



# Redesign and Retrospective

Clare Xie, Jessa Hafer-Zdral, Josh Coe, Karl Nieberding, Josh Zúñiga

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## **Executive Summary**

During the course of this semester, our group studied five methods key to the forming and evaluation of systems. Our task was to redesign the task of collaborative shopping. Our group observed and evaluated the following applications: Craigslist, Macys.com, Google Notebook and Gmail, Wetpaint, and eBay. These applications one way or another supported a piece of the collaborative shopping task, but did not address the problem in its entirety.

Each member of our five member group is a Masters student in Human Computer Interaction. Two members have a Computer Science background, one a background in Business Psychology and Computer Science, one in Design, and one in Psychology. This blend of experience gave our team insight into how users perceive and process information and the complexity of system design.

"The Get It Board" is a web application where users can collect and place items on a magnetic whiteboard space, more to the right if an item is desired and more to the left if an item is not considered desirable. To convey preferences and participate in the group discussion about items, users can pick up and drag magnets (using click & drag) to change their position on the board. The user then types a personal comment about why they moved the item there (e.g., "Sorry -- I hate floral couches"). The board keeps track of each movement of an item, and the complete path of the item represents that item's current discussion amongst the group and its level of consensus. Group members are left to decide how much to move an item to themselves; moving a item a little makes a small statement, while making a large movement can be considered a strong show of support or rejection. The comments allow a natural expression and banter amongst the group members as they discuss and argue the merits of each option. We hope this will allow them to bond in the experience and also facilitate the natural decision-making process in a natural manner.

This fall our group applied five methods to the Collaborative Shopping Redesign: Contextual Inquiry (CI), Contextual Design (CD), Heuristic Evaluation (HE), Cognitive Walkthrough (CW), and Think Aloud (TA).

By and large, CI and CD findings guided the design decisions we made about the new system. These methods uncovered which user roles to support and which to collapse. In addition to CI and CD, our team also leaned towards the Usability Aspect Reports (UARs) from the HE of Wetpaint and of those from the CW and TA of eBay to guide design efforts.

Our research shows that currently people are browsing the internet for items and passing around links to their group members via e-mail. Users had ease in sorting through ads on their own, but often had difficulty expressing like and dislike via email. They would also have discussions offline about the shopping process, and also sometimes looked together at items online. In addition, we noticed that the group members enjoyed having discussion about items, and that their initial preferences would often change to liking or disliking an item after talking to others about it. Screen clutter or unnatural labels often distracted new users from completing objectives.

Following is the get it board, our redesign and future vision of the collaborative shopping task.

## **Word Count**

**Redesign: 2537**

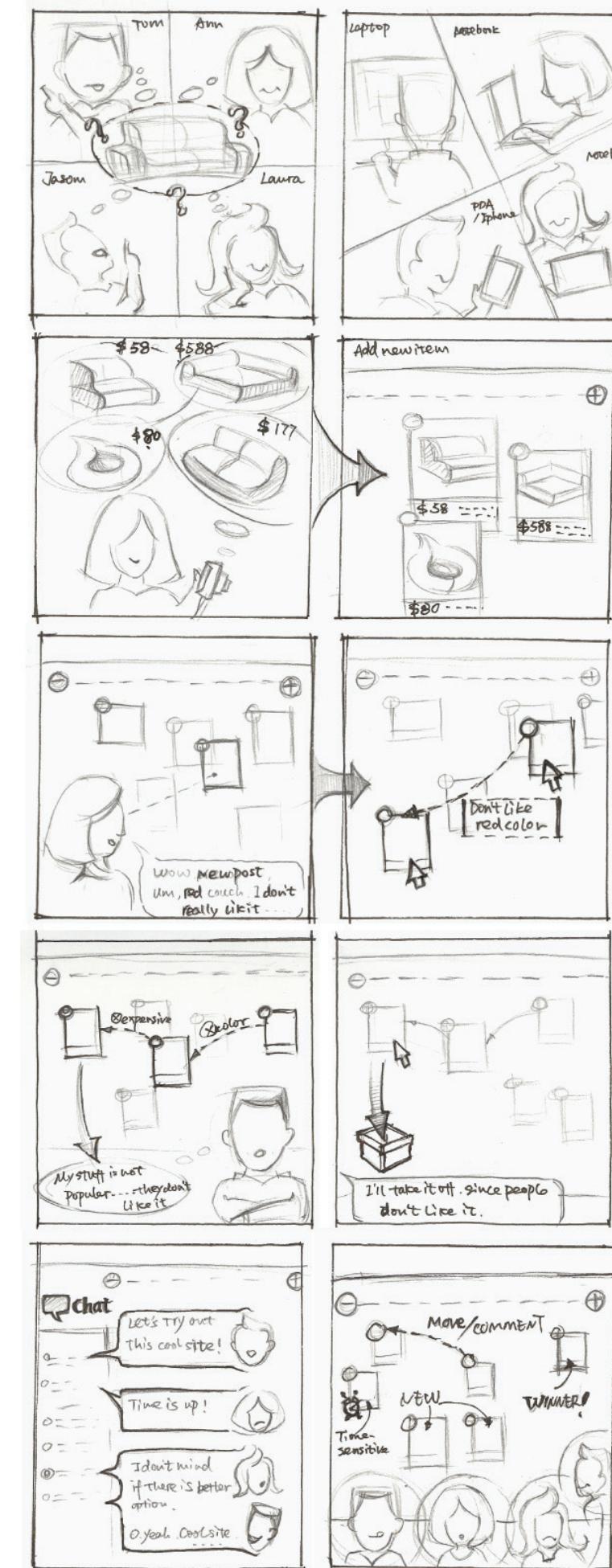
**Retrospective: 2875**

## The Get It Board - Redesign

We are an interdisciplinary team of five Carnegie Mellon Masters students in Human-Computer Interaction, with backgrounds in Computer Science, Design, and Psychology. Our goal is to support the collaborative shopping process for small groups of people. Our field research focused on a graduate student shopping for a couch with her roommates for their apartment. In addition, we conducted evaluations on competing systems that support group shopping in one way or another, which are made available in the Retrospective section of this document.

Group shopping has no direct support in the systems studied; users must improvise their own, less-than-efficient solution. The observed users shared their information through e-mails, which caused problems in keeping information up to date and voicing preferences effectively. The users would discuss items in person when possible, but were reliant on the internet for the majority of the communication. This points to a large opportunity to create a product which will directly support the needs of collaborative shopping in a way that existing systems aren't.

Our web application design, the Get It Board, provides a metaphor of a central board for the group to post items on and communicate preferences with. Users can add items as well as write specific comments on items, moving the item along the Board to indicate whether or not they like the item. This design supports the natural process of group discussion and consensus-making while providing features uniquely designed for collaborative shopping unavailable anywhere else.



## Story telling: **Get It Board**

Tom, Ann, Jason and Laura are grad students living together. Since winter is coming, they decide to buy a couch for the living room and warm the air inside the house.

They set up a period of time: two weeks for hunting the couch candidates individually and make decision together.

- Ann is IKEA fan, she goes to IKEA and take some pictures of the new promotion. She also looks on the IKEA website.

- She posts the pictures taken on the "Get It Board".

- For those she found online, she just easily copies the link into the postit, "Get It Board" reads the link and imports the pictures and product descriptions into the post automatically.

- While posting her own items, Ann found a new post, which is a bright red new love seat....

Ann doesn't really like its color, so she moves the post towards "-" a little bit and adds comments.

- Tom finds that his post has been moved to "-" : "umm, they don't like it...fine, I will take it off."

- While creating new posts, moving back-and-forth and commenting on items on the board, there is heated discussion in the group chat box as well.

- Time sensitive items always catch people's attention.

- It's a transparent process to get the final "winner".

## The Get It Board Features



## Members



View a list of who's participating



Add members

Notify...

## Chat



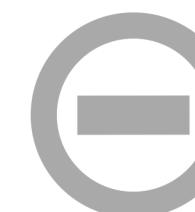
● **Karl** (10:26am): let's try out this cool site! I found a couch on craigslist that I like

● **Jessa** (9:32pm): i like the blue one

● **Josh C.** (11:07pm): the ikea couch looks okay. we've spent too long on this, let's make a decision by this week

● **Josh C.** (11:09pm): or at least get it narrowed down to two.

Add a chat entry:



-----current rankings-----



## Add an item



Expires today!

\$199 - Beige couch

New item (12/01)

\$250 - Ikea couch

\$50 - My brother's couch

\$135 - Green plaid couch

**the get-it-board Possible couches for Apt. 1B**

Logged in as [Josh Coe](#) | Log out

**Members** [Add members](#) [Notify...](#)

**Chat**

Karl (10:26am): let's try out this cool site! I found a couch on craigslist that I like

Add a chat entry:  Submit

**Add an item**

URL: <http://pittsburgh.craigslist.org/fuo/9427288> Import

Title **required**: Big green couch Price:

Upload photos: [Browse...](#)

Description:

Time-sensitive?  Yes  No Expiration date: 12/23/2008

Add the item

### Sharing Items with Group

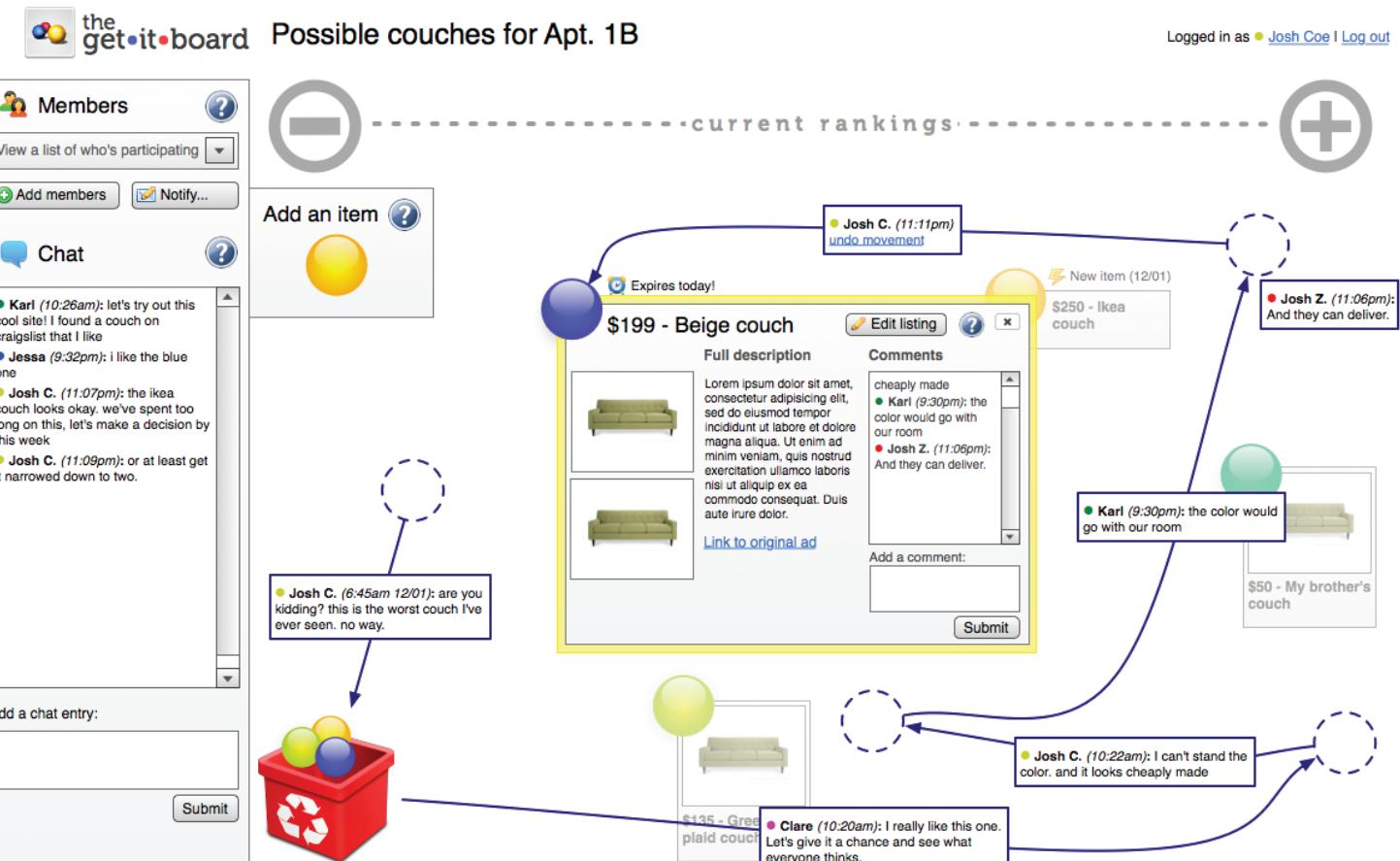
Our research showed that users enjoyed searching for couches on their own. This is shown in the CI models through the role sharing. They would then e-mail links to each other as a way to share items for the group to consider. These links would describe the item in detail, which other group members would explore. The sender would also write comments about the items sent out to inform the group of her specific opinions about them. Multiple members in the group would find and share items with the others.

All members of the group may post items to the Board. This is done by dragging a magnet from the "Add Item" area to the space on the Board they would like to place the item. Items on the Board are arranged by preference from left to right, where items to the right side of the Board are considered more preferred ("+") and items to the left are considered less preferred ("-"). This allows users to visually communicate how interested they are in the item.

#### Tradeoffs:

The tradeoff of this approach is that users do not necessarily get notified when new items are posted the way they are when communicating via e-mail. This problem is addressed later in the "Notify" feature. Also, the user must take time to log into an online application. [Reference: Flow model, Sequence model, G6-TA-03]

[Reference: Flow Model, Sequence Model, G6-TA-03]



### Comment on Items

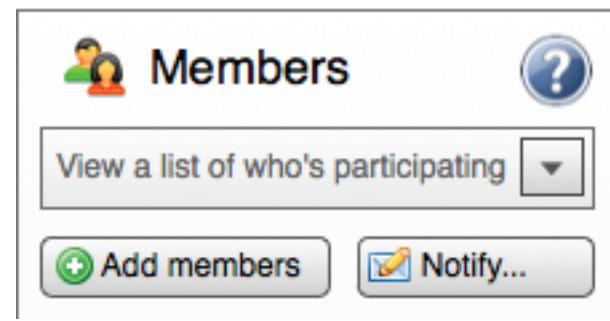
Research shows that users want to express comments and preferences about items to others in the group. The group members expressed their opinions about certain items which in turn elicited feedback from other group members to discuss and come to consensus. This process is currently accomplished through written comments in e-mail along with in-person conversations and collaborative viewing of items. However, group members were not able to see each other in person often, forcing most communication to occur asynchronously on the internet.

Our design addresses this core issue through the ability to move and comment items around the Board. To accomplish this, a user can simply grab and move the magnet for an item (using click & drag on the mouse) to a different preference position on the Board: to the right to denote positive preference and to the left to denote negative preference. The amount of movement along the Board represents the amount of preference the user wants to convey to the group for that item. The user then optionally enters a comment to the group about why they moved the item to that position. Each person's movements and comments build on each other's, and the complete path of the item shows the history of its discussion and expressions of preference within the group. We believe this design is an extremely flexible way to support group discussions and negotiations about items.

#### Tradeoffs:

Tradeoffs of this approach are that it requires users to visit the website to participate. For this reason, the Notify feature is added to allow group members to remind others about the discussion. In addition, the users must understand how the preference system works in order to make considerate movements with relation to the group, rather than always moving to the extreme right or left. We address this issue by providing help text to new users about the preference system, and in future versions could create a video demonstration.

[Reference: HE Consistency & Standards, G6-TA-15]



## Notify

Users receive e-mails from other group members when those members want to contribute new items to the group and make comments. This is helpful, as users check their e-mail regularly and can't help but see the new information about the process.

We want to keep the ability to be notified via e-mail about items and discussion in the shopping process, while at the same time not overload the user with trivial e-mails. The solution proposed is to allow users to notify other group members in order to get the attention of group members and request them to view what's happening on the Board. This is accomplished through the Notify button under the Member List. A user can optionally attach specific items of interest to the notification, allowing the notified user to know exactly what their group member would like feedback on. We think this keeps the strengths of the current system in our new design.

### Tradeoffs:

The tradeoff is that we weren't able to predict exactly when users want to get e-mail notifications and so the notification ability is left up to other group members to manage. Other considerations were a notification every time a new item is posted, or a daily digest summing up activity that occurred that day. We think initially it's best to leave the notification feature up to users, but it places the burden in their hands.

[Reference: Flow model, Sequence model]

**Notify...**

List of members

- Josh Coe
- Jessa Hafer-Zdral
- Karl Nieberding
- Clare Xie
- Joshua Zuniga

Select all

Message

List of items (optional)

<input checked="" type="checkbox"/>	img	Price Title
<input type="checkbox"/>	img	Price Title

Send

**Chat**

Karl (10:26am): let's try out this cool site! I found a couch on craigslist that I like

Add a chat entry:

Submit

## General Chat

Users often communicate with each other about how the overall shopping process is going. This was described by a user as occurring through arranged meetings in person. The users need to have these discussions in order to organize which specific item to buy, when to buy it, and other logistical issues. There is little support in the current system for this process in a group who does not see each other regularly.

Our design includes a General Chat for the entire shopping process. This is located on the left side of the Board, and users may enter comments into it at any time. Other group members see all comments that have been posted when they view the Board. They can contribute to the discussion as desired. This conversation takes place asynchronously and is not attached to any specific item, allowing a general discussion and consensus to be reached after input has been given in the main Board area. It can also be used for general conversation about the process.

### Tradeoffs:

The tradeoffs of this design are little. It takes up some screen space on the left and may at times seem redundant with the ability to comment on items, but it provides a valuable way for the group to spontaneously communicate with each other about the process without using e-mail. The system does not notify users when comments are posted in chat, so the user may need to use the Notify feature to let others know when something important is being discussed, depending on the level of involvement of the group.

[Reference: Flow Model, Sequence Model, Cultural Model]



### Preference Ranking

Research shows that users can easily determine if they like an item, but do not have a good way to “mark” preferences about items for the rest of their group to see. This is largely accomplished in the current system by writing comments in e-mails and having face-to-face discussions about items, which are still important components of group shopping, but by themselves are generally inefficient.

The magnet for an item is placed on the Board at a position corresponding roughly to the level of preference for that item, with items to the right being more preferred and items to the left being less preferred. (The vertical dimension does not take preference into account and simply makes room for more items to be posted.) This allows users to quickly convey the level of preference of an item to their group and allows visual ranking with the other items of consideration. Users can change preferences at any time, reflecting the change in people’s opinions after discussion and consideration.

#### Tradeoffs:

The tradeoff of this design is that users may not understand the preference system at first, as it is not generally part of the board metaphor. For this reason we include a help pop-up for new users to get information on how it works.

[Reference: Heuristic “Match Between System And Real World”, Cultural model]

[Reference: Cultural Model - user stating preferences and sorting through images]

### Magnets and Polaroids/Labels

In our research, we observed users clicking through links to find specific items. These links usually had the price and title of the item as written by the seller. Our observation is that the titles are not always clear to the user, which violates the heuristic “Match Between System And Real World.” We also noticed that users have an easier time getting to the items they want when pictures are provided. This is in accordance with the heuristic “Recognition Over Recall”.

To support these findings, we give users the option to create their own titles and attach images of the item. Once an item has been posted, it appears on the Board as a magnet holding a small Polaroid with the item’s image, price, and title. A paper note is used instead of a Polaroid for items without images. This allows images to be browsed visually and in the user’s language, rather than needing to follow links.

#### Tradeoffs:

The tradeoff of this design is that users may not be good at making titles. Also, they might not take the time to attach images. For these reasons, the Import feature is designed to at least get the original title and image into the posting using only a link, which still marks an improvement over a simple list of links.

[Reference: Heuristic “Match Between System And Real World”]

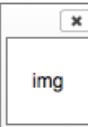
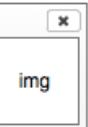
[Reference: Artifact Model -ads missing critical information to help user form an opinion]



**Add an item**

URL  
http://pittsburgh.craigslist.org/fuo/9427288

Title \*required      Price  
Big green couch  \$

Upload photos  
  
   

Description

Time-sensitive?  Yes  No

#### Describing Added Items (Ad Form)

The users we observed used links to represent the specific items they were considering. This often meant clicking through many links to find the exact item they were looking for. There was no place where the items of consideration were gathered other than in a person's e-mail program. In addition, items in consideration that were not on the internet were not stored in e-mail.

To address this issue, users enter information about the item directly on the Board. This allows the Board to be a collection of all items in consideration along with information about each. This information can be as short as a title that represents the item. Price, description, images, a URL, and a personal comment can also be added. This information can optionally be imported from a given URL (this feature exists already in Facebook link sharing). In this case, a user would enter a URL and select "Import", which uses simple algorithms to retrieve the title, images, price, and description of that item. The user can modify the imported information as desired.

#### Tradeoffs:

The tradeoff of this approach is that users may spend time entering data for each item. However, we've tried to minimize this time by allowing the Import option and requiring only a title to post an item.

