

Evaluation CS352

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Empirical (Think-Aloud)

What we are trying to find out from the Think-Aloud technique

We want to find insight into the user's mental model. Since we are evaluating normal computer users who are in college, this information will be vital to understanding how our design matches their expectations. We also want to figure out the user's navigation strategies and common behaviors when dealing with this design. Since the Think Aloud method returns UI problems, we are trying to identify the common obstacles that interfere with its effectiveness.

Think-Aloud Voice Recording Transcript

Participant: Geoff Hamilton

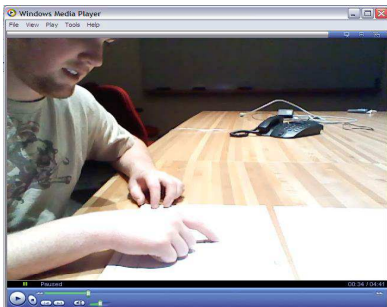
Geoff's Information: College student, sophomore in mathematics, and avid social network user.

Observations: We're in KEC 3057, a conference room. We're sitting at a big table and in comfortable chairs. I'm sitting next to him with all of my materials. The lights are slightly dim because the main lights are off. It's 7:30pm. He just ate lunch, been cracking jokes for the last 20 minutes. I run him through a quick math problem and ask him to think aloud as he works through it. He seems to understand what I'm asking. For each of the tasks, I explain to him what the task is and then let him work through them. If he's unsure of what he has been asked to do, then I provided some input. I also throw in a few questions at the end of several of the tasks to get feedback. *I hope this hasn't affected the study, but I'm interested in feedback and intuition about the design.*

Task: Finding a Friend

What we intend to find: First off, we have some data from previous cognitive walkthroughs of the current Beaversource site, and one of the big issues was effectively finding a friend. Since this is essential aspect of social networking and fairly simple by utilizing the 'search bar', or the 'people' tab, we can understand how effective our design is at making these tools visible and efficient.

Evaluation:



"Ok, so to search for a friend, the first thing I would go to the search bar and type in their name. Umm....assuming I came up with results, I would then click on the person's name hopefully to bring me to their profile. So, like if I would click on Chris Hanchey's name, that's one way."

What do you think is another way to do it?

"Another way to search for friends is to, based on the site, would be clicking the people tab. Ok, so then you can

alphabetically it looks like search for people based on their newest, popular or how active they are on the site—how often they use it I'm assuming. So, umm...if I was looking for a friend who had just joined it, I would go to the newest tab. Or, if I was looking for someone that had been on here since the site's been developed, then I would go

with the active tab. Then I would search for their last name alphabetically." So you're looking for Chris Hanchey with an 'H.' "K, so I would go to, well assuming he's been on here for awhile, 'Active', and then click the 'H' link and there he is right there. So, I found him."

What we found:

The search box and the People tab were very visible to the user. Both were intuitive to the user on what he needed to do and what he expected as results. He was able to find a person using the search box and using the "People" tab. He also saw that there are multiple ways to filter through the list of people by clicking on "newest", "active", and alphabetically; and he was able to easily search using this filtering method as well.

Task: Update a group Calendar

What we intend to find: This task utilizes 'triangulation' from both navigation tabs; the 'groups' tab from left side menu and the 'calendar' tab on the bottom screen menu. This, in itself, is a different type of navigation and should be tested. We want to find out if this type of navigation is intuitive or too difficult for users.

Evaluation:

"So when I heard group calendar, first I thought about groups, like going to my groups that way (pointing at groups tab). Then, I thought calendar (pointing at calendar tab). I'm going to assume it's one of those two. My first intuition is going to be group. So I click groups...and it looks like it brings up a list of groups that are on the site that you can join. Umm...and it looks like there's a page of them. It doesn't look it's alphabetical order or anything like that. Umm...so...which one is my group?" You're looking for CS162. "Well, I mean, if CS162 is the group I'm looking for, then I would think I would need to go to that groups profile page. Umm...so I would click that." So that wouldn't take you to it. So what else do you think it would do?

"Umm...is this tab referring to this square?" (Referring to the popup window that says to try a tab at the bottom, like calendar) "I would probably go with calendar next. So, ok, now I get it. It's like a dual tab, so now it's got both group and calendar open. So now, to have both of my groups and calendar..umm..oh that's cool how it locks off certain things because you can't have certain things open at the same time. You kind of know what you can and can't use. So at this point I would click on CS162. And that brings up a calendar for February." So, let's say you want to post on any day? "So, I would probably click on that day. Ok, so it looks like I'm posting on the 25th of February. Ok, yeah so I can set the information and hit save."

What we found:

At first, finding the correct tab along the right-hand side of the screen along with clicking a tab along the bottom was a little confusing to the user. Drawings of pop-up windows aren't as effective as real pop-ups for catching the users attention, but after he looked around on the UI he saw the pop-up that directed him that tabs along the bottom of the page could be clicked. He completed the task after he found that he could click a second tab to display the group's calendar. We plan to use a pop-up tutorial/tips window that the users can turn off when they feel they don't need them anymore.

Task: Post a message on a specific course's discussion board

What we intend to find: It is an indirect way to get to something that is not immediately visible. Users will have to travel through multiple levels of navigation to find a course's discussion forum.

Evaluation:

"Ok, so the first thing I would do is clicking 'courses' and that opens up a courses menu so CS162 is my class. So, from there, I would click on CS162. Umm...I'm hoping that would take me to some sort of menu for the class. Say my task one more time." So your task is to post on CS162 course's discussion board. "So, maybe 'news' as well...or 'people', I'm trying to think of how to get to a discussion board with the triangulation tabs. If now, just click the class itself." So tell me what you want to click? "So, I'll try 'news'." That wouldn't work. "The next thing would be people." That wouldn't do it either. "Maybe 'chat'. Nope. "So, that makes sense. I guess I would just try clicking the class. Ok. Alright, so that brought up a menu of specific things that I can do within that class. And I'm looking for 'discussion board' correct? So I click 'discussion board'. And that opens up discussion board topics and if I want to..I'm adding my own right? Not commenting on other people. So, I would add a topic, and...from here it gives me the option to give the topic a title, tag and then the actual message. So, and you can preview it and edit it assuming before you actually post it. Cool." And then how would you post it? "Submit new topic."

