Different (Key)strokes for Different Folks: Designing online venues for professional communities

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ABSTRACT

Educational on-line resources are expanding in their application beyond delivering courses to providing venues in which members of professional communities of practice meet to exchange problems, ideas and questions. This paper will discuss two such communities, their similarities and their differences. Design decisions will be suggested to encourage designers and facilitators of such venues to be aware of the community for whom they are designing.

Keywords

On-line learning community, Human-computer interaction, Communities of practice, User-centred design

Introduction

On-line communities have been evolving since the Internet allowed for electronic communication. Email was an obvious way to connect with like-minded people, but did not provide a natural interface for interpersonal communication. Initially, such communities were limited by technical (computer) expertise, to such people as computer and engineering research pioneers. Then, as computer hardware and software evolved, accessibility to communication was improved by both less expensive hardware and easier to use software. By the end of the 1990s, there are over 56 million computers connected to the World Wide Web (Network Wizards, 1999). The environment for on-line communities continues to grow, and is a resource to be exploited.

Software that allows people to interact electronically, has evolved from simple messaging, to entire virtual worlds in which participants live, play and work together. Examples of these worlds, as Nolan (1999) discusses, range from the first Multi-user Domains (MUD) being used purely for role playing games to the current Multi-user Object Oriented (MOO) environments used for professional collaboration. Such electronic interactions will continue to evolve, expanding in ways that will support and encourage new communities. These communities may be drawn together based on the affinity of professional or personal interests (e.g., computer gaming, gardening, travelling or literature).

On-line professional communities are a way to facilitate "communities of practice", which Wenger (1998) describes as a joint enterprise with relationships of mutual engagement, relying on a shared repertoire of communal resources. These on-line communities of professionals can address many needs, and individuals may belong to the same community for different reasons. One obvious benefit of interacting with other professionals in ones field is the opportunity for collaborative learning and knowledge building. On-line discussions and contact with professionals in different geographic regions not only reduce professional isolation one may experience, but also expand the opportunity for learning at several levels of richness: seeking solutions to technical questions, keeping up-to-date with recent advances, and extending the boundaries of collective knowledge. This paper will compare and contrast two online venues designed to support collaborative learning for professional communities. We will identify some of the important factors distinguishing the two case studies, i.e. how the differences in the communities are reflected through differences in 'what works where'.

Case studies overview

The two on-line knowledge venues that we are comparing are Tapped In (www.tappedin.org) and TeleCHI (www.telechi.org). Each venue has its own history, community and types of interactions. Following the

descriptions of the two venues, we will discuss the deliberate design decisions that were made, and the possible reasoning and effect that they have on the community.

Tapped In

Tapped In, the Teacher Professional Development Institute, was developed as a community to support teacher professional development for K-12 teachers (Schlager and Schank, 1997; Schlager, Fusco, and Schank, 1998). Based on the need for teachers to be able to communicate and participate in on-going professional development, researchers at SRI (geographically located in Melno Park, CA) developed the on-line venue to connect teachers to one another. These researchers currently serve as environment architects, support providers and community organizers to the Tapped In community.

TeleCHI

TeleCHI, an idea network for human-computer interaction (HCI) knowledge leaders, was developed as a prototype knowledge venue for professionals in the human-computer interaction (HCI) community across Canada (Bringelson and Carey, 2000). Many of the HCI practitioners may be isolated within large companies, with many computer professionals but not many HCI professionals. The motivation behind TeleCHI was to provide an opportunity for them to gain access to recent developments in HCI research and share their ideas with peers and knowledge leaders in the field. The venue has been designed by researchers in the Learning and Teaching Through Technology (LT3) Centre – Research Laboratory at the University of Waterloo in liaison with IBM Canada and Nortel Networks, and supported by 'apprentice knowledge leaders' [= graduate students].

Design Factors for Online Professional Communities

Tapped In and TeleCHI are similar in that they were deliberately designed to support and encourage a specific professional community of practice. Neither of them is a vertical portal (Vanden, 1999), nor do they have advertisements or business transactions. Additionally, they are not designed as meta-sites to index a body of knowledge. Both are designed as meeting places for community learning. But, they are also different in many ways. These differences are summarized in Table 1, and the design issues and rationale for the two knowledge venues is discussed in the sections which follow.

Work Rhythms

Professionals in these communities have a very different rhythm to their work. For example, educators in the Tapped In community tend to have a shorter day in the workplace with work at home in the evenings. Combined with their poor access to computers in the workplace and relative isolation from other adults, this results in more frequent critical mass for open-ended collaborative learning in synchronous sessions after hours. The TeleCHI community, on the other hand, tends to have longer days at the workplace, with 'edge time' at lunch hours and before/after normal hours. These times are bounded by other factors like scheduled meetings, so that TeleCHI synchronous events have to adhere to a strict timetable.