[Reference: Flow Model - emailing back and forth between users, Sequence Model - email others and adding description to linked ad from Craigslist, KLM - tasks requiring creating a message and pasting links required most time to complete task]



#### Time-sensitive Postings

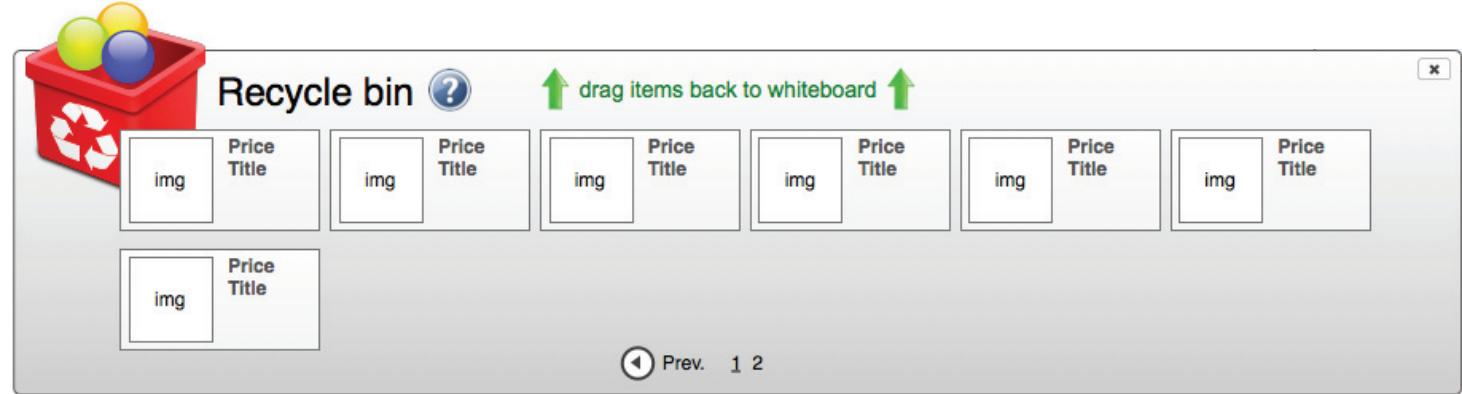
Our research also showed that users consider some items to be time-sensitive; that is, an item may need to be acted on fast due to it being a good deal or that it will be unavailable after a certain date. This was not always directly conveyed in the existing system; sometimes following a link would show that an item had to be sold by a certain date, and other times users simply knew by intuition that good deals on used items should be acted on fast.

The proposed design addresses this issue by allowing users to mark an item as "time-sensitive". This places an indicator on the item that calls attention to it and allows the group to see time-sensitive items at a glance, so they can be reminded which items are more urgent to make a decision about.

#### Tradeoffs:

The tradeoff of this solution is that users are required to tell the system which items are time-sensitive, as the system has no way to know otherwise.

[Reference: Cultural Model - user being influenced to find couch by ex-roommate, Artifact Model - information out of date and user uncertain if item still available]



### Recycle Bin

Observed users shared some items with each other that upon further discussion were rejected. This allows the group to keep only the best items in consideration and not worry about those that have already been decided against. However, the current system of e-mailing links does not explicitly separate good links from bad ones. Users are left to their own devices for remembering or managing which items are still within consideration.

Our solution to this issue is the Recycle Bin. Users can place unwanted items into the Recycle Bin to remove them from the Board. The Recycle Bin holds items placed here, and any user may decide to return items from the Recycle Bin back to the Board. Users make comments on these movements to tell the group why they decided to put the item in the Recycle Bin or bring it back out. The recycle bin is a common standard for deletion features, in accordance with the heuristics "Consistency And Standards", and also facilitates the heuristic "Error Prevention" and "Aesthetic And Minimalist Design" by allowing reversal and cleaning up the main content area.

### Tradeoffs:

The tradeoff of this design is that it adds some screen clutter and system complexity. Users must be able to access the Recycle Bin to see what's inside it as well as have a way to drag it back out to return it to the Board.

[Reference: HE - Consistency and standards, HE - Error prevention, HE - Minimalist design, Cultural Model - influencing each other with likes and dislikes]

### Help Buttons

In the think aloud, we found that the user was happily surprised by the presence of a question-mark button. She was aware that such a button was present to provide help, and she was able to use the button quickly and easily to learn about the feature in question. This also follows the heuristic "Present Help In Context".

In a new system such as ours, we want to make sure that help is available for every feature for which the user might need an explanation. The Think Aloud made it clear that a question-mark button is an effective and easy-to-use way to provide help to users, so we used these buttons in our design. When a user clicks on a question-mark button, a pop-up message appears explaining the feature.

### Tradeoffs:

A tradeoff exists of cluttering up the screen, but we think that this feature is helpful enough to warrant using the allocated screen space.

[Reference: HE - Help and documentation, JC-TA-10]

# Retrospective

## Contextual Inquiry and Contextual Design

Contextual Inquiry (CI) is an observational method which focuses on users performing work within their environment. Although we did not execute this method, we observed an augmented mentor/apprentice relation from the CI video. The observer asked the user questions to collect rich qualitative data. The clear benefit is seeing the minutiae and understanding why those details matter in the context of the user's work domain.

CI was the first method learned and applied to the collaborative shopping task. By watching the CI couch shopping video, it became apparent that the data collected would center on understanding the user's work practice and how the system would be supporting it. Therefore it was a natural and logical step in understanding the problem area of redesigning this task. For group members with work experience, it was particularly difficult as they had previously designed systems based on directives from proxy users. For these members, practicing this method afforded the importance of basing system design on this type of contextual data.

During the modeling stage our group developed models which illustrated how users went about their work in context. Through the models we showed (1) how communication flows to and from user, (2) the sequence of actions to complete a task and the underlying intent, (3) the cultural influences on the user from people, groups, or objects, (4) the artifacts and how those were used, and (5) the physical space where the user performs their work. Each of the models revealed important findings around the user's work; for example difficulty of keeping track of who had viewed an ad and shared an opinion and the cultural value of interacting with the other roommates about how they felt about potential couches. We also observed that artifacts containing the 'right' information aided the user to form an opinion quickly. CI was by and large the compass our team used for redesign, as it allowed us abandon our assumptions of the user and see how they actually behave in context.

By nature, CI has high preparation costs associated with it as is highly qualitative and subjective. In our case we observed only one user, but ideally a group would collect upwards of 15-20 CIs of many users involved in the work being observed. Forming a focus to guide questions, pre-interview practice, conducting the interview, modeling, post-interview follow up, and finally consolidation and interpretation sum to a cost far greater than each of the other methods.

As mentioned earlier, we observed only one user, yet participant selection becomes critical as the number of observed participants decreases. This is important, as participant selection may not be representative of the larger community or accurately reflect the reality of the work performed. A clear disadvantage of poor selection is designing a system which supports only the observed group or in our case an individual. It is best to consider what type and how many roles are being designing for. If the roles are of many, then we suggest identifying whether similarities exist between two of the same role and then move onto modeling the next identifiable role within the flow of work to model.

Another limitation is subjectivity of interpretation associated with CI and CD. Modeling the data is based on interpreting what is observed from of the users, consolidation is an abstraction based on interpreting the aggregation of a number of models, and design is based on the consolidated models. The inherent pitfalls associated with this method are the attenuation of the data through interpretation. A user can easily lose their voice if in each step assumptions are made or questions about user work practice are unanswered.

In comparison to other methods, CI is an input to the other methods. Inherently, CI is used to understand the users and observe what they do in context. CI is a guide for design and does not require that a system even exist in order to perform. In contrast, the other methods are used to evaluate a system as it exists in low or high fidelity.

## Heuristic Evaluation

HE is a method in which usability experts apply a set of rules of thumb in order to evaluate and discover usability issues. These rules were first formed by Jakob Nielsen and have been based on numerous evaluations of websites and applications. These findings can then be folded back into the next iteration of design. Our group applied the heuristics to the Wetpaint wiki creation site. Each member applied the heuristics individually and wrote rough UARs. We then grouped UARs to identify duplicate and unique violations. Afterwards we assigned a consensus rating on each violation.

After applying the method our group found 60 UARs, of which 48 were unique when grouping like individual UARs and rejecting UARs which did not violate the heuristic sited. We found that 38% of our UARs were assigned a severity rating of a 2 or higher, indicating that HE identified usability issues that could be addressed during the next design iteration. By drawing relationships between individual UARs, our group was able to move from a narrowed problem and identify larger overarching issues which may span across multiple locations in the system. For example, much of the Wetpaint site fails to provide feed-forward on actions resulting in states which cannot be undone. We observed this when an age of 15 or less locked the user from creating future wikis and that there is no way to change a wiki's skin unless it is deleted. These specific violations could not be directly addressed in our redesign, as we formed an entirely new system. However, they served as a reminder of how the heuristics are applied not only in one location, but across an entire system.

Experience turned out to be problematic during HE, as most of the group took a scenario-based approach in order to guide the evaluation method. This approach meant focusing on just one area of the system and possibly avoiding others. Therefore, many of the individual UARs found overlapped and were grouped together. It is debatable whether or not a scenario or systematic component-based approach would reveal more issues.

Trustworthiness of the severity ratings proved to be challenging, as there was no one consistent way to weight the inputs (frequency, impact, and persistence). Our group often arranged the weighting towards the higher scored inputs by rationalizing why it was such a large usability issue. Had we done this again, we would have looked at the major components of the interface, along the work flow, and assigned a scoring matrix for that area. Ratings would then rely on the scoring of the inputs: frequency, impact, and persistence. This would provide a more impartial and systematic way of assigning severity ratings and avoid over-rationalizing the severity.

In comparison to the other evaluative methods, HE is not rooted in theory and therefore can be applied with little or no prior knowledge of the cognitive models or theory. Unlike CI and TA, HE is the most cost- effective method as it requires only one expert to run and no users (though it is important to note that multiple evaluators performing an HE will find more problems than just one evaluator). However, CI and TA are good inputs into HE, as it may indicate what the critical tasks to evaluate are and where a majority of the user's time is spent. In our practice we have found that HE uncovers many usability issues early on in the design process and can be applied at any point thereafter.

## Keystroke Level Model

Keystroke Level Modeling (KLM) is from the GOMS family of models and is used to predict the execution time of a specific task by an expert user for a certain interface design. KLM is an analytic method, meaning it is based in theory and does not require an actual user to make a prediction. This also makes it a very objective model, unlike some of the other methods, because it relies on absolute measurements and not on one particular user's actions or the experimenter's interpretation of those actions.

With the aid of CogTool, we found KLM quite easy to implement. CogTool was relatively easy to learn and automated many of the calculations and applications of mental process times that would otherwise make this method extremely tedious and error-prone.

Since CogTool reduces the amount of expertise needed to implement a KLM, this method can be very inexpensive and easy to apply. In addition, the output is quantitative--the time it would take to complete the task. While this number may not necessarily be helpful in and of itself, it becomes extremely useful when comparing multiple designs or improving elements of one design. In theory, one can clearly see how much more efficient one implementation is over another; for example, of the interfaces we evaluated in the homework it was quite clear that Google notebook was significantly faster for sharing a link and a comment than either Gmail or Wetpaint. As with any model however, it is not always perfect--one needs to bear in mind the 20% error rate when interpreting KLM results.

The biggest drawback to the KLM is that it only estimates time for expert users, but says nothing about the performance of new or novice users. It is certainly possible to over-optimize an interface, which may help expert users greatly, but completely neglect new users (for example, replacing steps with a lot of keyboard shortcuts may make a system easier for an expert, but it could take a novice a very long time to learn all those shortcuts).

Our design did not draw heavily from the KLM data because our goal was focused on facilitating collaborative discussion and not necessarily related to the efficiency of expert users. The one area we did use it was to remember the effects of Fitts's Law and, in general, keep the number of intermediate steps for a task to a minimum. In our design, for example, to adding an object the user has the option of importing information directly from a hyperlink, rather than having to type everything in themselves.

In comparison with other methods, the KLM is much more objective than other models because it is quantitative rather than qualitative. While it is heavily based in theory, it is very easy and cost effective to implement with the use of CogTool. Other methods can be very informative in evaluating an interface by itself, but the KLM is best used to compare different designs, since knowing how long a task takes is not always helpful in and of itself.

## Cognitive Walkthrough

Cognitive walkthrough is a qualitative, analytical method based on the cognitive theory of exploratory learning. Evaluators move through a specific task, one step at a time, putting themselves in the shoes of a user in order to determine whether a user would understand what they would need to do to complete the task, find and recognize the correct control, and understand the results of their action.

A cognitive walkthrough is useful in that it can be applied relatively early in the design process, since only wireframes, a storyboard, or even sketches of the beginning and end state of each step are needed. In addition, the assumptions made about user knowledge forced our group to explicitly think about what kind of user would be using the interface, and exactly what minimum knowledge is needed.

While the CW initially seemed relatively straightforward, we often had a great deal of difficulty interpreting the questions and how they should be answered. Sometimes we knew that a step failed, but could not agree on which question (or questions) it failed. In addition, sometimes we could find equally strong success and failure stories for the same question. The amount of difficulty we had suggests that this method would be most accurately and efficiently applied by someone of more expertise.

However, a CW also has some drawbacks. While its narrow focus is good for evaluating one specific task, it tends to uncover fewer problems than with the more generally focused HE. In addition, the CW questions can only be answered with a very black and white "yes" or "no". While there is the possibility to list redesign ideas, there are no opportunities formally write up an issue that may be problematic but does not warrant a full failure story. Also, without experienced evaluators, this method can be difficult and time consuming to implement.

In comparison to other methods, the CW is similar to the HE in that it is very subjective and can be quite cost effective to implement, since it needs as little as wireframes or even just rough sketches. Also like an HE, a CW produces UARs for each of the problems found. However, a CW evaluates a very specific task and is based on very specific assumptions of user knowledge. However, a CW requires more expertise than some of the other methods because it is heavily based in cognitive theory and the questions require some interpretation to answer.

## Think Aloud

According to Jakob Nielsen, think aloud is the “gold standard” of usability tests. A user is given a task and asked to voice their thoughts, impressions, and reasons for their actions--i.e. they are asked to “think aloud”—as they work through the task in order to open a window to the user’s thought processes. The evaluators then note any significantly negative or positive events, such as the user getting confused or expressing positive or negative affect. The theory behind this method is that the user is voicing the information present in their working memory, which is easily accessible yet otherwise unreachable by the evaluators.

This method can be quite useful and compelling in that it involves an actual user experience. While it is a qualitative model, the data is less subjective on the evaluator’s part because it is no longer based on the evaluator’s assumptions. In addition, the TA can validate the good and bad aspects found in CW and HE. Since an actual user is evaluating the design, the issues that the encounter are easier to present as actual problems and can help to validate previous findings. Also, TA is relatively simple to perform. Though it can only be applied later in the design process, as it requires some type of prototype (either low or high fidelity can work), all that is really needed is a willing participant. However, the time needed to recruit participants, set up and perform the procedure, and the possible need to compensate participants can add to the cost of this method.

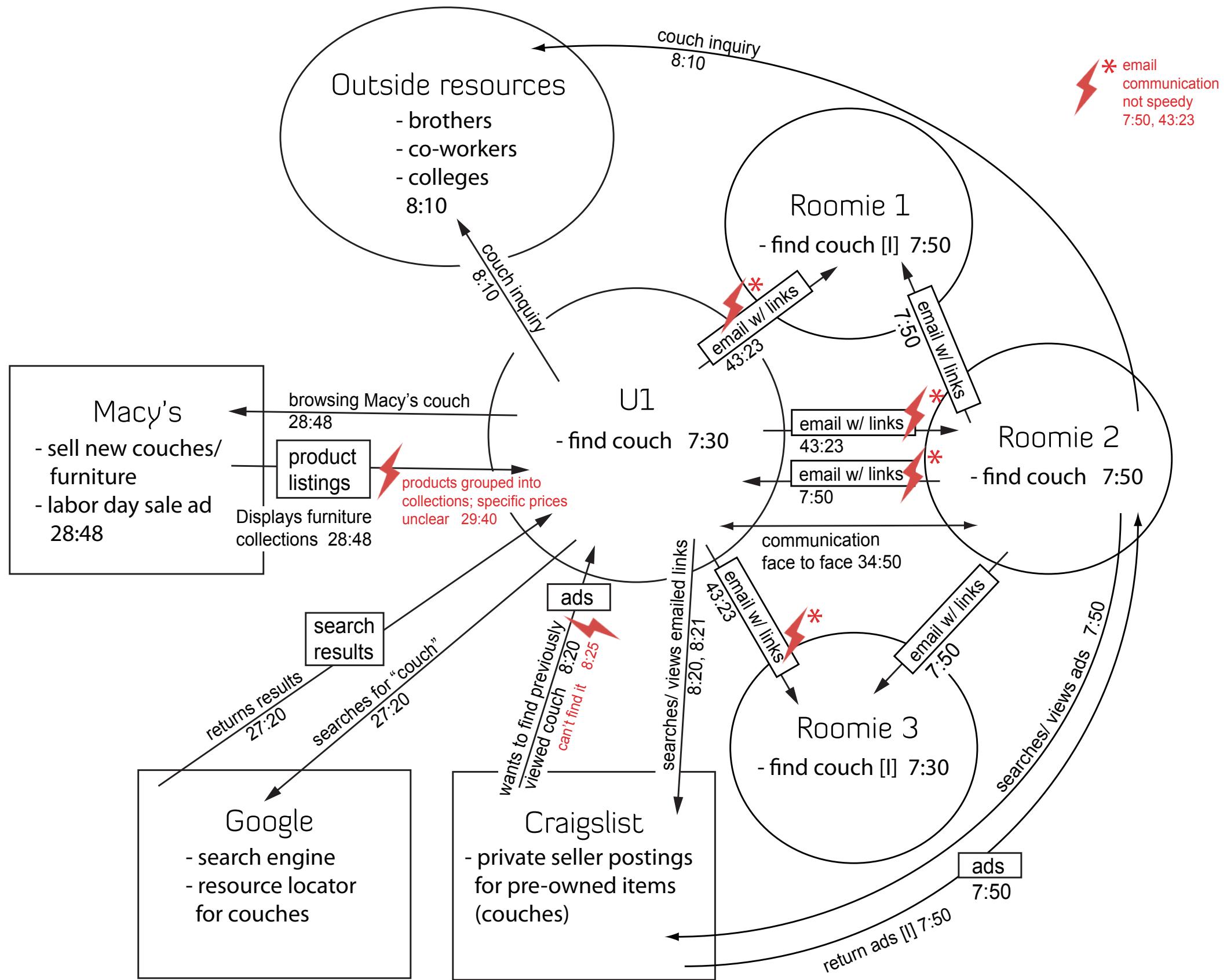
Despite its rich data and ease of implementation, the TA has a number of unfortunate drawbacks. As with the CW, the TA requires a very specific task to evaluate. While the TA is very thorough for this one task, it makes it difficult to evaluate the system as a whole. In addition, sometimes we saw problems with the design that were not directly related to the user’s task or goals, such as whether the user understood the use of “Buy it now”, and so were unsure whether these were appropriate to write up as part of the TA. Also, while it is easy to find problem areas using a TA, it can be difficult to interpret why they are problematic. For example, in the TA on selling a couch on eBay, it was quite clear that the “sell” button was very difficult for the user to find. What was less clear was why this was the case: if the pages were just too cluttered and overwhelming for her to see it, or if she just did not think to look in the upper right hand corner of the page.

Other problems arise in working with participants in general. First of all, the evaluators must carefully consider whether the participant is among their target audience. As with the CI selection and CW assumptions, the user’s background must be taken into account. Someone who is very unlikely to use the product that finds problems at every turn can be just as unhelpful as a very skilled user who has no problems. Also, the evaluators must be especially vigilant of the participant’s comfort during the process. We observed that users may believe you are evaluating them and not the system. By the nature of the TA, it is very easy for the participant to believe that they are being evaluated versus the system.

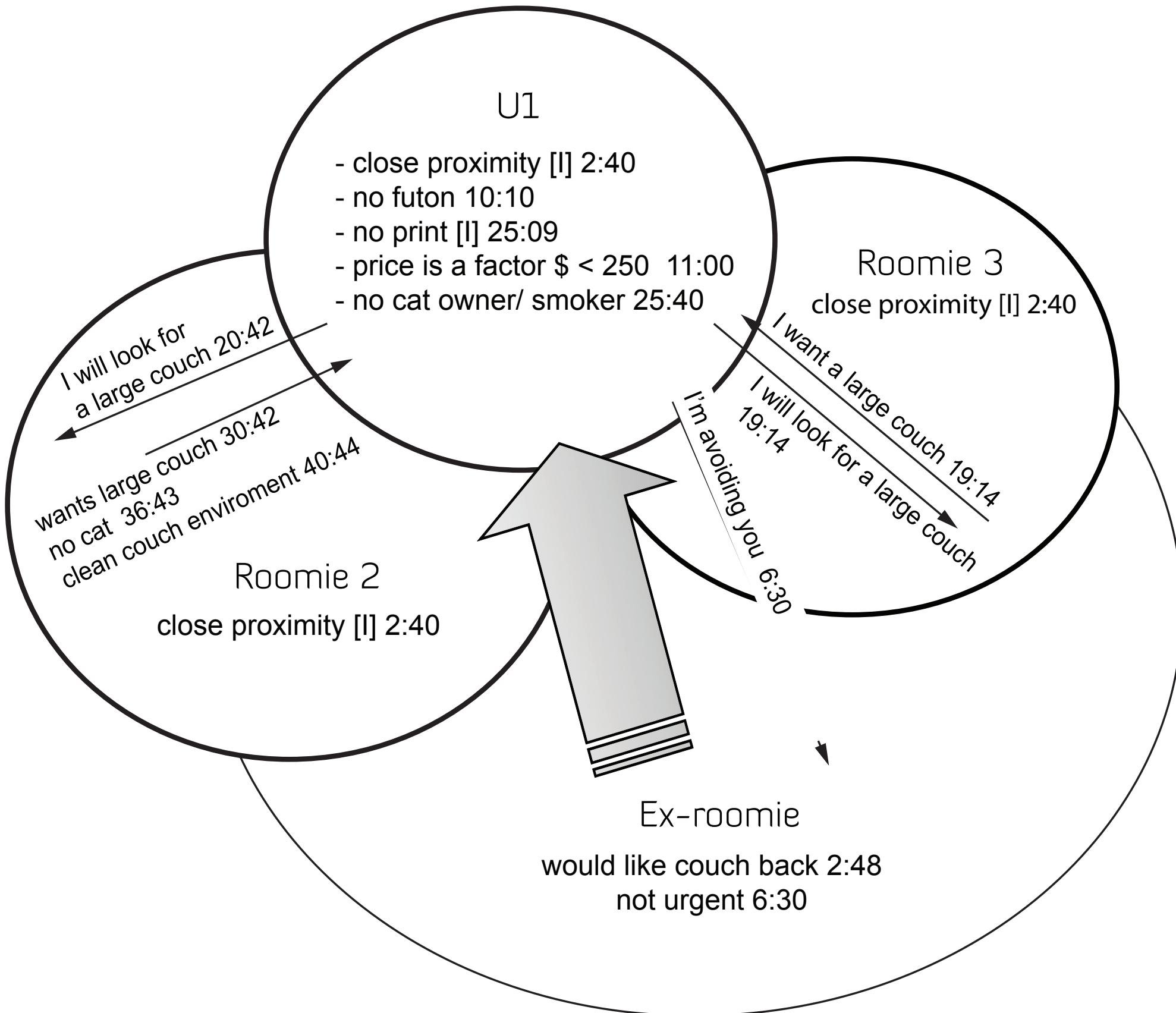
Finally, as with any study that involves sampling a population, it is important to make sure the data is representative of the target audience, which means having a larger sample size. While some of the other methods only need to be performed once (such as KLM) or only require a few evaluators (such as HE), a TA should be repeated with many participants in order to ensure accurate data. Generally a TA requires at least 6-8 participants to uncover the majority of issues. Having to repeat the procedure multiple times with multiple participants can make it much more costly and time-consuming to apply. Nonetheless, often there is no substitute for actual user data—even with careful modeling and evaluative techniques, as the mantra goes: “the user is not like us.”

