

Connecting the Bits

A reference for using technology in teaching and learning in K-12 schools

School-Home-Community Learning Connections: Roles of Information Technologies

Introduction

The home, the school, and the community are the most important influences on a child's education (U.S. Department of Education 1986; Microsoft Corporation 1996). Parents are their children's first teachers, responsible for overseeing their cognitive, social, and emotional development and ensuring they start school ready to learn. Continued parental involvement throughout a child's years of schooling has a strong positive impact on learning.

The community also influences the education of children. The concept of community includes many groups such as neighbors, friends, relatives, and organizations such as religious institutions, local businesses, recreational and service organizations, and civic groups. Through technology the concept of community now also extends to the global community, made possible by instantaneous access to people and organizations throughout the world. The community contributes to children's education by shaping their values, offering a wide range of social experiences and occasions for interaction with different kinds of people and providing resources, knowledge, and opportunities for learning inside and outside of school. Once young people graduate from school, the community continues to be a place where they can apply their knowledge and learn throughout their lives.

Information technologies are expanding and strengthening the relationships among school, home, and community, creating new possibilities for children to learn in diverse settings and different modes. Recognizing the value of these relationships, *The Road Ahead* program made school-home-community partnerships one of its primary goals. Each of the twenty-two sites was required to establish or promote a partnership with another entity in the community. The projects forged partnerships with a wide range of institutions, including police departments, museums, libraries, senior centers, child care programs, nature centers, colleges and universities, and businesses.

This paper discusses

- how information technologies are transforming the educational roles of school, home, and community;
- how technology-enhanced partnerships can help children to learn more;
- what elements of technology partnerships characterize successful programs;
- an annotated bibliography

School, Home, and Community: How Information Technologies Are Transforming Their Educational Roles

As underscored by findings from cognitive science, the social context is very important in helping children to construct meaning and build knowledge. During the Industrial Age, learning became separated from the daily life of the community, compartmentalized within the confines of schools designed to accommodate an assembly line workplace (Abbot 1995). In response to changing societal needs, many schools and communities are working to create dynamic learning environments, in which individuals learn through collaborative interactions and take responsibility for their own learning. As they become increasingly common in schools, homes, and community settings, informational technologies can help to accomplish this goal.

Technology extends learning
beyond school walls

The communication avenues opened through digital networks, video, email, the World Wide Web, and other technologies link students and teachers with learning opportunities not bound by location or physical structure. Technology-enhanced school-home-community partnerships are dissolving the walls that have traditionally defined “school” as a distinct place in the community where children go to learn during certain times of the day. Instead the learning environment is extended to include the home, other community sites, and the virtual world and is accessible any time of day. People who might not normally participate in school-based activities are drawn into the learning process by the lure of new modes of interaction. Students’ interests are piqued by the appeal of going, at least virtually, outside their classroom walls.

The following examples from *The Road Ahead* sites illustrate some of the potential:

In Phoenix, Arizona, students at an inner-city high school learned about Chinese culture through a technology partnership with a “sister cities” organization. Students from Chengdu, China, came to Arizona for a “winter camp” where they learned to use computers, while the local students learned about Chinese culture and developed presentations about the United States to share with their visitors. Later on, two of the American students went to China as part of a sister cities delegation, where they visited a Chinese school.

In Anchorage, Alaska, a technology-enhanced partnership with a senior citizens’ home spurred junior high students to interview seniors about local history and create a video “virtual museum” of Alaska’s past. The students also taught computer skills to the residents and aides at the home.

Information technologies are also changing the roles of students, parents, educators, and community members within the learning process. Students, who often have more technology expertise than parents and community members, may become teachers as well as learners in a technology-enhanced partnership, educating adults about how to use new technologies. In the Anchorage project the students had to learn how to tailor their computer instruction to many adults who were unfamiliar with computers or keyboarding.

The role of the teacher also shifts, from a deliverer of instruction to a facilitator of learning who helps students access knowledge and resources from many sources. At the same time, the teachers learn more about how to craft effective partnerships. Parents and community members become lay educators who share their knowledge and experience while they, too, learn new skills.

