Master of Computer and Information Sciences

ASSIGNMENT COVER SHEET - INDIVIDUAL	
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The Pervasiveness of Web Standards

Research Methods I

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Research Methods I
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Abstract

This project analyses whether native English speakers can use Chol, a Korean language search engine.

The point of this study is not how well particular web applications work but whether basic web standards make a foreign language web page intelligible.

I found that all native English speakers with any foreign language ability were able to use Chol.

Future work would consist of

- A broader cross section of users
- Testing users of different language ability
- Testing speakers of different languages
- Design science attention to pre- and post-evaluation questions.

Introduction

Media conventions are the form that helps us understand the substance of the media. They effectively are shortcuts to the relevance of the content.

The Worldwide Web is still a relatively young medium but in its short history, conventions have come and gone. Since its rise as the search engine of choice, Google's clean interface has become the standard for search engines. (Google, 2009) Consider the search engine Cuil. (Cuil, 2009) It looks very similar to Google.

Another example is the Chinese search engine Baidu. (Baidu, 2009) It would seem a trivial matter for a native English speaker without any Chinese language ability to use the Baidu search engine. It is a clean and uncomplicated interface.

There are foreign language websites that do not exactly copy the clean Google design. One example is the Chol search engine. (Corp., 2009) It is a Korean language search engine. Unlike the other mentioned search engines, it is covered with Korean script. However, it has a search string entry box in the same place that Google does.

Previous research addressed how non-native English speakers use Google and other English language search engines. Other projects compared and contrasted the way non-native English speakers use Google with a native language search engine. This project looks at how native English speakers deal with a foreign language search engine.

Research Question

The question of this research project is: Can users who don't know the language of a web search engine easily use it?

The question behind this research question is whether current web conventions are so pervasive in web life that they override language.

Research Design

Objectives

The objective is to determine whether or not native English speakers can use a Korean language search engine, Chol.com.

Setting

Three test users used my personal PC. I travelled to the homes of two others

Procedure

After giving the test user the Participant Information Sheet to read and the consent form to sign, I explained that I was interested in giving them a task to measure how pervasive web standards are.

I asked them if there was something they wanted to look up on the internet, but I didn't tell them I wanted them to use a Korean search engine. I asked them to think aloud of what they are experiencing so that I could gain access to the "actual experience" they were having at the time of using the artefact. (Carter, 2007)

At some point I would have to prepare a browser with Chol.com and minimize it. This meant I had to change seats with the test user.

I next asked the pre-evaluation questions to find out the test users prior experience with web search engines and foreign languages. Then I would ask them maximize the browser and use the search engine there to search for the topic they wished to find.

After they either completed the task or abandoned it, I interviewed them with my post-evaluation questions. I also asked them to mark on the screen shot what they first noticed about the screen.

I did not pursue the post-interview email survey I mentioned in the proposal.

Measurements

Mouse clicks, time taken, successful completion of the task, task abandonment

Successful completion of the task will be self-defined.

Findings

I drew my test users from my friends here in Auckland. They do not span a large age range.[1]

Gender	Age range	Place of Birth	Evaluation Took Place
Female	60-69	Auckland, NZ	At my home
Female	50-59	New York City	At her home
Female	20-29	NZ	At her home
Female	50-59	NZ	At my home
Male	30-39	San Jose, CA	At his home

[1] One of my friends has a tendency to obfuscate. Therefore, the age range is actually narrower than it appears.

Of the five users, four could be classified as completions.

User A

User A is an ex-software professional. She was the pilot study of my pilot study. After finishing this evaluation I changed a few of my questions in my pre-evaluation interview.

As I had to explain to A what I meant when asking her if she "scripted Google," it was obvious the question was inappropriate.

Secondly, I asked her if she knew another language and she asked if I meant computer or natural. So I ironed out the problem with those questions.