# Appendix

# Flow Model



# Cultural Model



# Sequence Model

Trigger: receives email from Roomie 2 [7:34]

Intent: find a couch she likes and communicate to roommates

Sub-intent:  
get roomie's  
suggestion

- 1. receives roomie's email [7:38]
- 2. chooses Craigslist ad link [8:20, 10:05] ←
- 3. looks at and evaluates ads \_\_\_\_\_

Sub-intent:  
search for used couch

- 4. goes to Craigslist furniture listings [12:25]
- 5. looks for couches in close proximity [13:21]
- 6. chooses Craigslist ad links [14:52, 15:20, 15:35, 17:10, 18:45, 20:47, 21:14  
22:57, 24:28, 24:40, 25:04, 25:48] ←

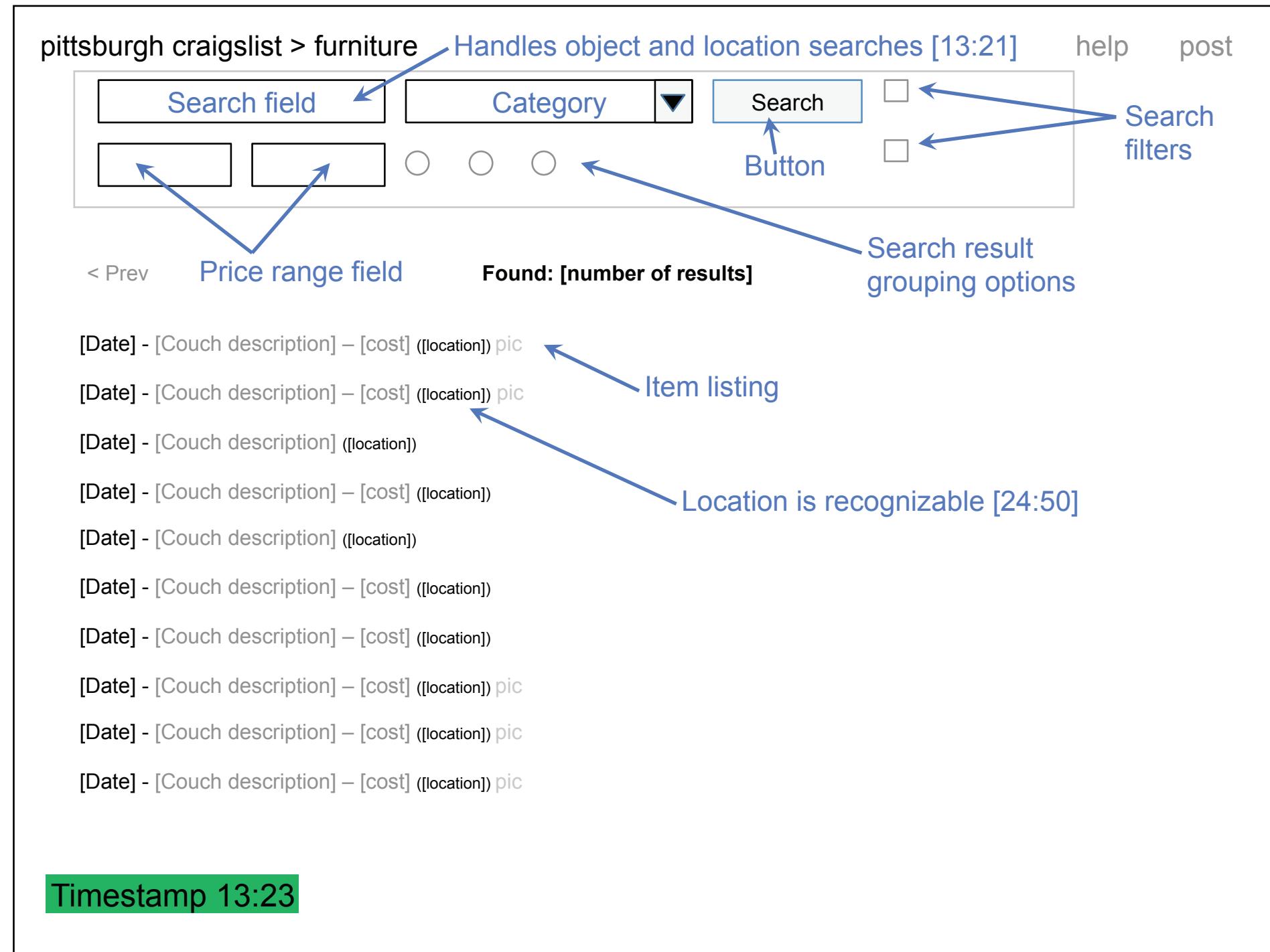
- 7. looks at and evaluate ads
- 8. if interesting, sends to others in response email [16:22] \_\_\_\_\_

9. searches for additional couch-buying resources [27:30]

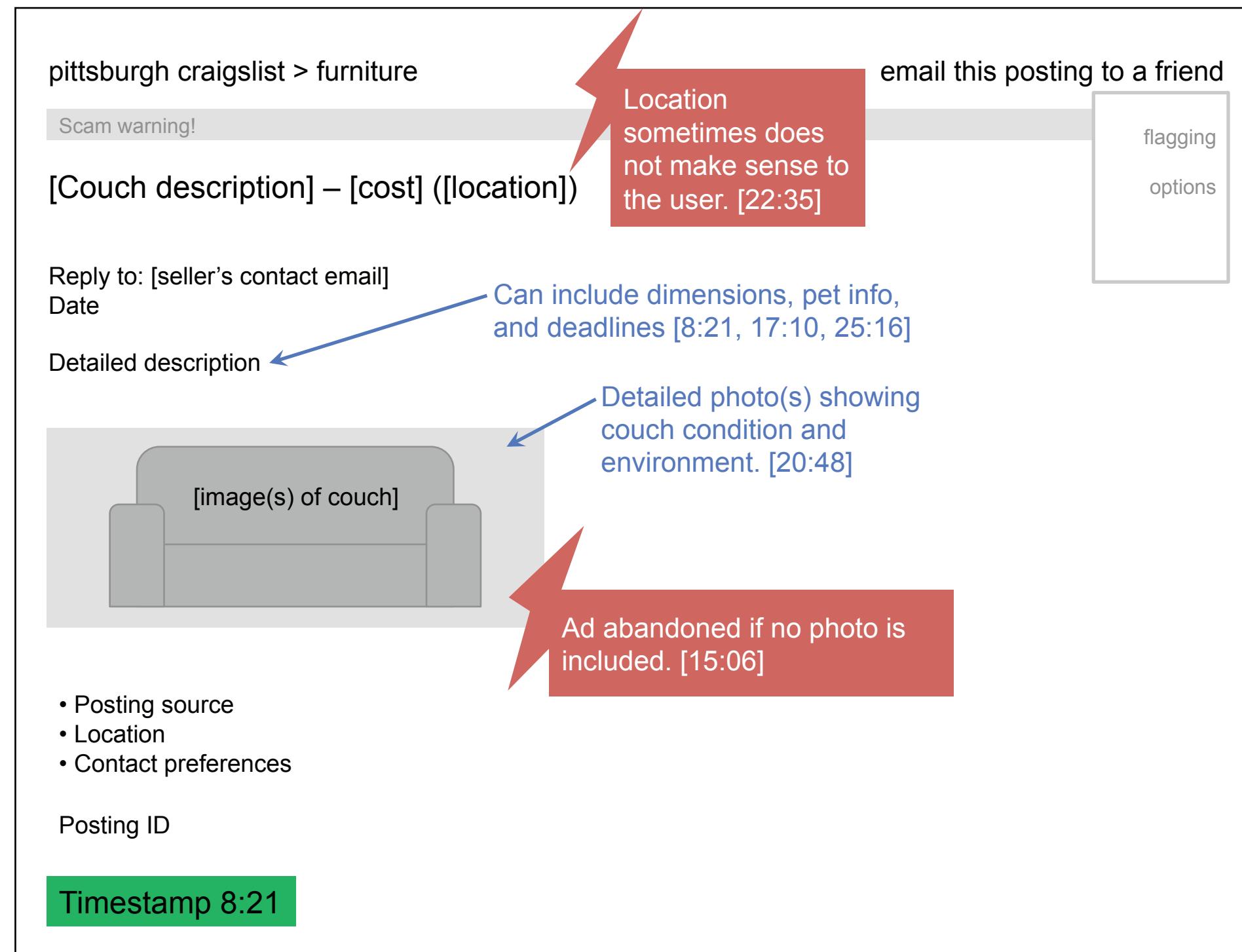
Sub-intent:  
search for new couch

- 10. selects Macy's [28:49]
- 11. browses furniture listings [30:07, 31:14, 31:32, 32:05, 37:22]
- 12. sends email [43:27]

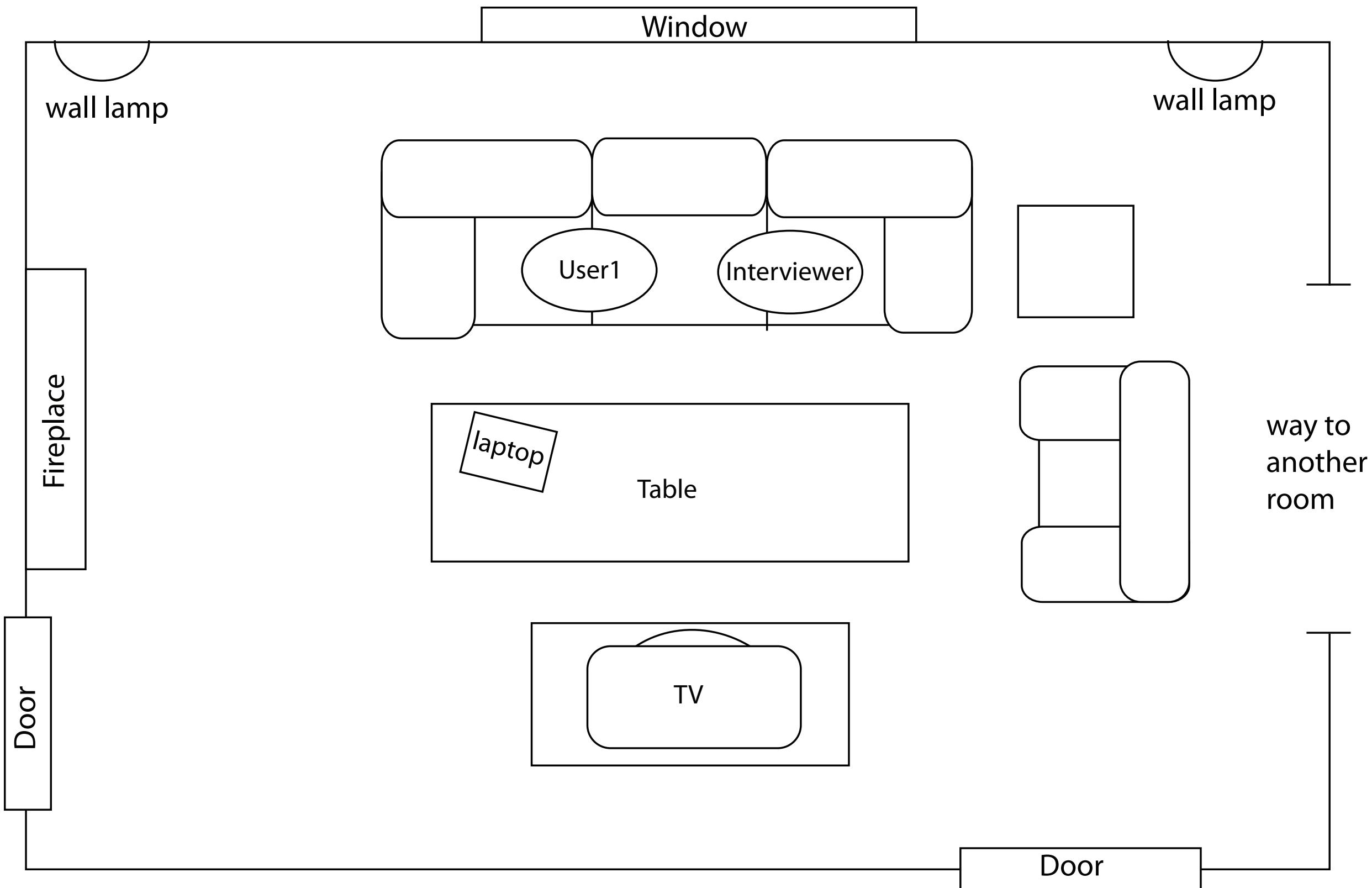
# Artifact Models



# Consolidated Artifact Model



# Physical Model



No. G6-HE-01	Problem/Good Aspect: Problem
Name:	No 'Back' button
Evidence	<p>Heuristic: User Control and Freedom</p> <p>Cancel ends the wiki creation workflow. Therefore, all data previously entered is lost.</p> 
Explanation	<p>The user is not able to go back from step two or three to a previous step. If the user would like to change previously entered data, then they must choose cancel and start over again.</p>
Severity or Benefit	
Rating (0-4):	3.4
Justification	<p><b>Frequency:</b> Low  <b>Impact:</b> High  <b>Persistence:</b> High</p>

<b>How these factors are weighted and why:</b>
Frequency is rated low because this is encountered only during site creation. Impact is high and is the most important factor because the user loses the data previously entered if they would like to go back and make changes. Persistence is high because the problem is not fixable.
<b>Possible solution and/or trade-offs</b>
Include a back button in the workflow of creating a wiki. We see no reason not to include this feature in the workflow.
The trade-off is that there is one more item on the page for the user to parse.
<b>Relationships</b>
KN-HE-04, JZ-HE-10, YX-HE-05

Figure 1: Back button not available from the second step.

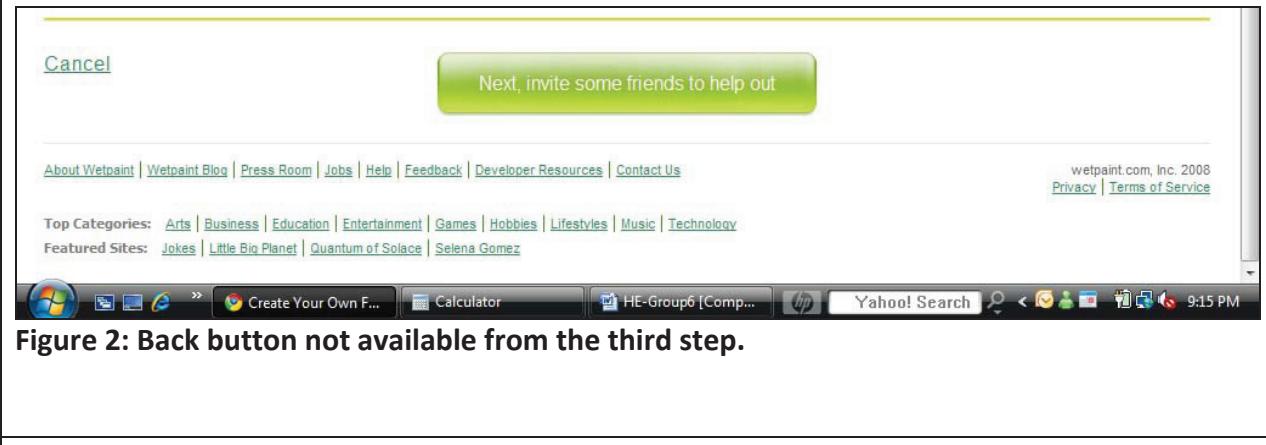


Figure 2: Back button not available from the third step.

<b>Explanation</b>
The user is not able to go back from step two or three to a previous step. If the user would like to change previously entered data, then they must choose cancel and start over again.
<b>Severity or Benefit</b>
<b>Rating (0-4):</b> 3.4

<b>No. G6-HE-02</b>	<b>Problem/Good Aspect: Problem</b>
<b>Name:</b> Unknown age limit lockout	
<b>Evidence</b>	
Heuristic: Visibility of System Status	
If the user enters in a birth date equating to less than 15 years of age and confirms, then the user's web browser is blocked from making any wikis using Wetpaint.	
A screenshot of a Wetpaint sign-up form. The user has entered their first name as 'sldkfjlskj' and last name as 'lksdfjlskf'. The date of birth is set to '1/11/2004'. A modal dialog box titled 'Alert http://www.wetpaint.com' contains the text 'Please confirm that your date of birth is: 1/11/2004' and 'If that's correct, click OK. To change it, click Cancel.' with 'OK' and 'Cancel' buttons. Below the form, there are 'Cancel' and 'Next, invite some friends to help out' buttons.	
<b>Figure 3: Age verification pop up.</b>	
A screenshot of a Wetpaint account creation page. It displays a message: 'Based on the information you supplied in a previous form, you are ineligible to create a Wetpaint account.' Below this message are 'Cancel' and 'Next, invite some friends to help out' buttons.	
<b>Figure 4: User blocked from creating wiki after confirming under age.</b>	
<b>Explanation</b>	
The user is not warned that confirming an age which is 15 years or less will result in locking them from creating a wiki. The user can only create wikis if the browser history is cleared. This is not immediately apparent unless they search Wetpaint for a solution.	
When signing up for memberships, users may not care to share their actual birth date; therefore they may be likely to select an arbitrary date leading to this problem.	
<b>Severity or Benefit</b>	
<b>Rating (0-4):</b> 3.2	
<b>Justification</b>	
<b>Frequency:</b> Low	
<b>Impact:</b> High	
<b>Persistence:</b> High	
<b>How these factors are weighted and why:</b>	

The frequency is low because the problem only occurs if a user selects an age lower than the unknown limit. The impact and persistence are the most highly weighted factors. The impact is high because the user is blocked from making future wikis. The persistence is high because unless the browser history is cleared the problem is irresolvable.
<b>Possible solution and/or trade-offs</b>
A feed forward message before site creation could warn the users that users under a certain age will be locked out from creating a wiki. A clear statement indicating that users under 16 cannot use the site and confirming an age under the limit will result in locking them from creating a wiki.
An example message would be: "If you are under the age of 16, you will be locked out from creating a wiki on this site! According to your birth date ___/___/___ you are under 16. Is this correct?"
The trade off here is that there will be one more line of text on the pop up. Also, there may be a possibility that more underage users will be able to circumvent the age limit by changing the date before they get locked out.
<b>Relationships</b> JZ-HE-12, JZ-HE-13

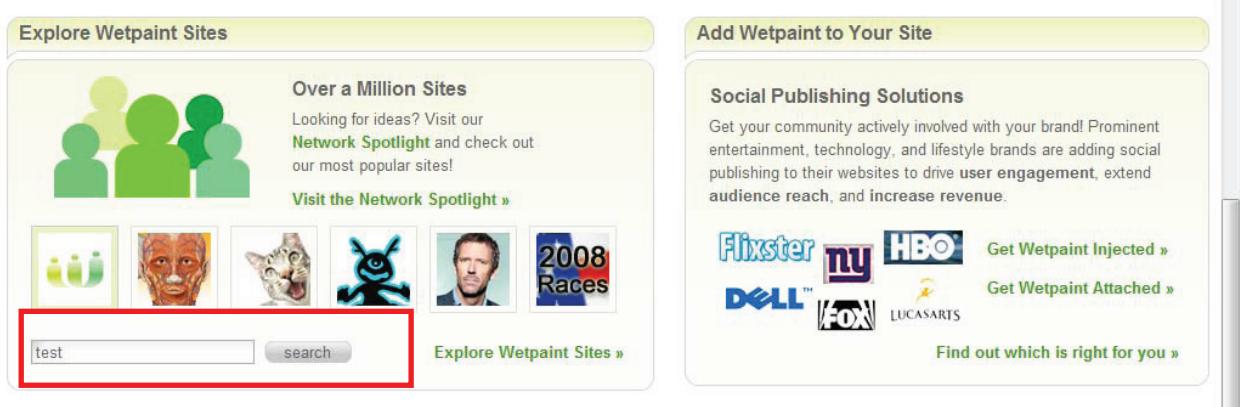
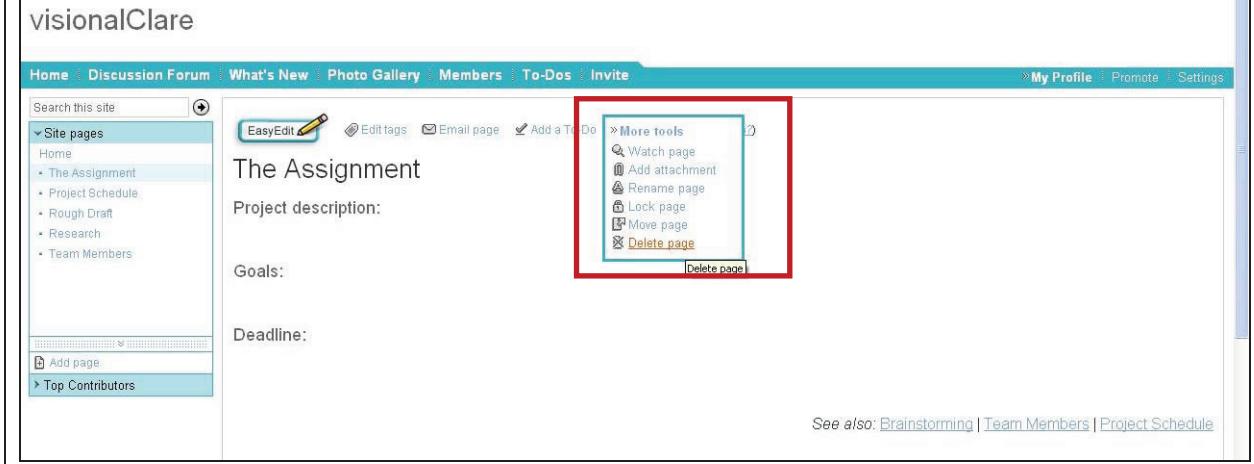
No. G6-HE-03	Problem/Good Aspect: Problem
Name:	No new search from results
Evidence	<p>Heuristic: Consistency and Standards</p> <p>After searching for Wetpaint sites, the <i>Search results</i> page does not allow the user to enter a new search; there is no search bar present on the new page. To conduct a new search the user must select the browser's back button or home link.</p> <p><a href="http://www.wetpaint.com/pageSearch?contains=computer">http://www.wetpaint.com/pageSearch?contains=computer</a></p>  <p>The screenshot shows the Wetpaint homepage with two main sections: 'Explore Wetpaint Sites' and 'Add Wetpaint to Your Site'. The 'Explore Wetpaint Sites' section features a 'Network Spotlight' with various logos like Flixster, NY, HBO, DELL, FOX, and LucasArts. Below this is a search bar with the word 'test' and a red-bordered 'search' button. The 'Add Wetpaint to Your Site' section discusses social publishing solutions and includes logos for Flixster, NY, HBO, DELL, FOX, and LucasArts, along with links to 'Get Wetpaint Injected' and 'Get Wetpaint Attached'.</p>
Severity or Benefit	

Figure 5: Search field on home page.