Feedback after:

So give me some feedback? What do you think about starting from the beginning "So, I guess, after I clicked the 'courses' tab, because of the last thing I was doing, um, my instinct was to use the triangulation kind of thing. I pretty sure I would have clicked the course originally." Does it seem clickable to you? What do you think was the issue that caused your initial confusion? "I think it would seem clickable..it's just the part of everything being in pencil makes it different. I'm assuming that courses is not clickable, but some of these are. If there was a color difference it would stand out more. What I am curious about, if I went to 'courses' and 'people' then it would be people in that course. Then I could chat with people online in that course. So, with 'news' is that going to be professors or stuff about the week or term. So that's kind of cool.

What we found:

After the previous task that used both tabs (side and bottom) to complete the task, the user thought that the same method was needed to complete this task. It wasn't necessary to complete this particular task, but after he "explored" the idea of the double-tabbed filtering system, he thought it was a good tool.

Task: Find the SVN history of a project

Find the Subversion commits in a project

What we intend to find: This task which is useful because it will test the window navigation function which is a different navigation from the previous ones listed. When a tab is clicked a window is then opened. Inside this window, a user can navigate to different areas of the site related to that topic. In essence, it's a browser inside of a browser.

Evaluation:

"Ok, I'm looking for projects. So first I would click the 'project'. So this brings up a menu. We have projects that are currently.." Bookstore is the project you're looking for. "If

Bookstore is the project we are looking for, then I would just click that. And then that brings up Bookstore's own little menu. I believe I am looking for SVN. So I would click SVN. This brings up its own menu. You said I'm updating?" No, you're checking the 'history.' "So I would then click 'history'. I see that two things have been done to it. Um..it tells me who did them, when it was updated on here, what exactly they did to it, what they saved it as, yeah, pretty sweet." Let's say you wanted to close that window. "I would just click 'projects' tab and hopefully that would bring me back to my home." What if that didn't? "The little 'X' button in the top right."

Thoughts?

"Pretty easy, this was probably the easiest one. It was self explanatory; you didn't need to search for anything." Do you feel like you are more comfortable with the site? "Since I started doing this?" Yeah. "Oh yeah, from the very first time to this time, I'm pretty sure, based on the four that we have done so far, I feel like I could navigate the site much more flawlessly than starting out."

What we found:

The user found this form of navigation very easy. It is possible that the tasks became easier for him because he gained some confidence in the navigation of this site from each of the previous tasks. This would mean that the new layout and navigation of this site has some form of learnability.

Insights:

- Good to have multiple ways of accomplishing the same task as found in the people search task. It's definitely important to have multiple ways of filtering the information so that the user can easily find what they are looking for.
- We need to make it clear to the user when double tab navigation is needed and when is it not. The user had some difficulty knowing when he should use the double-tab method to navigate or when he should use the drill-down navigation method.
- Our plan to use a pop-up tutorial/tips window, that the users can turn off when they feel they don't need them anymore, will help new users gain confidence in the web site's navigation.
- The user suggested color to differentiate between clickable and non-clickable tabs. This would help let users know that there is another tab they can click that will get them more information like in the "groups" / "calendar" task.
- The user thought that clicking the tab he was in should close the window. It's probably a good idea to have multiple ways to "close" a navigation screen.

Analytical (KLM)

What we are trying to find out from the KLM technique

With the KLM, we are trying to find out the speed from intuition that our design provides for navigating through Beaversource. One of our main focuses is to eliminate the number of

steps it takes to access information. More specifically, through the KLM, we will find insight into how our new 'triangulation' system compares against the current one. By having four tasks, we can effectively test the two primary features of Beaversource (Academic and Social).

Changes between the evaluation plan and the evaluation

When we wrote the evaluation plan, we didn't completely understand what exactly the KLM was. It wasn't until we had our prototype running in cogtool that we understood that CogTool simulates the time it takes to do certain tasks within our system. Therefore, we wouldn't need actual skilled users to use our prototype, or a form with descriptions for each task, or a set of follow up questions. All we need for our analytical evaluation is mock ups of our four tasks in CogTool for our new system, and for the current Beaversource system.

Our process for KLM

We began working on this evaluation by drawing by hand a paper prototype that effectively demonstrated the four tasks that we created in the evaluation plan. We then scanned and imported the paper prototype into CogTool so that we could do the KLM.

Prediction times for each Task

Tasks	Current Beaversource	New Beaversource
▲ Task 1: Finding a Friend	Mean: 84.334 s	Mean: 8.978 s
- Search bar	11.431 s	7.757 s
- People tab	157.236 s	10.198 s
Task 2: Post on a Group's Calendar	23.788 s	16.151 s
Task 3: Post on a Course's Discussion Board	19.964 s	16.300 s
Task 4: Find the SVN History of a Project	16.239 s	16.049 s

We set the "wait for system response" time in CogTool to 3 seconds between each frame. This encompasses the page loading and rendering times. As you can see the new Beaversource design outperforms the current Beaversource in all the tasks.

