

Heuristic Evaluation for Group #1: Recipe Book

Harriet King
Feb 14, 2011

This document evaluates the Recipe Book application design and includes descriptions of the design and UI domain, domain specific usability principles, general usability principles, usability concerns and critical concerns with an illustrative scenario.

Description of Design

[quoting Group 1: <http://www.csl.mtu.edu/cs4760/www/Projects/Undergraduate/group1/www/?page=proposal>]

Recipe Book is a recipe application for the Android OS, for use when cooking, browsing, or shopping. Primary users include both users living alone (such as college students) and families.

UI goals and focuses include:

- A photo-based way of browsing (with good photos)
- Speed and ease of use (includes easy reading)
- Simplistic UI with few distractions
- Able to manage or switch between multiple recipes being cooked simultaneously
- Viewing favorite recipes offline
- The ability to update an offline database with new recipes through the Internet

Main features

- Quick recipe summary, detailing cost, time, quality, servings
- Creating a new recipe
- Searching for and modifying existing recipes
- Sorting recipes by ease, quality, and estimated cost
- Voice commands and/or minimizing screen touching
- Cooking timer
- Shopping list

[end quote]

UI Domain

The UI domain for the recipe book application are people searching for and selecting recipes, shopping for ingredients for recipes, or cooking one or more recipes using a handheld device.

Domain Specific Usability Principles

Some selected usability principles specific to this UI domain include control over the search and selection of recipes in any setting, use of the application to help shop, and direction in cooking properly.

- find recipes:

1. can search for recipes anywhere,
 2. able to see the results,
 3. able to scroll the results,
 4. able to control the search,
 5. possibly save the search,
 6. save a list of possibilities
- select recipes
 1. have a way to save or select the recipe,
 2. make a list of ingredients,
 3. note the time required to make the recipe,
 4. be able to refer back to the recipe
 5. able to refer back to the ingredients
 - ingredient shopping help
 1. able to read the ingredients while holding your purse, pushing a shopping cart and possibly juggling kids,
 2. easy to scroll through ingredients,
 3. possibly even deleting ingredients already selected, or
 4. sort ingredients by the aisle configuration of a grocery store (store layouts are pretty uniform)
 5. be able to return to list instantly when phone turns off to sleep,
 6. able to not unintentionally change the list page when holding the phone,
 7. able to answer the phone without losing your place on the list,
 8. possibly warn the user of the expected expense of this list of ingredients
 - direct cooking
 1. able to read directions for one or more recipes,
 2. able to know when something is completed,
 3. able to be forewarned about upcoming requirements of the recipe,
 4. able to find your place instantly after phone goes to sleep,
 5. able to touch the phone and read the directions with dirty and/or wet hands,
 6. able to schedule the details of meal preparation without having to change screens or open other tools on the phone.

Heuristic Usability Principles

I have prepared an Appendix I to this document that compiles a list of heuristic usability principles gleaned from the textbook by Carol Barnum, "Usability Testing and Research" (2002). The list is too long to include here, but it informs my review of the recipe book application that follows.

Please note Group 1's own list of expected usability, quoted below from their User Task documents. [quoting Group #1:

<http://www.csl.mtu.edu/cs4760/www/Projects/Undergraduate/group1/www/uta/Scenarios.pdf>]

Browsing/choosing recipes, modifying recipes, rating, commenting, experimentation
 Recipe suggestion, cooking multiple dishes simultaneously, switching between recipe instructions, using the cooking timer, changing serving size, bookmarking favorite dishes.
 Searching for recipes, shopping, ingredient researching
 [end quote]

Usability Concerns

For searching and selecting recipes, the application seemed to be well designed, aesthetically pleasing and fun to use, with a few detailed concerns below. Ingredient shopping was not available for review but there are some general concerns below.

This design did not provide a clear solution to how the application would direct someone cooking. Possibly the design intent was just a recipe reader. Following one or more recipes at the same time requires high level thinking, creativity, time management, distraction elimination, and interleaving of steps and the handheld application does not seem suited to managing this level of complexity. A larger screen and hands free use are required to see at a glance where you are in the recipe process, and a good solution to cooking direction would be a talking application or an AI application with a web cam and talking.

Even if one simplified the cooking directions to just reading a recipe step by step, a handheld is too small to be useful for all but the youngest eyes, glasses on and off is annoying while cooking, and the danger of destroying your device with wet or dirty hands is very high. Considering the cost of a handheld device compared to a printed cook book or even a printout from the internet, the risk is too high to bother using the handheld.

