Assignment M5: CS6750

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***Abstract*—**The topic I am investigating is how to redesign a particular section "Study Material" of one of my academic partner's websites to make it more user friendly and reduce the search time while looking for the study notes. This website is used to get exam related updates about IAS/PCS exams (state and centre level administrative services). Website can be found here : www.civilacademy.in .

1. Qualitative Evaluation

To do the qualitative evaluation of the textual prototype, I used a survey method. I received responses from 21 participants who took the survey. Link can be found here: https://docs.google.com/forms/d/e/1FAIpQLSdf-8x8wCbtXAiIlZNn3ZmsWOUuJRcsznCIOBKdPPK3_-RGNg/viewform?usp=sf_link ; Some of the respondents were colleagues from the software industry (male, age 35-40, technically at expert level), two of my family members (age 35-45, technically at basic level) and most responses came from colleagues at the university. Summary can be found in Appendix Table 1.

Overall the survey could not glean much useful information except 2-3 good points. From responses, I realized that demographic information should have been included as part of the survey questionnaire. However, I also received some useful feedback that was expected to improve the existing prototype. No changes in questions were made during the survey. Same set of questions were used for all the participants.

From response, it feels that organization of the survey questions must be improved significantly to get more meaningful feedback. For example, I should place the prototype on top of the page and then questions should follow.

Looking at extreme views (vary hard or very easy) for a few questionnaires, I feel that involvement of primary users (target population) was critical towards the final design. Concerned people could be in a better position to respond as they are affected by the design scenario. However, few suggestions may affect future design in the right direction. Overall summary can be found as below:

	QUESTIONS				
1	How would you rate the difficulty level in finding the "Study Material" section on the Home Page?	28.6% Very hard	28.6% Little hard	19% little easy	28.6% very easy
2	How would you rate the difficulty level of finding a search box in the current interface?	47.6% Very hard	14.3% little hard	14.3% little easy	23.8% very easy
3	Would you recommend autocompletion of search query (as shown in the current interface)?	55% Yes	35% May be	10% No	
4	Do you think that search box offers enough feedback to the user to make query search easier? (currently 'subject' is used as prefilled word as example)	57.1% Yes	14.3% No	28.6% May be	

5	Following question no. 4, if you selected "No", what other criteria do you want in the search box.	30% participants could not locate the search box			
6	How would you rate the difficulty level of finding advanced search options?	42.9% Very hard	9.5% Little hard	23.8% Little easy	23.8% Very easy
7	Do you think that list of items in drop down form (as per search query)is a good way to locate relevant items quickly?	71.4% Yes	14.3% No	14.3% May be	
8	How would you rate the option of right clicking in the list of items in the search box, as shown in the current interface? (to save, read, export to external storage)	38.1% Very hard	19% Little hard	19% Little easy	23.8% Very easy
9	How would you rate the difficulty level in finding a voice search option?	45% Very hard	20% little hard	15% LITTLE EASY	20% very easy
10	Would you recommend any other changes to the current interface?	Six different suggestions offered			

From survey report following conclusion can be drawn, it was also aligned to my own expectations:

1. Autocompletion of the search query would be a good idea to incorporate. Autocompletion means, the search box should come with multiple relevant results (as we type the query).

2. List of items (from search query) in a drop-down list format is a good way to represent the search results.

Similarly, I found following few responses that surprised me:

1. 47.% responses (majority) say that it is tough to locate the search box in prototype. However, it was in the middle of the webpage. This is the top goal of the prototype, so I need to understand its meaning and what can be done to make it more usable.

2. People also have difficulty in finding advanced search and voice search criteria (as per response from survey). It might mean that textual description may have to be more exploratory, and few changes may require in terms of visibility.

On few points I am still uncertain to draw the conclusion:

1. I got mostly outlier responses (very hard -28% or very easy-28%) when asked about finding the "study material" section on the webpage. It is the first step to achieve the intended objective so it would be very difficult to interpret its meaning.

In summary, along with the survey method, I probably need a qualitative approach(or other methods) as well in order to understand the user's mind to draw the final conclusion for next iteration. At this stage, further refinement in the visibility of the search box is required. We may need to think about the placement of advanced search options to make it more accessible.

2. PREDICTIVE EVALUATION

By using a persona (***as shown in Appendix -User Profile 1&2***) obtained from the need finding and evaluations phases, we will evaluate our card prototype using cognitive walkthrough technique as one of the methods of predictive evaluation.