User A took a long time from start to finish. I had prepared a browser with Chol.com and minimized it to the taskbar. When I asked A to maximize the browser on the task bar, she made an exclamation when she saw the Korean script.

User A did not hesitate or resist the task. She had no problem finding the search box.

However, something quirky happened when she was entering her search string into the search box. The cursor flew from the search box to the user-id entry box on the left hand side of the web site. She complained that she do anything to cause the cursor to go there. I also didn't see her do anything to cause that to happen. A joked that she found a bug with the search engine.

She wanted to find out what was the name of an album of a singer she saw on Juice TV.

After she entered the search string, A was unnerved – perhaps because of the earlier bug – that the website wasn't indicating at the bottom of the browser that something is happening. She repeatedly pointed out the search engine wasn't giving the same kind of feedback Google would.

The search engine results page (SERP) did come up. Unfortunately, A thought the singer was an Australian and entered that into the search string. This caused a lot of entries about gin and Australia to come up.

As A didn't know much about the singer, she did not realize that one of the listings half way down the SERP page was the one she wanted. The singer was listed by first and last name (she goes by first name only in the video on Juice TV).

User A became frustrated after not finding what she wanted. She said she was done and confirmed she was abandoning the task when asked. However, instead of quitting, she said she was going to try something else.

She said she was going to enter into the Chol search box something she knew would come up – google.co.nz.

As I was watching over her shoulder, I realized she was *debugging* the task, not giving up.

After linking to Google.co.nz, she entered the same search string and found the singer was actually from New Zealand. Once she corrected her search string in Chol she found the entry.

What can be learned from this experience – the task was more difficult because A held a misconception about what she wanted to search for. Although she held the same misconception about the singer when she entered her identical search string into google.co.nz, because more people use google.co.nz to search for this singer, the relevant listings were more obvious since more people search for a NZ singer on google.co.nz than on chol.com.

However, that has more to do with the vagaries of search engines rather than User A's ability to navigate a search engine written in a foreign language.

After spending five minutes with User A, I decided that the one task would be enough for the rest of my test Users.

User B

It was only when we had completed the post-evaluation interview that User B told me he had been a "results analyst" for two years. He described himself as one of banks of results analysts who all day long entering search strings to find if the results were ordered in the correct way. B said because of that experience he knew what to enter into a search box to make sure he found what he wanted on the first SERP page.

When I explained the task, he said there was something he wanted to look up – how to improve the monthly email newsletter for his business. As always, I had prepared a browser with Chol.com and minimized it to the taskbar. When I asked him to maximize, he chuckled and said under his breath, "That's funny." Then he typed google into the website box. After gently redirecting him back to chol.com, he did seem surprised. However, he did go back.

After typing in his search words, he said he wouldn't be able to read the results. But I suggested we should just see what happens. Then he had the same problem with the Chol.com search engine A had had - the cursor suddenly from the search entry box to the user-id box. He repositioned the cursor back into the search box and the website behaved itself.

This strange bug occurred only twice, but it was during the first two evaluations.

B discussed aloud (as if to himself) what words he should enter. After he entered his search string the SERP results came back. He found they were satisfactory after having a look at a couple of results.

User C

User C is the only user to balk at the task. Like everyone else, she had an audible reaction (a snort) on first seeing the Chol.com website. However, when I encouraged her to try the Chol search engine, she said: "You're joking?" and "I have no idea what it's saying." I asked her if she was abandoning the task and she said she was.

User D

Like C, User D came to my home. I have two screens and when I booted up my PC that morning they decided to reverse themselves, which meant that I had to tell D that to move the mouse cursor from one screen to the other, which she had to, she had to move in the opposite direction.

Although D seemed convinced she didn't know anything about computers. She first resisted doing that "on this Chinese thing." She twice asked to go to Google ("Can I type in google here?" and "Can I delete that and type in Google.") After I suggested she give it a "bash" she did complete the task. However, Chol couldn't find what she was looking for - a friend's website.

Again this has more to do with the search engine than anything she did.

