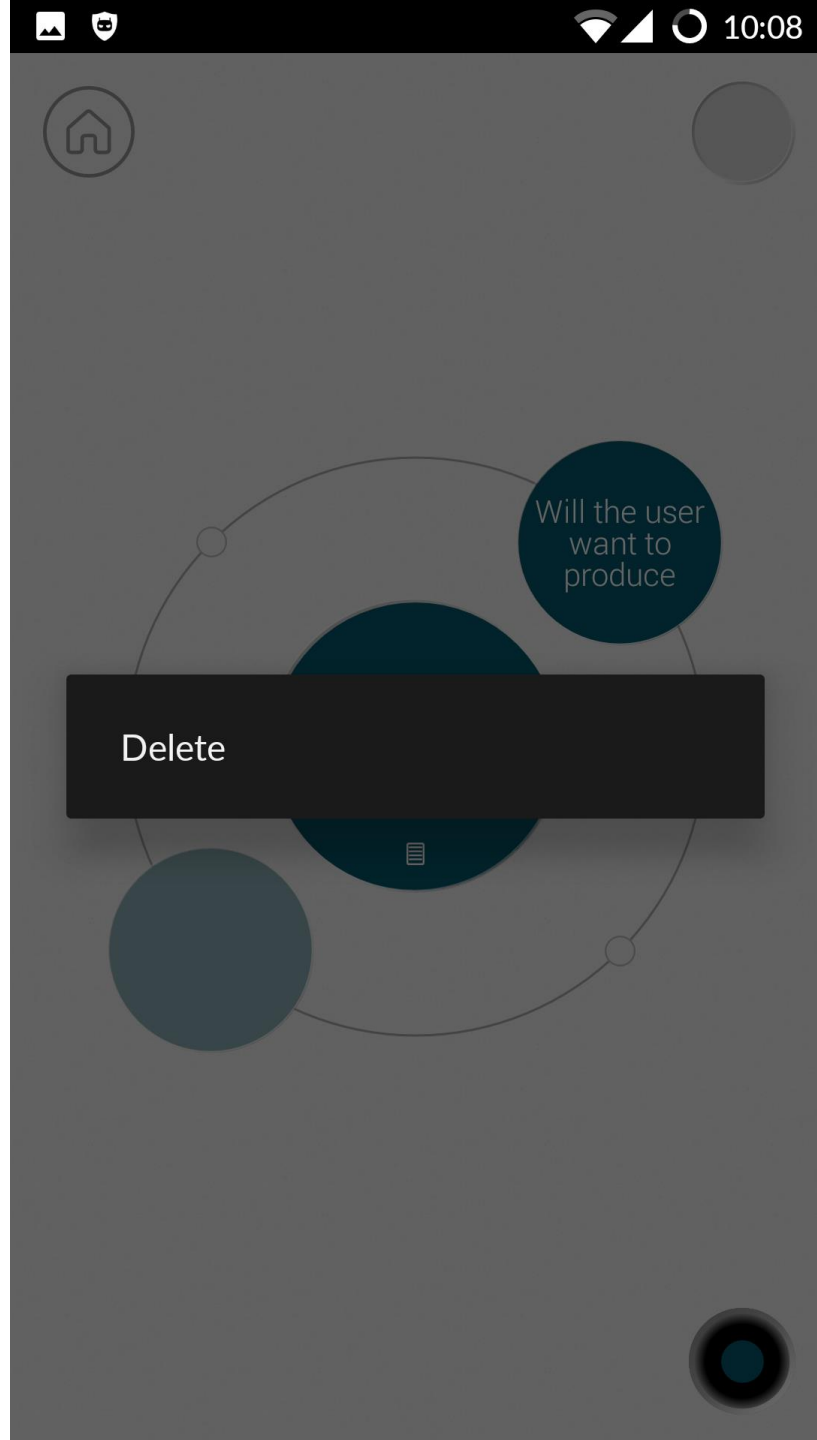
User must press and hold the circle they wish to delete.