Task: Finding a Friend

Evaluation:

Search Bar Step List

Current BeaverSource			New Beaversource		
Prediction: 11.431 s Show Visualization			Prediction: 7.757 s Show Visualization		
Script Step List			Script Step List		
Frame	Action	Widget/Device	Frame	Action	Widget/Device
home	Think for 1.200 s		Home	Home Mouse	
home	Home Mouse		Home	Move Mouse	searchBar
home	Move Mouse	searchTB	Home	Left Click	searchBar
home	Left Click	searchTB	Home	Wait for 0.200 s	
home	Wait for 0.200 s		search001	Home Keyboard	
search01	Home Keyboard		search001	Type 'chris hanchey'	searchBar
search01	Type 'Christopher Hanchey'	searchTB	search001	Wait for 3.000 s	
search01	Wait for 3.000 s		search002	Look At	hancheyLink
search02	Look At	chrisLink	search002	Think for 1.200 s	
search02	Think for 1.200 s		search002		
search02					

People Tab Step List

Current BeaverSource			New Beaversource		
Prediction: 157.236 s Show Visualization			Prediction: 10.198 s Show Visualization		
Script Step List			Script Step List		
Frame	Action	Widget/Device	Frame	Action	Widget/Device
home	Think for 1.200 s		Home	Think for 1.200 s	
home	Home Mouse		Home	Home Mouse	
home	Move Mouse	peopleLink	Home	Move Mouse	peopleBut
home	Left Click	peopleLink	Home	Left Click	peopleBut
home	Wait for 3.000 s		Home	Wait for 3.000 s	
people01	Think for 1.200 s		people001	Think for 1.200 s	
people01	Move Mouse	nextBut	people001	Move Mouse	hLetterLink
people01	Left Click	nextBut	people001	Left Click	hLetterLink
people01	Wait for 150.000 s		people001	Wait for 3.000 s	
people02	Look At	chrisLink	people002	Look At	hancheyLink
people02	Think for 1.200 s		people002	Think for 1.200 s	
people02			people002		

What we found:

The current Beaversource system does not have an efficient way of finding a friend without using the search feature. Users may have to navigate through over 100 pages of people in order to locate a friend. The list of users does not have a good ordering system; users are simply ordered by date they joined Beaversource. We estimated that on average the user would have to navigate through $n/2$ pages before finding their friend, where n is equal to the number of pages. In our new design, we sort the users based on their last name. By adding this feature, the time needed to find a friend using the people tab improved from $O(n)$ to $O(1)$. Using the search bar in our new improved design is also faster than the current one. From the data gathered from CogTool, users spend a significant amount of more time thinking in the home screen compared to the new design. This is due to the fact

that current search bar is located right side of the screen and the new design is located on the left side.

Task: Update a group Calendar

Evaluation:

Calendar Step List

Prediction: 23.788 s			Show Visualization
Script Step List			
Frame	Action	Widget/Device	
home	Think for 1.200 s		
home	Home Mouse		
home	Move Mouse	groupLink	
home	Left Click	groupLink	
home	Wait for 3.000 s		
post00	Think for 1.200 s		
post00	Move Mouse	yourGroupLink	
post00	Left Click	yourGroupLink	
post00	Wait for 3.000 s		
post01	Think for 1.200 s		
post01	Move Mouse	cs161Link	
post01	Left Click	cs161Link	
post01	Wait for 3.000 s		
post02	Think for 1.200 s		
post02	Move Mouse	myProfileLink	
post02	Left Click	myProfileLink	
post02	Wait for 3.000 s		
calendar03	Think for 1.200 s		
calendar03	Move Mouse	calendarLink	
calendar03	Left Click	calendarLink	
calendar03	Wait for 3.000 s		
calendar04	Think for 1.200 s		
calendar04	Move Mouse	moreDetailLink	
calendar04	Left Click	moreDetailLink	
calendar04	Wait for 3.000 s		

Current Beaversource

Prediction: 16.151 s			Show Visualization
Script Step List			
Frame	Action	Widget/Device	
Home	Think for 1.200 s		
Home	Home Mouse		
Home	Move Mouse	groupBut	
Home	Left Click	groupBut	
Home	Wait for 3.000 s		
calen001	Think for 1.200 s		
calen001	Move Mouse	caledarBut	
calen001	Left Click	caledarBut	
calen001	Wait for 3.000 s		
calen002	Think for 1.200 s		
calen002	Move Mouse	csGroupLink	
calen002	Left Click	csGroupLink	
calen002	Wait for 3.000 s		
calen003	Think for 1.200 s		
calen003	Move Mouse	calendarPage	
calen003	Left Click	calendarPage	
calen003	Wait for 3.000 s		
calen004			

New Beaversource

What we found:

Even before running CogTool, the number of steps it took to update the calendar in the current system was many more than the new Beaversource. One of the main features that we added in the new design was the triangulation from the left and bottom tabs. By adding this feature, it reduces the number of steps required to update the group calendar. The difference was 23.7 seconds to 16.1 seconds, over a 7 second improvement. Another issue is that there is no integrated calendar system within the current Beaversource; users have to rely on an outside calendar system such as Google Calendar to keep track of events and tasks. We eliminated this issue by adding a calendar system to groups, projects, and courses.

Task: Post a message on a specific course's discussion board

Evaluation:

Discussion Board Step List

Prediction: 19.964 s Show Visualization			Prediction: 16.300 s Show Visualization		
Script Step List			Script Step List		
Frame	Action	Widget/Device	Frame	Action	Widget/Device
home	Think for 1.200 s		Home	Think for 1.200 s	
home	Home Mouse		Home	Home Mouse	
home	Move Mouse	groupLink	Home	Move Mouse	courseBut
home	Left Click	groupLink	Home	Left Click	courseBut
home	Wait for 3.000 s		Home	Wait for 3.000 s	
post00	Think for 1.200 s		post001	Think for 1.200 s	
post00	Move Mouse	yourGroupLink	post001	Move Mouse	cs162Link
post00	Left Click	yourGroupLink	post001	Left Click	cs162Link
post00	Wait for 3.000 s		post001	Wait for 3.000 s	
post01	Think for 1.200 s		post002	Think for 1.200 s	
post01	Move Mouse	cs161Link	post002	Move Mouse	boardLink
post01	Left Click	cs161Link	post002	Left Click	boardLink
post01	Wait for 3.000 s		post002	Wait for 3.000 s	
post02	Think for 1.200 s		post003	Think for 1.200 s	
post02	Move Mouse	forumLink	post003	Move Mouse	newTopBut
post02	Left Click	forumLink	post003	Left Click	newTopBut
post02	Wait for 3.000 s		post003	Wait for 3.000 s	
post03	Think for 1.200 s		post004		
post03	Move Mouse	topicBut			
post03	Left Click	topicBut			
post03	Wait for 3.000 s				
post04					

Current Beaversource New Beaversource

What we found:

We added this task as a challenge to our system, because it was already implemented relatively well in the current Beaversource. We were pleased when we compared the task in CogTool and saw that our design was over 3 seconds faster than the current one.