Seasonality during the calendar year also affects membership and participation in these on-line communities. Tapped In research shows that community membership grows indirectly related to the school year. In other words, while some new members join during the school year, the majority of people join during the summer (non-teaching) months. This can be attributed to the summer institutes and seminars introducing teachers to technology. Tapped In then becomes a venue for teachers to follow-up with presenters and colleagues from these professional development activities. Another way of measuring the effect of work rhythms on community activity is the number of logins; Tapped In logins increase during the months when teaching demands are less (e.g., March break, June and July). (Research on Community Development, 2000). TeleCHI participation is much more closely related to the specific events in which members can participate. The number of people answering the HCI Pulse question increases during the times that there are other events that people "come to the site" for other community events. Due to the age of the community, there are not enough data to look at the seasonality throughout the calendar year.

		Tapped In	TeleCHI
Who?	Audience	K-16 Educators	HCI Knowledge leaders
	Technical expertise	Low to Experienced Limited workplace access	Medium to Expert Good workplace access
	Isolation from...	Other professionals: little adult contact in working day	HCI specialists, contact with other technical staff
	Professional development time	Usually blocks of time in the summer	No large time blocks – squeeze in 'edge time'
	Relation to apprentices	May have student teachers	Need to attract new hires
What?	Learning activities	➢ Periodic – Seminars ➢ Resources to access ➢ On-line synchronous contacts	➢ Multimedia updates on current advances ➢ Synchronous collaborative exercises ➢ On-going discussions
	Sponsorship of content	Rooms/Resources provided and sponsored by outside groups	In-house development and community discussion
How?	Metaphor	Conference Center with external Student Center	Playbill of events Fitness club membership
	Technology	Text-based input and web graphic	Web-based multimedia
	Community roles	Key participants serve as help desk volunteers and seminar presenters	Knowledge leaders and apprentices contribute to content and discussion

Table 1. Characteristics providing rationale for deliberate design decisions

Interface Technologies

Both of these venues required an interface that was easy to use, but the populations they were designed for varied greatly in exposure, availability and experience with computers. Educators may have experience using computers, as office tools, but may not have the drive to explore "features" the way that HCI professionals will. For this reason, the choices made in designing the on-line communities were different. The metaphors presented by the two sites are meant to entice their respective audiences with the prospect of an engaging online experience.

Tapped In employs the metaphor of a physical conference centre, a building that teachers may have heard about or visited [Figure 1]. Different activities happen on different floors: reception and a café' on the ground floor, with the second floor being sponsored meeting rooms, above that are virtual offices that members can set up an furnish for their own purposes. The actual interaction is text based, although there is a Java application that can be used to show a more "realistic" picture of the venue.
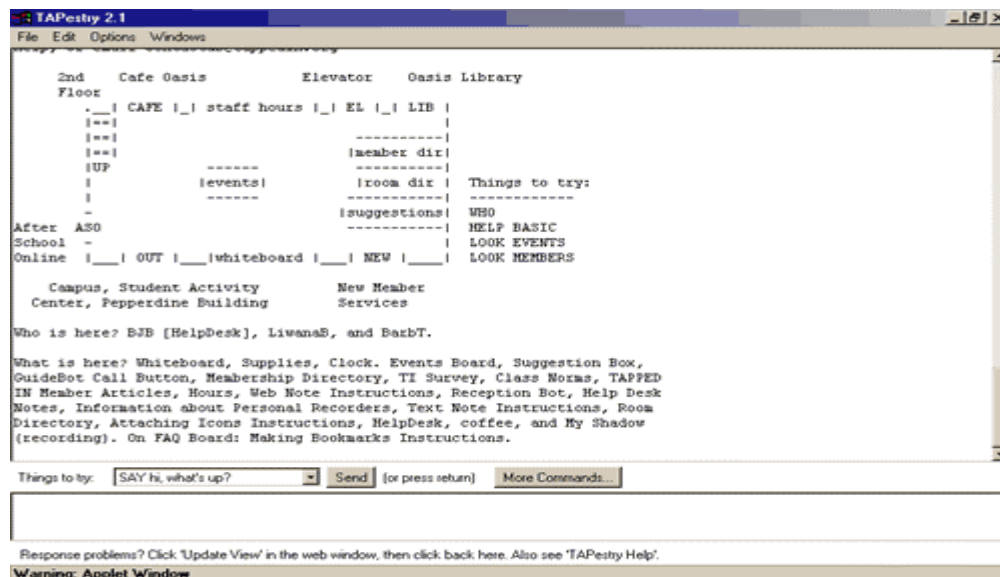