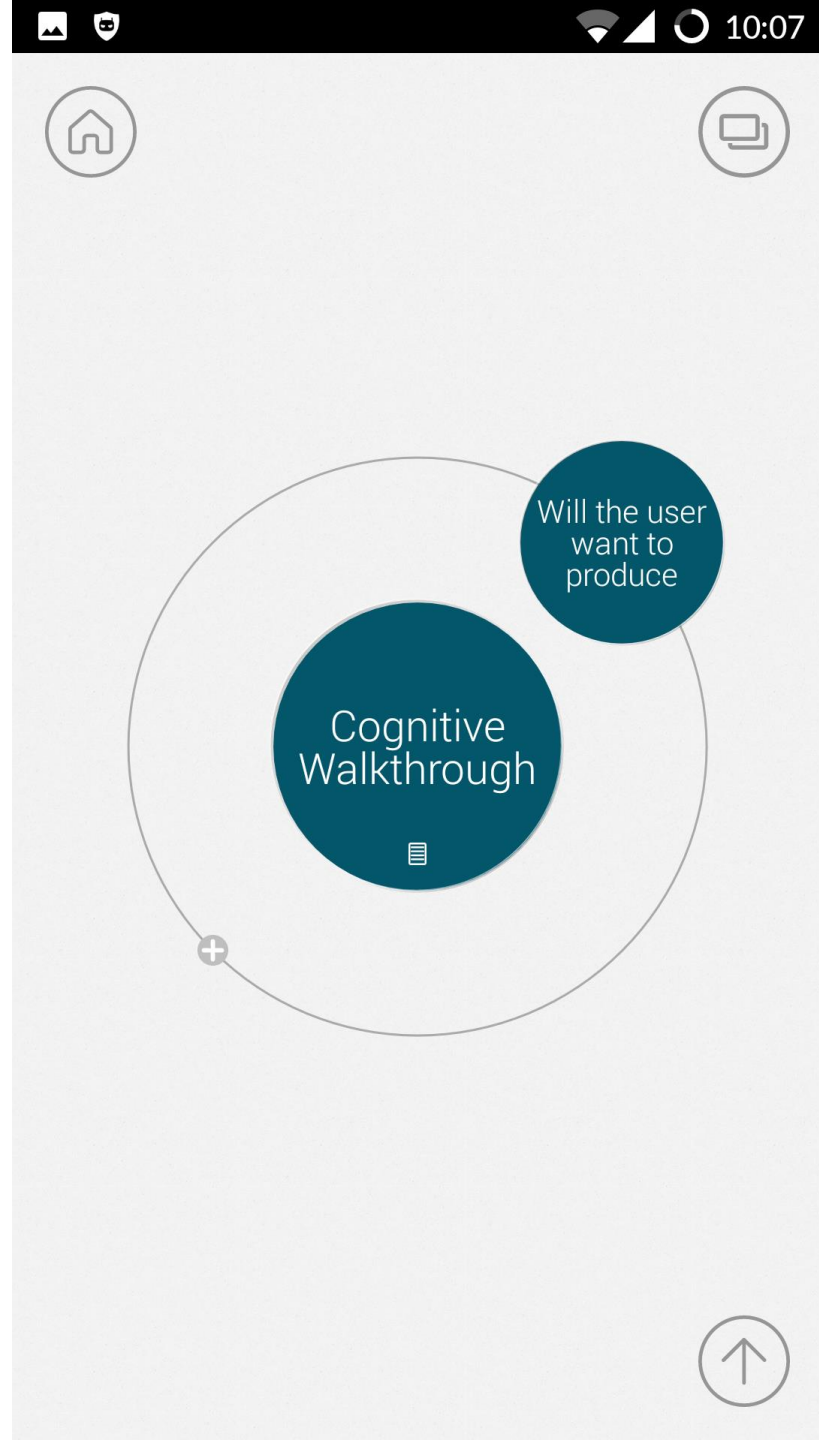
Step 2



Step 3



Done



Problem: How can we accurately judge what the user does or does not know?

Personas

Persona

- A short biography about a fictitious user that describes a reasonably large segment of your intended user population.
- Helpful as a way to gather together data from interviews and present it clearly to others
- Useful to explain who the user is to other people

Pat (Patricia) Jones¹

- 43 years old
- Employed as an Accountant
- Lives in Cardiff, Wales

Pat loves public transportation and knows at least three routes to get there from home. When she arrives at work, she scans all her emails first to get an overall picture before answering any of them. (This extra pass takes time but seems worth it.) Some evenings she plays computer puzzle games like Sudoku before bed.

Background knowledge and skills

- Pat works as an accountant in a consulting firm. She just moved to this employer 1 week ago, and their software systems are new to her. She describes herself as a “numbers person”. She is not a professional programmer but she writes and edits spreadsheet formulas in her work.
- Pat has a degree in accounting, so she knows plenty of Math and knows how to think in terms of numbers. She’s never taken any computer programming or IT systems classes.
- Even though she’s an accountant and deals with numbers all day at work, she likes working with numbers in her free time, too. She especially likes Sudoku and other computer games that involve puzzling.