Explanation
<p>The search bar is prevalent in most any web and console application; the user expects this feature to be here. The fact that the search field does not exist on the search results page is more than just a nuisance to the user.</p>
Severity or Benefit

<p><b>Rating:</b> 3</p> <p><b>Justification (Frequency, Impact, Persistence)</b></p> <p><b>Frequency:</b> Medium</p> <p><b>Impact:</b> Medium</p> <p><b>Persistence:</b> High</p> <p><b>How these factors are weighted and why:</b></p> <p>This problem is frequent because it happens whenever the user conducts repeated searches of Wetpaint sites. The impact slows down searches by several seconds, especially from first-time users who would be looking for the nonexistent search bar on the results page. This problem is persistent because every time a user performs more than one search, they will be unable to avoid the problem.</p> <p><b>Possible solution and/or trade-offs</b></p> <p>The search results page should have a search bar at the top and bottom. This would make searching the site much more efficient, since the user would not have to navigate back a page to try another search.</p> <p>The trade off would be that 30 pixels of screen height would be allocated for this feature. The page is so minimal already that the usability benefits of the search bar would far outweigh any aesthetic issues.</p> <p><b>Relationships</b> JC-HE-11</p>
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No. G6-HE-04	<b>Problem/Good Aspect: Problem</b>
<b>Name:</b>	Important options buried
<b>Evidence:</b>	<p>Heuristic: Recognition Rather Than Recall</p> <p>Users must click on “More tools” menu in order to access other important options in order to help edit a wiki page. These options are found only in this location.</p> <p>URL: <a href="http://visionalclare.wetpaint.com/page/The+Assignment">http://visionalclare.wetpaint.com/page/The+Assignment</a></p> 
<b>Explanation:</b>	The user must learn what features are available within “More tools” and recall them in the future, rather than being able to recognize these items from what is visible otherwise. The title of the menu is named rather ambiguously and does not aid the user in recalling what options reside within the menu.
<b>Severity or Benefit</b>	
<b>Rating:</b> 2.6	
<b>Justification (Frequency, Impact, Persistence)</b>	<p><b>Frequency:</b> Medium</p> <p><b>Impact:</b> Medium</p> <p><b>Persistence:</b> Low</p> <p><b>How these factors are weighted and why:</b></p>

<p>The frequency is medium because many users are encouraged to contribute to the site. The impact is medium because initially it will take some time to search for a desired option which is not displayed elsewhere. Adversely, the persistence is low because as contributors use the menu they will learn where the tools are located since there is only one menu.</p> <p><b>Possible solution and/or trade-offs</b></p> <p>Move all the options out of the menu and onto the page with the other editing options. This removes the trouble from the user to recall what options are available in the existing menu. The trade off is that five more options would occupy space on the page.</p> <p><b>Relationships</b> JHZ-HE-04, YX-HE-12</p>
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Group Heuristic Evaluation Table

Combined Aspect Report	Heuristic(s) Violated	Individuals Referenced	Average Rating
Vague email error message - When user enters an invalid email, the system does not explain why it is an invalid email.	Help User Recognize, Diagnose, and Recover from Error	YX-HE-01	2.2
Feedforward for forms - Instructions on the form guide the user well.	Error Prevention	YX-HE-02	0
Must invite friends - After creating a site the only option is to go to the invite friends screens.	User control and freedom	YX-HE-03, KN-HE-07	2.8
Text box resizing affordance - The text box corner is denoted with a corner tab inviting resizing of the window.	Consistency and Standards	YX-HE-04	0
No 'Back' button - During the wiki creation workflow there is no way for the user to go back to a previous step.	User Control and Freedom	YX-HE-05, KN-HE-04, JZ-HE-10	3.4
What is step 2 - A button states "continue to step 2 - the fun part". What is the next step to be expected?	Visibility of System Status	YX-HE-06	1.2
Number of options unknown, Chrome - While using Google Chrome, the number of selectable screens is unknown to the user.	Visibility of System Status	YX-HE-07	2.4
Custom display name - User can change the display name of the wiki.	Flexibility and Efficiency of Use	YX-HE-09	0
Help and documentation - In form / page help and documentation links.	Help and Documentation	YX-HE-10, JZ-HE-07, JHZ-HE-09, KN-HE-03	0
Browser specific help link - When the 'Where are the tools' link is clicked, using Google Chrome, an Apple Safari reference is cited.	Help and Documentation	YX-HE-11	1.6
Important options buried - The important editing options are very difficult to find and are buried in the more tools menu.	Recognition Rather Than Recall	YX-HE-12; JHZ-HE-04	2.6
Missing field feedback - If there are any empty fields in a form the user is notified upon submission.	Help User Recognize, Diagnose, and Recover from Error	JHZ-HE-01, JZ-HE-08	0
Workflow feedback - Tabs along top of page show status of wiki creation workflow.	Visibility of system status	JHZ-HE-02, JZ-HE-09, KN-HE-01	0
Theme page format inconsistent - themes do not display in the same format.	Consistency and Standards	JHZ-HE-03	1.6
Keyword tags ambiguous - Clicking on a newly created keyword and searching for a keyword yield different results.	Consistency and Standards	JHZ-HE-05	1.4
Attachment size limit unknown - The size limit of a document is unknown to the user before attempting to attach.	Error Prevention	JHZ-HE-06	2.2
My Wetpaint' inconsistent - the behavior of the button and associated options are different depending on where you are at on the site.	Consistency and Standards	JHZ-HE-07	1.6

Cancel button available - Cancel button is available during account creation.	User Control and Freedom	JHZ-HE-08	0
Go button - The go button behaved consistently.	Consistency and Standards	JC-HE-04, JHZ-HE-10	0
Location known - Under the 'About Us' page the location is made known to the user by bolding the text in the nav bar.	Visibility of system status	JHZ-HE-11	0
Not all green text are links - The green text are not always links to other pages.	Consistency and Standards	JHZ-HE-12	2.2
Duplicate names poorly explained/prevented - When entering a URL for the newly created wiki, the system shows sites which are created that have similar names and suggests to visit them.	Error prevention	KN-HE-02	2.6
Site naming restrictions inaccurate - When entering a URL name with an accent mark, the system notifies the user that 'value can contain letters and numbers with no spaces'.	Consistency and standards	KN-HE-05	1.8
Extraneous language in name creation - A congratulatory message pops up when the username chosen is available.	aesthetics and minimalist design	KN-HE-06	1
Optional step hard to skip - The 'just create my site' option is not well seen by the user in order	aesthetics and minimalist design	KN-HE-08	1.4
Successful wiki creation feedback message - Once the wiki is created, the system provides good feedback.	visibility of system status	KN-HE-09	0
Site wizard prompt for templates - After creating a wiki a list of available templates are given to the user to choose from.	Help and documentation	KN-HE-10	0
No way to change site template - After applying a site template, there is no known way to change the template without removing content.	user control and freedom	KN-HE-11	3.4
Red OK button confusing - The 'Add Page' button used a red color.	consistency and standards	KN-HE-12	2.6
Tab set absent - When clicking on a link at the top of a home page, it does not stay highlighted like an upper-level tab should.	match between system and real world	JZ-HE-01	1.8
Developer resources new site - Upper-level nav lost when going to developer resources link on homepage.	consistency and standards	JZ-HE-02	1.6
Two tabs persist - Middle two tabs at top of homepage persist after clicking on them	match between system and real world	JZ-HE-03	0
Tab Selection Not Indicated - Upper level nav does not show which is currently selected.	visibility of system status	JZ-HE-04	1.2
Creation "tabs" not selectable - During creation the steps look like they are clickable tabs but are not.	consistency and standards	JZ-HE-05	1.4
Button pushed off screen - On step 2 of creation opening the drop down menu pushes the next button down during the animation of the menu. This can make the user lose track of the next step while distracted by the animation.	visibility of system status	JZ-HE-06	1.4
Privacy policy link leaves workflow - Clicking on the privacy in step 3 of creation directs the browser to a new page, interrupting the user's workflow, and requiring the user to use the Back button on the browser, inconsistent with the rest of the site's	user control and freedom	JZ-HE-11	2.6

operation.			
Birth date dialog date bug - If under 16 and born in December, dialog displays birth month as "0".	visibility of system status	JZ-HE-12	2.6
Age restriction not communicated - The user is not told that if he says he is under 16 years of age he will be prevented from creating a site.	visibility of system status	JZ-HE-13	3.2
Pop-up windows block help access - Pop-up windows like the template selector block access to other page functions, including help.	Help and documentation	JC-HE-01	1.6
Excessive whitespace between page info - The information on your page is separated by large columns which normally suggest that they are not related.	match between system and real world	JC-HE-02	2
EasyEdit uses standard icons - The EasyEdit toolbar uses standard icon graphics.	consistency and standards	JC-HE-03	0
Yahoo doesn't accept Enter key - The Yahoo search does not execute when you type and press the enter key, representing a lack of flexibility.	flexibility and efficiency of use	JC-HE-05	2
Yahoo Image Search Feedback - Yahoo Image Search displays an animated circle icon while it is searching to notify the user what is going on.	visibility of system status	JC-HE-06	0
No step 1 signin - No way for an existing user to sign in on step 1 of the creation process.	user control and freedom	JC-HE-07	2
Inconsistent My Wetpaint Wiki text - 'My Wetpaint Wikis' takes you to a page called 'My Wetpaint Sites'.	consistency and standards	JC-HE-08	1.4
Character limit surprise - User is notified of character limit of bulletin board post only after reaching 1300 characters.	error prevention	JC-HE-09	1.4
Add Photo Doesn't Show Others - While adding a new photo you cannot see the other photos in the gallery.	recognition vs recall	JC-HE-10	1.4
No search from search results - After performing a search, the user must go back before performing another search.	flexibility and efficiency of use	JC-HE-11	3

**Rejected UARs**

Rejected UARs	Who found	Why isn't this a problem
Skip step 2 - Cannot skip step two; selecting a wiki background.	YX-HE-08	Is required step of creating a wiki site.
Taken domain names - Same and similar names of your domain name are shown.	JC-HE-12	Decided it's not easy to tell.

## A Priori Description of Users and Background Knowledge

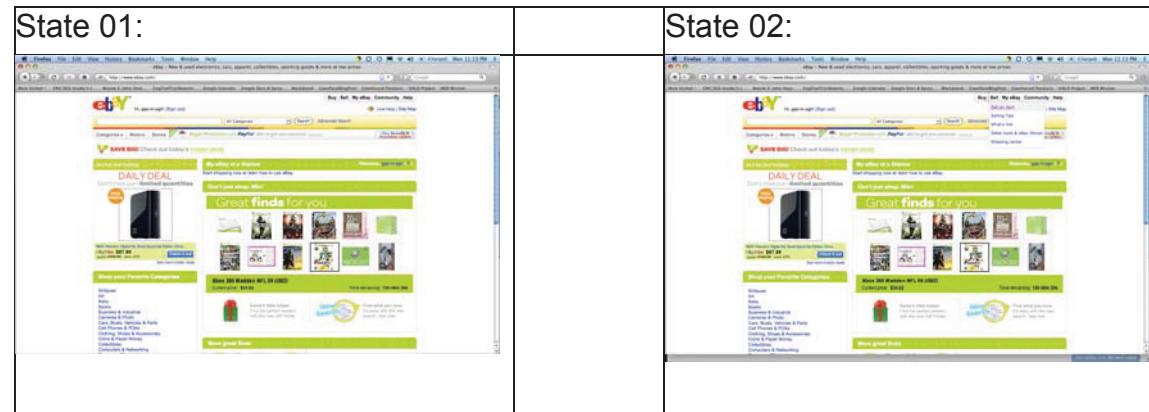
The user should be familiar with the general layout of the site. They should have knowledge of searching, the auction results page, and a typical auction ad page. They will know what makes a good or bad item listing. They will be familiar with eBay concepts such as Buy It Now, Paypal, and user ratings.

**Assumption 1:** The user is a skilled computer user who knows how to use the keyboard and mouse.

**Assumption 2:** The user is familiar with the web and browsers. This means they know how standard browser & web features work, like the scroll bar, the back button, and links.

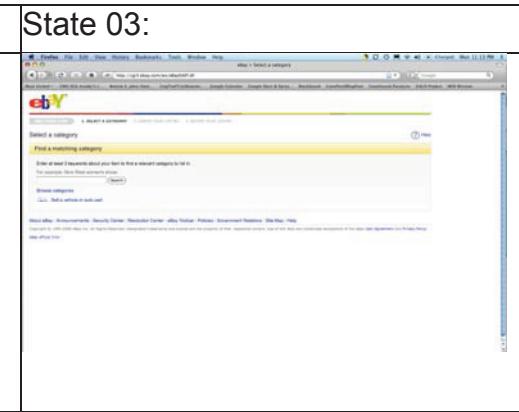
**Assumption 3:** The user has an eBay account already and knows how to sign in. Due to this assumption, we will start the task after the user has already signed in.

**Assumption 4:** Based on the artifacts from the CI, the user knows how to perform basic tasks in creating an online ad listing, such as uploading a photo and writing a title.



Step 01. Mouseover Sell

1. Will users be trying to produce whatever effect the action has?  
Yes, because of prior experience with the similar “buy” menu (Assumption 6). This is reason enough to believe that the user would mouse over “Sell” and immediately see the actions associated with selling an item.
  
  
  
2. Will users see the control (button, menu, switch, etc.) for the action?  
Yes. It’s next to both “My eBay” and “Buy,” which they should be familiar with as a buyer (Assumption 6). People who are familiar with reading from left to right, will most likely find the “Sell” button as they scan the top of the screen.
  
  
  
3. Once users find the control, will they recognize that it produces the effect they want?  
Yes. “Sell” is an accurate label for the task that indicates the possible actions that may be associated with the activity of selling an item.
  
  
  
4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?  
Yes. They understand they’ve opened a drop-down menu and can click on an action associated with selling.



Step 02. Click Sell an item.

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

Yes. A new screen clearly labels that there are steps required to sell an item.

2. Will users see the control (button, menu, switch, etc.) for the action?

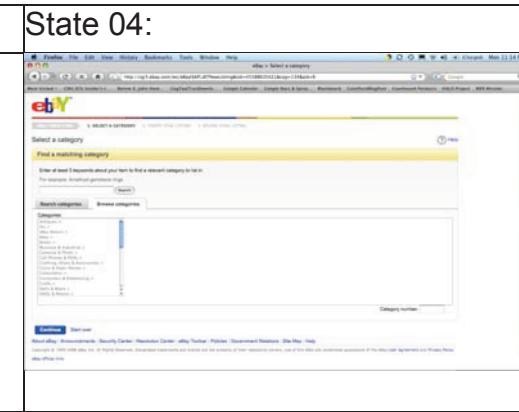
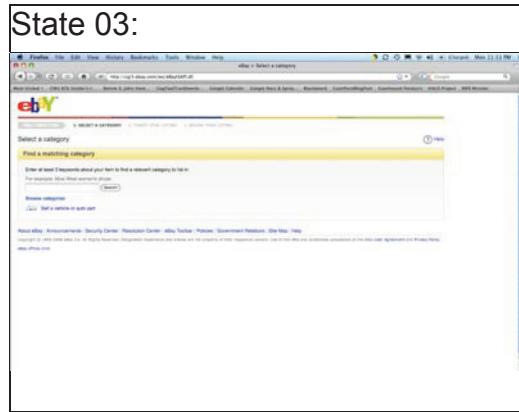
Yes, there is a link clearly labeled "Sell an Item" at the top of the drop down menu. The user will read the list of options from top to bottom and see this option first.

3. Once users find the control, will they recognize that it produces the effect they want?

Yes, the user is familiar with the front page and sees that there are no options for selling an item. Therefore, experience leads them to believe that a new page will appear with the steps to sell an item.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?

Yes. The screen changes, it shows you in "Sell An Item" and on the first step. Instructions are displayed showing the next steps to accomplish in order to sell an item.



Step 03. Click Browse categories.

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

Yes, the list of parent categories is on the screen, and these are part of the steps listed across the top of the screen for selling an item.

2. Will users see the control (button, menu, switch, etc.) for the action?

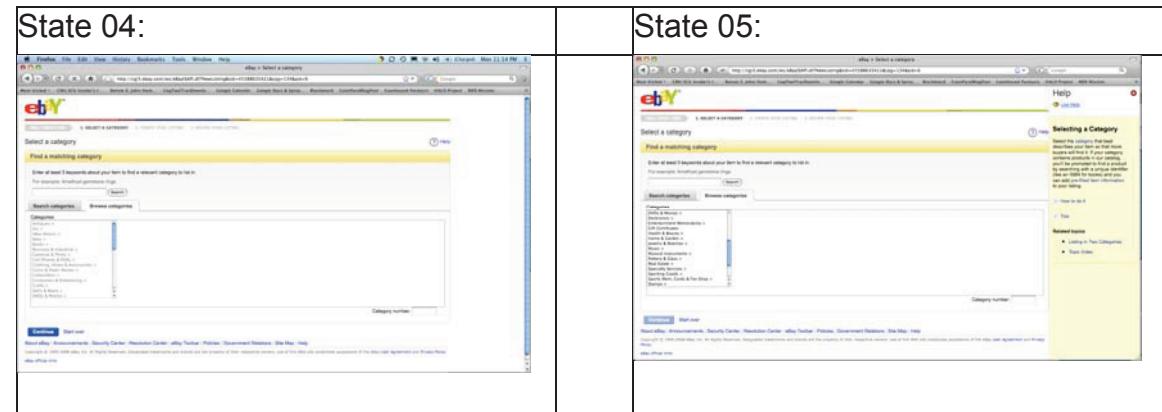
Yes, because the link is blue, bolded, and right below the search bar where the user may expect to interact.

3. Once users find the control, will they recognize that it produces the effect they want?

Yes. It is labeled accurately. There is a match between the term browsing and a list being returned for the user to look through.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?

Yes. Though it might not be expected to pop up in place, it is understandable as a menu of categories that can be browsed.



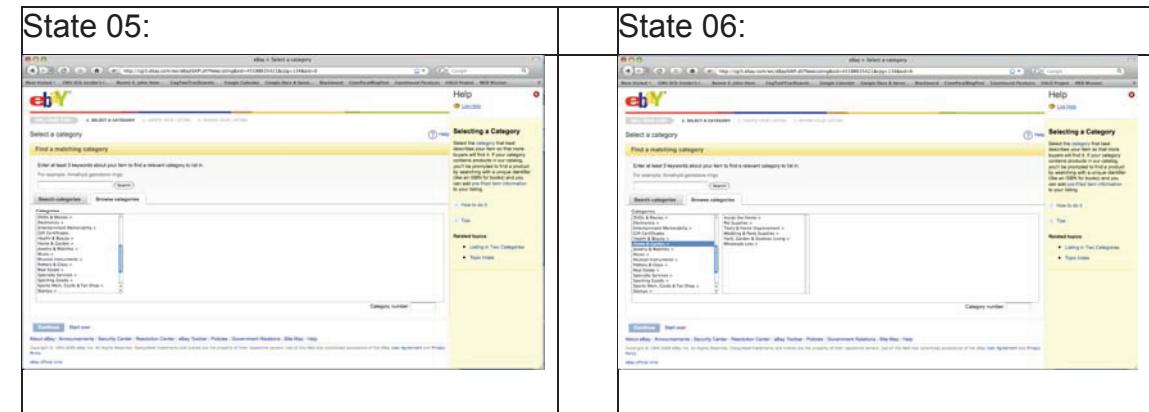
Step 04. Scroll down

1. Will users be trying to produce whatever effect the action has?  
 Yes. They want to scroll down to see more categories, because they can tell there's more to see in the list. This is indicated by the amount of space which is below the scroll slider.

