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ABSTRACT
                This paper describes how rural school districts can
use educational technology to evolve into learning communities that
meet the learning needs of all community members. The story of a
fictitious small rural school district illustrates how the role of
education can be expanded through technology. The superintendent
developed a distance education program to bring greater educational
resources to the community and minimize the disadvantages of being a
small and geographically isolated school district. As a result,
students had opportunities to take courses not offered at their
school, exchange e-mail messages with other students around the
world, and participate in joint research projects with students from
other schools. Teachers had opportunities to participate in
professional development courses. After a year, distance education
services were expanded into the community. As a result, professional
members of the community were able to enhance their knowledge,
skills, and services through technology, and all community members
were able to obtain information on topics of interest. Small
districts' goals in developing learning communities may include the
following: (1) all residents should have access to more formal or
structured learning opportunities as well as learning resources
beyond formal courses; (2) residents should have better ways of
sharing resources with the community; (3) residents should explore
the possibility of new kinds of industries and businesses for the
community; and (4) the community should become part of a larger
community, while retaining its unique characteristics. The paper also
describes various technology systems and outlines steps for building
a learning community. (LP)

THE EVOLUTION OF A RURAL LEARNING COMMUNITY

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The Evolution of a Rural Learning Community

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A Story: Orland, Minnesota

The superintendent of District 200, located in the small community of Orland, Minnesota (a fictitious community), is worried. She has known for a long time that the district needs to find new ways to bring learning resources and opportunities to students. She feels sure that the district's basic programs are sound, but she has a sense that students might not be receiving the breadth or depth in the curriculum necessary for them to prosper as citizens of a rapidly changing society.

Orland is a small town, with a population of about 2,000 people in the immediate area. Minneapolis is two hours away on a good summer day. Orland citizens historically have made their living through farming and farming-support businesses. The community supports education and a small public library. Orland has a grocery store, pharmacy, several banks, and assorted retail shops. Wal-Mart and K-Mart are about an hour away, as are movie theaters and other resources.

The superintendent has been worried about providing some of the courses the state universities now require for admission. She worries about her teachers—both attracting and retaining them—and providing them with opportunities to continue their own learning, which she regards as vital to maintaining the quality of the academic programs in the district. She is concerned about the general economic development of the community, and what employment students will be able to find once they leave school. She knows that the district has many very capable kids and she worries about their competitive edge in getting into colleges and universities. And, at a less defined but still troubling level, she wonders if the community understands the profound changes taking place in the state and nation and around the world. She hopes that the young people are emerging from their education in Orland ready to become a part of those changes.

After doing some research, the superintendent decides that the district should consider becoming a part of a distance education system. Such a system would be a way to bring teaching and learning resources into the community through the district. It would minimize some of the disadvantages of being small and geographically isolated while retaining the advantages that come with being a small community. After developing a plan for a distance education system for the district, she convinces the board that it's a good plan. Some modest resources are found to implement the plan.

Thanks to the superintendent's efforts, the district establishes a technology-based distance education system, including two classrooms "wired" for audioconferencing, one classroom equipped with two-way inter-

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active television capacity, a satellite dish, and several microcomputers with modems and telephone lines that permit users to participate in e-mail and computer conferencing activities. For a small community, the initial costs of acquiring the hardware and software needed for the system are substantial. But the understanding and support of the local telephone company, plus two local businesses, make the purchases possible.

The district experiments with its distance education system for about a year. Courses in advanced foreign languages, previously unavailable to students in the district, are offered. Teachers take professional development courses through the system, joining colleagues in other districts around the state. Students exchange e-mail messages with other students around the world. Orland students also participate in several joint research projects with students from other schools in the state. Students in the eighth-grade class exchange essays with students in a French-speaking school in Quebec.

At the end of the year, the superintendent, her teachers, and the students of Orland are very enthusiastic about using the distance education system. The system is not without a few problems, of course. The equipment doesn't always work the way it should. Scheduling is often a problem. Some parents worry that their children may have access to materials the parents think are questionable. Still, everyone is generally satisfied with and supports the system.