Motivations and Strategies

- **Motivations:** Pat is proficient with the technologies she uses. She learns new technologies when she needs to, but she doesn’t spend her free time exploring technology or exploring obscure functionality of programs and devices that she uses. She tends to use methods she is already familiar and comfortable with to achieve her goals.
- **Information Processing Style:** Pat leans towards a *comprehensive information processing style* when she needs to gather information to problem-solve. That is, before following any option that seems promising, she first gathers information comprehensively to try to form a complete understanding of the problem before trying to solve it. Thus, her style is “burst-y”; first she reads a lot, then she acts on it in a batch of activity.

Attitude to Technology

Pat is generally comfortable using familiar technology, but she does not get a big kick out of obtaining the latest gadgets or learning how to use them. She prefers to stay with the technologies for which she has already mastered the peculiarities.

- **Computer Self-Efficacy:** Pat has medium computer self-efficacy, meaning that she has some self-confidence in performing computing tasks other than the ones she is familiar with. This has a variety of impacts on how she uses software. For example, she will keep on trying to figure out how to achieve what she has set out to do for awhile; she doesn’t give up right away when computers or technology present a challenge to her.
- **Attitude toward Risk:** Even so, Pat is risk averse when she uses computers to perform tasks. When confronted with new software features, Pat worries that she will spend time on them and not get any benefits from doing so. She prefers to perform tasks “the safe” (ie, familiar) way if possible, even if less familiar features might promise a more direct solution.
- **Willingness to Explore and Tinker.** When Pat sees a need to learn new technology, she does so by trying out new features or commands to see what they do and to understand how the software works. When she does this, she does so purposefully; that is, she reflects on each bit of feedback she gets along the way to understand how the feature might benefit her. Eventually, if she doesn’t think it will get her closer to what she wants to achieve, she will revert back to ways that she already knows will work.

Frank Kreuse

Cyber Analyst, EOBU (a defense industry supplier)

Background:

Frank has a B.S. in Information Systems. He specialized in technical writing and has CISSP certification. His training, experience and certification establishes him as an expert computer user.

Work Environment and Information Management:

Frank has access to sophisticated data capture tools but better analytic tools are still lacking. Much of the data that he works with is generated by state-of-the-art network scanning tools. However, he primarily relies on Excel to keep track of the data that is of interest to him so that he can perform analyses such as “what if” queries.

Duties:

Part of Frank’s duties is to produce risk analysis reports based on test results derived from system assessment tools such as Tivoli Netview and DISA SRR.

Stoll, Jennifer, et al.
"Adapting personas
for use in security
visualization design."
VizSEC 2007. Springer
Berlin Heidelberg,
2008. 39-52.

User Data			Features
<i>Frank Cyber Analyst</i>	<i>Terry Intelligence Researcher</i>	<i>Rob Consumer Safety Officer</i>	
<p>"Frank is not always the person required to respond to intrusions. ...he must be aware of and be able to access information about how each incident is being handled by the team. ...network monitoring information comes from a variety of tools so Frank needs to know where the information came from."</p>	<p>"Terry must perform her analysis in a highly collaborative environment and the data she receives from the Intelligence support staff comes from many varied sources. ... at times she must do quality control on the information she receives from the newer support staff by making sure they are coming from credible sources."</p>	<p>"Rob works for an agency that utilizes antiquated computer and information systems.</p> <p>One of the daily challenges that Rob faces is keeping track of the many alerts he receives about food safety incidents to be investigated. He relies on where the alert came from to determine priority for investigation."</p>	<p>1. Functional: Need a summary of the metadata about the information being used in analysis.</p>

Features	Persona Weights			
	<i>Frank</i> (weight = 40)	<i>Terry</i> (weight = 40)	<i>Rob</i> (weight = 20)	<i>Weighted Priority</i>
1. Functional: Need a summary of the metadata about the information being used in analysis.	2	2	2	200
2. Non-functional: Need information change alerts to be rapidly customize-able.	2	1	0	120
<p>weight = percentages totaling to 100% or on a scale such as 1-5</p> <p>score = -1 harms persona</p> <p>0 does not matter to persona if the feature is there or not</p> <p>+1 helpful to the persona</p> <p>+2 is a must-have feature for the persona</p>				

Cognitive Walkthrough with Persona

You can combine Personas with Cognitive Walkthrough to better define if something is or is not usable.