Technology changes roles in learning process

Consider these examples from *The Road Ahead* sites:

In Eau Claire, Wisconsin, *The Road Ahead* project connected elementary school students with a senior citizens center and a museum. Students posted an email “question of the week” about local history, which senior citizens answered. In addition to learning about local and state history, the children learned how to use digital scanners and digital cameras and to make multimedia presentations and hyperstacks. Among the students’ products were a CD-ROM with a historical walking tour and a bilingual counting book in Hmong, the language of many immigrants in the community.

In South Burlington, Vermont, a partnership between a school and a recreation department brought together high school students, parents, children in after-school programs, and other community members. The high school students helped the adults learn computer skills and advanced presentation skills.

Technology-Enhanced Partnerships: How New Connections Help Children Learn More

Educators around the country have recognized the potential of new school-home-community connections to improve student learning and have organized partnership programs with technology at their center.

These partnerships have a variety of purposes, but among the most common are those that aim to

- **increase parents’ involvement in their children’s education;**
- **connect students with learning resources in the wider community;**
- **create community hubs for learning and social services;**
- **forge collaborations with businesses, government, and community-based organizations to improve technology planning and education.**

Increasing Parental Involvement

As reported by NFIE (1996), “The top issue on teacher’s minds when they think about education is parents. Teachers’ highest priority for professional development is learning how to reach out to involve parents more effectively in their children’s learning.”

Information technologies can make it easier for parents and educators to communicate regularly. They can encourage parents to play a greater role in supporting their children’s schoolwork and participate in family learning activities. Information technologies can also be a catalyst for reaching parents who have traditionally felt disconnected from schools. For example, communicating by email may be less intimidating for some than coming to the school building and talking to a teacher. Talking about computers can be an icebreaker that leads to deeper conversations about learning. Parents can also use these technologies to improve their own literacy and parenting skills.

Through telecommunications technologies, parents gain access to a world of information that can help them support their children’s learning—anything from a science website to a parent chat room to a G.E.D. course. Parents and children can engage in family learning activities together on the computer or via the Internet. Working together on the computer can be a catalyst for parents and children to spend more quality time together.

Many homes, however, do not have access to information technologies, and many parents do not have basic computer skills. Some programs around the country have used the strategy of providing students with computers to use at home and at school and providing parents with training and at-home learning activities. Establishing online connections between home and school is a critical component of these projects. In many rural and inner-city areas, community technology centers are attempting to bridge the divide between those with and without home access. These centers often collaborate with schools in their communities.

Technology increasing
parental involvement

The goal is to make email communications between home and school a regular part of the educational process. Parents and teachers can have structured conversations about students' work and academic progress. Teachers can send home reports and assignments via email, inform parents about upcoming events, request permission slips, or take care of other routine communications. Parents can ask questions about homework and curriculum, express concerns, provide information they might be less inclined to talk about face to face.

One such effort is Indiana's *Buddy System* project, which since 1987 has supplied every student and teacher in selected schools with computers, modems, printers, and software, both at home and school. This project has afforded access to computers and telecommunications to parents and families who would not otherwise have had them.

An example of parental involvement

Through the project, parents have received training in basic computer skills. As one activity, teachers assigned writing projects as homework and asked parents to comment on them. In addition, teachers have asked parents or family members to write something themselves. The telecommunications aspect of the project has been particularly useful; teachers have used it to communicate daily with families in a non-threatening way (Rockman 1995).

As reported in the Rockman study, the *Buddy System* program has had several positive impacts on the education of participating students. It has significantly improved students' writing achievement, increased their engagement in academic tasks, and improved teacher skills by providing effective professional development. Rockman also notes an increase in students' interest in and attention to mathematics, although it has not been reflected in higher test scores. In a 1994 study, Miller and McInerney reported a similar finding.

The Rockman study also found positive outcomes for families, including greater parental involvement and improved family climate. The *Buddy System* has enhanced the level of communication between family members and teachers and increased parents' monitoring of their children's schoolwork. Families have reported working, learning, and playing together. In addition, parents have used the computer for their own goals, such as preparing papers for classes, studying for a G.E.D., or filling out job applications.