2. Will users see the control (button, menu, switch, etc.) for the action?  
 Yes, the scroll is in the standard position, to the right of the list, and in the standard display colors.

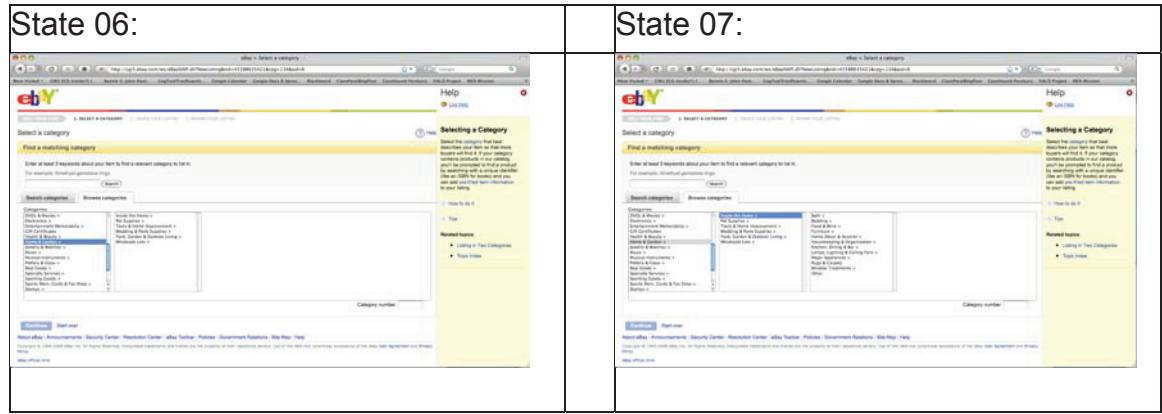
3. Once users find the control, will they recognize that it produces the effect they want?  
 Yes, the user is familiar with using scroll bars according to Assumption #2, which assumes knowledge about how a standard browser and web features work.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?  
 Yes, the list scrolls down, as expected and reveals the remainder of the list.



Step 05. Click Home & Garden >.

1. Will users be trying to produce whatever effect the action has?  
 Yes, a set of subcategories is now shown to the right of selected category.
2. Will users see the control (button, menu, switch, etc.) for the action?  
 Yes. The text is visible and sorted in alphabetical order.
3. Once users find the control, will they recognize that it produces the effect they want?  
 Yes. The user expects to select a category from the list, and the ">" icon shows that there are subcategories. According to Assumption 7, the user is an experienced eBay buyer, so they have previous experience with eBay categories.
4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?  
 Yes, because a subcategory list is now on the screen.



Step 06. Click Inside the Home >.

5. Will users be trying to produce whatever effect the action has?

Yes, a set of subcategories is now shown to the right of selected category.

6. Will users see the control (button, menu, switch, etc.) for the action?

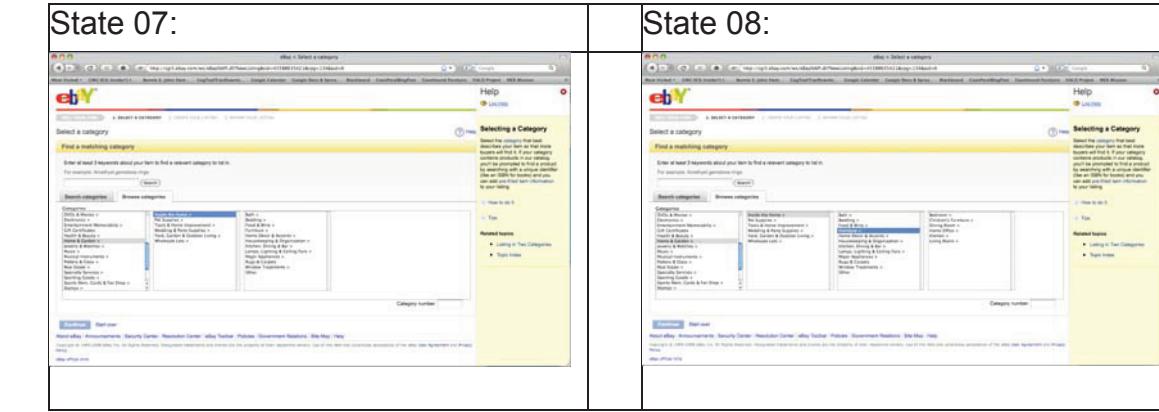
Yes. The text is visible and sorted in alphabetical order.

7. Once users find the control, will they recognize that it produces the effect they want?

Yes. The user expects to select a category from the list, and the ">" icon shows that there are subcategories. According to Assumption 7, the user is an experienced eBay buyer, so they have previous experience with eBay categories.

8. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?

Yes, because a subcategory list is now on the screen.



Step 07. Click Furniture >.

5. Will users be trying to produce whatever effect the action has?

Yes, a set of subcategories is now shown to the right of selected category.

6. Will users see the control (button, menu, switch, etc.) for the action?

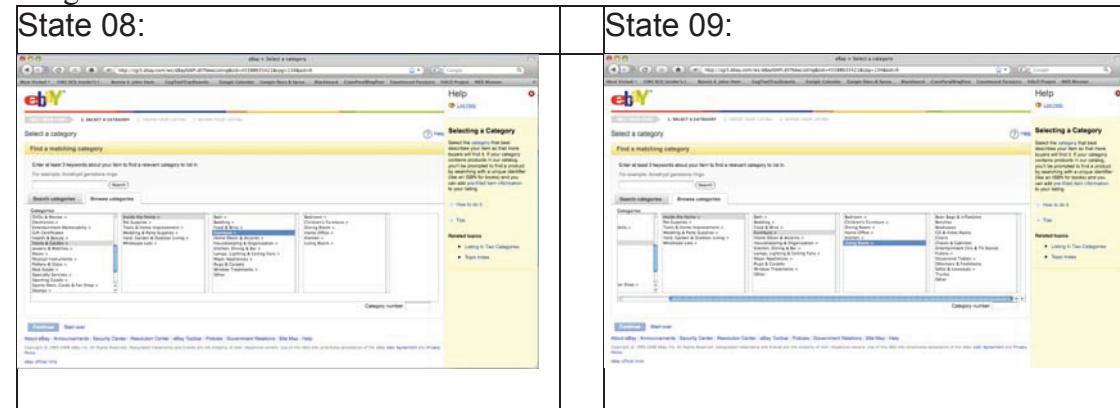
Yes. The text is easily legible and sorted in alphabetical order.

7. Once users find the control, will they recognize that it produces the effect they want?

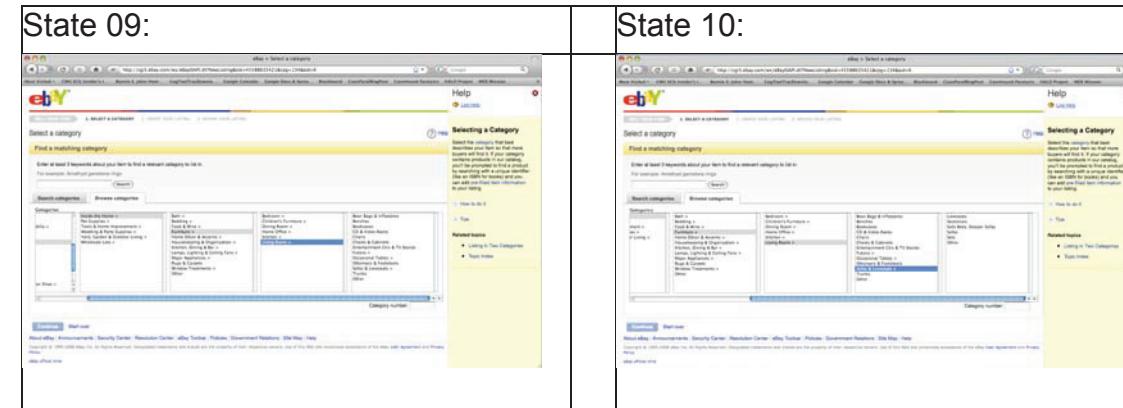
Yes. The user is familiar with the standard list widget and so expects to select a category from the list. The ">" icon indicates that there are more subcategories to refine their categorization. According to Assumption 7, the user is an experienced eBay buyer, so they have previous experience with eBay categories.

8. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?

Yes. Users are familiar with eBay's organization of multiple subcategories.



11



12

Step 08. Click Living Room >.

5. Will users be trying to produce whatever effect the action has?  
 Yes, a set of subcategories is now shown to the right of selected category.

6. Will users see the control (button, menu, switch, etc.) for the action?  
 Yes. The text is easily legible and sorted in alphabetical order.

7. Once users find the control, will they recognize that it produces the effect they want?  
 Yes. The users are familiar with the standard list widget and so expect to select a category from the list. The ">" icon indicates that there are more subcategories to refine their categorization. According to Assumption 7, the user is an experienced eBay buyer, so they have previous experience with eBay categories.

8. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?  
 Yes. Users are familiar with eBay's organization of multiple subcategories.

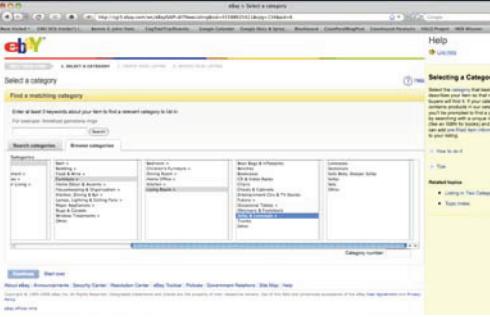
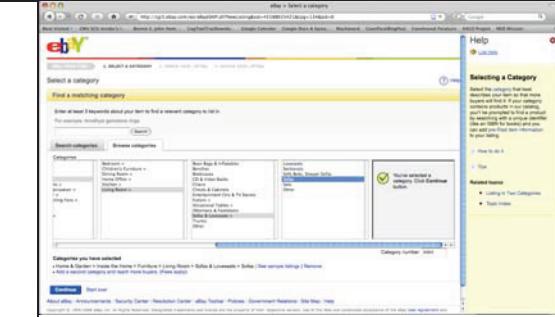
Step 09. Click Sofas and Loveseats.

5. Will users be trying to produce whatever effect the action has?  
 Yes, a set of subcategories is now shown to the right of selected category.

6. Will users see the control (button, menu, switch, etc.) for the action?  
 Yes. The text is easily legible and sorted in alphabetical order.

7. Once users find the control, will they recognize that it produces the effect they want?  
 Yes. The users are familiar with the standard list widget and so expect to select a category from the list. The ">" icon indicates that there are more subcategories to refine their categorization. According to Assumption 7, the user is an experienced eBay buyer, so they have previous experience with eBay categories.

8. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?  
 Yes. Users are familiar with eBay's organization of multiple subcategories.

State 10:	State 11:
	

#### Step 10. Click Sofas.

5. Will users be trying to produce whatever effect the action has?

Yes. The user receives a final confirmation indicating that they have finished choosing a subcategory for their item. The user is trying to select a subcategory for their item as part of the process of selling their item.

6. Will users see the control (button, menu, switch, etc.) for the action?

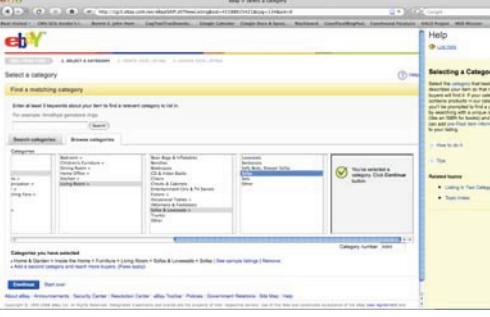
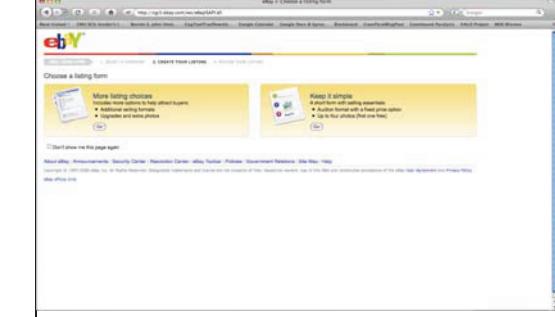
Yes. The text is easily legible and sorted in alphabetical order.

9. Once users find the control, will they recognize that it produces the effect they want?

Yes. The lack of ">" symbol indicates that this is the last category level to select, differentiating it from the previous menus. According to Assumption 7, the user is an experienced eBay buyer, so they have previous experience with eBay categories.

10. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?

Yes. There is visual feedback indicating the action was taken and there are no further options to select. It tells them to click Continue.

State 11:	State 12:
	

#### Step 11. Click Continue

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

Yes. The system tells the user that they have completed step 1 and now needs to select a form to fill out, a simple or detailed form.

According to Assumption 9, as an experienced online buyer may expect that filling out a form is part of the process of buying or selling on eBay.

2. Will users see the control (button, menu, switch, etc.) for the action?

Yes. It's easily visible and quickly differentiated from the other links on the page.

3. Once users find the control, will they recognize that it produces the effect they want?

Yes. It's properly labeled to match the system instructions and looks like a Continue button.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?

Yes. The steps at the top indicate that they have moved to step 2: "Create your listing", and "Choose a listing form" tells them how to do this.

<b>State 12:</b> 	<b>State 13:</b> 
---	--

Step 12. Click the Go under Keep it simple.

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

Yes. Filling out a listing form is necessary to creating an ad, and the descriptions of each form option make it clear what kind of forms they are. Since the user is a first time seller, they want to get to a simple form to sell their item.

2. Will users see the control (button, menu, switch, etc.) for the action?

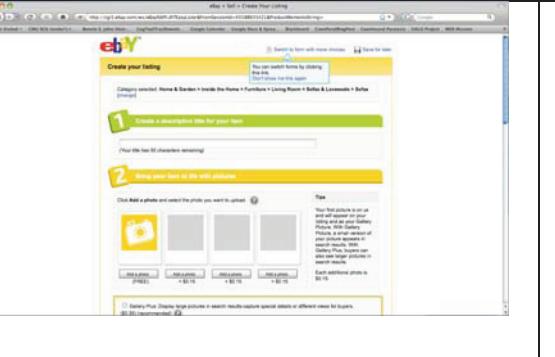
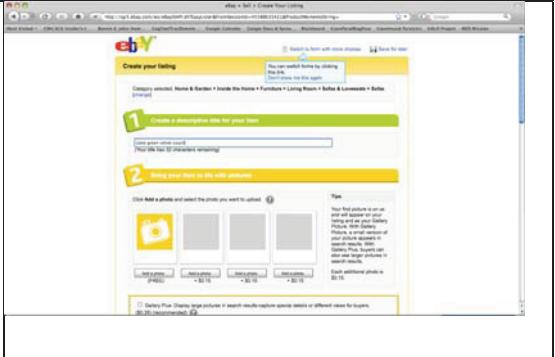
Yes. The “Go” button is visible.

3. Once users find the control, will they recognize that it produces the effect they want?

Yes. “Go” indicates that it will “go” to the form, and the button is clearly associated with the desired option.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?

Yes. The form given is straightforward and matches the idea of a “short form” and “keep it simple” with clear instructions on how to fill out the form to “create your listing.”

<b>State 13:</b> 	<b>State 14:</b> 
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Step 13. Type title into the field.

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

Yes. The user is trying to type words to create the title. As an experienced buyer on eBay, the user will know that creating a title is an important part of the task of selling an item.

2. Will users see the control (button, menu, switch, etc.) for the action?

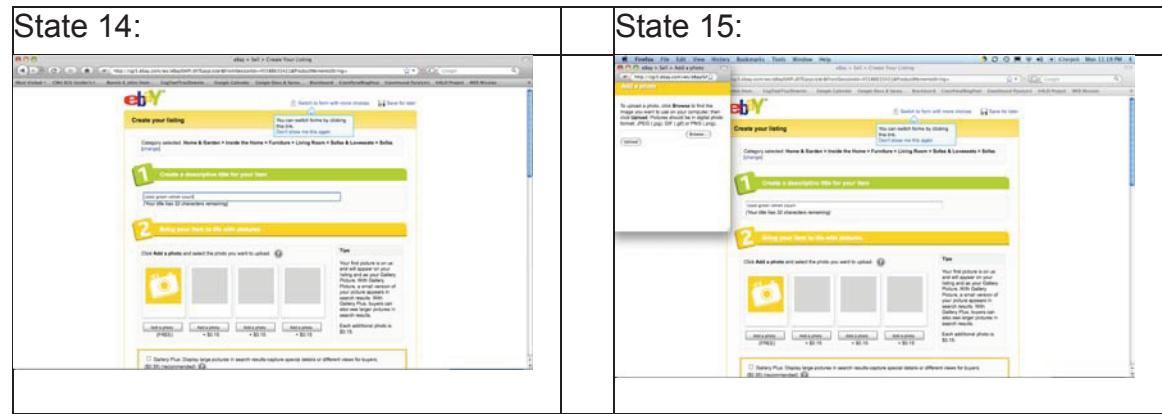
Yes. The text box is easily seen; it is the only field below the first step in the form.

3. Once users find the control, will they recognize that it produces the effect they want?

Yes. They have experience using forms and text fields on web pages. The heading also says to create a descriptive title. Furthermore, the text field highlights to show that it's active to use once the user clicks it. For these reasons, the user will know that they should use the text box to input the title.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?

Yes. The characters typed into the text box are shown immediately.



Step 14. Click Add a photo above (FREE).

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

Yes. The user wants to tell the system what photo to upload from their computer. The user will be trying to produce the effect of adding a photo because their task is to post an ad that includes a picture.

2. Will users see the control (button, menu, switch, etc.) for the action?

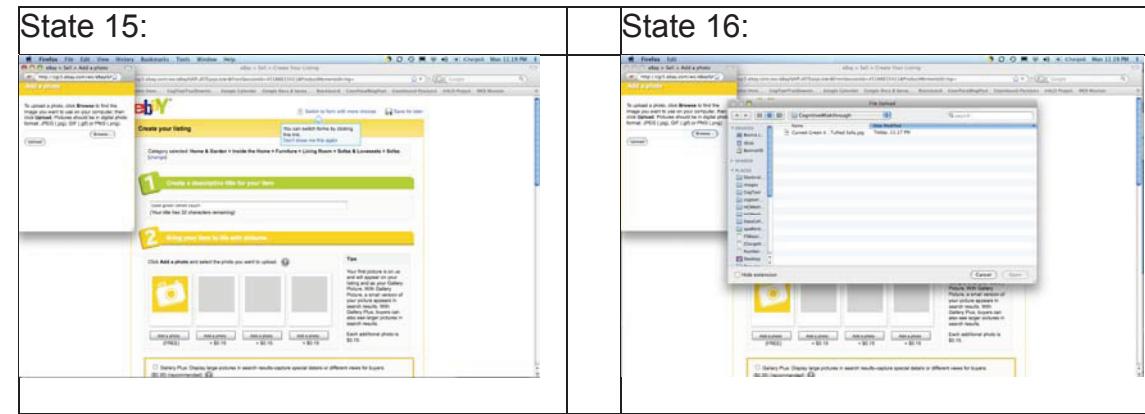
Yes. The button is easily visible and looks like a standard button. Two features will make the user perceive that the button should be selected to add the first photo: (1) the yellow photo icon that draws the eye to that location and (2) the button's position as the first in the row.

3. Once users find the control, will they recognize that it produces the effect they want?

Yes. Since the button reads "Add Photo," the user will associate the sub-task that they are trying to achieve (adding a photo) with the button.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?

Yes. The user will encounter the feedback of a pop-up window labeled "Add a photo" and a file browse dialog to upload a photo from their computer; they will recognize that browsing for a photo on their computer will get them closer to the task of adding a photo to their ad listing. According to Assumptions 5 and 8, the user is familiar with pop-up windows and file browse dialogs.



Step 15. Click Browse....

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

Yes. The user wants to find a photo, which requires browsing your file system to choose one. Since Assumption 5 states that the user is experienced with their operating system, they will know that browsing for a photo will lead to the completion of the sub-task of adding a photo to their ad listing.

2. Will users see the control (button, menu, switch, etc.) for the action?

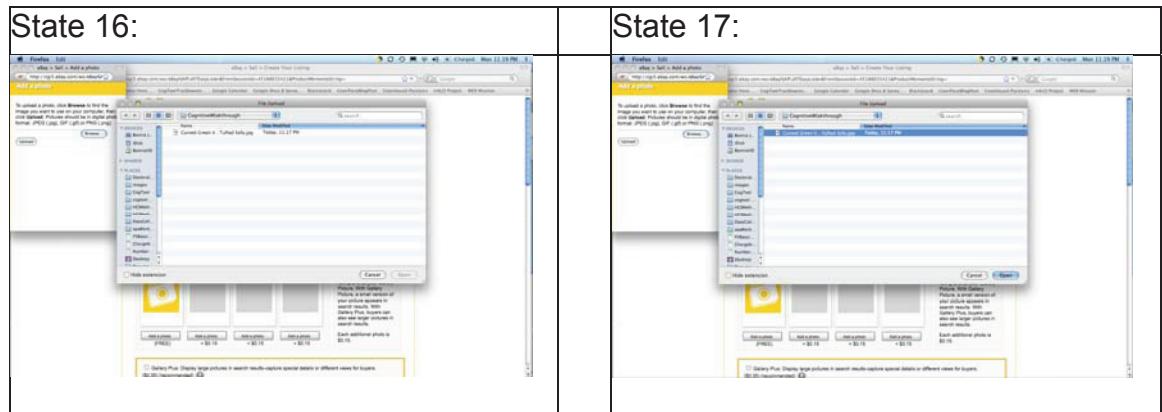
Yes. The browse button is easily visible and at the end of a text field for the file name, which is a standard form. It's also a standard operating system button, which the user will recognize according to Assumption 5.