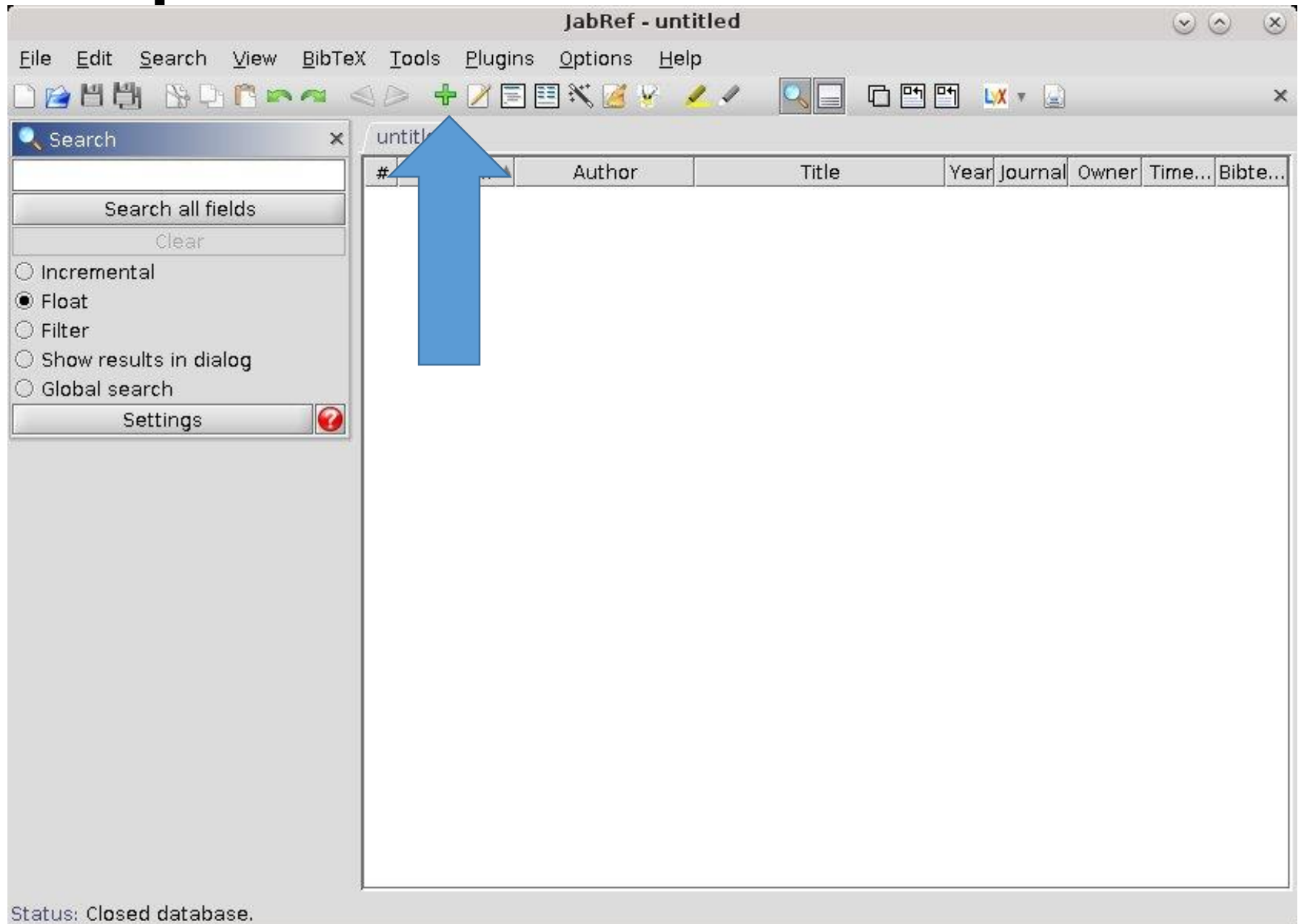
Patricia

- Patricia is a design student who is taking Human Computer Interaction this semester
- She has been using technology most of her life and is proficient with software like Word or Excel as well as complex drawing programs like Adobe Photoshop
- She is generally adventurous when it comes to downloading and trying out new apps
- She has recently been learning to code in Arduino as part of her courses but she is still working on the basics