Here we will find out the user's overall goal and subsequently divide it in various subtasks (as given in link:*https://gtvault-my.sharepoint.com/:x:/g/personal/ayadav85_gatech_edu/ESxqd9WLybtBr8YB9Fjo730B5ZGMb4hdhYrvkRQ-e56hDA?e=B1DZ8a*). Each subtask leads to the final objectives.

During cognitive walkthrough we will provide a framework consists of four questions (Blackmon, Polson, et al., 2002) , which will guide each subtask or actions (as shown in above link):

1. Will the users want to produce whatever effect the action has ?

2. Will users see 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?

These questions help us in cognitive walkthrough whether the user is in position to achieve the goal by performing the action, if not, then what other information is needed at any given step. Further I will connect each specified action with design principal (***see Appendix figure-A***) as how these principles help in achieving the task or why not.

2.1 Action 1 (Locate the Study Material Section : Explanation)

Based on the user's profile, they are quite aware of academic websites. They have used similar websites in degree programs and other professional exams. Keeping this in mind, the user must be able to find Study Material Section. According to Fitt's law, it is easier to navigate at the corner of the web pages so placement of

"Study Material " button should be justified. Once the user hits the button it must provide the visual feedback (***as shown in prototype section***) to the user which represents the on-going operation and wait for a new page (as a result of redirect) containing a search box.

2.2 Action 2 (Search the relevant Notes using Search query : Explanation)

Finding out the search box would be an easy navigation as it has been placed at the header section of the web page aligned centrally (***satisfies the principle of Discoverability)***. However, putting the right query in the search box might feel complex in the beginning, so we need to offer flexibility (***satisfies the principle of Flexibility***) of using two different approaches; ***a) all the relevant words (as pre-filled text in the search box) b) advance search criteria with multiple filters***.

Once the user completes option 'a' unsuccessfully(***feedback from system; item not found***) , the user will be certain that advanced search options are required. An advanced button will be clicked, it must return the advanced search page to the users to achieve the end objective. Since these options are central to any academic site so given the user's background they should not have much difficulty in carrying out these tasks.

Voice search command should be applicable in normal search operations only. Objective would be to minimize the gulf of execution depending on the user's context.

2.3 Action 3 (Select the Notes - Explanation)

Once we hover the cursor over the list of items (results in a search box as drop down list), a ***signifier*** must be used for the cursor ***(standard palm shape along with text written 'right click'***). Right click will enable the user to select one of the given options. Based on the user profile, they must be able to read or save the notes for later use. Different feedback will be offered once the user chooses the

options (For example, in case of save to Google drive, feedback must appear in form of “item saved to Google Drive”).

3. EVALUATION SUMMARY

Required Additional Information

Based on the survey results especially responses to (question no 1, 2, 6, 8 and 9) are termed as very hard. Question 1, 2 and 8 are the basic step to move forward to achieve the intended objectives. So it must be verified through further need finding exercise as why it has been termed as very hard. In the next iteration of the need finding process some additional questions related to demographic details of the user and design principles (for example; simplicity and discoverability) should be considered. Visibility of the search box and its placement on the web-page along with better text format would be an example of discoverability related question.

Along with a survey questionnaire, qualitative interviews should be considered in the next stage of need finding. This will help me to get deeper into the user's mind.

Similarly, based on the cognitive walkthrough, I feel that more feedback from the system is required which makes interpretation easier for the user at the level of Action-2 and Action-3. But the choice of feedback (for example; change in cursor shape , change in text color, visual written information etc.) should come from user’s experiences that fit into their existing mental model of a similar system.

Additional Design Alternative (based on present experience)

Based on survey results and cognitive walkthrough, it is clear that changes are required in the search box design along with advanced search options. Looking at the amount of required changes, a new design would be approached that may integrate normal and advanced search options simultaneously. Since right click

on search results were favored by the majority of participants so for the selected items it will be provided at two levels; a) in the drop down list inside the search box b) title of article on the web page (similar to google search). Visibility of voice search will be improved and the rest of the options will remain the same (for example; storage to local or external drives).

Revisions to Current Prototype

Based on evaluation results I feel that feedback was quite constructive except for a few discoverability issues. Participants were in favor of the whole working system and its features (as derived from answered questions). But I could not gather moderate level responses (as majority of responses were of extreme view) that help me in coming to a conclusion, so I would like to test my design alternatives (as discussed above) again with a low fidelity prototype in the next stage. It is my assumption that since the survey was based on the textual prototype so certain functionalities were not exploratory and clear by reading.