Figure 1a. Screen shot of the ascii-based interaction screen for Tapped In

Figure 1b. Screen shot of thegraphics-based interface for Tapped In

On the other hand, the TeleCHI interface is more of a playbill metaphor, with events happening at different times, and for different topics [Figure 2]. The interface itself uses multimedia presentation, such as Java and HTML within a web browser with one plug-in. While TeleCHI was designed to be easy to use, the designers were also aware of the "computer sophistication" of the target audience, therefore, tried to be consistent in the use of technology, yet engaging to high-tech professionals. A second metaphor, the online 'fitness club', is used for the monthly HCI Aerobics classes, which provide design exercises in distributed small groups [with accompanying 'warm up' and 'cool down' activities].
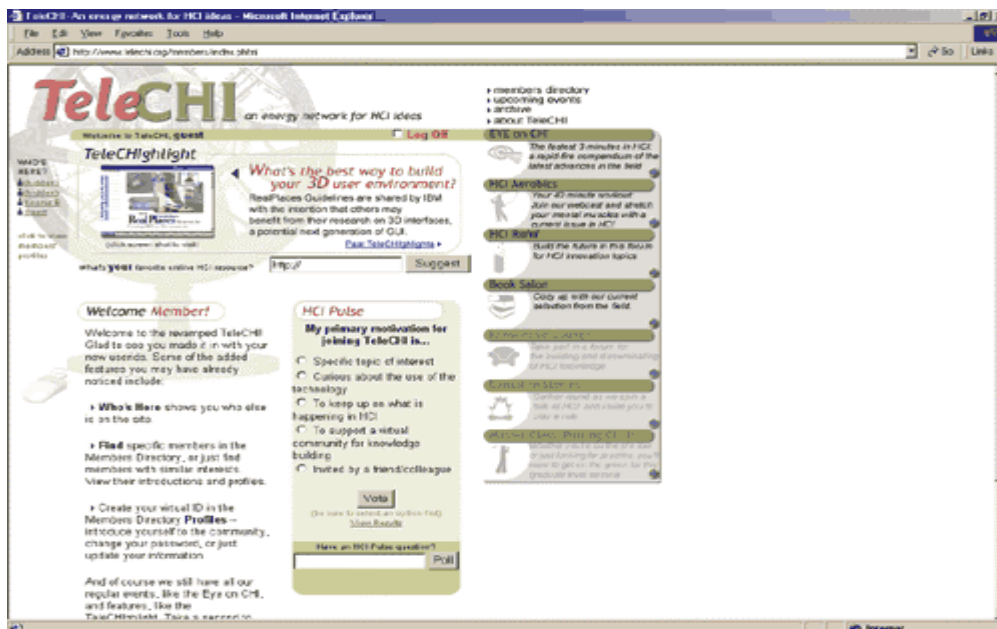

Figure 2. Screen shot of the playbill interface for TeleCHI

Learning collaborations

Tapped In has synchronous events, that are like seminars, although they are totally text-based (no audio). These sessions are called "After School On-Line", ASO, and members of the Tapped In community provide tips or

techniques for using aspects of the community, such as "Chatting tips from a Lurker" or "Learn to Program your Virtual Pet". Every month an ASO/Tapped In newsletter is sent out to members to notify them of the general news of the community (usually related to administrative issues) as well as ASO times, dates and topics for the upcoming month.

In addition to the design exercises in the monthly 'mental aerobics' classes, two of the prototype TeleCHI collaborations are intended to promote interactions amongst workplace practitioners and HCI graduate students - who are in effect apprenticing as knowledge leaders in future practice. There two activities are the monthly update on knowledge advances, Eye on CHI, which the students prepare to keep their workplace counterparts up-to-date as a side effect of their course activities; and Research@Work seminars in which students' proposed research question are critiqued by their peers and the HCI practitioners. It is especially important to the HCI professionals that they build relationships with the students, as the ability to attract new staff to their workplace has direct impact on their organization's success and on their personal workloads. The graduate students have typically entered Master's degree programs directly from undergraduate study, so the 'reality check' provided by their workplace counterparts is particularly valuable.

