

Usability Studies of a Socially Enhanced Web Server

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ABSTRACT

We describe the results from user studies of a collaborative, socially enhanced Web space named a CoWeb. We added social navigation in the form of graphical footprints and “new” markers next to the links in the CoWeb. We found that social enhancement of the Web space using these markers altered the navigation behavior. Participants who were able to see these markers accessed the pages less frequently compared to a group of participants who did not have access to the markers. We interpret this such that the markers help people navigate to important information. Participants who could see markers also seem to have a better overview of the space. We hypothesize that the markers convey a kind of social filtering window that highlights which information is the most interesting in the CoWeb. This helps participants find their way to this information through social navigation.

Keywords

Social Navigation, Usability Studies, History Enriched Environments, CSCW

INTRODUCTION

The CoWeb (for collaborative Web) was initially implemented by Mark Guzdial [1] to support anchored, threaded discussions. A CoWeb is an open web server that allows anyone to edit any page hosted on it. Usage is simplified since HTML tagging is not required, but supported.

The fact that the Web space is modifiable makes many CoWebs in sense become virtual communities. Unfortunately there are no explicit interface features that tells participants whether there are other participants present, what they have done or are doing or which topics are popular.

Description of the system

We have worked on improving a feeling of community in the CoWeb. The approach has been not only to provide information on what has been modified within the system, but also what has been accessed, thus helping the participant in finding the most interesting information in the CoWeb. The information is provided as “new” markers and footprints, right next to links (see Figure 1). It is easy to see

not only which links lead to new material, but also which links or topics people are currently most interested in [2].

Showing what is new

In the socially enhanced CoWeb there are 3 levels of newness, shown as differently colored “new” markers (newer than 24 hours in red, newer than 3 days in orange and newer than one week in gray). The markers show up for new and for modified pages (see Figure 1). They help the user navigate by showing dynamically what has been most recently added or edited.

Showing accesses

Access history might be even more important in order to provide the user with information of what might be the most interesting parts of the CoWeb. Access history is an effortless side effect of using the system. Using Alan Wexelblat’s [3] terminology, this is an example of *passive interaction history*. Modifications cause *active interaction history*.

The CoWeb uses three levels of colored footprint symbols to show access history (see Figure 1). The color scheme for the footprints is consistent with the colors for the “new” markers, going from red to gray. Traffic is aggregated for the past 24 hours. A special marker for pages that have not been accessed for over two weeks is also shown. It depicts a small dinosaur, thus signifying the page as ‘extinct’.

STUDY

Our initial hypothesis was that visualization of interaction history through the “new” markers and footprints encourages additional traffic based on the observation that “what attracts people is people” [4]. Furthermore we hypothesized that navigation would be more efficient for users since they would be able to easily see what had recently been modified and/or accessed. Users would navigate in a more social way, rather than in a spatial or semantic way.

Participants

We studied the usage of the socially enhanced CoWeb with a community of students from a university course in Computer Science. The total number of participants was 33 and

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the age ranging from 23 to 30 years. The CoWeb was used as a tool for collaboration during a two-month period.



Figure 1. CoWeb view for a 'seeing' user

Participants were asked to use the CoWeb for a number of tasks, ranging from answering questions for the course to using it freely like, for instance, a chat room.

Procedure

The variable manipulated in the study was that 18 students in the course could see the social markers in the CoWeb (henceforth called 'seeing') and 15 could not see them (henceforth called 'blind') (see Figures 1 and 2).

The 'seeing' users were not informed what the markers meant, other than by a mouse-over on the graphics showing ALT-banners saying, for instance "used frequently today", for the red footprint marker. The participant's accesses were logged and an analysis of variance has been conducted with the data.

After the course the participants filled out a 30-question questionnaire inquiring whether they liked the CoWeb or not. We also asked participants how much they use the system, whether they thought it differed a lot from ordinary web spaces, if it was fun to use, and if they felt they were supported in their navigation tasks. The questionnaire also contained questions on whether people thought they had a good grasp of the CoWeb's content, if it gave them a sense of community and if they found it useful. We received 25 fully answered questionnaires.