Selection of Evaluation Strategy

In the next phase I would like to do ***a survey followed by an interview on wireframes and post-event protocol on card prototype***. As I will re-design the search interface so a low fidelity prototype makes sense as it facilitates incorporation of changes with relatively low cost and in less time. A post-event protocol allows me to evaluate feedback once the action is completed so it gives me a taste of the working system in a rapid cycle.

4. REFERENCES

1. Polson, P. G., Lewis, C., Rieman, J., & Wharton, C. (1992). Cognitive walkthroughs: a method for theory-based evaluation of user interfaces. *International Journal of Man-Machine Studies*, *36*(5). (pp. 741-773).

2. Wania, C. E., Atwood, M. E., & McCain, K. W. (2006, June). How do design and evaluation interrelate in HCI research? In *Proceedings of the 6 Conference on Designing Interactive Systems.* (pp. 90-98). ACM.
3. Chamberlain, S., Sharp, H., & Maiden, N. (2006). Towards a framework for integrating agile development and user-centered design. In *Proceedings of the 4 International Conference on Extreme Programming and Agile Processes in Software Engineering.* (pp. 143-153). Springer.

5. APPENDIX

Age Group 30-40 yrs
works as software developer
……..
Professional Background:
From the last 15 years working as a developer on .NET platform. Have a good understanding of the software development cycle.
…….

Experience in Technology Design:
He did not take any role as primary UX designer in the past but he has informal working knowledge about working products from a customer's perspective.

……
…
Attitude towards Technology:
He is quite interested in designing technology that could be used by common people without having much technical expertise.

User Profile - 1

Age Group 30 - 50 yrs
works in academic
academic background : Liberal Arts
……
…
Professional Background:
From the last 20 years, working as a political science professor. Good understanding of subjects in the Arts domain. However little interaction towards the latest technology.
……
…
Experience in Technology Design:
No background in technology design. Use lots of available software for academic use so you know what makes a better user experience.

……
…
Attitude towards Technology:
Having worked on various technologies (editing, writing and flow chart creation in academic work). Knows how to use technology efficiently. possess steep learning curve towards new technology. Good grasp of available similar academic websites.

User Profile -2

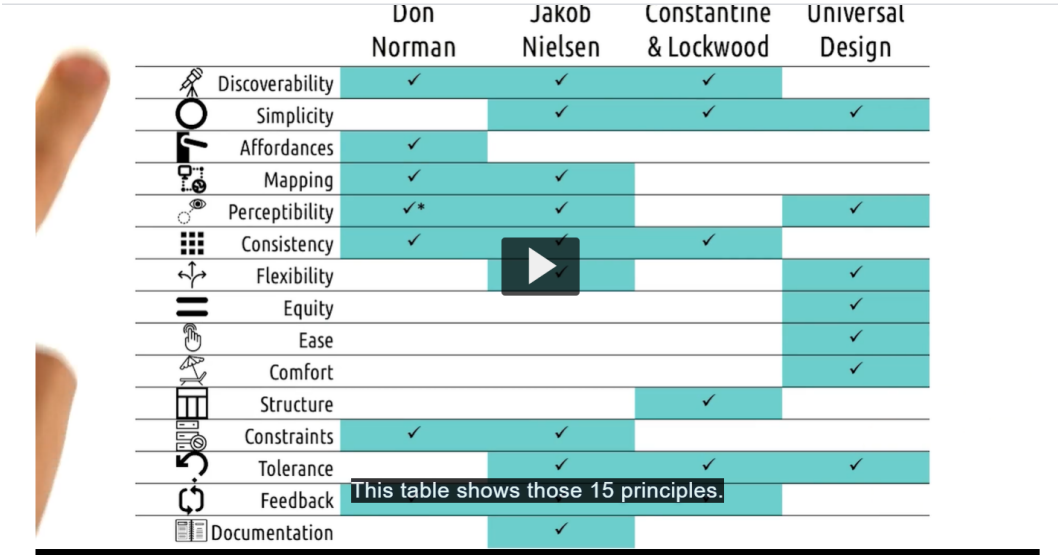


Figure - A (Design Principle)