Because Orland is a small community, most residents are aware that the school district is doing something different. Many residents are curious about the distance education system and wonder if they could

participate in some way. As the superintendent works with the system, she becomes convinced that it could be used more broadly than just by the school. After some thought, the superintendent begins to envision a plan that places the distance education system—brought to the community through the district—at the center of a whole new notion: the idea of Orland as a *learning community*. Orland residents have always valued education; why not turn the whole community into a great learning experiment that involves all those in the community who want to participate?

With help from key community leaders, the superintendent introduces the idea to the community. Over the course of a year, things start happening that reflect a commitment to the learning community concept. Among the events that transpire in Orland:

- Working with the county extension agent and the local community college, farmers from around Orland gather one night a week in the school to participate in a live "seminar," using the two-way interactive television classroom. Each week, the farmers can interact with personnel at the local community college, county extension agents, and other farmers throughout the state to discuss new techniques, products, and issues. At first, only a few farmers attend the sessions; by mid-year, the room is full of people. Farming can be a rather isolating profession, which is part of the reason some people choose farming as a way of making a living. But the farmers who attend the weekly sessions find interaction with colleagues and specialists to be interesting, fun, and helpful.

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- Several bankers in town find a group of other bankers who regularly participate in a computer "conference" on issues facing banks in small communities. Within six months, the Orland bankers participate regularly and enthusiastically in the conference through their micro-computer hook-up to America Online. One banker says the experience has reju-venated his interest in his work. Another says she has learned new approaches to solve certain banking problems.

- The local pharmacist speaks passionately about the value of training on new drugs that is available through the distance edu-cation system. For years, he had felt increasingly inadequate. He felt he did not have a grasp on the new medications being prescribed by local doctors. The pharmacist believed he could not afford to go to conferences out of town, yet he knew of no other way to keep up with his field. Today, the pharmacist commu-nicates with a group of colleagues through the Internet. He is able to ask questions of the group and get informa-tion he could never find on his own.

- It is not easy to find doctors to practice in small communities. However, in the past several years, Orland attracted two young physicians. Now the community is concerned with retaining them. The superintendent and members of the village council believe that medical care in the community could be enhanced through use of the distance education system. They also believe that the young physi-cians would be more interested in staying in the community because of the avail-ability of the system. Using the system, the doctors are able to connect to one of

the emerging medical conferencing sys-tems, providing them with both continuing education and opportunities to consult with specialists around the country. The isolation that sometimes confronts profes-sionals such as physicians living and serving in rural communities is greatly reduced as Orland connects with the world through the distance education system.

In time, the Orland citizens who use the school district's distance education system begin to "push the envelope," to explore new ways to use the system. The local doctors, for example, learn to transmit patient information electronically to teaching hospitals in larger cities in order to get assistance in diagnosis. They also learn about experiments on a device called a "data glove," which can be used by a physi-cian in a remote setting to send information about a patient. The glove makes it possible to transmit information that normally would be available only through direct physical contact with a patient. Using the glove, doctors can send information hundreds of miles to other physicians, who actually "feel" the patient's condition from afar.

Thus, the distance education system has become a valuable tool for enhancing and supporting the professional responsibilities of members of the community. But that is only a part of the idea of a learning commu-nity. Residents have started other activities that truly underscore the concept of expanded learning for all interested residents, regard-less of age, interests, or prior educational experience.

Some residents use the distance education system not only to enhance their jobs, but also to pursue ideas with more personal or family connections. For example, the

owner of the gas station in town is interested in history, even though he has no formal training in the discipline. Using "H-Net," a computer conferencing system for history buffs, he can communicate daily with others who are interested in the Civil War. As a result, he has formed long-distance friendships, exchanged reading materials, and discussed ideas.

A parent of one of the elementary students watched her child use a home computer to connect to the district computer and then to databases on the Internet—Usenet, in particular—to find resources about raising bees. The child found information about bees on the Net and was able to connect with people who shared an interest in beekeeping. For as long as she can remember, the mother has been interested in this topic, but found it hard to pursue her interests. Since the child taught her how to join the newsgroup on beekeeping, she has been able to communicate with others around the nation who share her interest in the topic. She feels intellectually stimulated for the first time in a long time. Her interest in her child's educational experience has increased, as has her own desire to continue learning.