Task: Find the SVN history of a project

Evaluation:

SVN Step List

Prediction: 16.239 s			Show Visualization	Prediction: 16.049 s			Show Visualization
Script Step List				Script Step List			
Frame	Action	Widget/Device		Frame	Action	Widget/Device	
home	Think for 1.200 s			Home	Think for 1.200 s		
home	Home Mouse			Home	Home Mouse		
home	Move Mouse	projBut		Home	Move Mouse	projBut	
home	Left Click	projBut		Home	Left Click	projBut	
home	Wait for 3.000 s			Home	Wait for 3.000 s		
svn01	Think for 1.200 s			svn001	Think for 1.200 s		
svn01	Move Mouse	traifficLink		svn001	Move Mouse	bookstoreLink	
svn01	Left Click	traifficLink		svn001	Left Click	bookstoreLink	
svn01	Wait for 3.000 s			svn001	Wait for 3.000 s		
svn02	Think for 1.200 s			svn002	Think for 1.200 s		
svn02	Move Mouse	websiteLink		svn002	Move Mouse	svnLink	
svn02	Left Click	websiteLink		svn002	Left Click	svnLink	
svn02	Wait for 3.000 s			svn002	Wait for 3.000 s		
svn03	Think for 1.200 s			svn003	Think for 1.200 s		
svn03	Move Mouse	historyBut		svn003	Move Mouse	histLink	
svn03	Left Click	historyBut		svn003	Left Click	histLink	
svn03	Wait for 3.000 s			svn003	Wait for 3.000 s		
svn04				svn004			

Current Beaversource

New Beaversource

What we found:

Currently, Beaversource is lacking intuition in doing certain tasks, and anything having to do with the SVN functionality is no exception. Using CogTool to simulate how long it takes an expert to find SVN history for the current system is somewhat misleading because its default setting is to show history within the last 30 days. So if the last update or change didn't happen within 30 days, the user will have to change at least one field and click another button to see any results which will increase the time. Our new design will always list SVN history irregardless of date, so this will not be an issue.

Insights:

After running all of our tasks through CogTool, it is apparent that our system is faster than the current one, and our interface is making Beaversource more efficient.