User E

The most straightforward was User E. When I arrived at her house, she was actually in the process of Googling. When she finally began the task, she simply entered the same search string into the search box and was able to complete in 27 seconds.

User E was helped by the fact that she was just looking up the same thing on Google so immediately recognized the listings on the SERP.

Still, despite the fact she readily found her results, E did have a moment of doubt. She later said she thought she wouldn't be able to use Chol.com but "you made me do it and I did."

Analysis and Discussion

Five test subjects are not enough to safely make any generalizations. However, there are some interesting points.

First, all test users expressed surprise when first facing Chol. The novelty of a web page full of foreign script was reinforced by the fact that none of them had intentionally gone to a foreign language website before.

Secondly, two test users asked to go to Google not once but twice. It was as if I could not possibly mean what I was saying. After I gently redirected each back to Chol, they succeeded in the task.

As only one of my test users did not enter anything into the Chol search box, obviously I am obliged to compare her with the rest. Although User C is older than the rest of the test users, she isn't that much older than the User E, who found what she was looking for in 27 seconds. We aren't comparing a grandmother with teenagers.

User C and User D both had similar computer and web search experience; however, D did enter a search string into the search box (although Chol could not find any results).

However, C is the only test user who had no foreign language ability or experience. There may be a level of confidence one learns from dealing with a foreign language that is transferrable.

An added bonus was the different approaches of User A and B. Thwarted with the search engine results, A approached the problem as a programmer. She hacked it. Later she told me she didn't want to cheat but do things in the spirit of the exercise; I told her she couldn't cheat.

User B has a different perspective due to his background as a results analyst. He views search strings critically and carefully selects the words to enter to bring up what he wanted to see immediately. This is not to say others didn't try to do this, but User B did so by considering how the search engine would work.

Finally, the fact that C abandoned the task helps justify that my research question is not a trivial one.

Limitations

The greatest limitation for this project is the small sample size. There really can't be any generalization.

In addition, the fact that I went to some of the users homes and others came to mine may be viewed as a limitation. Kantner et al (2003) advocates travelling to people's natural habitat in order "to learn their normal or natural behaviour." However, I am hardly going to test their normal behaviour by having them use a Korean search engine. Two of the test users came to my house – one was in the neighbourhood and the other didn't have enough room around her own PC for the two of us. I am uncertain whether this made a difference.

Another limitation is data capture. As mentioned by others, I feel that any one technique is inadequate (Nielsen, Clemmensen, & Yssing, 2002). Although I used a digital audio recording device, video recording would have been welcome. I found it a bit overwhelming to simultaneously count mouse clicks and observe, and worried I was missing something.

Lastly, another limitation of this project is my inexpert technique, but an examination of that will await my reflections paper.

Future Work

Sample Groups Size and Definition

Future research should involve larger test groups. It would be optimal to develop a test user group that not only represented a broader age range and but also more men.

In addition, future research could also more finely delineate different levels of computer experience.

Speakers of other languages: Ideally, I would like to test speakers of other native languages. Chinese would have been a good contrast from English, as its ideographs are a different kind of script. However, one problem with doing that is that I personally could not test native Chinese speakers who had no experience with foreign languages (or at least not without *really* brushing up my Chinese).

One way around this problem would be to enlist a native speaker of Chinese to do the interviews.

It would be interesting to test people according to their language ability, regardless of language:

- Those who speak only one language (user C)

- Those who have some foreign language ability (most of test users)
- Those who speak two languages but learned one as an adult (a hard won skill)
- Bilingual groups such as bilingual Indians and French-Canadians (natural ability from growing up in a unique language environment)

Tasks

I gave my test users one simple task. After they found the search box and entered their search string, they basically had conquered Chol. Assigning any more tasks would have been needless repetition.