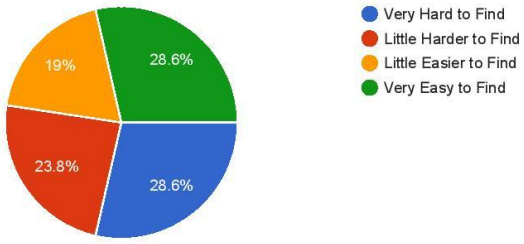
prototype survey

21 responses

Publish analytics

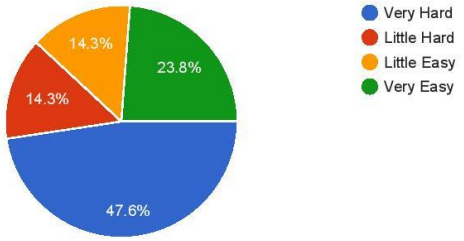
1) How would you rate the difficulty level in finding "Study Material" section on Home Page?

21 responses



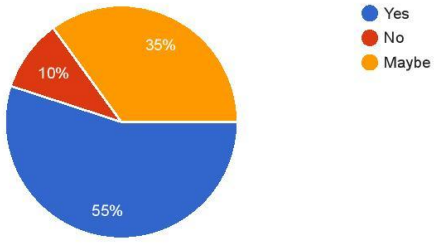
2) How would you rate the difficulty level of finding search box in the current interface?

21 responses



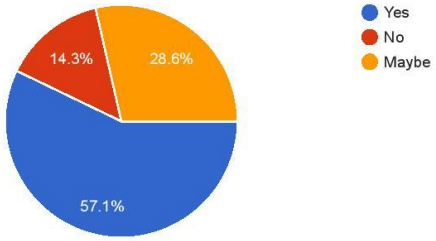
3) Would you recommend autocompletion of search query (as shown in the current interface)?

20 responses



4) Do you think that search box offers enough feedback to the user to make query search easier? (currently 'subject' is used as prefilled word as example)

21 responses



5) Following question no. 4, if you selected "No", what other criteria do you want in search box.

6 responses

na

I could never find the Search Box

n/a

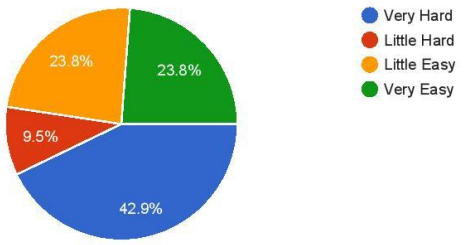
I couldn't find the search box at all

I am unable to locate the search box at all

I can't find the search box on the screen

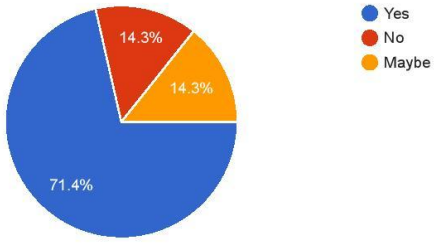
6) How would you rate the difficulty level of finding advanced search options?

21 responses



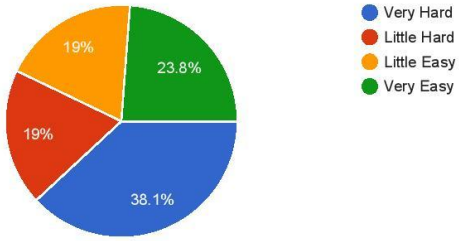
7) Do you think that list of items in drop down form (as per search query)is a good way to locate relevant items quickly?

21 responses



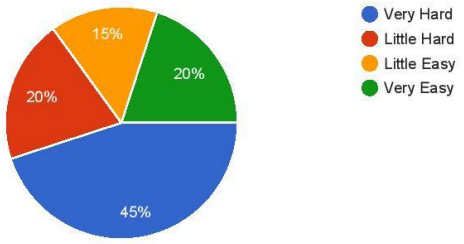
8) How would you rate the option of right click in the list of items in search box , as shown in current interface? (to save, read, export to external storage)

21 responses



9) How would you rate the difficult level in finding voice search option ?

20 responses



10) Would you recommend any other changes to the current interface?

6 responses

yes

plz add 'search' in search box

n/a

Emphasis on the search icon. I can't find it at all.

Use material design standards, replace marquee text with static text, the images change way too quickly, and add a small summary about the purpose of the site on the home page

N/A