The following detailed usability concerns are from reviewing prototypes at <http://www.csl.mtu.edu/cs4760/www/Projects/Undergraduate/group1/www/walkthrough/cogG UI.pdf> and also paper prototypes at <http://www.csl.mtu.edu/cs4760/www/Projects/Undergraduate/group1/www/walkthrough/cogRecipes.pdf>. There were no detailed design prototypes for the menu options: “grocery list”, “recipes”, “favorites”, or “more”.

1. The home screen, titled “Recipe Book”, has 3 tabs: “new”, “featured”, and “top recipes”. Affordances do not give clear distinctions between these three tabs, how is “featured” different from “top recipes”? Why would the user want to distinguish these three tabs when they have access to the menu which covers similar ground?
2. The pop up menu at the bottom has too small font? The contrast of black text on white is both easy to read and aesthetically pleasing for minimalism. Would icons give better affordance of what these choices represent?
3. Background button color, font style, and text color consistency really help the user know that the top tabs and the pop up menu buttons are selectable in contrast to the non selectable title bar background color and reversed font color. Good job.
4. The pop up menu exactly fits the user’s expectation from menu button and having six choices helps to eliminate deep menus, nice touch with a broad menu.
5. The recipes screen is unavailable for review, I hope that the recipe screen has sortable categories. How is favorites organized? What mechanism is there for moving recipes into and out of favorites?
6. What happens if the user clicks on “new”, “featured”, or “top recipes”?
7. Grocery list was not available for review but it is imperative that it be readable without glasses and if the phone goes to sleep while viewing the grocery list, the list is visible right away without any action other than waking up the phone.

8. Using recipes to direct cooking was done with a paper prototype. There is a box with an X on the left of each recipe, is that to delete the recipe? If it is, it might be too accessible and lead to errors. Is there any error recovery such as confirmation if the user does delete the recipe?
9. The arrow on the right presumably leads to more information, but the proximity to the photo of the finished food makes me wonder if the photo is click-able, then that could be confusing between enlarging the photo and getting more detail of the recipe.
10. Color, check boxes, selectable sections, font and size are all details that cannot be reviewed based on the black and white prototype.
11. The add a recipe button seems clear but a “plus” icon would be a reasonable mapping expectation and help the user with recognition instead of relying on recall.
12. Page 2 of the recipe directions indicate that the user will check off steps they have completed. What is the feedback? Would the completed steps disappear? The use of checks that are green would be a perfect match between the design and the real world.
13. Is there really room on a little handheld device to include an icon picture of the food on this recipe detail screen as the designer has done?
14. Would it make sense for mapping to have some time bar for each step in the sequence, thus matching the time bar on the first screen? It is important to give the user direction about timing, especially in cooking.
15. The design for the recipe section needs some basic thought about whether it is directions for cooking or just reading a recipe. If it is directions, then things like help menu with details of a glossary, etc. would be important. For example, step 3: “wait 10 minutes or until done”, how would the novice user know what “done” is for spaghetti. Directing cooking is very difficult so limiting the design to just reading a recipe makes better sense. That way you can capitalize on the powerful aid of search and select recipes and the grocery list functions and possibly offer a print from the handheld device option for users wanting to read the recipe without dirtying/destroying their handheld.
16. How was multiple recipe reading at once to be performed? Design concerns include wet or dirty hands destroying the handheld device and having to change or touch screen frequently. How would the status of multiple recipes be maintained and visible to the user?
17. The search screen, page 4 of pdf, is great. The title is reasonable weight and clearly a non selectable color, the enter text box is labeled in two clear ways and the white color gives affordance that you can enter text there, the categories indicate selectability with arrows. All good design and satisfying minimalist design.
18. Search page 6: radio buttons are really clear, but mapping and consistency would dictate some order to the list, probably alphabetical. And the same for any of the category screens.
19. Search page 7: dangerous proximity of selected keyword’s delete button to the pull down android menu. I think that “search” title could stay at the top and that would create a touch buffer from the android pull downs. If you allow the selected keyword to be a bit bigger, you could balance the largeness of the categories.
20. Having a category that was already used in the search change color or be otherwise marked would be good visibility of system status.
21. Is there any allowance for starting search over? Going back a step? Or exiting search entirely? What feedback to the user?
22. Search results, page 12. The options for “list” and “grid” are very clear and because they are on the right top, they are easy to select without interfering with other android menus. Their placement is good affordance that they are ways to view this screen.
23. There is a short list of functions in the description of Recipe Book that have not been

designed for. Possibly those are contingency functions that would be added if there is time. Things like creating a new recipe, modifying existing recipes, seeing estimated cost of a recipe, and cooking timer (which I think Group #1 explained they decided to drop from their design).