A young couple with a newborn child learned of the "parenting" interest group on the Network. The couple, eager to learn and share what they are learning as their child grows, have become active participants in the group. Several times, facing difficult situations with their child, they have consulted their peers on the Net for advice. The Net does not (and should not) replace the family doctor as a first line of consultation on the physical well-being of the child, but it does provide a comforting forum for problem solving and sharing insights about parenting. Based on the electronic social system established around the topic, the young couple has invited several other couples from the region to get together for a "face-to-face" experience over a picnic. They have formed new friendships that continue today.

Perhaps the most interesting phenomenon of all can be seen in the changing patterns of communication within Orland itself. Slowly, community residents have begun to communicate by e-mail with each other. In a way, this kind of electronic communication may seem strange in a small town like Orland, where people generally communicate face to face. Society is changing, however. Many residents feel that they don't see their neighbors as much lately, that interpersonal communications have decreased. The e-mail system has encouraged people to "talk" to each other again. Perhaps sending messages electronically is safer to those who find it difficult to communicate face to face. Perhaps the system is just a novelty. Whatever the reason, many, many messages are exchanged among the citizens of Orland. Among those messages are a significant number of interchanges between parents and teachers.

As Orland residents access the multitude of information resources in and through the distance education system, something else has started to happen: more residents are talking about the future of Orland. Residents have always been concerned about where the community is headed, but, in the past, few people participated in formal discussions about goals, priorities, and issues. The distance education system makes possible a unique form of interchange about the social and economic future of Orland.

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Electronic town meetings are held in which individual citizens are encouraged to post their views on important matters confronting the community. Town leaders seek residents' opinions on a regular basis and use the results to guide decisionmaking about the future of the community.

What makes a community a *learning community*? There are several factors:

■ Citizens must feel a need and a desire to learn.

■ Information resources must be available from which people can learn.

■ A readily available means of communicating among learners must exist.

■ Citizens must be willing to share materials and data that might be of interest to others.

Orland is populated by people who care about learning, but, as is true in so many communities, the means to learn what they want, when they want, and in a manner they prefer, were not available. The district's distance education system has provided the stimulus they needed to become a genuine learning community.

Building a Learning Community

The story of Orland, Minnesota, illustrates a phenomenon that is beginning to appear throughout the nation in both large and small communities. Emerging technology capacity is making it possible to realize what has long been only a dream in the minds of many people: a community where citizens are engaged in a lifetime of learning activities. In such communities, the local schools become vital components in the learning community, but the idea of learning extends far beyond the walls of the school building.

What is involved in building a learning community in a rural town? While communities differ in their resources and "personalities," each community needs to address certain questions in order to create an active and continuously learning population.

What are we trying to accomplish?

The concept of a learning community means different things to different people. One of the first steps a community must take is to determine just what it wants to accomplish in creating this thing called a *learning community*. A town might have at least five goals as a learning community:

1. **All residents should have access to more formal or structured learning opportunities.** Such access may be limited in some towns because of geography—institutions of higher education or other sources of learning experiences may not be readily available. For example, teachers may not have ready access to continuing education opportunities, parents may not have access to courses on parenting, or farmers may find it difficult to attend meetings on new pesticide application procedures. Similarly, students may be limited in the kinds of courses available to them in their schools. Having access to more formal learning experiences thus becomes a high priority for many rural communities.

2. **Residents should have ready access to learning resources beyond formal, structured courses.** For many rural citizens, formal courses or other structured learning experiences—while useful—

may not be what they really need. Rather, what they want is convenient access to information resources—information to answer a question, pursue a personal goal, entertain, or generally inform. Public libraries in many rural communities have limited resources. And, residents often have limited access to cultural events and resources. Ideally, rural citizens should have access to holdings of the Library of Congress, state universities, symphonies, and art museums. They also should have access to National Geographic resources, government documents, a broad range of movies, information about new advances in medical or agricultural research, and news on world affairs.

One characteristic of a learning community is access to the world's information resources, regardless of where a person lives or what time of day a person wants that access. While learning activities include a range of exercises, most people would argue that some key elements in learning are engaging new information, seeing new ways of looking at things, and hearing new arguments about issues. Some people feel overwhelmed by the amount of information they have access to on a daily basis. Yet, in many parts of the nation, the problem is that people cannot get access to the information they want when they want it.