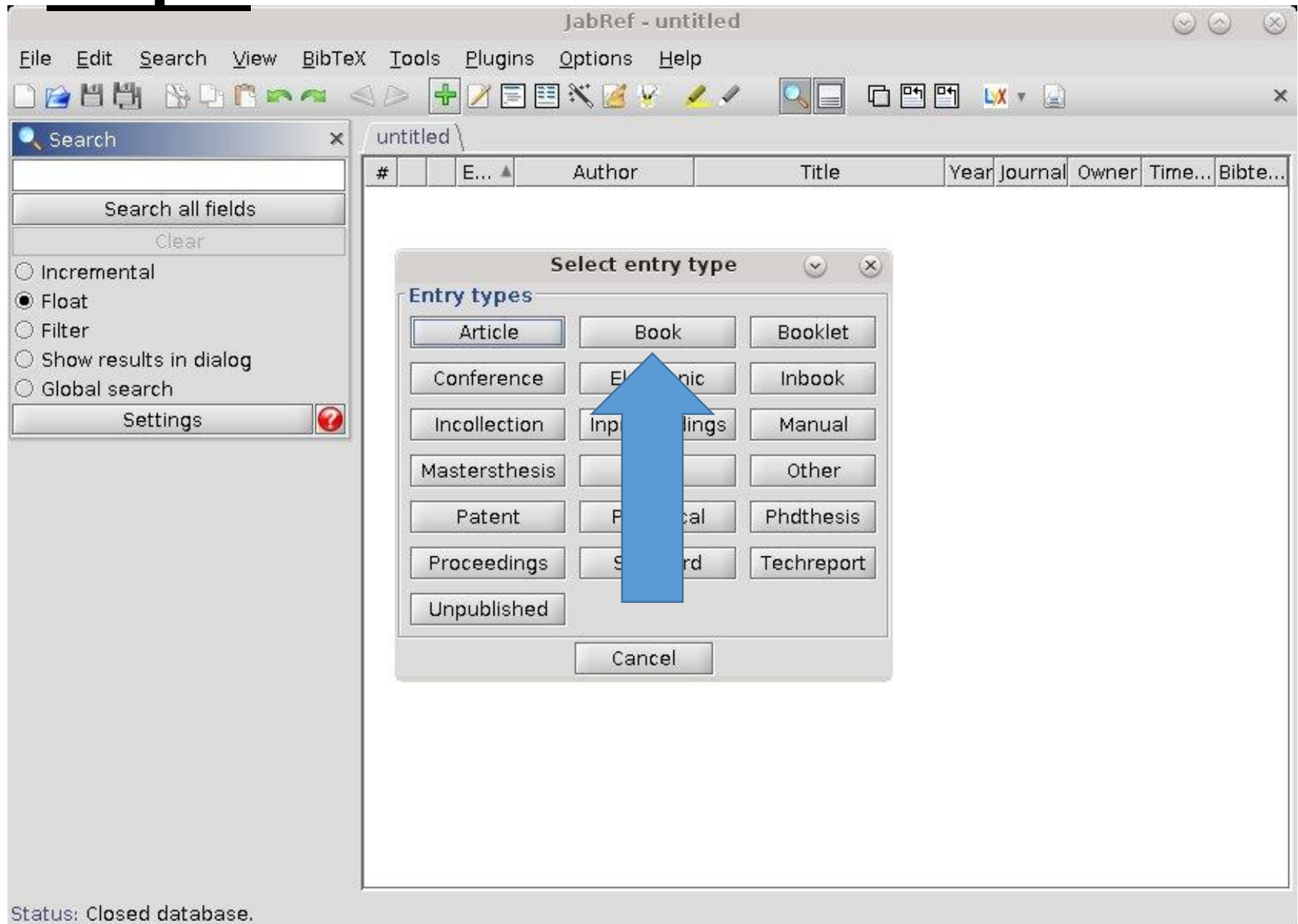
Patricia's project supervisor recommends she use a program called JabRef for tracking publications she reads as part of her thesis project.

Today she wants to add the HCI course textbook into JabRef.

Step 1



Step 2



Step 3

JabRef - untitled*

File Edit Search View BibTeX Tools Plugins Options Help

Search

Search all fields

Clear

☐ Incremental
☒ Float
☐ Filter
☐ Show results in dialog
☐ Global search

Settings

untitled*

#	E...	Author	Title	Year	Journal	Owner	Time...	Bibte...
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InProceedings

BibTeX source

Required fields Optional fields General Abstract Review

Author

Title

Booktitle

Year

Bibtexkey

Status:

Step 4

JabRef - untitled*

File Edit Search View BibTeX Tools Plugins Options Help

Search

Search all fields

Clear

☐ Incremental

☒ Float

☐ Filter

☐ Show results in dialog

☐ Global search

Settings

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InProceedings

BibTeX source

Required fields Optional fields General Abstract Review

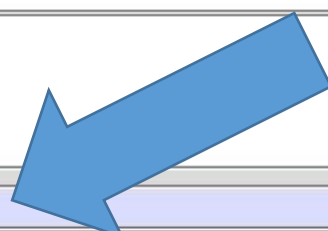
Author Bella Martin and Bruce Hanington

Title

Booktitle Universal Methods of Design: 100 Ways to Research Complex Problems, Develop Innovative Ideas, and Design Effective Solutions