Future research could more closely define the task if the sample group is large enough. Manning et al (2008) differentiate searches into information queries, navigational queries, and transactional queries. (Manning, Raghavan, & Schutze, 2008). Informational queries seek general information on a topic. The user seeks out many listings and to try "to assimilate information from multiple web pages." (p. 395) In my sample group, both User A and E's searches were informational queries. User B, C, and D had navigational queries – they wanted to find a web page, either a particular one in User C and D's instances, or for the best one as in User B.

However, it would be useful with a large sample group to be able to identify the kinds of queries in this manner, to determine whether one has a greater likelihood of succeeding.

Search engines

As mentioned above, more than one query on Chol would have been redundant. However, it is possible to try more than one foreign language search engine.

It is possible, say, for native English speakers, to try Chol and then the other Korean search engine Daum, or maybe something completely different such as one of the Arabic language search engines.

Artefacts

Future work would also involve the application of design science to the artefacts of this project. As there is so little quantitative data available (mouse clicks, time, and the binary completed/abandoned datum), a more complete set of pre- and post-evaluation questions is desirable.

After User A did her evaluation, I altered the questions I asked. This fits in with the typical design science build-and-evaluate loop. (Hevner, March, Park, & Ram, 2004)

A more complete project would involve iterative development of the questions.

Pre-Evaluation Questions

Test User	Computer Use	Search Engine Use	Search Engine	When last use another SE	What was it?	Foreign language?	Speaking Ability	Reading Ability	Language
A	Daily	Daily	Google	Same day	Yahoo	Yes	Conversational	Read menu	French
B	Daily	Daily	Google	Day before	Internet Explorer	Yes	Conversational	Read newspaper	Spanish
C	Daily	Daily	Google	Never		No			
D	Daily	Monthly	Google	Never		Yes	Ask directions	Read menu	French
E	Daily	Daily	Google	A long time ago	Yahoo	Yes	Conversational	Read menu	Spanish

Evaluation Metrics

Test User	Start time	End time	Successful?	What to search for	Mouse clicks
A	4:05	9:10	Yes	Gin's latest CD	Too Many to count
B	3:02	4:07	Yes	How to improve your monthly email newsletter	4
C	2:28	3:09	No	Village Sky City cinema listings	0
D	4:38	6:45	Yes	Friend Heather's website	5
E	3:20	3:47	Yes	A disease	4

Post-Evaluation Questions

Test User	Q1	Q2	Q3	Q4	Q6	Q7	Q8
A	Novel	No	Lots of Korean Writing	Layout of the text box - immediately	No	It was in English	No
B	Simple	No	The Language	Title Nav Bar Search Box – 1/2 second	Yes	The results were in English	Yes
C	Useless	No	Jabberwocky	The word Down in an ad -	---	---	No
D	Unusual	No	This foreign language	Part of the browser and the search box	No	There were no results	Yes
E	Weird	Only by Accident	Korean	Search Box	Yes	The results were the same as in Google	Yes

Appendix 1 - Pre-Usability Evaluation Questionnaire

If we break into ranges, starting, say with 20-29, what is your age range?

What is your native language?

Where were you born?

How often do you use the computer?

Less Often	Monthly	Twice a Month	2-3 times/week	Daily

How often do you search for something on the internet?

Less Often	Monthly	Twice a Month	2-3 times/week	Daily

Which search engine do you use?

When was the last time you used another search engine?

What was it?

Can you speak a foreign language?

Not at all	Pidgin	Ask directions	Conversational	Fluently

Can you read in another language?

Not at all	Read signs	Read menus	Read newspapers	Read novels

Appendix 2 - Post Usability Evaluation Interview

How did you find that?