Paper Prototype

Current Beaversource Design

Task #1: Finding a Friend – Search Bar



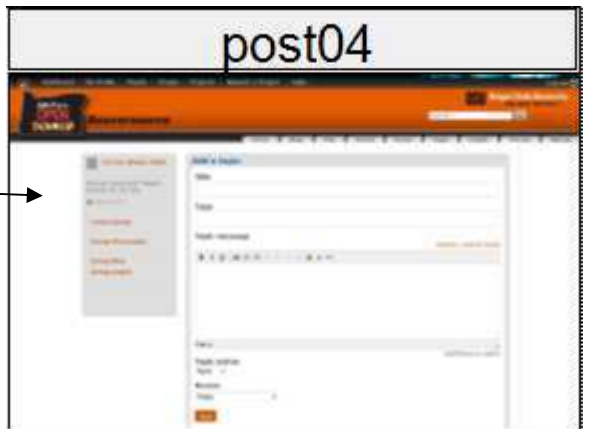
Task #1: Finding a Friend – People Tab



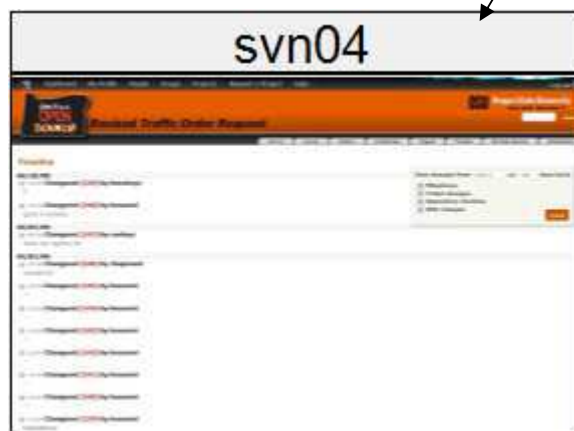
Task #2: Post on a group's Calendar



Task #3: Post on a course's discussion board