Critical Concerns with Scenario

Recipe Book application has been carefully designed and examples good design principles except for the recipe reading or cooking directions part and the shopping list was not available for review. The goal of cooking directions seems very difficult to achieve on a handheld device. If the recipe is just reading recipes, then I can see this application being satisfactory, but for being a cooking tutor, it is a critically flawed mismatch of system size and type to the functionality of cooking tutor.

To illustrate the distinction of recipe reading or cooking tutor and the critical design concerns, let's consider Bob, a middle aged single professional who cooks when he has to. He selects a Thai chicken dish because he wants to impress his cousin. His search and selection go well and he uses the grocery list on his Recipe Book to get all the ingredients, although he wishes they could be sorted based on grocery store aisle.

When Bob gets home, he opens Recipe Book to start the cooking and sees on the recipe home screen that it will take 55 minutes. That's great because Cousin is expected in 90 minutes. So Bob goes and takes a shower, listens to some music, writes in his journal and when he looks up, it's only 40 minutes before Cousin arrives. Bob rushes to the kitchen and opens the next page of the recipe. He sees step one and starts that without scrolling down to see that the recipe has concurrent steps that are listed in separate sections. Therefore Bob does not start the rice in time, and his lovely Thai dish is ready and quickly going shriveled and gross while he and Cousin wait for the rice to cook 20 minutes more.

Bob did not remember or know to scroll through the recipe, so even as just a recipe reader the application let Bob down. If Bob really needed Recipe Book to direct his cooking, he would have known to chop his veggies, set the table, and start the rice water before his shower and then assemble the last parts all at once before Cousin arrived. Cousin went home and told everyone about how inexperienced a cook Bob was and how he thought Thai food tasted shriveled and gross. Sigh.

APPENDIX I: Heuristic Usability Principles

Gathered from CS4760 lecture notes by Dr. Pastel and from the textbook: Carol Barnum, "Usability Testing and Research" (2002), and from internet searches.

Example Principles

- Visibility - visibility of functions and information
- Feedback - as a result of an interaction

- Constraints - restricting interactions
- Mapping - mapping of controls to their function
- Consistency - similar operations and tools for similar tasks
- Affordance - property of a object that just by looking at an object if it gives you clues about what it does, affordance should be intuitive

Design Principles

C.R.A.P.

Contrast - repetition – alignment - proximity

Heuristic Principles with Detail

Adapted from Jakob Nielson, IBM, and the textbook referenced above.

visibility of system status

headers/titles, icons, menu instructions, prompts, error messages, choices clearly visible, multiple options visible, current status visible, response time visible, menu naming consistent with user's domain, glanceable state of the system

match between system and real world

icons familiar, logical order, sequence to menu choices, related and dependent fields close, color matches expectations, default values in entry fields, keys labeled clearly

user control and freedom

easy to remember low frequency tasks, easy to switch windows, warnings to confirm before destructive command, undo function or easy to reverse, any retrace mechanism, user controlled defaults, how to cancel, menus s/b broad, not deep

consistency and standards

icons labeled, color, visual cues, window titles, menu structure matches task structure, same place on screen for same function, attention getting tricks saved for as-needed, most important info at beginning of prompt, actions named the same across menus, abbreviations consistent

recognition rather than recall

data starts in upper left, prompts and messages where eye goes, breathing space around text, choose many and choose one menus distinct, gray out or delete inactive choices/keys, items grouped logically, good separation, reverse color used to get attention (good), mark that something is selected, color and contrast use, first word in choice most important, mapping function and placement, confusing pairs eliminated, menu selection defaults, affordance use, function keys arrange logically

flexibility and efficiency of use

can user enter minimal, buttons for high frequency functions, keyboard shortcuts

aesthetic and minimalist design

only info necessary to decision making on screen, icons visually distinct, simple areas and bold to distinguish areas, icons stand out from background, labels familiar and distinct, prompts affirmative and active voice, pop up or pull down menus have many clear options

error prevention: help users recognize, diagnose, and recover from errors

sound used to signal error, prompts kind to user, prompts brief, no exclamation points,

avoid anthropomorphic tone, prompts place users in control, error message gives severity & cause & correction action, system helps user avoid errors, font size can be adjusted, or visual size

pleasant to use

icons harmonious, no excessive detail, color used discretely, most frequently used is most accessible, fun, easy

help and documentation (not applicable)