3. Once users find the control, will they recognize that it produces the effect they want?

Yes. The browse button is a standard concept for picking files. Therefore, the user will associate the browse button with the action of browsing for a photo.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?

Yes. The feedback is a standard browse dialog on their system, which they are used to using.



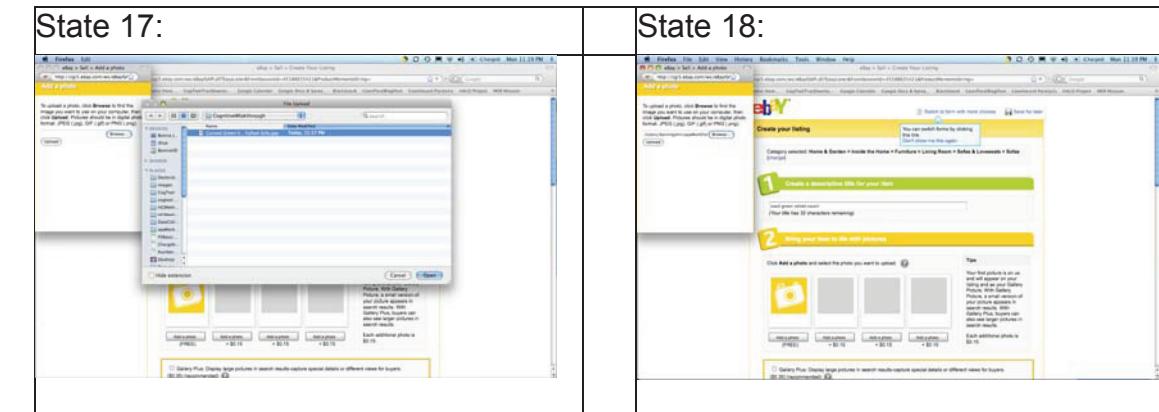
Step 16. Click filename.

1. Will users be trying to produce whatever effect the action has?  
 Yes. They want to select the file to upload. They know that they need to click the file name of the photo they want to add in order to complete the sub-task of adding a photo.

2. Will users see the control (button, menu, switch, etc.) for the action?  
 Yes. The file name is clearly visible in the dialog.

3. Once users find the control, will they recognize that it produces the effect they want?  
 Yes. Because the user is familiar with their operating system according to Assumption 5, they will know how to select files in browse dialogs.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?  
 Yes. The feedback is in accordance with standard browse dialogs.



Step 17. Click Open.

1. Will users be trying to produce whatever effect the action has?  
 Yes. The user wants to select the file to upload.

2. Will users see the control (button, menu, switch, etc.) for the action?  
 Yes. The "Open" button is visible and highlighted in blue.

3. Once users find the control, will they recognize that it produces the effect they want?  
 Yes. According to Assumption 5, the user is familiar with Mac browse dialogs, which include "Open" buttons when finished.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?  
 Yes. It shows the file name they wanted in the text field for "Add a photo," which was their sub-task.

**State 18:**

**State 19:**

Step 18. Click Upload.

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

Yes. They want to upload the selected file from their computer to the site. Since the user is experienced at using web features such as uploading according to Assumption 4, they will know that they have to upload their selected photo in order to complete the sub-task of adding the photo to their ad listing.

2. Will users see the control (button, menu, switch, etc.) for the action?

Yes. The upload button is visible and located below the text field that the user just filled.

3. Once users find the control, will they recognize that it produces the effect they want?

Yes. The button is labeled "Upload," so the user will know that it will produce the effect of uploading the file that they selected. Possible design change: Since the user is technically trying to add a photo, the button could be called "Add" instead of "Upload."

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?

Yes. The photo is shown as added to the form of their ad, and they have the ability to remove it, meaning that the photo has been added. This will signify to the user that they can continue on to the next portion of their task of creating an ad listing.

**State 19:**

**State 20:**

Step 19. Scroll down.

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

Yes. The form is cut off on the screen, implying that it needs to be scrolled to complete.

2. Will users see the control (button, menu, switch, etc.) for the action?

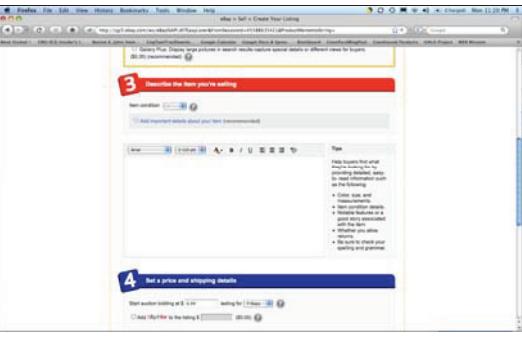
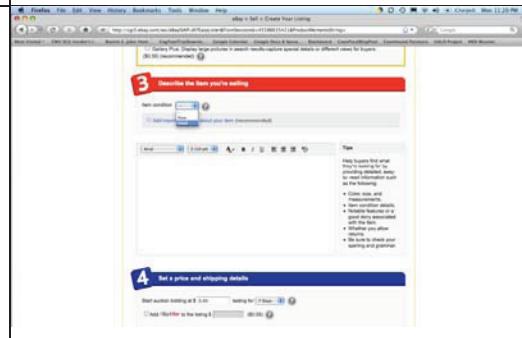
Yes. The scroll bar is visible in the standard position.

3. Once users find the control, will they recognize that it produces the effect they want?

Yes. The scrollbar is a standard widget that the user has experience with.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?

Yes. The user sees the remaining part of the form when he scrolls down as expected, and it shows him the next steps to do in the task.

State 20:	State 21:
	

Step 20. Click Item Condition pull-down list.

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

Yes. The user would like to specify the condition of the item, which is "used."

2. Will users see the control (button, menu, switch, etc.) for the action?

Yes. It is visible directly below the 3rd step task marker on the left side of the screen.

3. Once users find the control, will they recognize that it produces the effect they want?

Yes. The user wants to sell a used item, and "Item condition" makes sense to set this sort of data. Possible design change: Instead of an ambiguous hyphen as the initial position of the drop-down menu, default text such as "Select new or used" could be added to clarify that the user only has two options to choose between, not a range of conditions.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?

Yes. The menu displays choices of "New" and "Used" which allows the user to specify that their item is of used condition, in accordance with the task.

State 21:	State 22:
	

Step 21. Click Used.

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

Yes. The user wants to select "Used" at the condition of the item for sale, which is a necessary part of the task to sell a used couch.

2. Will users see the control (button, menu, switch, etc.) for the action?

Yes. The menu options display below where the menu opened, which is where the user's eye already is.

3. Once users find the control, will they recognize that it produces the effect they want?

Yes. The menu appears as a standard drop down menu, and the user has experience with being able to click on menu items to select them.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?

Yes. "Used" is now shown as selected for the item condition, and the rest of the form is still available to resume completing the task with.

State 22:	State 23:

Step 22. Type description.

1. Will users be trying to produce whatever effect the action has?  
 Yes. The user wants to enter information about the item as part of the task.

2. Will users see the control (button, menu, switch, etc.) for the action?  
 Yes. The text box takes up a large amount of room on the screen, and stands out as empty space against the rest of the content-filled form.

3. Once users find the control, will they recognize that it produces the effect they want?  
 Yes. Step 3 is called "Describe the item you're selling" and the user is familiar with using text boxes on websites.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?  
 Yes. The user sees the words that are typed and can see that there is another step on the screen to go on to when finished.

State 23:	State 24:

Step 23. Type starting price into bidding field.

(Yes, it did scroll down a bit, too, but I forgot to take that picture.)

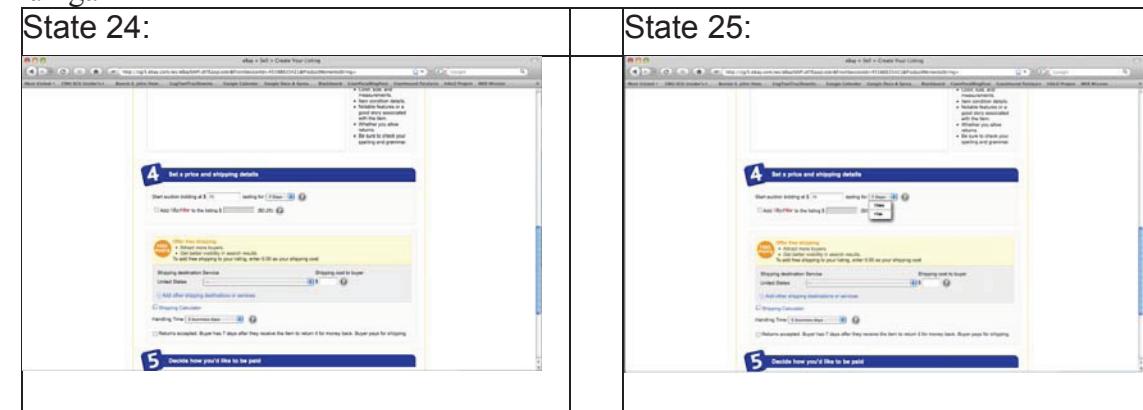
1. Will users be trying to produce whatever effect the action has?  
 Yes. The user wants to set a minimum price for the couch as part of the task.

2. Will users see the control (button, menu, switch, etc.) for the action?  
 No. The text box is filled in with a value, which suggests that it does not need the user's attention to modify. The user's eye will be scanning for blank fields; since the field is populated, it will not be perceived as something that needs to be filled in. Possible design change: To avoid confusion, remove the default price of \$0.99 so the user is sure to change it if desired.

3. Once users find the control, will they recognize that it produces the effect they want?  
 Yes. The text states that the textbox is for the starting price of the auction, and the users understand that text boxes can be changed.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?  
 Yes. The typed price appears in the box and completes the sentence of stating the starting auction sites.

No.	CW- 01	Problem/Good Aspect:
<b>Name:</b>		Problem
<b>Pre-populated starting price field</b>		
<b>Evidence:</b>		Task Step: Step 23 – Type starting price into bidding field Cognitive Walkthrough Question: Question 2 – Will the users see the control (button, menu, switch, etc.) for the action?
<b>Explanation:</b>		The user does not want to ship the item and the menu “Shipping destination / Service” does not imply that local pickup could be used. It is reasonable to assume that since the user wants to specify local pickup that they could be easily confused.
<b>Severity or Benefit:</b>		
<b>Rating:</b> 3, major		
<b>Justification (Frequency, Impact, Persistence):</b>		
<b>Frequency:</b>		The frequency is high, because .99 is a default. Therefore the user must change this value each time if they choose that the bid should start at a different price.
<b>Impact:</b>		The impact is high to the user, because the form may be submitted when they do not want to start an auction at a much lower price. There is potential that the user may sell their item for a much lower price than they would care for.
<b>Persistence:</b>		The persistence is low because once the user finds out that the amount can be changed to another amount then they will remember to change it in the future.
<b>How these factors are weighted and why:</b>		The frequency and impact were high. However the persistence was a low. We decided that this may dissatisfy users so much, from selling an item at a lower price than they would have normally, that the severity is major.
<b>Possible solution:</b>		Leave it blank or highlight the field in a color which draws attention to it.
<b>Possible trade-offs:</b>		The form size would not be increased. Development time is the largest trade off, which is nominal.
<b>Relationships:</b>		N/A



Step 24. Click 7 Days pull-down list.

1. Will users be trying to produce whatever effect the action has?  
 Yes. The user wants to decide how long the auction should run, based on the task.
2. Will users see the control (button, menu, switch, etc.) for the action?  
 Yes. The menu is at the end of the first sentence of this section, which is also at the top of the section.
3. Once users find the control, will they recognize that it produces the effect they want?  
 Yes. The default term “7 days” makes sense in the context of the sentence, and the user’s familiarity with drop-down menus allows them to infer that this value can be changed.
4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?  
 Yes. The user is given a list of other menu options and is experienced in knowing how to click on one to select it, or close the menu to cancel.

State 25:	State 26:

Step 25. Click 3 Days.

1. Will users be trying to produce whatever effect the action has?  
 Yes. The user wants to set the duration of the auction to 3 days, which is part of the necessary process for selling items. And according our Assumption 2 of the user's background knowledge, they know how to use the standard widgets in their browser, so they are aiming for the effect that appears in State 26 when they click on "3 days."

2. Will users see the control (button, menu, switch, etc.) for the action?  
 Yes. It is part of the menu they opened, and there are just 2 opinions available including "3 days." Also the font size is big enough for user to detect if there is no problem for them to open the menu.

3. Once users find the control, will they recognize that it produces the effect they want?  
 Yes. It states a duration amount, and all the other options are other amounts to choose. According to Assumption 6, users are experienced in buying in the same website, so they are pretty familiar with the expression of duration amount. They could recognize the effect it produces is the one they want.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?  
 Yes. It shows 3 days populated in the duration menu instead of 7 days, which is exactly match with their expectation based on the previous experience.

State 26:	State 27:

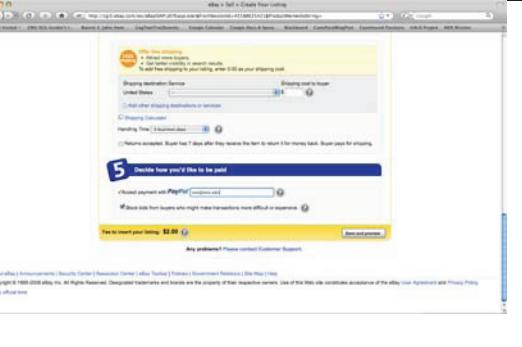
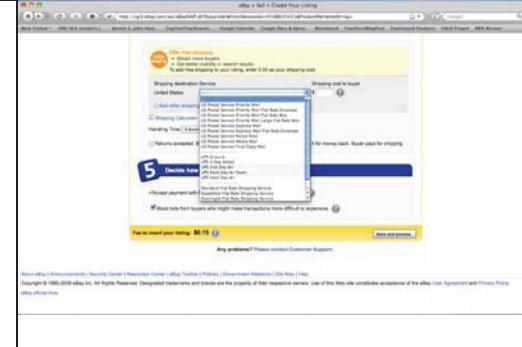
Step 26. Scroll down.  
 (Note: account address has been anonymized.)

1. Will users be trying to produce whatever effect the action has?  
 Yes. The user wants to complete the form which continues down the page, and they know how to use scroll bars according to Assumption 2, which states that the user knows the standard widgets used in their browser.

2. Will users see the control (button, menu, switch, etc.) for the action?  
 Yes. The scroll bar is quite visible in the standard position, and it's in light blue, which stands out from the others.

3. Once users find the control, will they recognize that it produces the effect they want?  
 Yes. The scrollbar is a standard widget, and users are experienced in using them based on Assumption 2, which states that users are familiar with standard web browser features.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?  
 Yes. The user sees the remaining part of the form when he scrolls down, as expected. When the user scrolls down, the window shows the downside of the webpage. They are moving in the same direction, which match users' mental model of scrolling down.

<p><b>State 27:</b></p> 	<p><b>State 28:</b></p> 
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Step 27. Click Shipping destination Service pull-down list.

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

Yes. The user wants to fill out the form, which includes selecting the shipping method. This is a necessary step within the workflow of setting up selling items. Since the user's sub-task is to select local pick-up only (no shipping), the effect of viewing the shipping options will allow them to perform this action.

2. Will users see the control (button, menu, switch, etc.) for the action?

Yes. The menu is easily visible since it's big enough to detect and in the center of the screen, which is within the user's attention area.

3. Once users find the control, will they recognize that it produces the effect they want?

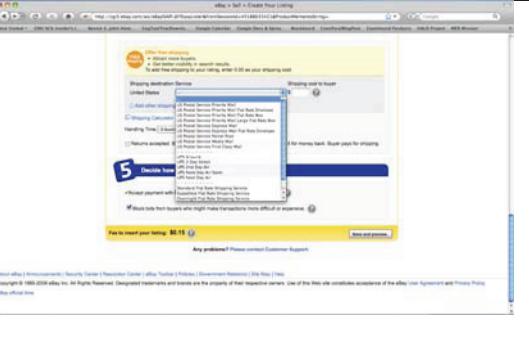
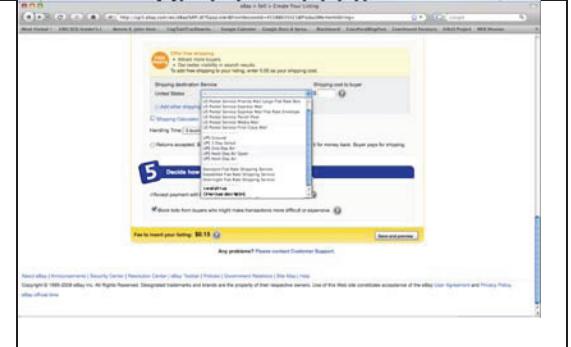
No. The user doesn't want to ship the item, and the menu "Shipping Destination / Service" does not imply that local pickup could be used. **Possible design**

**changes:** To make the function of the drop-down menu clearer, add text within the menu that reads, "Click to select shipping method." Also, to avoid confusion with the "Shipping destination" and "Service" text running into each other, more space should be added between these elements. Finally, instead of requiring the user to scroll to get to the local pick-up option, the drop-down menu could be lengthened slightly to fit all of the options.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?

No. Since none of the options that are revealed in the drop-down menu show the user's desired sub-task of finding local pick-up only, the user will not be confident that they will be able to go on to the next action. Possible design changes: Since local pickup is not technically a shipping method, but rather a lack of one, this option could be taken out of the shipping drop-down menu.

No.	G6-CW- 02	Problem/Good Aspect: Problem
<b>Name:</b>	"Local pickup" in Service menu	
<b>Evidence:</b>	Task Step: Step 27 Cognitive Walkthrough Question: <Question number and content>	
Question 3 – Once users find the control, will they recognize that it produces the effect they want?		
Question 4 - After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?		
<b>Explanation:</b>	The user does not want to ship the item and the menu "Shipping destination / Service" does not imply that local pickup could be used. It is reasonable to assume that since the user wants to specify local pickup that they could be easily confused.	
<b>Severity or Benefit:</b>		
<b>Rating:</b> 2.5, medium		
<b>Justification (Frequency, Impact, Persistence):</b>		
<b>Frequency:</b>	The frequency is low, because this would only occur with sellers of local items. We infer that eBay sellers, by and large, ship their items being sold.	
<b>Impact:</b>	The impact is medium to the user, because the form cannot be submitted without a service selected and the user will return to the list to eventually find local pickup. It may be possible that if the user believes that a service must be selected and they do not want to use a service, that they may abandon the task all together.	
<b>Persistence:</b>	The persistence is low because once the user finds that local pickup resides within the "Services" drop down menu, they will know where to look for future postings.	
<b>How these factors are weighted and why:</b>	The frequency and persistence were low. However the impact was a medium and increased the rating because of the potential to lose new users during this process.	
<b>Possible solution:</b>	Pull the local pickup option out of the list and use radio buttons to choose either local pickup or a shipping service.	
<b>Possible trade-offs:</b>	This reduces the set of options in the "Service" drop down menu. The form size is increased by 18 pixels. The numbers of controls on the form are increased.	
<b>Relationships:</b>	N/A	

State 28:	State 29:
	

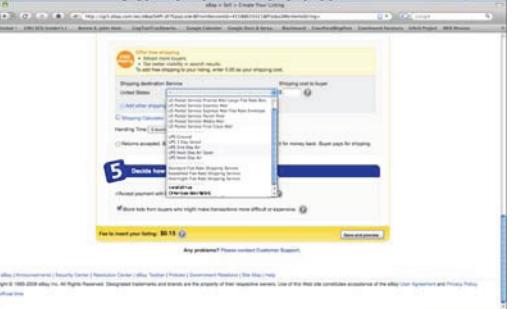
Step 28. Scroll down.

1. Will users be trying to produce whatever effect the action has?  
 Yes. They want to see more options in the menu.

2. Will users see the control (button, menu, switch, etc.) for the action?  
 Yes. There is an obvious scroll bar on the menu, and they are familiar with the widgets like scrolling bar based on Assumption 2.

3. Once users find the control, will they recognize that it produces the effect they want?  
 Yes. The scroll bar is a standard widget, and users are experienced users for windows system, so it's easy for them to recognize and know the effect it produces is what they want.

4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?  
 Yes. They see the rest of the options in the list that can be selected, which is just what they want.

State 29:	State 30:
	

Step 29. Click Local pickup.

The task is complete (we didn't want to have to pay for an ad, so we stopped here).

1. Will users be trying to produce whatever effect the action has?  
 Yes. The user wants to sell the couch via local pickup, which is the user's preference when setting up their ad listing.
2. Will users see the control (button, menu, switch, etc.) for the action?  
 Yes. The user scrolled down and the items were visible (and bolded) at the end, which falls in the user's attention area.
3. Once users find the control, will they recognize that it produces the effect they want?  
 Yes. "Local pickup" is a good label for having the couch picked up in person, and it makes sense to the user since they are experienced in shopping online according to our Assumption 6.
4. After the action is taken, will users understand the feedback they get, so they can go on to the next action with confidence?  
 Yes. "Local pickup" is set in the menu as the shipping method to be used, which is consistent with users' assumptions that they might be able to find "pick-up" related option within the shipping methods menu.

## Additional Assumptions about User Knowledge

**Assumption 5:** The user understands how to use regular operating system features, dialogs, and widgets.

**Assumption 6:** As an experienced eBay buyer, the user has used the "Buy" menu in the navigation and knows how auction duration and shipping works.