In addition we conducted open interviews with 7 users (three 'seeing' and four 'blind' users) and structured observations [5], using a set of prepared questions. The interview location was the environment from where the interviewees usually accessed the CoWeb (home, university computer room, etc.), in order to make the setting for the interview as natural as possible.

RESULTS

Results from logs

The analysis of variance of the log files shows that the 'blind' users were more active within the system. A measure of total participant accesses within the system shows an average of 42.77 accesses per participant for the 'blind' participants and 33.53 accesses for the 'seeing'. The difference between the two groups is not statistically significant but there is a strong tendency showing that the 'blind' users are accessing the CoWeb more often and clicking on more links. Both groups access newly added or altered informa-

tion to a higher degree than older information whether they can see the social markers or not.



Figure 2. The same CoWeb view for a 'blind' user

Results from questionnaire

Both groups appreciate the CoWeb's editing and community-empowering features. However, the suggestion to use the CoWeb for social activities did not catch on at all. Participants answered that if students from within the group administrated the CoWeb to a higher degree, the "social usage" of it would increase. In the experiment the participants exclusively used the CoWeb to answer the questions given for the course.

The 'seeing' participants answered that they have a better overview of the CoWeb than the 'blind' and they also answer that they think that they have seen everything within the space (containing between 30 and 50 pages). What came as a surprise to us was that the 'blind' participants found the CoWeb more fun, more different, and more useful than the 'seeing' participants!

'blind' participants' further answered that they were more affected by what others did in the CoWeb and they reported they feel a stronger sense of community. One possible explanation for this surprising result is that because 'blind' participants access the CoWeb more, they exist for a longer time within the virtual community, thus becoming more used to it and finding it more 'alive' and fun.

Results from interviews

Initial analysis of the interviews has shown that both 'blind' and 'seeing' users find the largest difference between a CoWeb and ordinary Web pages to be the possibility to modify all pages. Reasons given for the sparse activity in the CoWeb were lack of time and the fact that there was no pre-existing community within the group to build on. One participant answered: "If I had a CoWeb with my friends in my dorm it would have LOTS of activity!"

When the 'seeing' users are shown the same CoWeb page without the social markers they consider the page being "dull", "dead" or "less fun, less alive". The 'blind' users, when shown the social markers, react with comments like: "Oh! I would like to see those as well!" and "Neat! It gives even more of a feel of activity".

CONCLUSIONS

Socially enhancing a Web space might work for aiding the user's navigation. The 'seeing' users do not have to access pages as much as 'blind' users to find out what is new or more interesting topics. The 'seeing' users also report that

they are to some extent consciously helped by the markers in their navigation of the CoWeb.

'blind' users have a stronger sense of community in the CoWeb probably because they have been more active in it and the sense of a living community grows over time and usage.

Given these contradictory results, we have to take a step back and ask ourselves what is going on here? New thoughts for further research are; a CoWeb is plastic and changes over time, it is accessed several times to see what has changed and how. Information gets added and deleted. The harder it is to understand and see what has been changed or added, the more often the participant has to go there. This signifies that social markers within a space with high plasticity (i.e. a high rate of change over time) might be very useful for aiding navigation. This gets even more significant if the information space is big.

A sense of community within a computer mediated information space is to a high degree a function of usage and time. The theme for the community and the fact that it mat-

ters if participants are members of a pre-existing community or not are also very important to look further into.

REFERENCES

1. Guzdial, M., Collaborative websites to support an authoring community on the Web. *Submitted to Journal of the Learning Sciences*, 1999.
2. Harrison, S. and Dourish, P., Re-Place-ing Space: The Roles of Place and Space in Collaborative Systems, in *Proceedings of CSCW '96* (Boston, MA, 1996), ACM Press, 67-76.
3. Wexelblat, A., *Footprints: Interaction History for Digital Objects*. Ph. D. Thesis, MIT, Cambridge, MA, 1999.
4. Whyte, W.H., *The Social Life of Small Urban Spaces*. Washington, DC: Conservation Foundation, 1980.
5. Dray, S M., *Structured Observation: Practical Methods for Understanding Users and Their Work Context*, ACM Press, 1998.