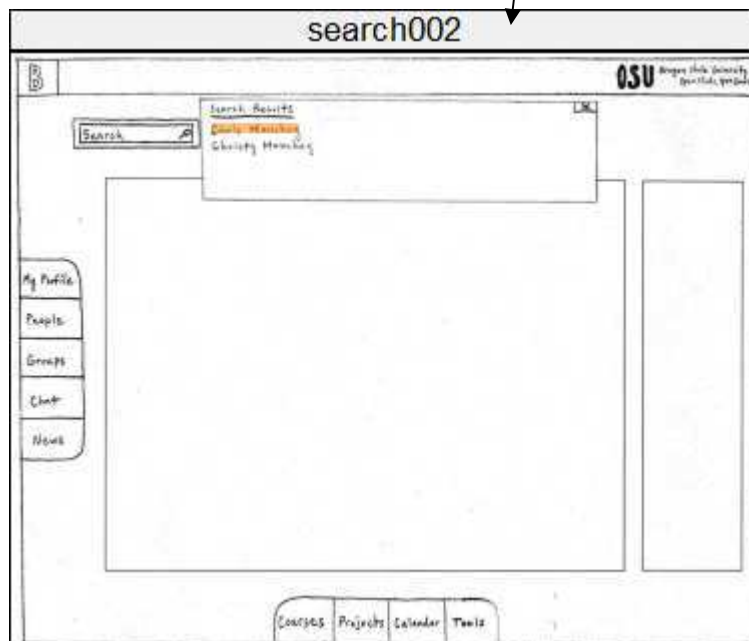
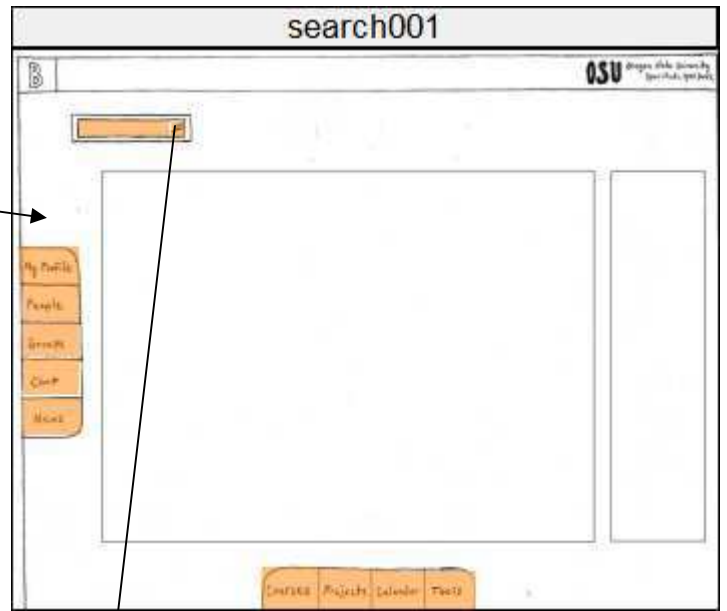
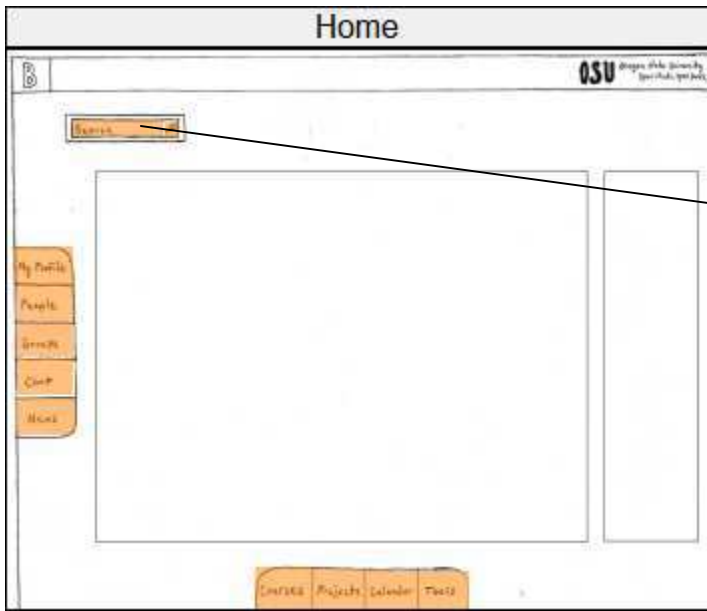


Task #4: Find the SVN history of a project

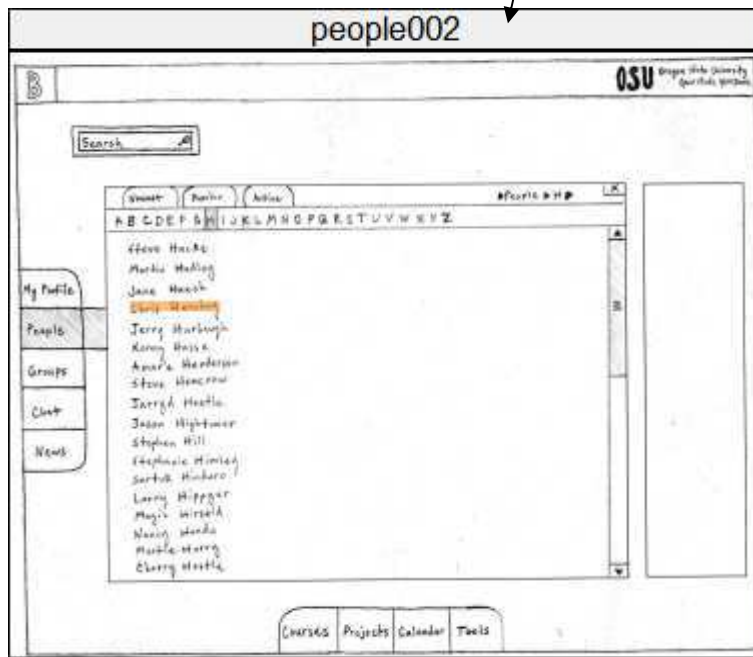
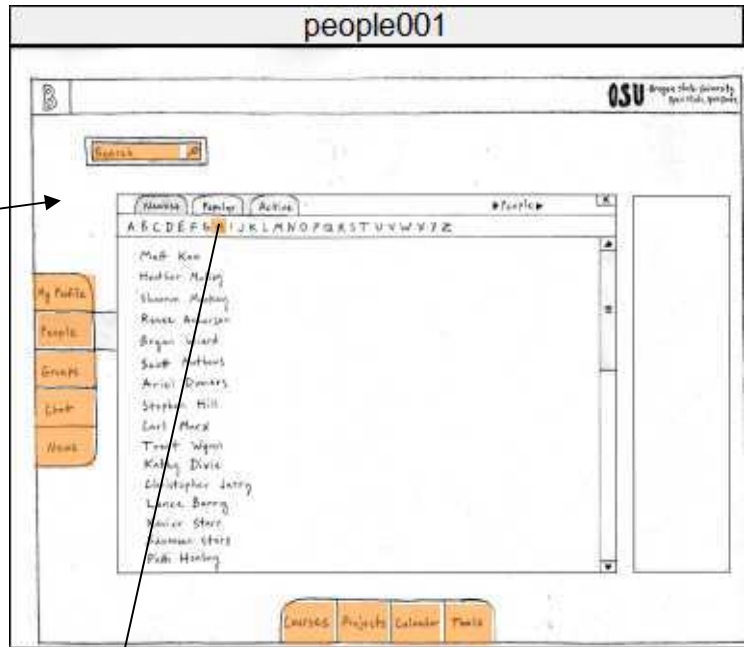
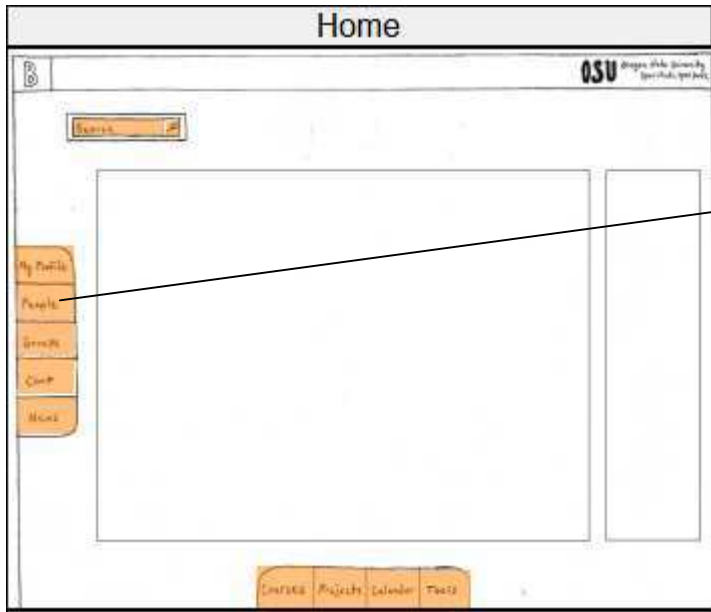