**Assumption 7:** The user is an experienced eBay buyer, so they are familiar with finding items using categories, subcategories, and keywords.

**Assumption 8:** The user is experienced with browsing online and thus is familiar with pop-up windows.

**Assumption 9:** Given the users level of comfort with purchasing items online using eBay, the user has also purchased using other sites. Therefore, they expect that a sub step of the task of making purchases is to fill out some sort of form. They are familiar with forms.

## Side Issues and Design Changes

**Step 18:** Since the user is technically trying to add a photo, the button could be called "Add" instead of "Upload."

**Step 20:** Instead of an ambiguous hyphen as the initial position of the drop-down menu, default text such as "Select new or used" could be added to clarify that the user only has two options to choose between, not a range of conditions.

**Step 23:** To avoid confusion, remove the default price of \$0.99 so the user is sure to change it if desired.

**Step 27:** To make the function of the drop-down menu clearer, add text within the menu that reads, "Click to select shipping method." Also, since local pickup is not technically a shipping method, but rather a lack of one, this option could be taken out of the shipping drop-down menu. Additionally, to avoid confusion with the "Shipping destination" and "Service" text running into each other, more space should be added between these elements. Finally, instead of requiring the user to scroll to get to the local pick-up option, the drop-down menu could be lengthened slightly to fit all of the options.

## Comparison of Cognitive Walkthrough and Heuristic Evaluation

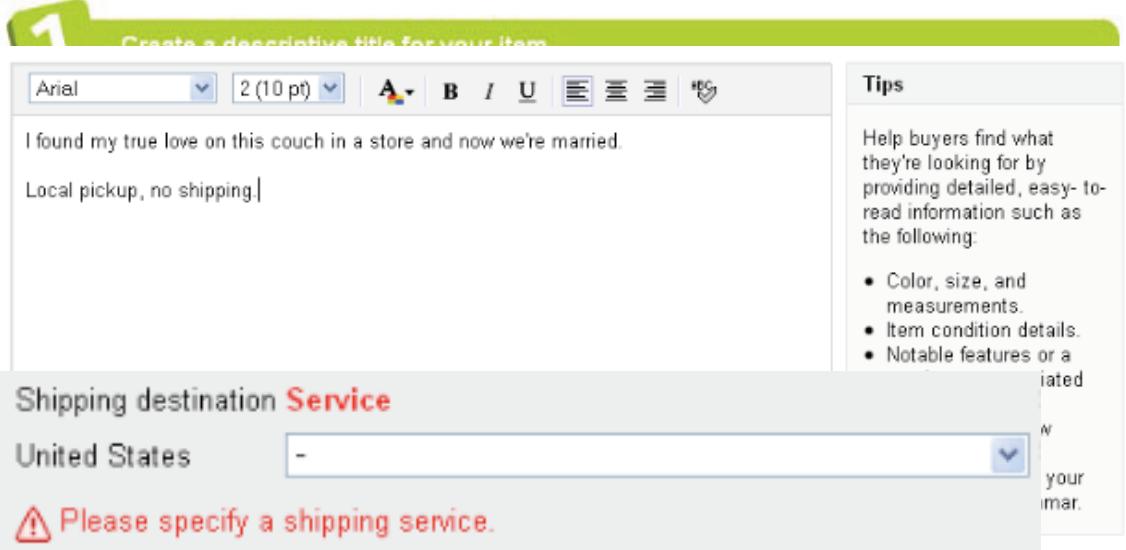
### How do the approaches differ (HE/CW)?

In a cognitive walkthrough (CW), the evaluator goes step by step through a task for which a system was designed and evaluates each step of the process in relation to the user's goals. CW indicates what steps in the sequence of completing a task violate the user's perception or understanding of how the step relates to the task, from a new user's perspective. CW was a useful technique in being very thorough with evaluating a specific task and how easy it is to learn. However, a heuristic evaluation (HE) seems to have a much more global approach. A specific task and user goals are not necessary—instead, the evaluator observes how the specific design violates general rules which, by and large, are applied to and observed by most systems.

CW captures each interaction required to do a task and verifies that each step passes criteria needed for first-time usability. HE requires less preparation and also does not necessarily require a task laid out in the same level of detail. We think that CW depends a lot on the research and preparation done ahead of the evaluation itself, which seems like it could be easy to get incorrect or incomplete. HE uses well-established heuristics, based on generalized user needs, but still leaves much subjective interpretation to the evaluator. Both are useful methods, with CW working best in situations involving first-time users performing a task, and HE best for looking at an overall system design.

### Did you find the same types of problems in this analysis as you did in the Heuristic Evaluation? Why or why not?

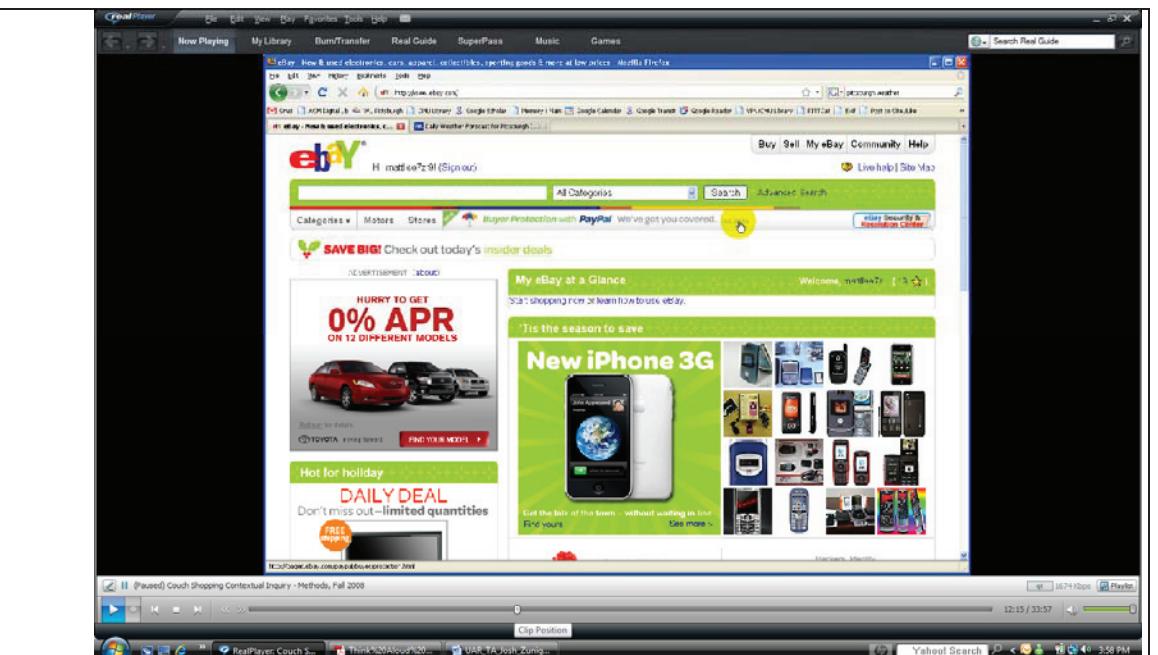
The problems we found during each evaluation method were very different. The HEs revealed many broad problems, whereas the CWs revealed problems which were more specific to the user's learning. This seemed to be that we had been focusing on a specific step by step inspection; therefore we caught specific problems to the prescribed task.

No. G6-TA-07	Problem/Good Aspect: Problem
Name: No clear place to enter "pickup only"	
Evidence: <p>What the user said: "I'm not sure if I need to mention here that it's pickup only and no shipping." [20:20] "Since I don't see anything, I'm going to add it here." [20:45] "I feel like I kind of covered what I wanted except for the pickup part. Maybe I'll put that here." [23:00]</p> <p>"I'm going to go back to where I put my romantic story and I'm going to add the shipping." [24:45] "Now I'm seeing there's a whole Shipping destination service thing. So it's in the United States but I'm actually not shipping."</p> <p>What the user did: The user scrolls up and down looking for a place in the form to specify pickup only (no shipping). She does not see a field, so she types "pickup only" into the title; but she runs out of room, so she deletes the words.</p> <p>The user scrolls up, clicks the description text box, and adds local pickup, no shipping, to the description. She scrolls back down to the shipping details and opens the drop-down menu to look at shipping options, but she does not see what she's looking for so she closes it.</p> <p>After getting an error message telling her to select a shipping service, the user clicks on shipping help, then scrolls up and down through the form looking for something she might have missed. She does not click on the highlighted field, shipping service, to find her goal of selecting local pickup only (no shipping).</p> <p>What the system did: When the user submits the auction to Save and preview, the system displays an error message stating that the user needs to enter shipping information. The system shows the user where to input information by highlighting the text in red and displaying red notice messages. After the experimenter leads the user to the shipping service drop-down menu, the user is able to select Local pickup, and the system immediately changes the shipping service field.</p>	
 <p>The screenshot shows the eBay auction creation interface. At the top, there's a green bar with the number '1' and the text 'Create a descriptive title for your item'. Below the title input field, there are font style and size dropdowns, and a rich text editor toolbar. The title input field contains the text 'I found my true love on this couch in a store and now we're married.' Below the title, the 'Shipping destination Service' dropdown is set to 'United States'. A red error message '⚠ Please specify a shipping service.' is displayed below the dropdown. On the right side, there's a 'Tips' sidebar with advice on what buyers look for in titles and a list of bullet points.</p>	

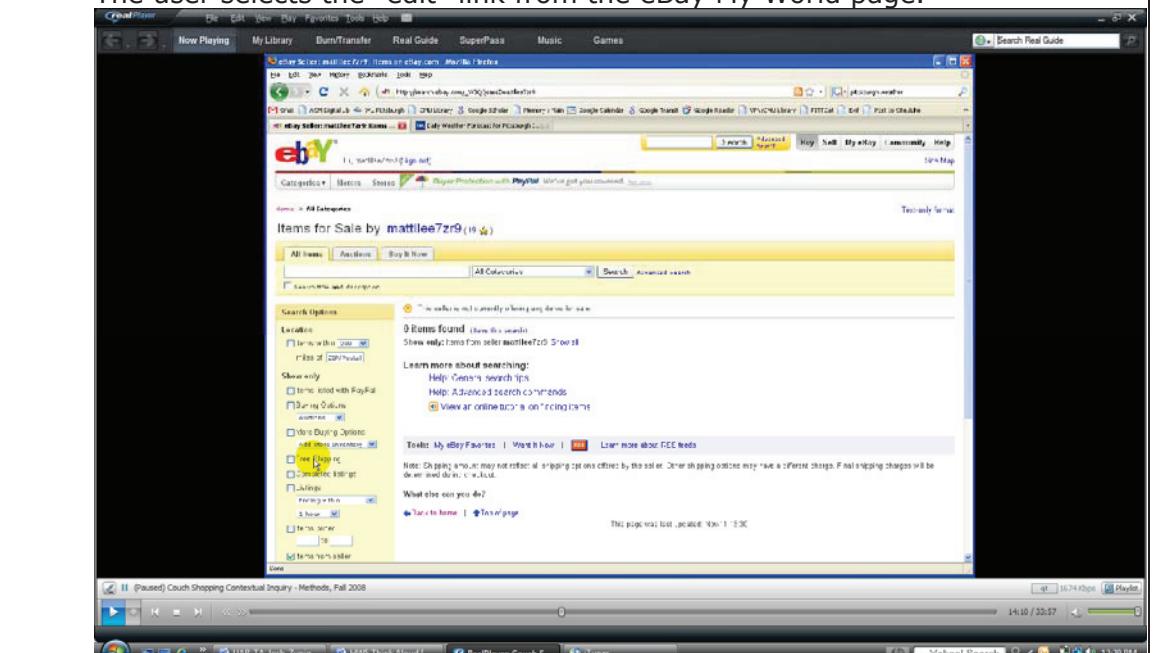
<p>Criteria: The user expresses confusion over how to achieve a goal The user articulates a goal and cannot succeed in attaining that goal within three minutes.</p> <p>Explanation: The user clearly has the goal of specifying that the item is available for local pickup only (no shipping). She wants to put this information in the form, but she cannot find a way to do it. This meets the confusion criterion because the user scrolls up and down in a confused state, often comments about not knowing where to put the local pickup information. This meets the three-minute criterion because the user could not complete her goal within three minutes and needed help from the experimenter to complete her goal.</p> <p>Severity or Benefit</p> <p>Rating: 3 major</p> <p>Frequency: Low. Users of eBay seem to often ship items, which is likely why it was designed this way. However, there's no reason to dissuade local sellers from using the site.</p> <p>Impact: High. The placement of Local Shipment does not logically make sense, and this user could not find it even given a fair amount of time to explore options. The user is completely prevented from posting the ad without selecting this option, even when it's specified in the item description.</p> <p>Persistence: Low. The user will likely remember how to select Local Shipping once they have learned where to find it. The hard part is finding it.</p> <p>How these factors are weighted and why: Because local sellers could be an important niche market and because they are completely prevented from listing an ad without finding the Local Pickup option, the impact and low frequency outweigh the low persistence to produce a critical problem that eBay will surely want to remedy for business reasons.</p> <p>Possible solution: Create a radio button menu between Shipping Service and Local Pickup. This way, Local Pickup is logically separated from shipping, which makes sense to the user.</p> <p>Possible trade-offs: Sellers who ship items do not need an item on the screen for local pickup, so it would add clutter. However, this could be minimized by placing the Shipping Service option first in the list, allowing those majority users to keep this default setting, while still providing flexibility for local sellers.</p> <p>Relationships: JHZ-TA-07, KN-TA-09, YX-TA-06, JLZ-TA-08, G6-TA-15</p>
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No. G6-TA-03

No. G6-TA-03	Problem/Good Aspect: Problem
Name: Unsure where to sell	
Evidence: What is on the screen or presented aurally? The eBay home page w/user logged in, the eBay "My World" page, the "Edit Listings" module page, and the "Items For Sale" page.	
What the user said? "I have absolutely no idea what I am supposed to do. So, I am going to have to think about this. . . . Oh My eBay at a glance. Ummmm. That's the only thing so far that makes sense to me, that I might go there" [12:30]	
"I see 'Shop your favorite categories' 'From our sellers'. It seems to me, that I would go to that (My eBay). So, I am going to click on it and see what happens." [12:45]	
"Ok, I may have taken a wrong turn. I am very naïve about this. . . . I am a little confused if this is incoming or outgoing. . . . I am not convinced I am on the right page" [14:45]	
"This doesn't make sense to me." [15:13]	
"Again I am not sure this is for me. I am sorry." [16:19]	
"Well I am going to learn more about selling." [16:28]	
What the user did? The user searches for familiar terms, related to selling. Then the user scrolls up and down the full length of the page to see more options. Then the user reads section by section to find a keyword in the titles. The user scans the page for selling terms and after not finding any returns to the previous page. The user scans the page for selling terms and after not finding any selects the listing type drop down list.	
What the system presented to the user and did in response to their actions? Include screen shots and video times.	
<ul style="list-style-type: none"><li>- The user starts to scan the top of the home page for terms that might indicate where to start. Mouse movement. [12:08]</li></ul>	

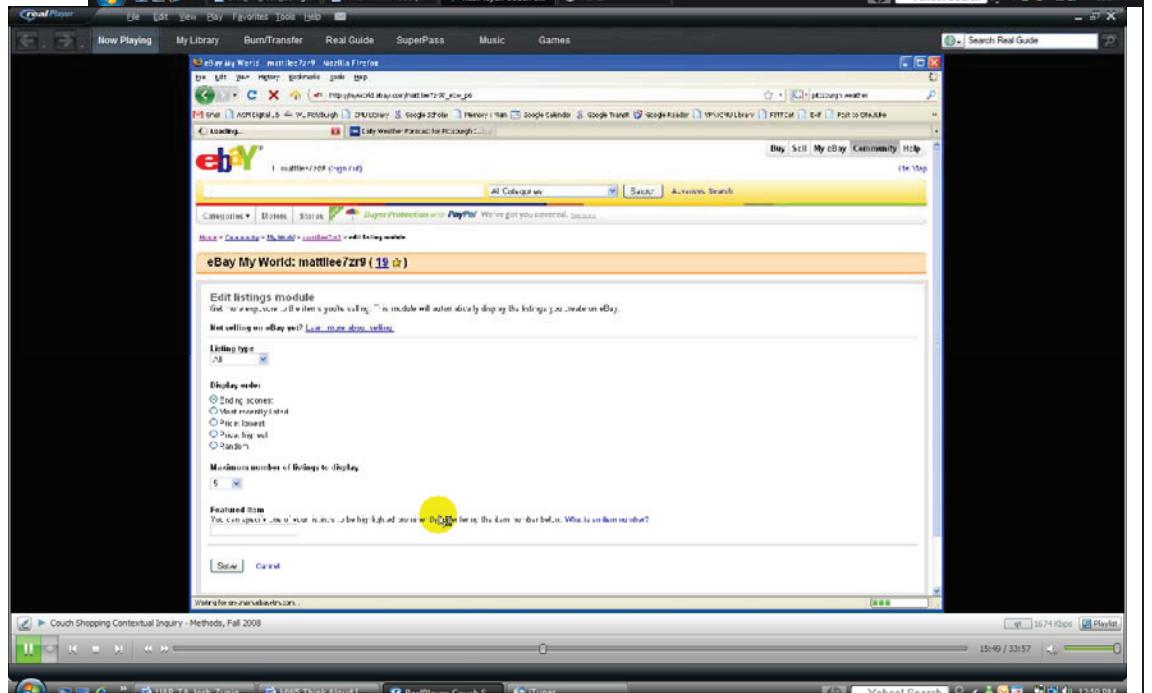
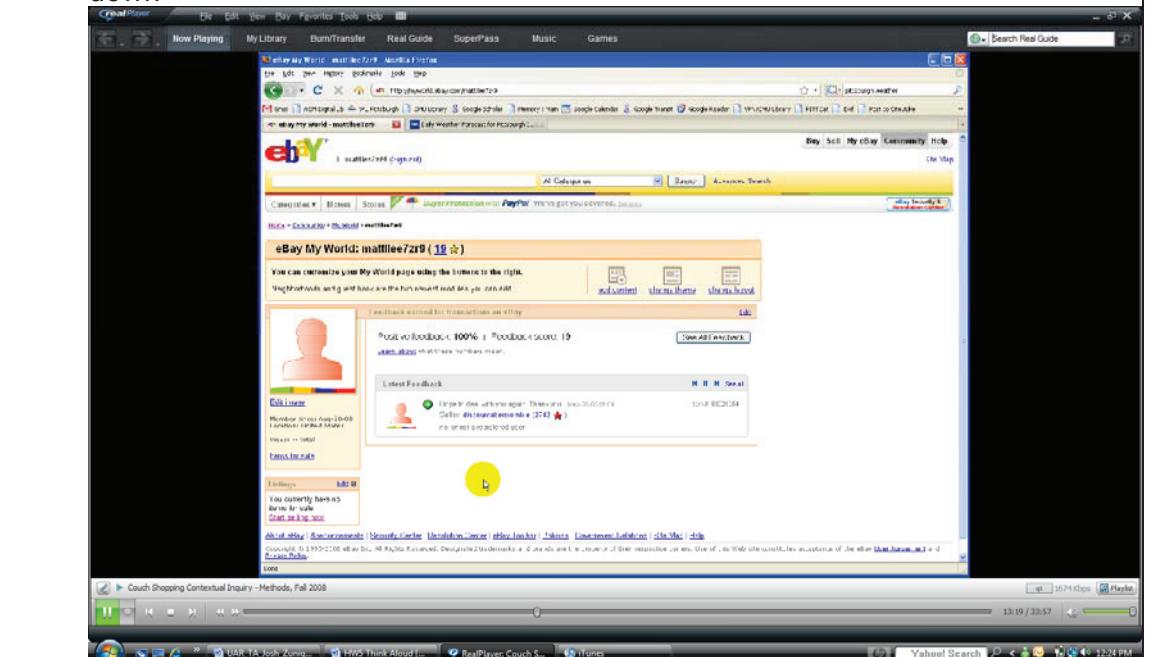


- The user scrolls down to the bottom of the page, and scans again for additional terms. [12:25]
- The user selects the "edit" link from the eBay My World page.



- The user reads the labels on the page, continuing to look for something that would indicate an area from which to begin selling. [14:30]
- The user selects the "edit" linkbox. [15:30]

- The user reads the labels on the page, continuing to look for something that would indicate an area from which to begin selling. The user selects the miles location drop down



#### Criterion:

The user expresses confusion over how to achieve a goal.

The user articulated a goal and does not succeed in attaining that goal within 3 minutes.

#### Explanation:

The user wants to sell the couch, however, and as she sifts through eBay pages, not once does she notice the "Sell" button in the upper right corner. Perhaps because the pages are too cluttered making them hard to find, or perhaps because she just did not think to look there.

#### Severity or Benefit

Rating: 3.5 -- major usability problem

#### Justification

Frequency: Medium. Anyone considering to sell an item on eBay not familiar with how to do it will run into this problem.

Impact: High. The site is large and complex, and there are so many paths to go down that it's hard to know if you're going the right way or not. If there were less pages, it would be easier to find even if poorly designed.

Persistence: Low. The user mentions that it's easy to do "if you know where to look". How these factors are weighted and why:

Though persistence is low, the user may be completely unable to ever detect the solution due to the high complexity of the site. Since this problem affects new users, it could drastically hurt eBay's business by deterring willing sellers from putting items on the site, which also reduces the number of items available to attract buyers, and the fees received from the listings.

#### Possible solution:

Make the buttons larger or more central on the page.

