

# Patterns of interaction and everyday knowledge sharing in Social Network Environments

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**Abstract:** Our research explores online social networking sites to describe the patterns of participation and knowledge sharing in these spaces. We examine how knowledge is shared and how participation is potentially shaped by social or material resources of the space. Our presentation will focus on data gathered from two different types of social networking sites.

## Theoretical Background

Educational researchers have begun to explore how people learn in a range of informal contexts, where free-choice learning is the dominant focus, and which involves participation within social networks of families, hobbyists, or other communities (e.g. Bell et al., 2009; Dierking & Falk, 1994). A fundamental characteristic of informal learning is that learners have some choice over what they want to learn, and is thus tightly connected to individual interests or intentions (Bell et al). Investigations of informal learning have been conducted within contexts such as museums (Ellenbogen et al, 2004; Falk & Dierking, 2002), farming (Saxe, 1991), and game playing (Nasir, 2002). Learning in informal settings can be framed within sociocultural perspectives, where learning is viewed as individual participation within a community of practice (Ellenbogen et al, 2004) and where cognitive shifts in individual reasoning are closely linked with the social processes that are part of the sociocultural setting (Nasir, 2005). Thus, learning can be considered as participation in everyday, situated activities that arise from interaction with material and social resources (Barab & Roth, 2006).

Online learning communities are often studied in classroom or professional development contexts. Online communities can be either created by design or emerge in more self-organized ways because of their function in the world (Barab, 2003; Barab & Roth, 2006; Hoadley, in press). Our goal is to examine participation in informal, online social networks. Broadly characterized as social network sites (identified by Boyd & Ellison, 2007), these online spaces offer individuals the opportunity to establish an identity within a bounded context and interact with others that share similar interests (Gunawardena et al, 2009). These activities closely resemble Wenger et al's (2002) definition of a community of practice as a group of individuals who share interests about a topic and engage with one another to deepen knowledge. The communities we are exploring foster networks of weak relational ties solely online, differentiating them from notions of community with sustained history or common heritage (Barab & Duffy, 2000). Network theory allows the study of some of these aspects, by exploring the nature of ties between the community -- i.e., how are nodes (or actors in the network) connected to other nodes with ties. For example, communication ties show who talks to whom, workflow ties show who provides and receives resources, and proximity ties show who is spatially/electronically close to someone else in the network (Katz et al., 2004).

Our research explores how everyday, online social worlds create opportunities for participation that are quite different from those encountered in formal educational settings. Yet, these spaces nonetheless may serve to mediate knowledgeable participation and accomplishment of goals in everyday life worlds (Barab & Roth, 2006) of people. Third spaces (Moje et al., 2004), which is closely associated with hybridity theory, is a theoretical construct that may provide a useful perspective for considering everyday learning in online social network spaces. Third spaces describe spaces where new forms of participation are established through a merging of a first space (e.g., everyday home contexts) and a second space (an institutional space like schools or work, or formal technical or scientific discourse) (Bell et al., 2009; Moje et al.). Bell et al. forward the notion that virtual worlds, like chat rooms or game worlds, might be considered third spaces because they are neither home nor work spaces, and provide a "unique potential for the development of identity where new resources and constraints evolve in the social milieu of the virtual space" (p. 264). Bell et al (p. 264) further note: "Whereas geographic, cultural, and technical boundaries have historically constrained cultural exchange among groups and individuals, virtual environments can facilitate transactions across these barriers, opening up new intersections of people, tools, and traditions to support identity development."

## Research Questions

The following questions guided our research:

***What patterns of participation are visible in various social network communities?***

- How are patterns of participation related to membership within the community?
- How do participants share knowledge within the group?

## Research Context and Methodology

Our research examines existing social networking sites. We focus on data gathered from two different types of social networking sites: (1) public hobby sites (e.g., ESPN Fantasy Sports-Basketball); and (2) self-directed learning social network sites (e.g., language, health). We use primarily a descriptive research design to observe participant discourse without influencing it. Data were based on discussion posts within social network sites. Social Network Analysis (using *UCI-Net*) and content analysis were conducted for some of the sites.