3. **Residents should have better ways of sharing the resources within the community.** For some, a learning community means finding ways to make local community resources much more available to—and thus used by—residents. Even in the smallest community,

information resources and services often are closely guarded. At best, they are not very well integrated. Some people do not know where to go to find the information they need; others are intimidated by local institutions such as libraries or museums. Some residents do not know how to find important medical information; others do not know how to ask questions about their schools and their children's learning.

One characteristic of learning communities is that residents help each other to learn. Thus, rich information and learning resources in the community are open to all members of that community, and residents help each other to access those resources. This goal sounds simple enough, but often it is not well realized in practice. The larger the community, of course, the more complex is the task of helping all residents learn what they wish—or need—to know. Yet, even in the smallest rural communities, people often do not know what resources are available.

4. **Residents should explore the possibility of new kinds of industries and businesses for the community.** This goal may not seem relevant to the idea of establishing a learning community, but a second look suggests that it has considerable relevance. The technology systems that make possible new forms of learning communities may also bring about new forms of employment and businesses within rural communities. As the United States continues to develop a substantial part of its economic structure around information processing and management, new kinds of "cottage industries" become possible. More and

more people earn their livelihood by using computers and modems, often living and working considerable distances from their employers. Many new, small companies are being formed around information-age activities. Such companies may well be located in rural communities, as geography and time become less important to the business at hand. Depending on the kind of technology-based system that a community uses for education and learning, that system could well serve as the gateway for new forms of work and productivity.

5. **The community should become part of a larger community, while retaining its unique characteristics.** Many people choose to live in rural communities because of the advantages that accrue to living in such locations. However, many people who make this choice also want to be part of a larger society—to have the opportunity to form relationships with a broad range of people without paying the price of living in a bigger community. For such people, estab-. lishing a learning community that extends beyond the geographic boundaries of their physical community is a high priority.

In his book *The Virtual Community*, Howard Rheingold (1993) powerfully portrays the concept of learning communities. After briefly describing activities that he engaged in using a computer-mediated communications system known as the WELL, he observes:

> *People in virtual communities use words on screen to exchange pleasantries and argue, engage in intellectual discourse, conduct commerce, exchange knowledge, share emotional support,*

make plans, brainstorm, gossip, feud, fall in love, find friends and lose them, play games, flirt, create a little high art and a lot of idle talk. People in virtual communities do just about everything people do in real life, but we leave our bodies behind. You can't kiss anybody and nobody can punch you in the nose, but a lot can happen within those boundaries. To the millions who have been drawn into it, the richness and vitality of computer-linked cultures is attractive, even addictive. (p. 3)

Rheingold's description of a virtual community captures in vivid detail the new forms of social engagement being pursued by millions of people. Computer conferences or "newsgroups" are being formed around almost every topic imaginable. People interested in a topic (e.g., cooking, flying, movies, gardening, music, pets, comics, the Grateful Dead, history, etc.) "come together" electronically to share ideas, advice, insights, materials, or whatever they find useful to share. Rheingold gives examples of people who have helped one another with emergency situations using computer networks. He also describes situations in which people who needed a helping hand received it through their computer from people they never met in person. He describes people for whom participation in a virtual community has ended years of isolation and depression.

It is easy to be enthusiastic about virtual communities, for the testimonies of those participating in such communities are persuasive. Yet, no one would argue that virtual communities can or should

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replace real communities, or that an addiction to participation in virtual communities is a good thing. But there is little question that, for many people, being involved in a virtual community, perhaps through the technology systems found in the local school, is a stimulating experience.

The learning community established in any small, rural town might encompass all of these goals and more. When designing a learning community—or rather when creating the environment within which a learning community can emerge—it is important to set clear goals and priorities, because it is likely that the learning community will need to evolve in stages. Priorities may help to move the stages along.

Which technology systems can we choose to support our learning community?

It *is* possible to think of a learning community without a technology system of some kind to support it. For the purposes of this paper, however, let us assume that the rural town wishes to create some kind of technology-based (or technology-enhanced) learning system. What are the choices?

Today, the answer is that there are a lot of choices. Tomorrow, there probably will be more. A district's or community's choice of a technology system will depend on the purposes it is meant to serve, available equipment and services, available resources, and the kinds of relationships that can be developed with local communications companies.