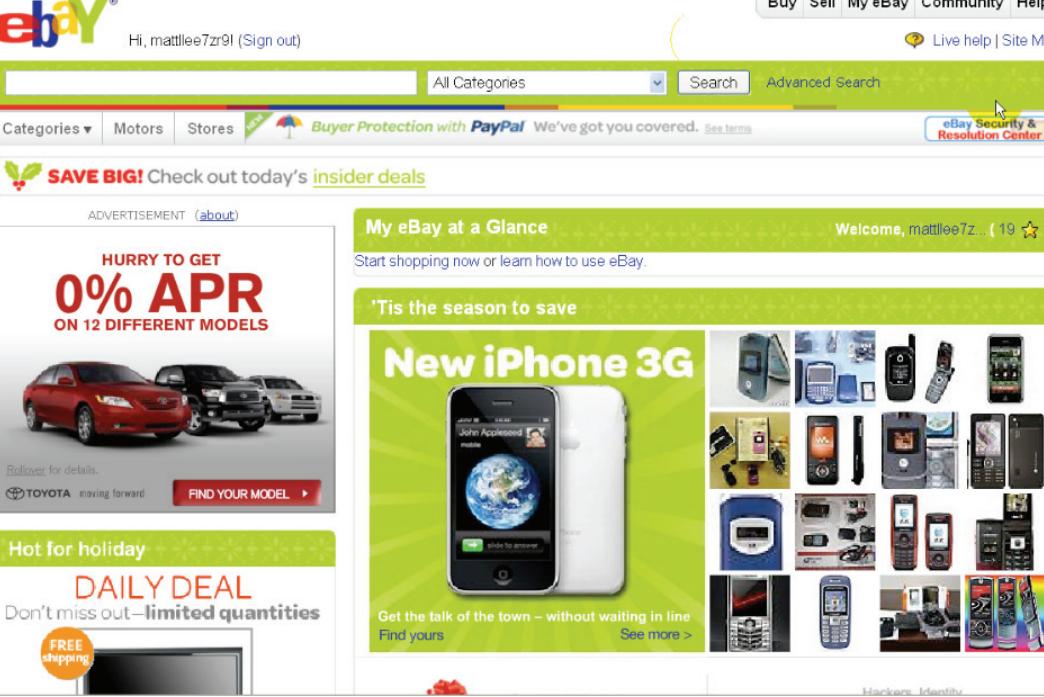
#### Possible trade-offs:

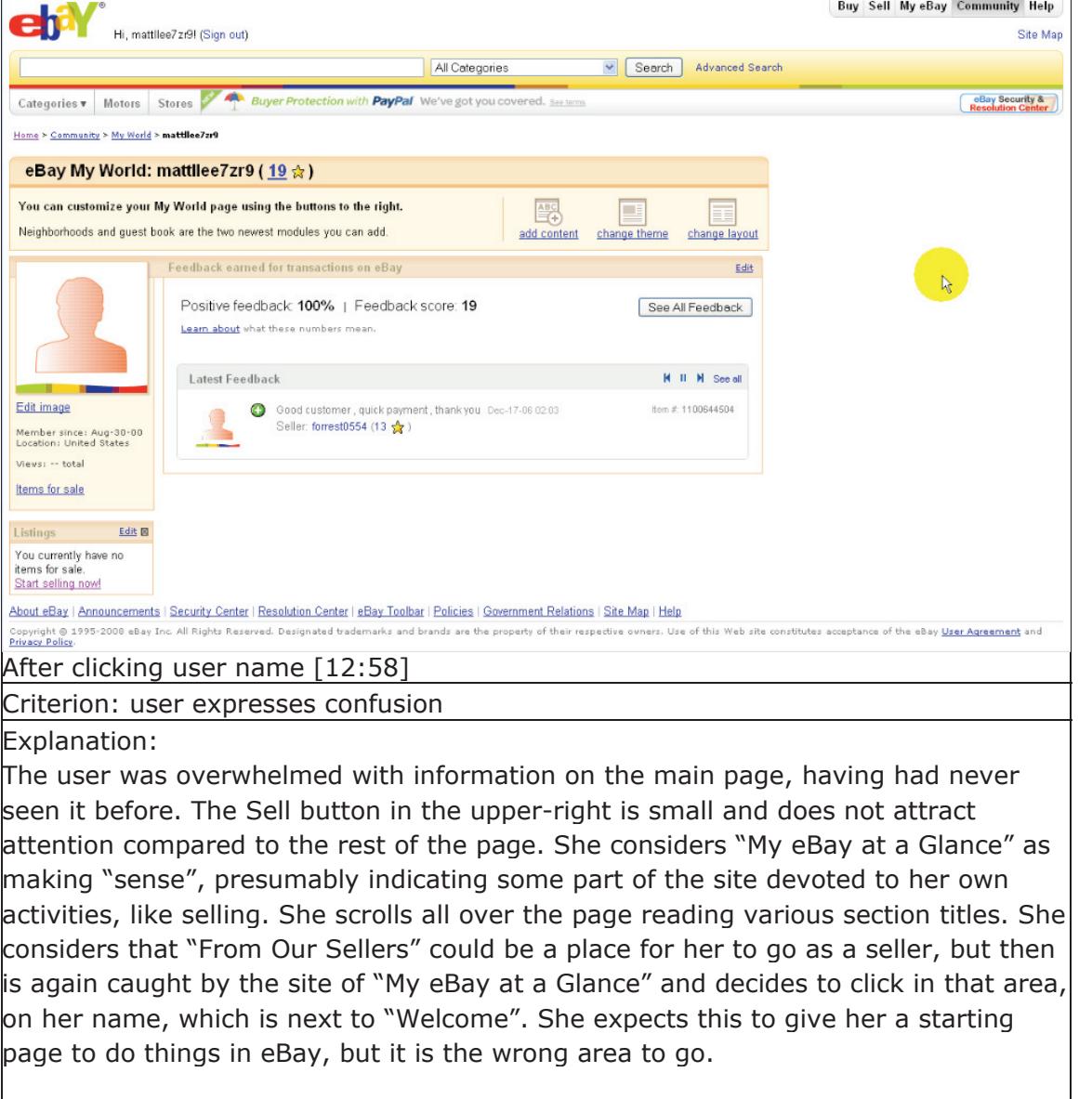
Larger, more central buttons could lead to more clutter on an already full page.

#### Relationships:

JHZ-3, JLZ-TA-05,YX-1, JHZ-4, JLZ-TA-01 thru JLZ-TA-04

No. G6 -TA-01

No. G6 -TA-01	Problem/Good Aspect: Problem
Name: Confusion Finding Sell on Homepage	
Evidence: What the user said: "So now I'm at the website, and I at this moment have no idea what I'm supposed to do, so I have to think about this." [12:00] "Oh My eBay at a Glance. That's the only thing so far that makes sense to me. I might go there." [12:25] "I'm going to click over here where it says Welcome." [12:50]	
What the user did: The user looks over the home page, looking for an access point that makes sense to her task of starting the selling process. She scrolls up and down the page for 48 seconds and clicks on her user name in the My eBay at a Glance section.	
What the system did: The system takes the user to a page called eBay My World: <user name>.	
 <p>Confusion over title page [12:00]</p>	



After clicking user name [12:58]

Criterion: user expresses confusion

Explanation:  
The user was overwhelmed with information on the main page, having had never seen it before. The Sell button in the upper-right is small and does not attract attention compared to the rest of the page. She considers "My eBay at a Glance" as making "sense", presumably indicating some part of the site devoted to her own activities, like selling. She scrolls all over the page reading various section titles. She considers that "From Our Sellers" could be a place for her to go as a seller, but then is again caught by the site of "My eBay at a Glance" and decides to click in that area, on her name, which is next to "Welcome". She expects this to give her a starting page to do things in eBay, but it is the wrong area to go.

Severity  
Rating: 3 major

#### Justification

Frequency: Medium. Anyone considering to sell an item on eBay not familiar with how to do it will run into this problem.

Impact: High. The site is large and complex, and there are so many paths to go down that it's hard to know if you're going the right way or not. If there were less pages, it would be easier to find even if poorly designed.

Persistence: Low. The user mentions that it's easy to do "if you know where to look."

#### How these factors are weighted and why:

Though persistence is low, the user may be completely unable to ever detect the solution due to the high complexity of the site. Since this problem affects new users, it could drastically hurt eBay's business by deterring willing sellers from putting items on the site, which also reduces the number of items available to attract buyers, and the fees received from the listings.

#### Possible solution:

Create more prominent Buy and Sell buttons, or make the help information in "eBay at a Glance" more prominent.

#### Possible trade-offs:

It's important not to optimize system for the first-time user where the existing users may be adversely affected by oversimplified pages. There is less space on the screen available for other features and advertisements.

#### Relationships:

JHZ-1, KN-1, JC-TA-01, YX-1, JLZ-TA-01, YX-3

No. G6 -TA-15

No. G6 -TA-15	Problem/Good Aspect: Problem
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#### Name:

Submission error (shipping service) requires user to input something that she believes should not be input.

#### Evidence:

What is on the screen or presented aurally?

The screen displays an error message indicating that the user must select a shipping service.

#### What the user said?

"Uh oh! . . . Specify shipping service. Huhhhhhh (sigh). This is what I couldn't figure out what it was." [28:48] "This is where I got stumped earlier. Shipping, I must have missed something." [29:30]

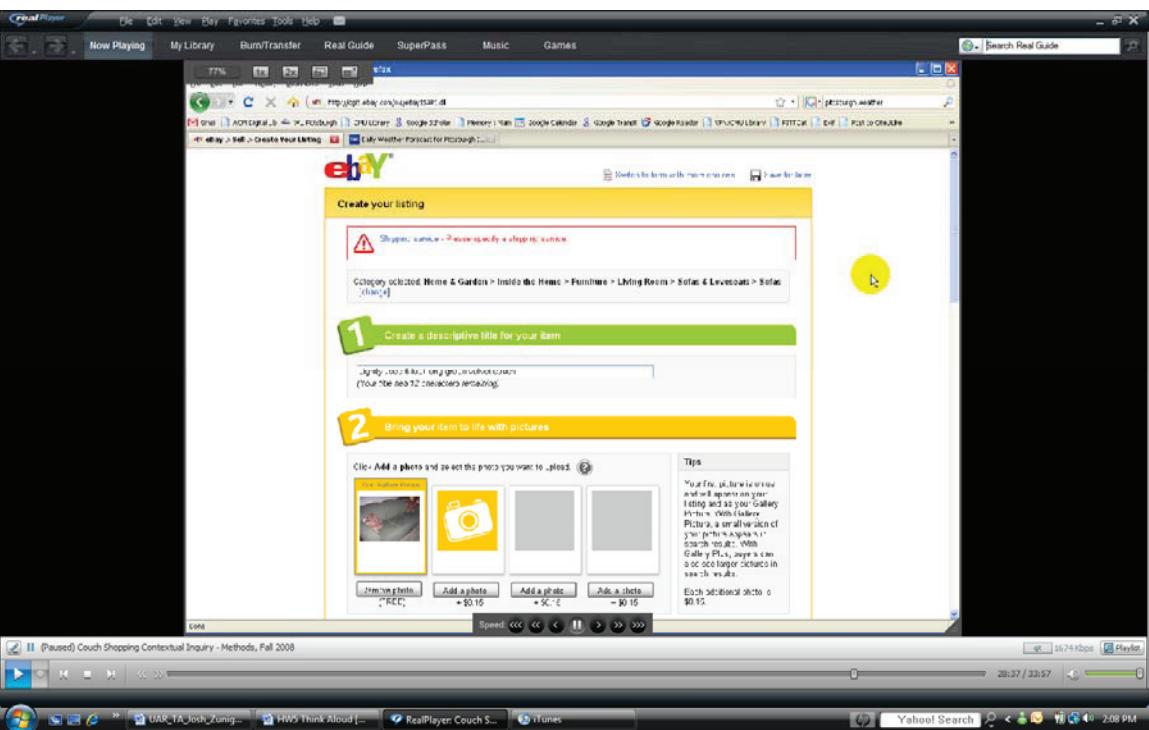
"I feel certain I missed something. . . . I don't understand." [30:05]

#### What the user did?

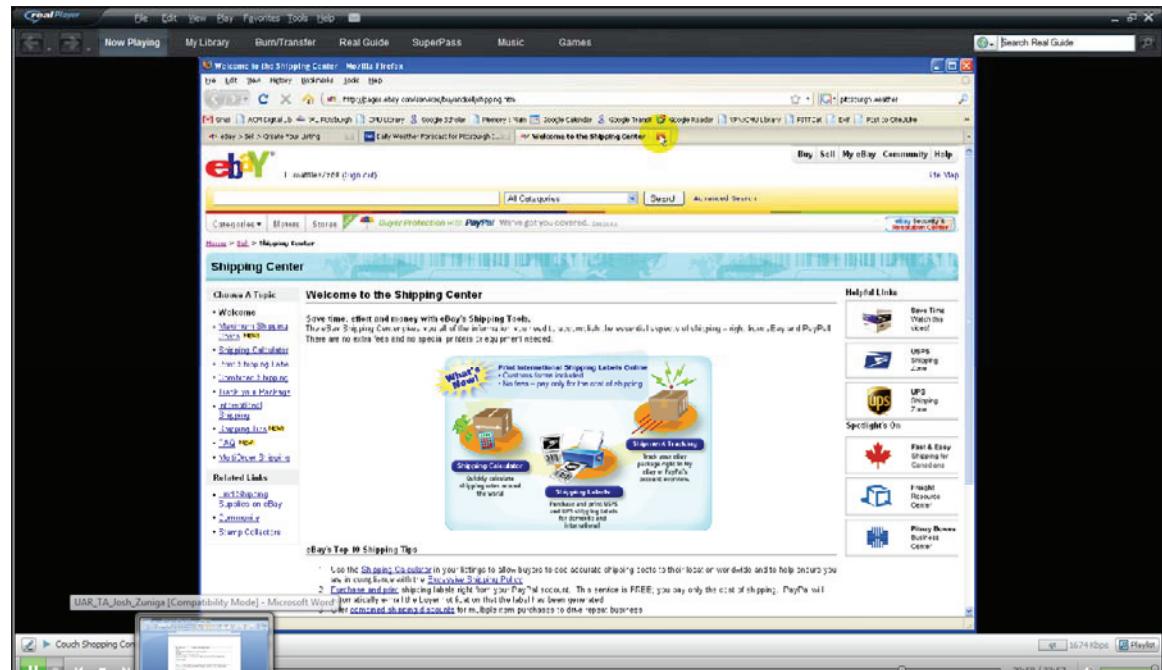
The user read the error message, scans the page for a shipping/no shipping term, and then reads about shipping again. Then the user returns to the page and scans each section again to find a familiar term.

After help from the facilitator the user then submits the form.

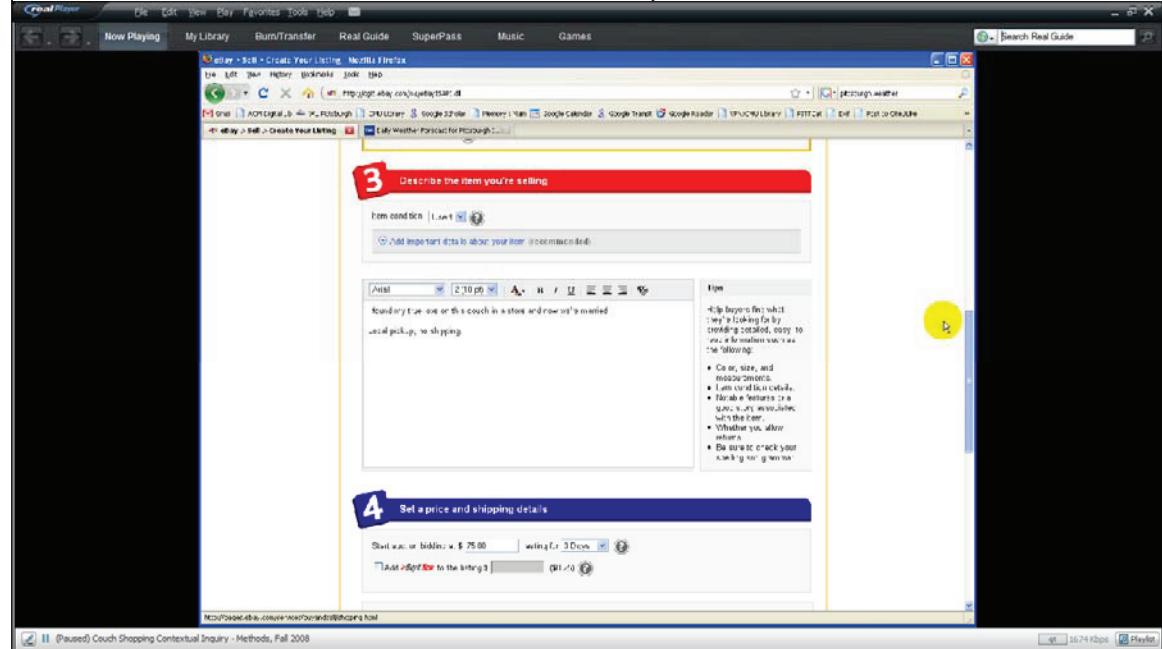
What the system presented to the user and did in response to their actions? Include screen shots and video times.



- The user is presented with an error message stating that she must select a "shipping service" [28:32]



- The user reads about shipping from shipping help. [29:27] Then the user closes the screen and returns to the simple form.



- The user scans the form section by section. [30:30]

#### Criterion:

The user expresses confusion over how to achieve a goal.  
The user articulates a goal (intent), tries several things or the same thing over again before explicitly giving up.

#### Explanation:

The user filled out the form, noting in the description and shipping price that there is no shipping, and then attempts to post the ad. She sees that the form still requires her to select a "Shipping Service" which she feels does not apply to her, and she is unable to figure out how to configure the ad to move on without help from the moderator.

#### Severity or Benefit

Rating: 3 major

#### Justification

Frequency: Low. Users of eBay seem to often ship items, which is likely why it was designed this way. However, there's no reason to deter local sellers from using the site.

Impact: High. The user is completely prevented from posting the ad without selecting this option, even when the user has specified in the item description and shipping price. This is hard to overcome in this situation because the user does not understand how the required shipping field applies to local shipping.

Persistence: Low. The user will likely remember how to selecting Local Shipping once they have learned where to find it. The hard part is finding it.

#### How these factors are weighted and why:

Because local sellers are completely prevented from listing an ad and not given directions that allow them to fix the situation, the impact is weighted heavily against the low persistence, and the group of users as local sellers should be supported by the structure of eBay.

#### Possible solution:

Call out the shipping services field (and other necessary fields) more prominently to inform the user that they are required and provide directions for what to do when a user does not wish to ship an item.

#### Possible trade-offs:

The screen might become overly colorful and confusing if applied too heavily.

#### Relationships:

JLZ-TA-08, G6-TA-7

## Consolidated Group TA UARs

No.	Tape Time	Problem Description	UAR #s	Consensus Severity Rating
G6-TA-1	12:00:00, 12:50:00	User scrolls through eBay front page looking for where to sell her item, but nowhere sees the "Sell" button in the upper right corner.	JHZ-TA-1, KN-TA-1, JC-TA-1, YX-TA-1, JLZ-TA-1, YX-TA-3	3
G6-TA-2	13:40:00, 15:40:00	User is confused whether "Start selling now" or "Edit" in the "Listings" panel will let her create an ad.	JHZ-TA-2, JC-TA-2, YX-TA-2	2
G6-TA-3	12:45, 13:45, 14:45, 16:19, 17:13:00	User never finds the correct link to sell an item.	JHZ-TA-3, JLZ-TA-5, YX-TA-1, JHZ-TA-4, JLZ-TA-1 - JLZ-TA-4	3.5
G6-TA-5	17:30:00	The user is unsure whether the "Start Selling" button is to setup an ad or to post a completed ad.	JHZ-TA-5, YX-TA-4, JC-TA-4	1.5
G6-TA-6	20:37:00	User is unsure whether she should list "pickup only" in the ad title or if there is another place to specify it.	JHZ-TA-6, KN-TA-3, JLZ-TA-7	2
G6-TA-7	25:50, 28:32, 29:07, 29:27	Local pickup option difficult to locate	JHZ-TA-7, KN-TA-9, YX-TA-6, JLZ-TA-9, JC-TA-7	3
G6-TA-8	28 :07	The user is adversely surprised at the listing of fees at the bottom of the ad. She did not realize earlier that there were fees, but feels she must submit to them regardless.	KN-TA-8,	2
G6-TA-9	13:15 13:32 14:42	The user is confused about "items for sale", whether pointing to incoming (get from the others) or outgoing (sell to the others).	YX-TA-2, JC-TA-3	2
G6-TA-10	24:00 24:15	Mis-translation about "Buy it Now"	YX-TA-5	0.5
G6-TA-11	0:26:02	Don't know what to input in "handling time" field	YX-TA-7	1.75
G6-TA-12	13:10:00	Difficult to find selling from eBay My World page	JLZ-TA-2	2.5

G6-TA-13	14:45:00	Difficult to find selling from Items for Sale	JLZ-TA-3	2.75
G6-TA-14	16:19:00	Difficult to find selling from Edit Listings Module.	JLZ-TA-4	2.7
G6-TA-15	0:30:48	Submission error (shipping service) requires user to input something that she believes should not be input.	JLZ-TA-8	3
G6-TA-16	18:50:00	The system motivates the user to select incorrect categories in the interest of widening their audience	JC-TA-6	1

Rejected UARS				
G6-TA-4	17:23:00	Once the user is directed to the sell button, she appears annoyed that she "didn't even see it."	JHZ-TA-4	

## Comparing Methods Table

<b>Analysis Predicted (UAR #'s)</b>	<b>Aspect Report Name</b>	<b>Evidence (tape time)</b>	<b>Think Aloud UAR #'s (if any)</b>	<b>Supported/Refuted</b>
CW-01	Pre-populated starting price field	23:41	JC-TA-09	Refuted
CW- 02	"Local pickup" in Service menu		JHZ-TA-7, KN-TA-9, YX-TA-6, JLZ-TA-09, JC-TA-07	Supported