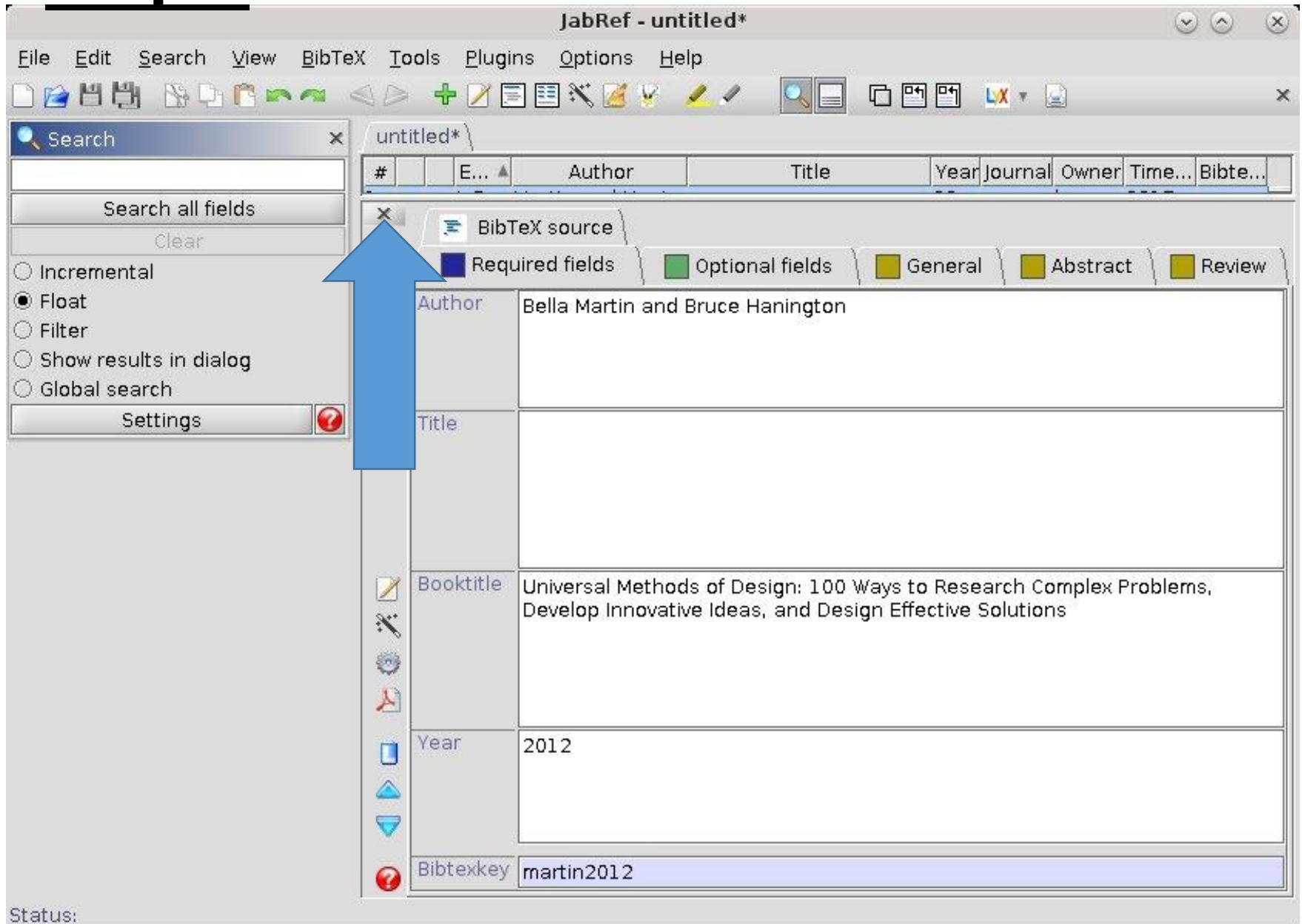
Year 2012

Bibtexkey



Status:

Step 5



Step 6

JabRef - untitled*

File Edit Search View BibTeX Tools Plugins Options Help

Search

Search all fields

Clear

☐ Incremental

☒ Float

☐ Filter

☐ Show results in dialog

☐ Global search

Settings

#	E...	Author	Title	Year	Journal	Owner	Time...	Bibte...
1	InP...	Martin and Hani...		20...		kvani...	2017...	marti...

InProceedings (martin2012)
Martin, B. & Hanington, B.