Participation frequency

Venues for electronic communities must be designed for a wide distribution of frequencies of visits. Design decisions can also be made to draw people into the community with some regularity. TeleCHI has events planned throughout the month, so that when people come to the site for a synchronous event such as the HCI Aerobics, they also see a new TeleCHIghlight and HCI Pulse. These two "site tidbits" change within each month, so that people will visit more frequently, to see what is happening. While TeleCHI has over 60 members, not everyone participates in all events. Synchronous events, such as the HCI Aerobics which is an opportunity for small group discussion on a specific design problem is usually 6-10 people each session; the asynchronous events which require less time may have up to 20 people participating over a two week time span.

Tapped In has both similarities and differences with respect to frequency of events. Since the venue includes a "reception area" where visitors or members can check-in, this feature is like an on-going, continuous event. Volunteers or Tapped In personnel act as rotating "Greeters" especially for people new to the community. They are available at the Help Desk, to give a brief (yet warm) welcome, answer questions, or provide pointers on where to find content of interest. This combination of timing and formats of events is expensive, in terms of time to staff the site, but also very effective in being welcoming to people at any time. The number of members in Tapped In is much larger than TeleCHI, over 8,400 members, and there may only be 4-5 people on the site at any one time. The flexibility of an on-line venue allows members to select the time and events that are most appropriate ones in which to participate.

Development partnerships

The development of an on-line community is an interesting project, but the sustainability of the same is another significant challenge. Tapped In is much maturer as a community, founded in 1996, whereas TeleCHI is still in a formative pilot stage with the current community venue released in summer of 1999. Developers of both communities have recognized the importance of organizational partners, both to encourage participation of their staff (e.g., school boards and universities) as well as to provide financial support and relevant content. Tapped In has "rooms" that are sponsored by organization, as a place to post links or documents that are relevant. TeleCHI is striving towards a model of knowledge stewardship, where the community becomes the caretakers of the knowledge and content, thereby reducing the need for a development team to perpetuate the content of the site. In both cases, research foundations and organizations have provided funding to allow the development to continue on both Tapped In and TeleCHI, but the community itself is driving the content.

Conclusions/Recommendations

Each of these two venues had an overall goal of providing an electronic "place" for a community of practice to gather. They each facilitate the processes toward that goal differently. This is due to the fact that venue designers took into consideration the members of the community as users of the collaboration space, to design an interaction that was appropriate to that particular community of practice. Ongoing analysis of these communities

will look at the outcomes of these designs, in terms of the representation and transformation of knowledge in the development of these online communities of practice.

These two cases provide examples of on-line venues that have been designed to support a professional community of practice. Each was designed differently, and appropriately. Future developers of such venues may rely on the lessons learned from previous facilitators, but should also consider the members of their target community. Some member characteristics to consider during the design and development phase of a new venue include:
- ➢ previous exposure to technology;
- ➢ access to new/developing technology;
- ➢ time and rhythm of accessing the venue;
- ➢ breadth and depth of the community;
- ➢ Sustainability of the interactions.

In both cases, the basic designs are being applied with new communities. Tapped In is now being used by school librarians to explore the new roles they face as the Internet becomes a more important feature in schools (Berger, 1999). The collaborative learning activities in the TeleCHI prototype were tested in the Fall of 1999 with another professional community, designers of telelearning applications for the workplace. This experience highlighted a number of ways in which this community differed from the HCI professionals, e.g. the strategic importance of the learning experiences for corporate/organizational goals and the relative maturity of management roles in the area. These factors will be the focus of ongoing research into the interactions between the characteristics of the professional communities and the design of online spaces for collaborative learning to meet their needs.

These case studies provide anecdotal support for the design decisions discussed, but there are other ways of studying on-line learning communities. We are developing three analytic models to approach this line of research from different perspectives: an analytical model for the interactions influenced by telelearning technologies [RAMP model]; a model of the TeleLearning Value Chain; a Knowledge Community model. The RAMP model suggests that introducing new technologies into the workplace affects all four workplace elements:
- ➢ work *Roles*;
- ➢ technology *Artifacts*;
- ➢ *Metrics* for success and
- ➢ supporting changes in *Process*.

This model suggests that all four elements, and their interactions, should be investigated and, in effect, designed for both traditional and on-line workplaces. Similarly the TeleLearning Value Chain model represents the need to study the continuum of telelearning from Learning to Knowledgeable action to greater Value for the organization. Finally, we are continuing to explore Knowledge Community issues at a higher level including innovative models for building partnerships within and across organizations and sustaining knowledge leadership within and across communities.

The evolution of on-line communities will continue, as long as the demand continues to evolve. How well these technologies are used to meet the needs of distributed communities of practice will depend heavily on how well the designers attend to the knowledge, skills and abilities of their target community.

Acknowledgements

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