Parental involvement resulted in positive outcomes

To improve the project, Rockman recommended increased integration of home and school activities, more professional development, expanded use of telecommunications to connect home and school, and use of *Buddy System* graduates as resources in the community.

Another program, the *Apple Classrooms of Tomorrow*, began providing home and school computers to selected sites in 1986. Studies of this effort found that it increased student engagement, improved achievement in some subjects, and encouraged teachers to use more student-centered instructional approaches (Apple Computer 1995).

Connecting Students with Community Learning Resources

Every community has a wealth of individuals with knowledge, skills, experience, enthusiasm, and other resources to contribute to children's learning. In a global online community, these resources are almost limitless. Technology can help schools identify and tap these resources.

Linking to outside experts

One project to link schools with outside experts in a range of disciplines is the *Electronic Emissary* project based at the University of Texas at Austin (Harris, O'Bryan, and Rotenberg 1996). Since 1993 the *Electronic Emissary* has connected classroom teachers and their students with professional experts who serve as advisors to classroom projects. For example, middle-school students conducting a biology project in a rural California school received guidance from a researcher at Michigan State University; a Texas elementary school class gained insights for a study of early colonial history from an historian in Virginia; and a New England high school genetics class discussed scientific theory and ethics with a geneticist in Minnesota.

The Knowledge Society model developed by Scardamalia and Bereiter (1996) sought to overcome the one-way flow of knowledge that characterized earlier “ask the expert” approaches. This model enables school children, university students, museum staff, businesses, and other network participants to share and modify common databases. For example, museum staff working on an electricity exhibit and elementary students studying electricity may use one another’s databases as resources. “By visiting the students’ databases, the curators will gain an understanding of students’ conceptions (and misconceptions) of electricity, and the students will have input to the design of the exhibit.”

Other projects are more local in their focus. Reissman (1995) described her experiences using computer, video, and audio technology to connect students to adults in the community. She assigned seventh-grade students of diverse ethnic backgrounds a conventional task of reading and critiquing current news articles.

Linking to adults in community

Reissman, however, added a novel requirement. The students interviewed an adult, recorded their correspondent’s comments on the article, and prepared multimedia presentations on the topic. Reissman reported that the students explored issues over a period of time, encountered unexpected cultural perspectives, and spontaneously sought other points of view beyond the minimum requirement. “Interestingly,” she wrote, “the ongoing partnerships were often valued by the adults . . . as well. Many unrelated retirees wrote to tell me and their student co-commentators how they really enjoyed talking about the news and hearing how ‘young people felt.’”

Some projects have sought to pair successful adults in minority communities with minority students, with the goals of helping students improve their self-esteem and increase their appreciation of their own or other minority communities (Moll and Gonzalez 1994; Paratore et al. 1994; Swick 1995).

Whether global or local, these types of interactions can improve students' understanding of subject-matter content. Students get a better sense of what a practicing botanist does, for example, and how the study of biology in school relates to people's lives in the real world. Students can also gain maturity and confidence by corresponding with experts, adding information to multisite research studies, or designing products that will be seen and used by others. Students who connect with a global community can learn about other cultures at the same time they learn about the particular topic they are studying. In addition, their motivation is often greater with such learning experiences than with traditional methods of instruction.

These kinds of projects can benefit schools and communities as well as students. Schools, for example, may develop a constituency of community people who will advocate for and become involved in other school ventures. In the *Buddy System* program ties formed through the project helped to facilitate other school reform efforts. Projects may create new bonds between people from different segments of the community who have all too few opportunities to interact in their daily lives, such as those from different generations or from diverse ethnic and cultural backgrounds.

Positive outcomes from
community links

Community groups may also strengthen their technology skills and infrastructure. In South Burlington, Vermont, for example, the whole community began using technology more as a result of *The Road Ahead* project. Students may gain new understanding of citizenship and become more involved in improving their community. In this respect, technology can help to rebuild a sense of community that has dwindled in today's mobile and segmented society.

