

Creating a Knowledge-Sharing Community: If You Build It, Will They Come?

Technology may support a knowledge-sharing environment, but getting users to participate in effective ways is key.



In their efforts to improve organizational effectiveness, many companies have used IT to facilitate the sharing of knowledge and best practices across organizational boundaries. Those organizations that have succeeded have found technology alone, despite its power and flexibility, rarely suffices.

Instead, companies must use technology in close concert with a variety of organizational initiatives to create knowledge-sharing communities. In addition to appropriate technology, experts in knowledge management cite leadership, alignment with business priorities, supportive organizational policies and practices, and measurement of benefits as critical to a successful effort [3]. In fact, the demonstrated importance of nontechnical factors has prompted the caution: "If you just build it, people probably will not come." But what of settings where we want to promote knowledge sharing, but have only limited ways to intervene on the organizational side? Can we use technology to seed the development of a knowledge-sharing community? If we build it, will they come? And if they come, will they use the technology to help one another in the ways we hope?

In the Center for Technology in Teaching and Learning (CTTL) at Rice University, we are exploring these questions in connection with the professional development of teachers in the Houston Independent School District (HISD), the seventh-largest school district in the U.S.. Like other districts around the country, HISD has made a major commitment to educational technology. But while administrators can acquire the technology, they must rely on teachers to

put it to work in the classroom. Change in the schools depends on teachers finding ways to use computers to support good teaching. But technology remains cumbersome for many teachers, and distance and busy schedules make it difficult for them to help one another learn. And to date, the district has not moved beyond traditional professional development programs, which have achieved only limited success. So teachers often confront the technology alone, cobbling together ideas and techniques from scattered sources—with only modest results.

To remedy this situation, we created an Electronic Community of Teachers (ECOT) to help teachers across the district learn from each other about computing in the classroom. ECOT is a virtual community of practice where teachers who might otherwise be isolated in their classrooms can share experiences, identify best practices, and forge new relationships. CTTL built the infrastructure for knowledge sharing and catalyzed the development of the community. But the subsequent growth of ECOT depended on the interests and curiosity of teachers. In two years, almost 800 teachers have joined, despite the lack of a formal organization and explicit incentives. In this regard, ECOT is like other Internet communities that have emerged around available technology for sharing and collaboration.

We Built It

We implemented a software environment for ECOT that gives teachers email, discussion areas and workspaces, individual and group calendars, chat rooms and asynchronous forums. We also built a Media Server to disseminate digital video to the community

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on demand. The Media Server contains videos for professional development or classroom use, videos of lectures by prominent visitors and other special events at Rice or HISD; and multimedia demonstrations of teaching practices created by ECOT participants. To create the latter, teachers use a small, integrated system we built called the Media Machine that integrates computer display (slides, Web pages, simulations, and the like), electronic annotation, and video of the teacher in a single multimedia stream packaged for distribution from the Media Server.

In their classrooms and homes, teachers access the Internet through a variety of commercial sources and ISPs. To distribute digital video from the Media Server, we established peering relationships between their ISPs and the Houston GigaPOP, a gateway to Internet2 created by educational institutions in the Houston area. This interchange, called EduPOP, routes ECOT traffic to the ISPs for routine Internet access, but creates optimal low-latency routings to the GigaPOP for the delivery of digital multimedia from campus repositories.

...And They Came

As experience in many organizations has demonstrated, technology alone does not create community. Participants need a common purpose to use collaborative tools. So we recruited teachers with a potential interest in the use of computing in the classroom. For example, the greatest number of participants comes from a district project to improve science and mathematics education. We drew other ECOT participants from similar, but smaller projects. These groups had not previously sponsored any form of electronic community, but now some 800 of these teachers are members of the ECOT community. About a quarter of the participating teachers use ECOT during a typical workday, and 60% use it at least once a week. Not surprisingly, teachers use the system in different ways.

Some eager adopters of the technology are active

contributors to the community—posting new ideas and materials of their own, as well as outside sources for teaching materials, and information about technology in general. They are called “knowledge stewards” who organize, upgrade, and distribute knowledge the members use day-to-day [1]. An active curiosity and a genuine desire to share ideas seem to drive their initial participation. Later they may gain satisfaction from their prominence in the community. Although these knowledge stewards are the smallest segment of the community, they are vital to its success.

