Chapter VIII
Evaluating the Effectiveness of Social Visualization Within Virtual Communities

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ABSTRACT

Participation and system usage is crucial for virtual communities to develop and sustain. However, many communities report very low participation rates of members. Finding and studying strategies for fostering participation in virtual communities is therefore a growing field of research and different approaches for strengthening participation in virtual communities exist – among them social visualization. While many tools for visualizing social interactions have been developed, not much empirical evidence about their actual effectiveness exists. To find out more about the effectiveness of social visualization on the participation rate (number of logins, forum posts, personal messages, and chat posts) the authors conducted an empirical study within CyberMentor – a virtual community for high school girls interested in science and technology. In their sample of N=231 girls the authors did not find a significant difference between the number of logins in the phases before and after the introduction of the visualization tool. The number of forum post, chat posts and personal messages however increased significantly after the incorporation of the visualization tool. Long-term effects were found for one-to-many communication technologies (forum, chat), but not for personal messages (one-to-one).

INTRODUCTION

In this chapter we present results of an empirical study about visualizing usage behaviour of community members within CyberMentor – a virtual community for girls who are interested in science, technology, engineering, and mathematics (STEM). We conducted a timeline study and divided the ten months duration of our study (September 2006 till June 2007) in four phases: starting phase (month 1 and 2), consolidation phase (month 3), short-term effect phase (month 4 and 5), and long-term effect phase (month 6 through 10). The visualization tool (CyberCircle) we developed was incorporated into the platform after the consolidation phase. To find out if social visualization has an effect on the users' participation behaviour we compared community members participation rates (number of logins, forum posts, personal messages, and chat posts) of the consolidation phase with average participation rates of the short- and the long-term phase.

We will start with some background information about virtual communities in general, the technology acceptance model which serves as our theoretical background, and social visualization. The chapter focuses on virtual communities or online communities in general rather than on virtual communities of practice. The virtual community described in this chapter offers great opportunities for formal and informal learning though, which will be discussed later. Since virtual communities and virtual communities of practice are extensively covered in other chapters, we will not go into detail concerning this topic. As background of our own work we chose the technology acceptance model which will be described before defining and showing examples of social visualization. An overview of evaluation approaches of visualization techniques within communities shows that only little evidence of the effects of social visualization within virtual communities exists (e.g. concerning the participation rate). Next, we describe the aim of our research and the hypotheses concerning the effects of social visualization on participation. In the method section we will present the virtual community (CyberMentor) that we used as a research tool for our study. We also describe the community platform, and the social visualization tool (CyberCircle) we developed. After a description of the subjects, research design, and measurement variables, we present the results of our study and discuss them. We conclude our chapter by naming some limitations of our study and making suggestions for future research and practice.

BACKGROUND

Virtual Communities

In the research literature a wide variety of definitions on virtual communities exists, which range from technical to people-centred. Lazar and Preece (2002) define virtual communities as "a set of users who communicate using computer-mediated communication and have common interests, shared goals, and shared resources" (p. 128). Preece (2000) identifies key elements of virtual communities: (1) people, who interact as they strive to satisfy their own needs, (2) shared purpose, such as a common interest or need that provides a reason for the community, (3) policies, that guide peoples interaction, and (4) computer systems, to support social interaction and facilitate a sense of togetherness. Virtual communities encourage research of different disciplines (e.g. computer science, psychology, sociology, anthropology, etc.) and one finds various methods for studying and answering research questions about virtual communities. One important research field deals with investigating usage behaviour of community members. Reasons for joining an online community are examined (e.g. Ridings & Gefen, 2004) as well as reasons for lurking (reading but not posting) (Katz, 1998; Nonnecke & Preece, 2001; Preece, Nonnecke, & Andrews,