Creating Community Hubs for Learning and Social Services

Technology-enhanced collaborations have strengthened the role of the school as an educational hub for the whole community. In several *Road Ahead* sites, adults, family members, and other community members have come to the school to learn new skills or participate in school activities, but this does not mean that the school is the only locus for learning. Partnerships have also strengthened educational opportunities for children and adults in other sites within the community, such as museums and recreation centers.

Creating new venues for learning

Establishing educational programs outside of school can have special advantages. For example, programs in community-based organizations may offer a less structured environment with more freedom for students to do hands-on projects. Collaborative projects with businesses can help students better understand the relationship between school and the world of work and can expose them to technological applications not available elsewhere.

Many schools have begun to play a major role in building and maintaining links that enable community agencies to meet the social services needs of disadvantaged students (Burnett 1994). Technology comes into play in these partnerships as service agencies take advantage of shared, networked databases to identify needs and assess results (Council of Chief State School Officers 1995). Capper (1994) reported on an inner-city service consortium based in a housing project and noted that community members felt that the services were more accessible than when they were housed in another (sometimes intimidating) public institution. On the other hand, Ascher (1990) maintained that the school is often the logical community center and can provide the most efficient delivery of services.

Forging Collaborations to Improve Technology Planning and Education

The excitement of planning and implementing a technology-based partnership often provides a stimulating new reason for groups to come together that normally would have little interaction with the schools or with each other. Once they get together, however, they realize they have mutual interests. They realize they can accomplish more by developing reciprocal roles and sharing resources than any one group could alone. The joint planning, decision-making, and budgeting that occurs through these technology collaborations sometimes carries over to non-technology-based aspects of curriculum or community life.

Many school districts or schools have found it valuable to involve the community in their long-range technology planning processes. Some have established technology planning subcommittees or advisory councils, consisting of teachers, administrators, parents, business leaders, and other community members. Such groups can help the community “buy into” the technology plan and can be a source of ongoing advice once the plan is implemented.

They can also serve as a base of committed people for other school-community partnerships that involve technology. For example, in Canandaigua, New York, a large-scale committee, including representatives from private industry, planned a comprehensive technology effort for the school district. The end result was a system of networks, labs, multimedia workstations, and a TV studio. Any student with a Windows-based computer, a modem, and the proper software could link to the district’s extensive CD-ROM collection. Parents and other family members could also use this resource (Braun and Bielefeldt 1995).

Business—public involvement in technology education increases broad support

Within *The Road Ahead* program—itsself a business-education partnership between Bill Gates of Microsoft Corporation and the National Foundation for the Improvement of Education—a number of sites pursued school-business collaborations.

A Vermont high school's digital imaging lab cooperated with the local computer animation industry. A South Carolina elementary school augmented its computer facilities with donations from a software firm, which sees itself as investing in the technical education of its future employees. In Greece, New York, a civil engineering consulting firm formed a partnership with a middle school to design and construct a fitness trail for community use.

Several sites in *The Road Ahead* discovered that assumptions about schedules and learning needs were different for schools and their partner organizations (which also include, at different sites, senior care facilities, libraries, museums, nature centers, police departments, and youth programs). Some partnerships found that they had to make changes in meeting times, work schedules, and the content of activities to meet participants' needs (ISTE 1996).

Elements of Successful Partnerships

Studies of successful community partnerships in general (Grobe 1993; Imel 1991) and technology partnerships in particular (ISTE 1998; Thompson 1995; Apple Computer 1995) have identified certain conditions that tend to be present in most successful programs.

They include the following elements:

- **top-level leadership**

Partnerships are usually instigated by a school or community leader (or both) with a vision. Who these leaders are depends on the partners and their relationships, but often they are “spark plug” individuals with the authority and persuasiveness to energize others and convince them to stay the course. (For a school or district-wide effort, it also makes a real difference to have support from the principal or the blessing of the superintendent, even if they are not directly involved with the specific project.)

Leadership means promoting the project, getting others interested and involved, providing necessary resources, and holding staff accountable for results. In *The Road Ahead* projects, vision came from key individuals, such as technology coordinators, teachers, directors of community-based agencies or organizations, and business people.

