WISETales: Sharing Personal Stories as Informal Learning Experience for Women in Science and Engineering

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Abstract: Women are underrepresented in the areas of Science and Engineering, both in academia and industry. This leads to weaker support networks, lower self confidence and lesser access to mentors. We investigate whether a community built with a specific purpose to allow women in science and engineering to share personal stories can support women to reflect and learn from each other's experience. This paper presents the design of WISETales, a new online community for sharing personal stories. It discusses the design and the potential role of the community as an informal learning tool based on results of an exploratory user study.

Introduction

People are social by nature. They tend to connect easily with others who share their interests and opinions. These connections boost their self-esteem (Festinger, 1954), increase their sense of security (Reed, 1999) and allow them to establish status in their communities (Festinger, 1954). We investigate whether a new online community that allows and encourages women in science and engineering to share personal stories can support them to learn through their narratives and help in their personal, professional and career development. The community will also help to connect women who may be isolated in their workplace, provide a forum to ask questions, get help and informal mentoring, and ultimately, help them build up self-confidence and increase their motivation to achieve success. Other online communities exist for women in science and engineering, but there is no similar community focused on sharing personal stories.

We designed WISETales (Women in Science and Engineering Tales) – a new online community for sharing personal stories. The community is currently active and available on the web at http://www.ourwisetales.com and http://wisetales.usask.ca. It targets professional women from all over the world, of diverse backgrounds, cultures, ages and professional levels: undergraduates, graduate students, entry level professionals all through senior level professionals, in both academia and industry.

Related Work

Research suggests that there are two main factors behind women's underrepresentation in science and engineering: social gender stereotypes and (influenced by them) women's low self-efficacy and self-confidence in their abilities. According to (Cohoon, 2007) these social factors lower their expectations of performing well in these fields, thus diverging them away to other socially and gender-accepted fields.

By sharing stories about personal experience women can educate, support or warn other women going through similar situations. While positive stories encourage women in their professional journey by providing role model's original stories, negative stories project a realistic depth into the current obstacles they experience at various levels. The diversity and richness of the posted stories would serve many women in different stages in their lives and careers. Finally, as a result of story-sharing online, a repository of narratives evolves providing a deep and realistic perspective of the life and choices females in science and engineering face, which would be an important resource for researchers in gender studies, sociology, and human resources.

Some authors see the community design as the key to stating successfully a new community. Nine key design principles were identified (Kim, 2000). These principles evolve around identifying a goal for the community, having a flexible environment, allowing users to create profiles, assigning roles, encouraging social norms, promoting events, creating and celebrating special community occasions and finally assisting users in creating and managing their own subgroups.

Furthermore, the design should consider the possible motivations that users may have. One of the main theories in the area of motivation is Maslow's Hierarchy of Needs (Maslow, 1943). In the case of WISETales, there is a variety of needs that women may need to fulfill and that may affect their motivation for participation. First, the basic needs of providing access (easy to use interface, intuitive and understandable for users of different age and computer skills) need to be met by the community to allow users to participate. Ease of use is paramount to attract users of different backgrounds and computer skills to participate and contribute content

(Fogg et al., 2003). Immediate feedback to users' contributions makes the interface easier to comprehend, is rewarding and motivating (Norman, 1988), (Webster & Vassileva, 2006).

There are two other theories that can be used as a theoretical framework. The Common Identity Theory focuses on the individual's relationship with a group as a whole, and the Common Bond Theory investigates personal relationships among individuals in a group. In online communities, users are motivated to contribute because they either associate strongly with the community as a whole, and they work hard together to succeed in achieving the community's purpose, or they are motivated to establish strong relationships with certain users in the community. The motivation to contribute to the community may be a combination common identity and common bond (Ren, et al., 2007). So a community design should emphasize both the overall goal and provide means for the users to see how their activities contribute to it, and also it should support users in building relationships with each other, e.g. by avoiding complete anonymity, allowing users to send private messages to each other etc.

WISETales new Online Community Design

Our design allows only 4 functions for members which are all directly related to the main purpose of the community – sharing stories. The functions are: read and comment on stories, search for stories with particular tags or published in a particular month, and contribute stories. While it is possible to extend the purpose of the community to include, for example, supporting discussions, sharing news, personal blogs, chat tool, status updates etc., we decided to focus on the unique goal that defines the focus of the community – sharing stories – at least at the start. More communications purposes and their corresponding functionalities can be added later, once the community is formed, if it is required by the users. The homepage of the community is shown in Figure 1.

Figure 1. The Homepage of the Community

Usability Exploratory Study

We launched wisetales.usask.ca on January 31, 2008. At the time of writing, there are 21 stories in total (16 contributed and 5 seeded). In October 2008 we ran an exploratory study to evaluate the usability of the design and the interface and the appropriateness of functionality, as well as whether the users thought that the community provides an environment that supports informal learning. Thirty women in science and engineering were recruited for the study through the internet (Facebook groups, personal email invitations). We used a web-

questionnaire as a tool. We did not ask if WISETales provides a learning experience in order to avoid the Hawthorne effect. The participants were asked in an open ended question what they thought of WISETales. Ninety percent of the participants (90%) said it is a great idea, but only eleven elaborated further, most of them emphasizing the value of knowing there are other women going through similar experiences, learning from each other and passing on their experiences through generations. Eighty percent (80%) said that they would join such a community. The majority of the participants (90%) found the design easy to use, attractive and 70% thought that it was easy to figure out the main purpose of the community from the design. Regarding privacy, 77% of the participants supported the need to require registration to post stories or comments, and 84% liked the anonymity option (but only 54% created anonymous accounts).

SUMMARY, DISCUSSION, AND FUTURE DIRECTION FOR THE PROJECT

We created a new online community for Women in Science & Engineering (WISETales) to share personal stories using design principles based on theories of motivation and some general design principles for online communities. We were particularly interested if WISETales serves a need in the community by helping professional women in science and engineering to connect and learn from one another by sharing their personal experiences through narratives. We confirmed our hypotheses through an exploratory study with 30 users. Our results are based on a relatively small sample of users, but in most qualitative studies, more than 15 users are considered sufficient number to account for the possible variability of answers. Yet, our sample was mostly formed by professional women (faculty, graduate students and women already working in industry). There were no high-school students among the sample, and only two of the participants were undergraduate students. So our results are somewhat biased towards women in further stages of their careers.

The timeline of most successful communities shows a long period with few contributions, which later increase exponentially. The specifics of our audience suggest that it would be impossible to expect a growth of contributions comparable to Flickr, YouTube or Del.Icio.Us. "Success" for WISETales would mean a stream of sustained contributions at a low scale (2-4 stories a month). We do not think that this goal is unrealistic. Starting a new online community is very hard. Yet, we believe that the goal of creating a community for underrepresented women to share personal stories is noble, and the area of research offers many avenues for investigation. The next stage of our research would be to follow up on the feedback received, enhance the design and investigate ways to elevate the learning curve further by incorporating a social visualization. Another study will take place to test the effects of the visualization. We are optimistic that we will be able to gain interesting insights into important questions of online community formation, what motivates participation of women in science and engineering in online communities, and how informal learning happens in them. There aren't many repositories of gendered narratives available currently, even less so in the areas of science in engineering. WISETales will help to fill this gap.

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