At a minimum, a learning community may best be served by providing residents with access to some form of computer net-working (what Rheingold calls computer-mediated communications). Such access to a network connection minimally requires a microcomputer, modem, communications software, and, most important, a reliable telephone line. Choices among all these components are many, of course, ranging from very basic hardware and software to "souped-up" versions.

The district or community also will need to select a means of connecting to the Internet or some other information source. For instance, they may subscribe to a commercial service (e.g., Compuserve, Prodigy, America Online) or connect to a network through a local institution such as a college or university. The choice among services will be a function of what the service provides and its cost.

The community also may wish to establish audioconferencing capability, perhaps in the local school or library. An audioconferencing system usually comprises a telephone line and a speaker phone-like device that permits everyone in a moderate-sized room to hear and to speak into a microphone. Using this technology, residents can participate in audioconferences with people anywhere in the world, to learn, to share ideas, to brainstorm, and so on. Some companies provide audioconferencing services, including recording the conference. Telephone companies also may provide such services. Audioconferencing is a relatively low-cost way to facilitate learning and gain access to learning resources well beyond the boundaries of the community.

Some communities have selected two-way interactive television systems as a means of supporting the learning community. Such systems permit participants to see

other participants in connected sites. Courses using two-way interactive systems are becoming more commonplace and can be very effective. The costs for such systems are greater than for audioconferencing, but, depending on what the community wishes to accomplish, videoconferencing can be very important.

Computer-based, audio, and video systems represent the core of most technology-based systems. To this core can be added a variety of features such as fax machines and electronic "chalkboards." Rapidly emerging new technologies also need to be considered, such as:

■ *Video on demand systems* that provide access to libraries of video programs at times and places determined by the user

■ *Integrated video, audio, and data services* that are provided by combinations of telephone and cable companies

■ *Multimedia workstations* for use in local communities

■ *Cellular technologies*

■ Many new technologies that are still in the planning stages

Getting Started on Building a Rural Learning Community

How can a rural community begin to develop the kind of learning community described above? In many communities, the foundation for such a learning community already exists—the school, which usually is at the heart of the community. People in rural communities often engage in ongoing learning through a variety of means. They have regular contact with their schools.

And, they often participate in informational and learning activities sponsored by county extension units and similar organizations.

However, if members of the community see the value of expanding their learning opportunities in the community, how might they start that expansion? While each community is unique, all may pursue some common procedures or activities to form a strong rural learning community:

■ It may be helpful to form a **learning community steering committee**, comprising representatives of the community at large, educators, business people, local telephone or cable companies, and the like. This steering committee might be charged with thinking about the specific needs and resources of the community and guiding the development of a learning community plan.

■ Establishing a **learning community plan** is a good way to stimulate the development of an expanded learning community. The plan, coordinated by the steering committee, could spell out the particular kinds of learning opportunities desired by members of the community, inventory the resources available in the community to assist in learning projects, identify external information resources and people that might be of interest to local community members, outline a technology plan to support the learning community, describe the financial resources needed to implement the plan, and identify sources for those financial resources.

■ Once a plan has been developed and shared with community members, a **prototype** or **pilot activities** might be

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undertaken to begin to "test" the learning community. For example, a few residents might be given microcomputers and modems (or encouraged to use equipment in the local school). They could be encouraged (and helped) to gain access to data sources through the Internet or a commercial network such as America Online. Or, the district could organize a teleconference for small business owners in the community to link them with small business specialists in the state capital. The point is to start small, rather than trying to implement the entire learning plan at once. By observing these experiments in extended learning, lessons may be learned that will be valuable in expanding the learning community.

- The steering committee can collect **sample activities** from other rural learning communities. Although each rural community is unique and activities that are appropriate in one community may not

be appropriate in another, new ideas and insights can be gained from other's experiences that may help a local community to continue to refine its learning community. Sources of information about other learning communities may include the regional educational laboratory serving the community, the ERIC educational system, the state department of education, or university departments in the state.

Experience suggests that successful learning communities involve citizens in each stage of the process of developing a learning system; charge specific individuals or groups, such as a steering committee, with guiding implementation of the system; create a plan to provide broad oversight in developing the learning community; and, perhaps most important, focus on what people need and want. The activities outlined above provide at least one way to begin to develop a rural learning community.

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