For example, one teacher is recognized as an authority on monarch butterflies, a very relevant subject for many science teachers. Many teachers watch for her to post material, which they readily incorporate in their lesson plans. The butterfly expert exemplifies the knowledge steward. She “pulls” information from a variety of sources—most from outside ECOT—organizes it, and uses the tools to “push” it to others in the community.

Another knowledge steward is a CTTL member who has become a moderator on the use of technology in teaching science. He motivates discussion by bringing fresh content into the environment and answers a broad range of questions about content and technology. As one teacher active in the community explained, “I might as well throw away my computer if [the moderator] did not exist.”

We have found that face-to-face contact is an important factor in catalyzing the development of an electronic community, particularly among enthusiasts who are apt to become knowledge stewards. In business settings, we often find that virtual teams are better able to collaborate electronically when they have first established their relationships in face-to-face meetings. So we promote ECOT at various events where potential knowledge stewards can meet one another. And we hold weekly technology sessions of our own, which some of the most active contributors to ECOT attend regularly. As one of these teachers

explained, "We began attending the tutorials to learn from the CTTL technology instructor, but we are now just learning from each other."

This experience is consistent with Brown's observation that "social resources" play a vital role in knowledge sharing systems [2]. In the early development of ECOT, the primary social resource remains face-to-face contact. Once personal relationships have developed, the technology can support their continued enrichment in the electronic community.

The contributions of knowledge stewards can spread to a large audience of potential adopters, enabling many to benefit from the willingness of a few to accumulate and organize knowledge. The most obvious beneficiaries are those teachers who apply newly acquired knowledge in their classrooms. We call these teachers "consumers," and they comprise the second largest group in ECOT. But consumers are potentially generators as well, for in applying the ideas of others, they gain valuable new knowledge for the community.

Even the best content, however, has no value for a teacher who does not find it. And in a community of hundreds of teachers, it can be hard for a potential consumer to know where to find material. One teacher, for example, attributed his lack of participation in ECOT to an early failed effort to find materials for Spanish-speaking students. ECOT encompassed relevant materials and credible experts, but the newcomer did not find them. When consumers share their experiences, much of what they have learned flows through email and chat rooms, leaving few obvious tracks for newcomers to follow. So one of the challenges for ECOT is to explicate more of the knowledge of the community: Who in the community is knowledgeable about my problem or interest and what knowledge have they contributed? Basic tools for organizing and preserving knowledge are readily available—for example, creating folders of observations and other materials in a shared workspace. As more teachers put these tools to use, it will be easier for the rest to find relevant and reliable content. This, in turn, will encourage more teachers, particularly newcomers, to engage with the community.

The third and largest group in ECOT consists of passive participants, teachers who do not contribute and may not adopt knowledge and practice from the community. From system logs, we know they are

often connected, but they leave no other trace. For this reason, we refer to them as "lurkers." Their continued connection to the community, however, suggests it has value to them. Perhaps, as we hope, they are learning from other members.

Electronic Communities for Diffuse Organizations

The development of ECOT suggests that electronic communities for knowledge sharing can succeed even in diffuse settings where a strong organizational mandate is lacking. For example, it seems likely that electronic communities for collaborative learning could prove valuable across governmental or social services agencies where lack of coordination and integration of services often exacts a high toll on clients. With the Internet and collaborative software, we can create an infrastructure for knowledge sharing. Like the ECOT teachers, many who work in these settings would welcome new ways to share knowledge about programs, eligibility requirements, service levels, and case resolution. We just need to couple the infrastructure with active stewardship of knowledge.

Here is our suggestion: Defer complex questions of responsibility, commitment, and reward. Instead, create the conditions for a knowledge-sharing community to emerge. Implement some collaborative technology for the Internet. Organize some face-to-face meetings among potential participants. Encourage volunteer stewardship of knowledge by these enthusiasts. And create as many opportunities as possible for others to learn about the emerging community. In other words, build it and there a good chance they will come. ■

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