- **grounding in community needs**

A needs assessment is an effective tool for building consensus and creating shared ownership. Data about such issues as a lack of technology access or inadequate student performance can motivate people to take steps to fill the gaps.

This process should also look at needs within the larger community that could be addressed through a technology-based partnership—anything from providing employers with students who are well prepared for local jobs to ending social isolation of residents in a nursing home. It is also crucial for the partners to understand local social and economic needs and the local political climate.

- **attention to infrastructure**

To take root and thrive, technology-based partnerships require not only the hardware and software but also other kinds of infrastructure, such as adequate staff, professional development, and technical support.

Educators must recognize that community-based organizations generally have a more fragile infrastructure than schools, characterized by higher turnover among organizational staff, lower availability of professional development, and a lack of hardware and software. This point was brought home to several projects in *The Road Ahead* program when they encountered continually changing personnel or other frustrating delays.

- **effective public relations and community outreach**

Partnerships need to build and maintain support for their efforts. Partners need to be kept apprised of activities and accomplishments. Often, it is desirable that a partnership be thoroughly reported by the press and media. The project must have strategies for outreach that will involve all elements of the community, including diverse ethnic, racial, and economic groups. Inclusion of all such constituencies is a critical component.

- **strategic planning and delineation of responsibilities**

It is important to agree on a mission statement and put it in writing; to set goals and measurable outcomes; to develop a formal implementation plan that details activities, responsible persons, and timelines; and to develop a process for monitoring and evaluating progress. Articulating and agreeing upon roles and responsibilities (who will do what and when and where) is an essential step of this process, one that should be done early on.

- **shared decision making and interagency ownership**

To achieve a true partnership, schools must work with parents and community organizations on an equal footing, rather than one group calling the shots. Partners must be prepared to share decision making and responsibility.

Relationships based on trust, open communication, and shared credit and recognition are critical. Part of this process requires understanding that organizational partners may have different cultures, different bureaucratic structures, and diverse ways of doing things. A sense of ownership among all local partners is especially critical to the survival of collaborations developed as a result of outside grants. All the partners must feel they are benefiting from the arrangement.

- **appropriate resources and technical assistance**

Obtaining the needed resources—not just funding but human and in-kind support—is one of the most vexing problems confronting partnerships. While businesses may donate equipment and parent-teacher groups may raise money, there are likely to be other funding needs that will be met only by persistently recruiting other donors.

Human resources may be the most critical element in some programs. Apple Computer (1995) found that partnerships created to affect teaching and learning require extra time for teachers and intensive professional development. Funding for ongoing technical assistance is an especially important need, and a budget for this purpose should be built into the plan developed by the partners.

- **patience, vigilance, and flexibility**

Change takes time. Several of *The Road Ahead* projects had slow starts due to such obstacles as hardware and software installation problems, difficulty in recruiting community participants, or bureaucratic barriers. These partnerships successfully overcame initial obstacles because each of the partners had a sense of ownership as well as a long-term commitment to the attainment of their shared goals.

Above all, these partnerships were flexible enough to adapt their strategies to changing circumstances—a point emphasized over and over again among project sites. Leaders were also willing to assign time, money, and human resources to maintain the partnership. Ongoing community outreach is essential, along with expanding involvement and activities. Partnerships that are not growing are very likely dying.

Conclusion

Building partnerships among schools, families, and other community groups can strengthen technology-enhanced learning. When these connections are well established, families are more involved and supportive of the educational process, communities are more committed to their schools, and schools have a better understanding of both the needs and the resources in the community.

Technology in education can create new models of communication

Educators and researchers are increasingly working to turn this vision of partnership into a reality, but change takes a great deal of time, planning, training, commitment, and patience. Information technologies can facilitate this kind of change by offering new modes of communication among schools, homes, and communities. They can provide a fresh and exciting motive for parents and citizens to become involved in children's learning or to learn new skills themselves.

For technology-enhanced partnerships to work, however, all participants must be motivated by mutual concerns and treated with respect. Goals, roles, and objectives must be clearly delineated. Finally, excellent communication skills, with a focus on listening, are a prime requisite to success at every step of the way.

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