## Preliminary Findings and Implications: *What patterns of participation are visible in informal social networking communities?*

To address questions about the relationship between patterns of participation and community membership, our data analysis has thus far focused on examining social networks within the Fantasy Sports site. The site attracts a large number of participants, approximately 1300 or more, who contribute between 50,000-80,000 messages per year. We accessed data for two years from 2004-05 and 2005-06, totaling about 150,000 messages. Our initial analyses of the networks in this site produced a dense, highly connected sociogram (leftmost image in Fig. 1), which was difficult to parse. We subsequently focused attention on cliques with 30 or less actors to identify highly connected individuals and patterns of participation within those cliques. By identifying these cliques, we hoped to gain a better understanding of actors (participants) who were most prominent in the networks. The two right most sociograms in Fig. 1 indicate cliques from 04-05 and 05-06, which show participation by some of the same actors, i.e., the nodes marked 8, 9, and 19. As is visible in the sociograms, we see that the participant represented by node #9 has moved into a more central position in the clique in the second year of participation, while the participant represented by node #8 has moved only a bit closer to the center of the network. Participant #19 remains at a similar location of centrality in both years. We hypothesize that this change in degree centrality (i.e., the total number of ties that connect the participant -- both ingoing and outgoing) could be related to personal connections with other actors in the network and the quality of communication. Until this point, social network analysis has helped to focus our attention on specific groups of interest within this overall community, as well as on specific individuals with greater prominence within each of the cliques. Our next step is to qualitatively explore the ties between these participants to identify the nature of participation, knowledge and resource sharing, and identity enactments.

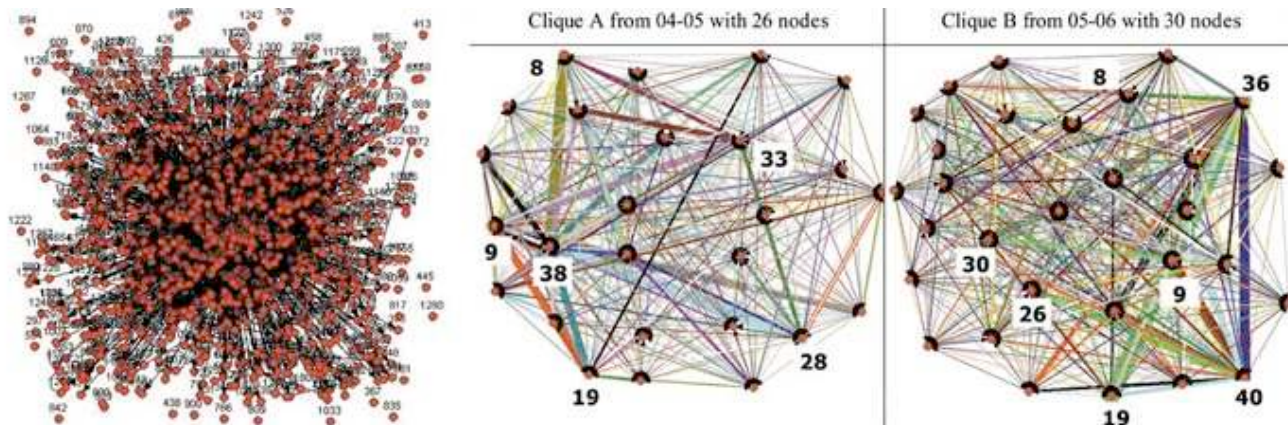


Figure 1: Sociogram for the whole fantasy sports network 2004-2005 and cliques from 04-05 and 05-06

To examine knowledge-sharing practices in social network spaces, we identified recurrent patterns of discourse that emerged from several online community discussion boards. Patterns included: (a) knowledge telling; (b) seeking advice/explanation; (c) experience sharing; (d) public deliberation; (e) mutual goal setting and achievement; (f) data sharing to improve practice.

## Potential Significance

The potential significance of this work lies in its contribution to the growing literature on lifelong, informal learning (Bell et al., 2009). Our research studies online spaces where people voluntarily go to learn and to participate in a shared goal or activity. This research may add to the knowledge base of how participants exchange knowledge and practices, as well as extend what is known about online virtual spaces as "third spaces" for everyday learning (Moje et al., 2004).

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