Universal Methods of Design: 100 Ways to Research Complex Problems, Develop Innovative Ideas, and Design Effective Solutions, 2012

Status:

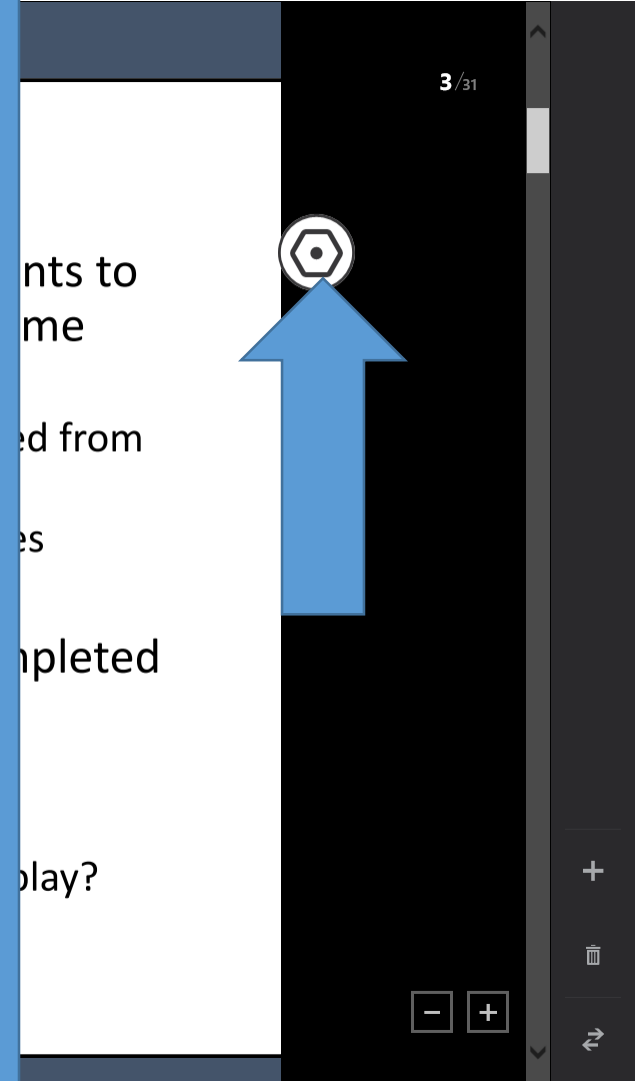
Cognitive Walkthrough with Heuristics

Neilson's 10 Heuristics

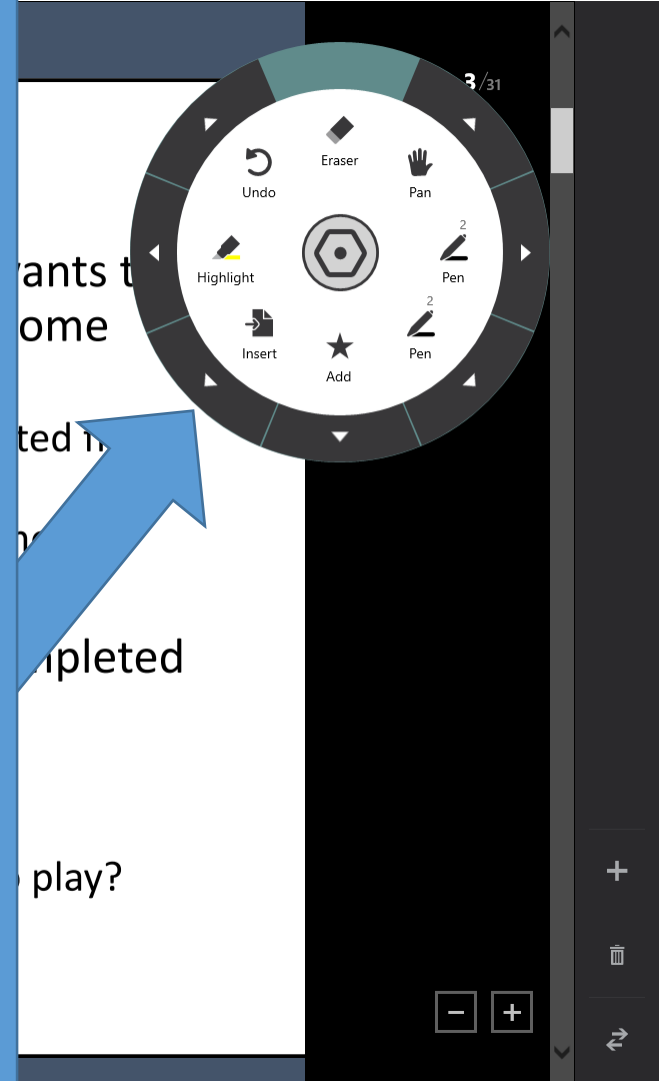
1. Visibility of system status
2. Match between system and the real world
3. User control and freedom
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility an deficiency of use
8. Aesthetics and minimalist design
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation

Write the word “important” on one of the lecture slide PDFs.