New Beaversource Design

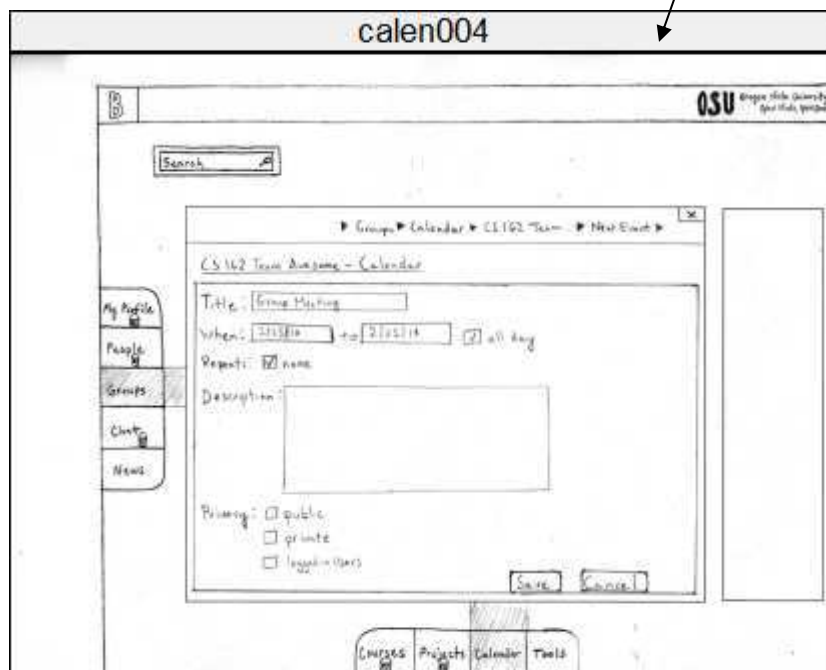
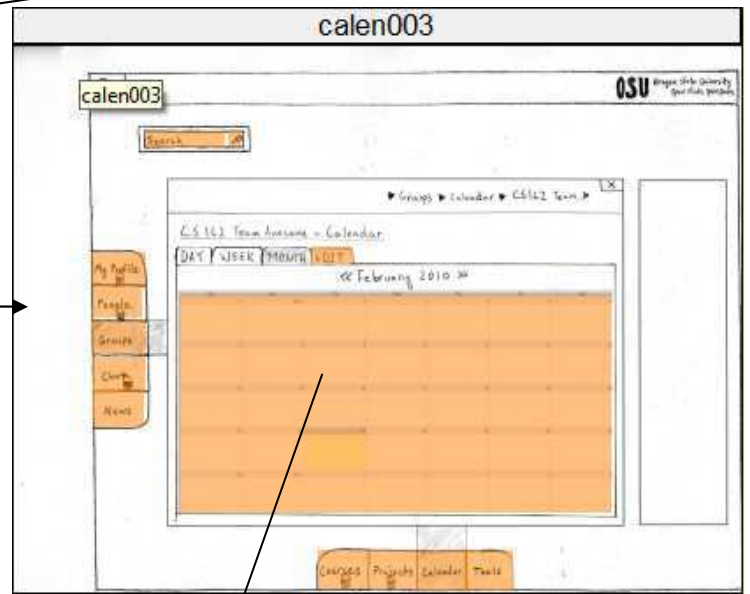
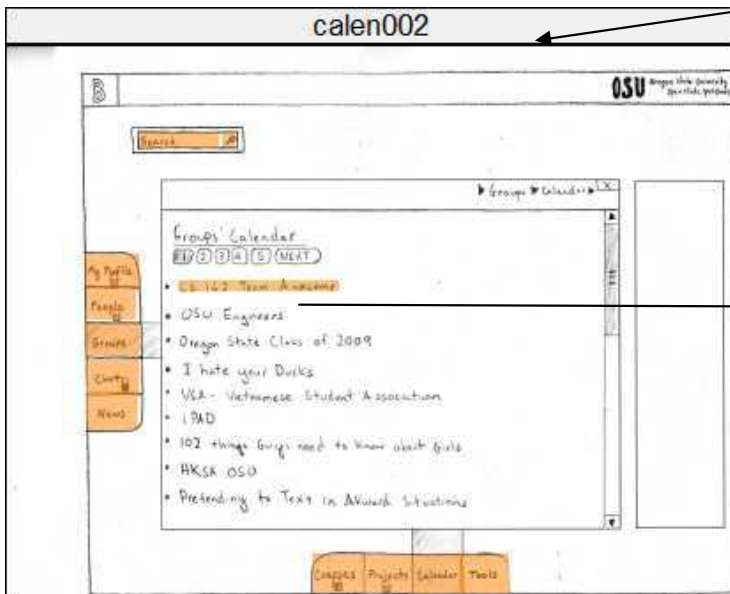
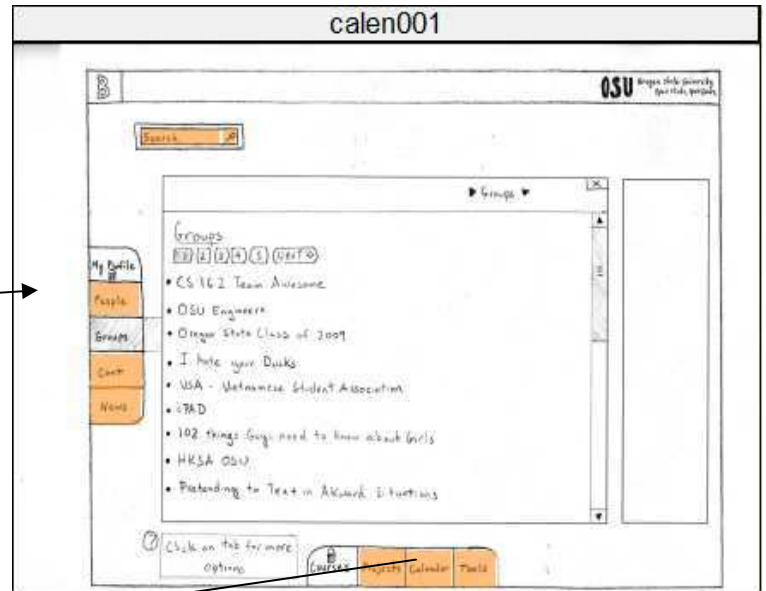
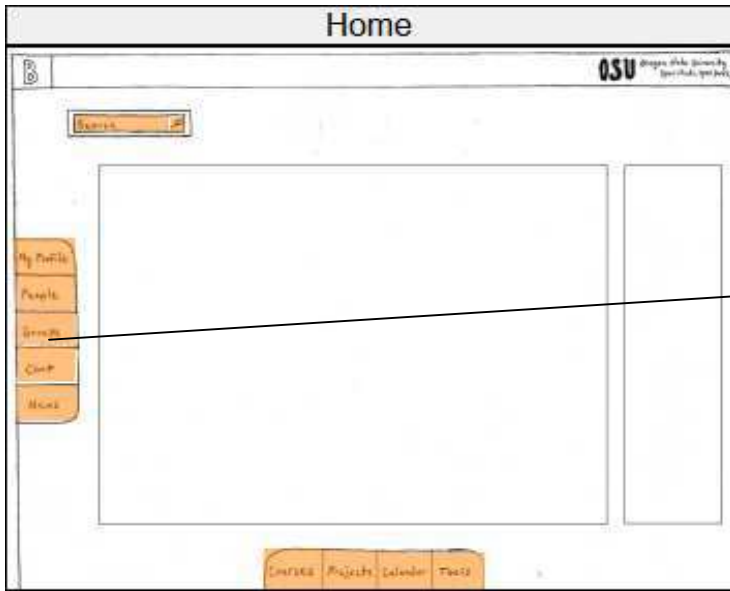
Task #1: Finding a Friend – Search Bar