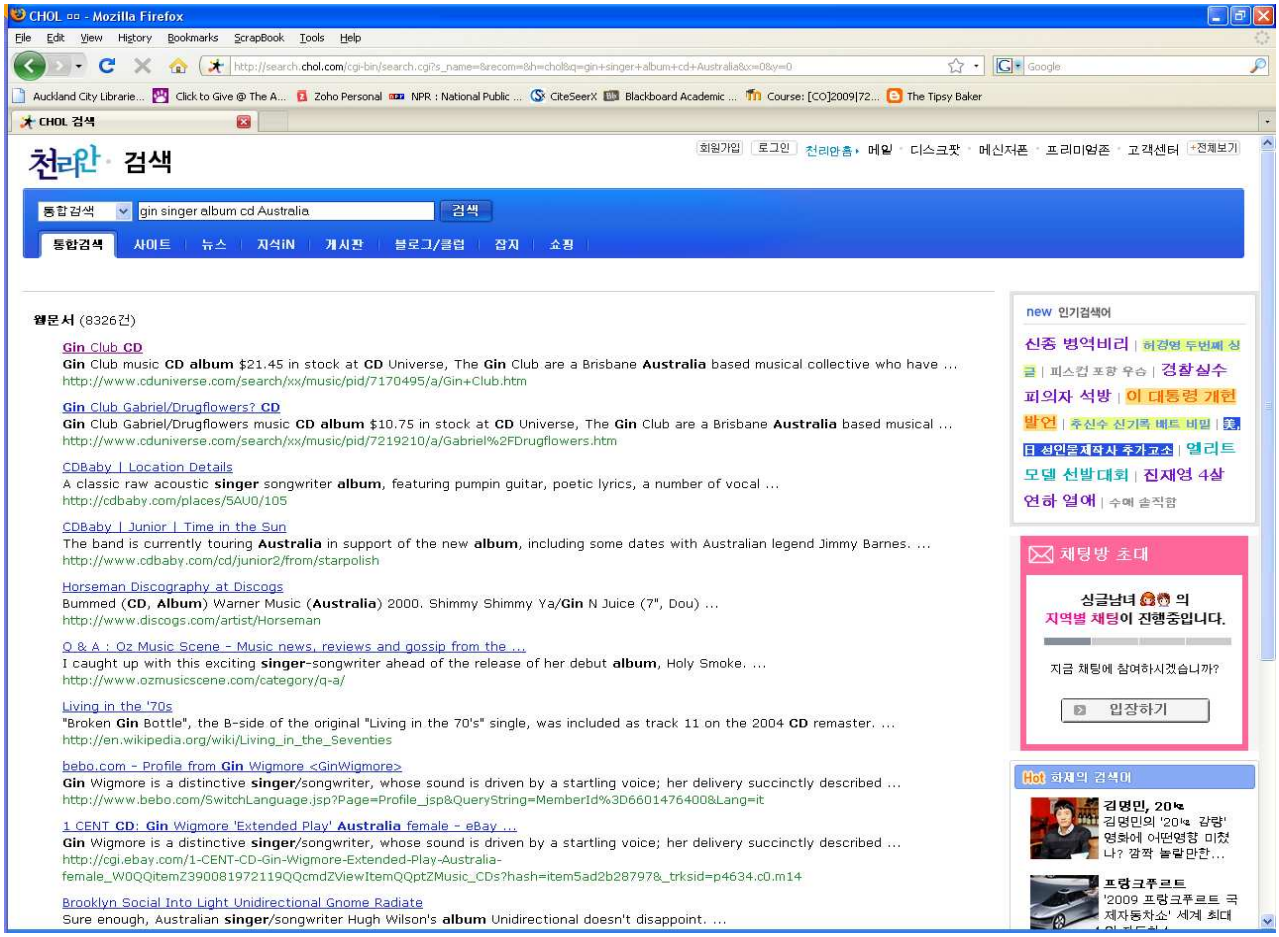
Have you ever used an internet site in a different language before?

When you first looked at the Chol website, what did you first see?

What seemed familiar? How long did it take for you to find what was familiar?

What helped you out on the screen?

After you entered your search string into the search text box, did you immediately find what you were looking for?



What helped you out on this page? Was what you were looking for on the first page?

Did you already know the answer for what you were searching for?

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