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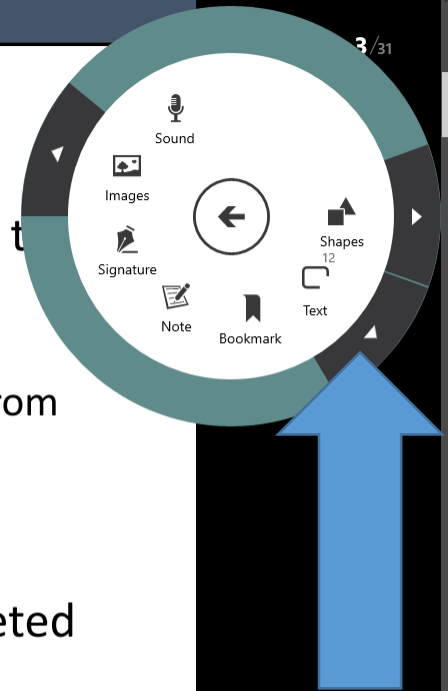
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Step 3

Tasks and subtasks

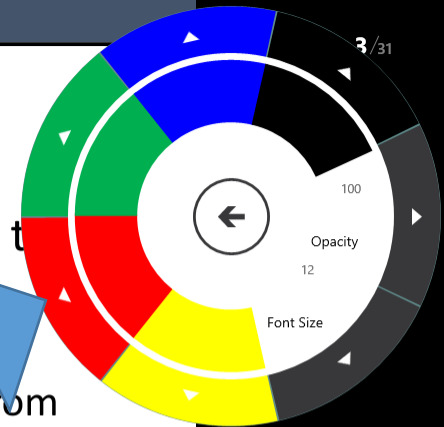
- A “task” is basically something someone wants to do. It is typically high level and expresses some state that user wants to achieve.
 - Determine if I need to buy anything fridge-related from the store.
 - Spend an hour playing not-too-challenging games
 - Play the song I just thought of.
- A subtask is a smaller task that must be completed to complete the larger task
 - What was the name of the song?
 - Which music service is likely to have it?
 - There are two versions, which one do I want to play?



Step 4

Tasks and subtasks

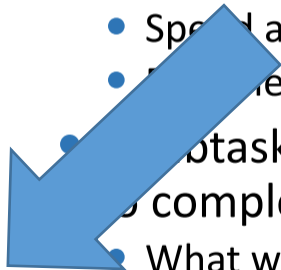
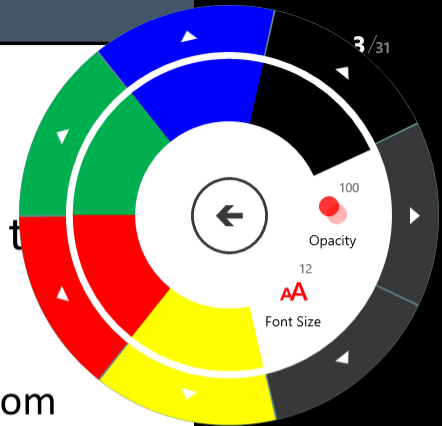
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Step 5

Tasks and subtasks

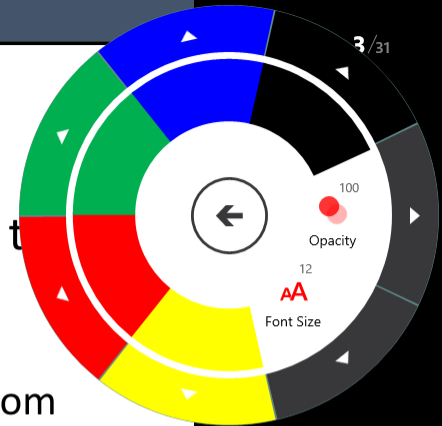
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 - Find the song I just thought of.
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 - What was the name of the song?
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Step 6

Tasks and subtasks

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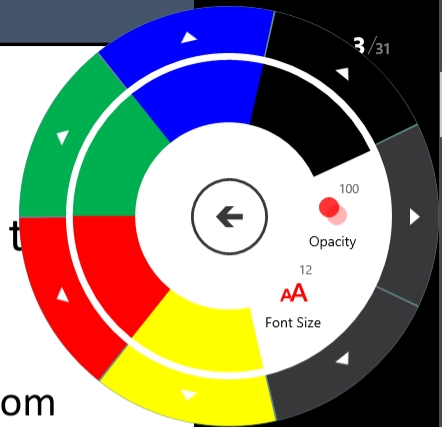


Step 7

Tasks and subtasks

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Important!



Questions?