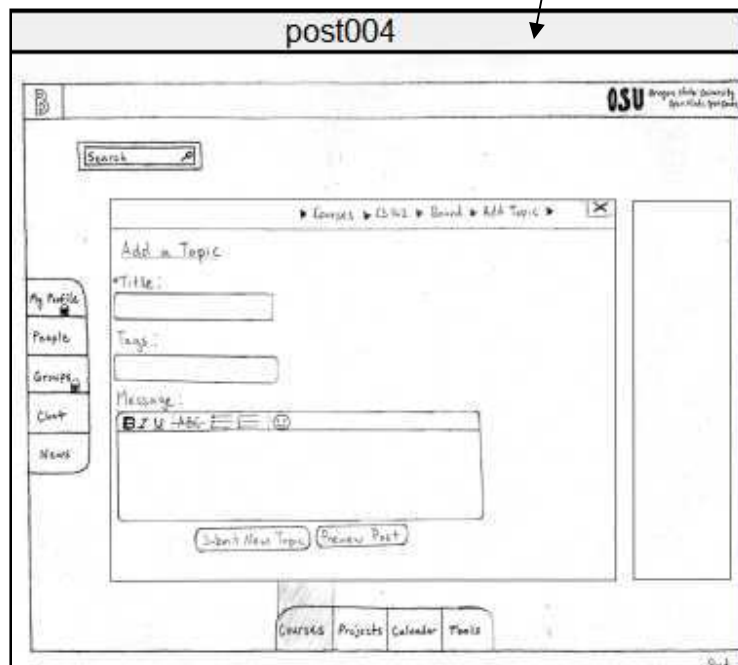
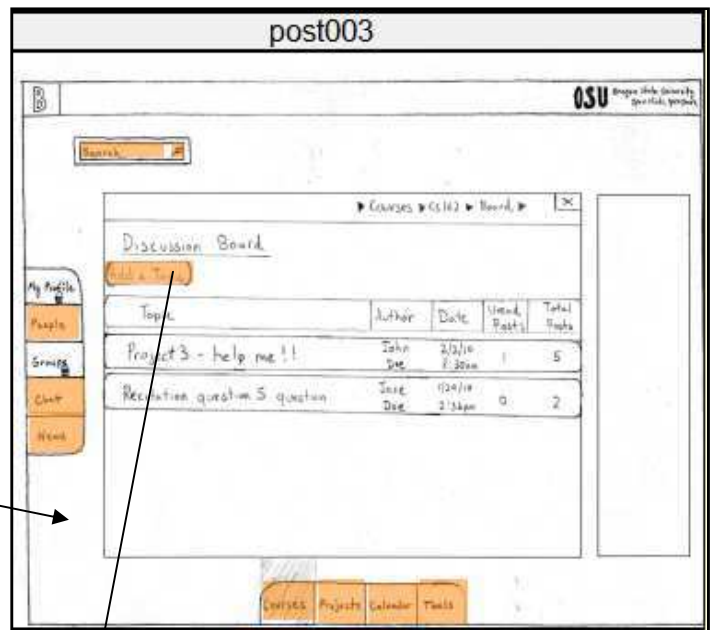
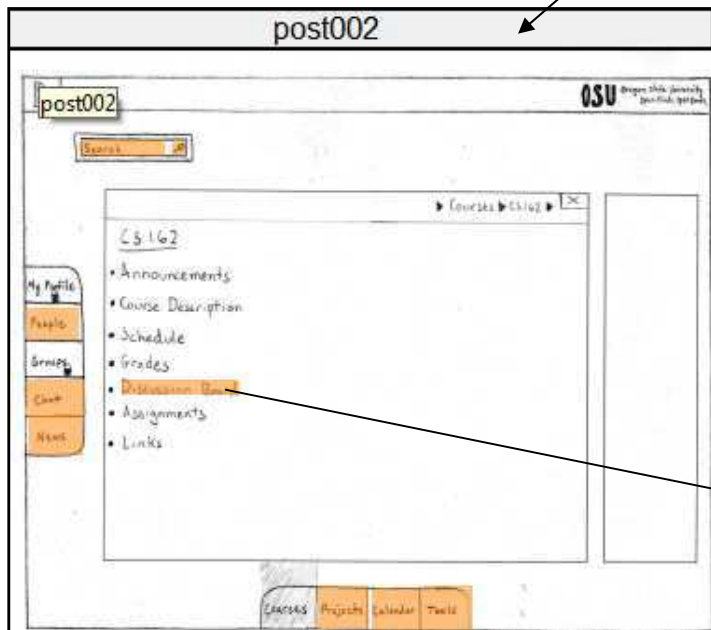
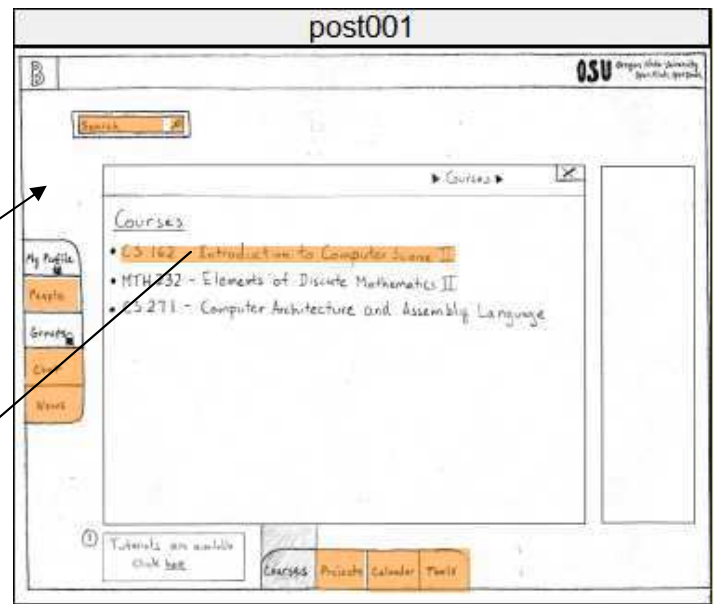
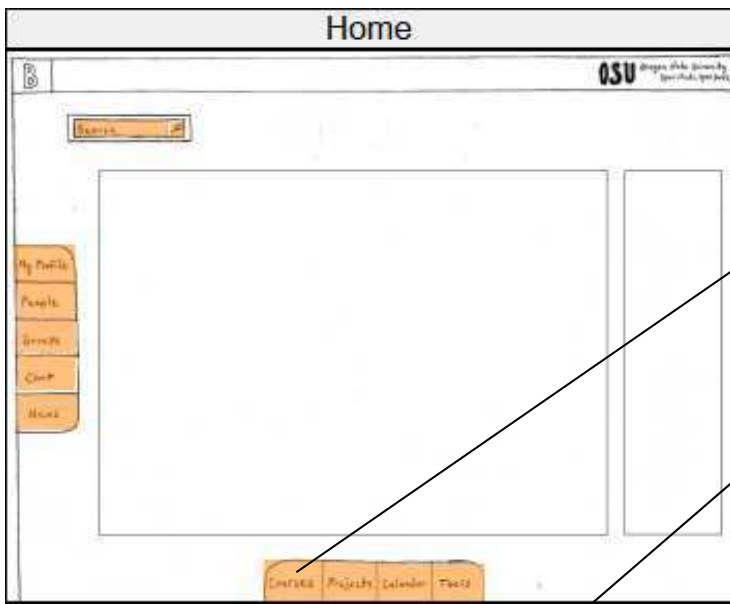
Task #1: Finding a Friend – People Tab



Task #2: Post on a group's Calendar



Task #3: Post on a course's discussion board



Task #4: Find the SVN history of a project

