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# A Distance Education Collaboration: The Learning Café Experience

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## Introduction

As distance education collaborations between high schools and colleges increase, there is a concern that little has been done to assess the quality and effectiveness of the resulting virtual courses (Carr & Young, 1999). Yet it is equally important to address or consider the many challenges and issues of the collaboration itself. How these issues are addressed will seriously impact the success of any college distance education project in collaboration with other institutions of learning, including K-12 schools, community centers, and private industry. This article is about collaboration issues between high schools and colleges. It focuses on what the developers learned and offers lessons for what must be considered and planned for prior to the initiation of a collaboration project.

The Brooklyn College Learning Café project (http://www.sci.brooklyn.cuny.edu/~lori/TLC/), a collaboration between an urban college and four local high school partners, was developed through a $650,000 grant from the U.S. Department of Commerce, Telecommunications and Information Infrastructure Assistance Program (TIIAP). More than 600 juniors and seniors participated in the Learning Café project. This report first describes Brooklyn College's impetus for designing the Learning Café project. The next section provides

a description of the curriculum and the software developed. Collaboration issues are discussed concentrating on all facets of the Learning Café. Finally, the report offers recommendations for achieving greater success in partnerships between high schools and colleges as well as other collaborations.

## Motivation for Collaboration

The Learning Café project was a direct result of the College President's recent initiative, "The Year 2000 and Beyond: Shaping the Future," to make Brooklyn College a model urban liberal arts college of the twenty-first century (Brooklyn College, Office of the President, 1993). Part of the initiative was to build bridges to the community, to contribute to its social and economic well being, and to assume a national leadership role in revitalizing instruction.

The Learning Café project formed a partnership with four Brooklyn high schools (Midwood, Edward R. Murrow, Samuel J. Tilden and the Brooklyn College Academy), Brooklyn College of The City University of New York (CUNY), and the College Board. The project had as one of its goals to introduce Internet access to these high schools. According to the National Center for Education Statistics 78% of U.S. public schools had Internet access in 1997. The remaining 22%, including the four designated Brooklyn high schools were schools in danger of remaining excluded from access to information because they were not connected to the Internet (U.S. Department of Education, 1999).

The four high schools participating in the Learning Café project are within five miles of Brooklyn College, but many of the students participating in the project were socially and economically distanced from what higher education had to offer. Brooklyn College's aim was to break down the economic and geographic barriers to computer access and Internet skills as well as barriers to considering college as an option. The high schools represent a mix of sizes, models, and enrollments. The Brooklyn College Academy is an alternative high school targeting at-risk students from throughout the borough who have had difficulty reaching their potential in traditional settings. A percentage of Midwood students are selectively admitted with the remainder attending based on residency. Edward R. Murrow is an Educational Option School, required to maintain both an ethnic and educational representation of the borough. Samuel J .Tilden high school serves neighborhood students in an economically disadvantaged area. The vision of Brooklyn College's TIIAP grant proposal was to bring together the expertise of professionals in the College, high schools, government, and corporations to develop an effective approach for integrating technology with secondary education. The College was awarded the TIIAP grant in October 1997. The project planning process began in November 1997 and the Learning Cafés were put in place in the schools by September of the following year.

## Collaboration between Secondary Schools and Higher Education: The History

Collaborations between high schools and institutions of higher learning have been growing for the past two decades, in particular since the publication *A Nation At Risk* (National Commission on Excellence in Education, 1983). Partnerships between schools and colleges have involved onsite as well as distance education (Clark, 1988; Wilbur, Lambert, & Young, 1988). Researchers have also noted that overburdened urban high schools can benefit from the enrichment that distance education may offer (Carr & Young, 1999; Williams, Eiserman & Quinn, 1988). Moreover, distance education provides a unique opportunity for innovative strategies by colleges and universities to recruit in areas far beyond their geographic environs.

## Learning Café Project: Establishing the Groundwork

The project was designed to expose high school students to new opportunities by making Internet access and college education more readily available. To achieve this, the project would:

- Provide Internet access in a computer lab at each school;
- Develop a junior year curriculum with teachers overseeing classroom activity;
- Offer a senior curriculum which would include live instruction and virtual college courses for credit; and
- Develop software for delivering courses, protecting systems, and gathering information about student performance.

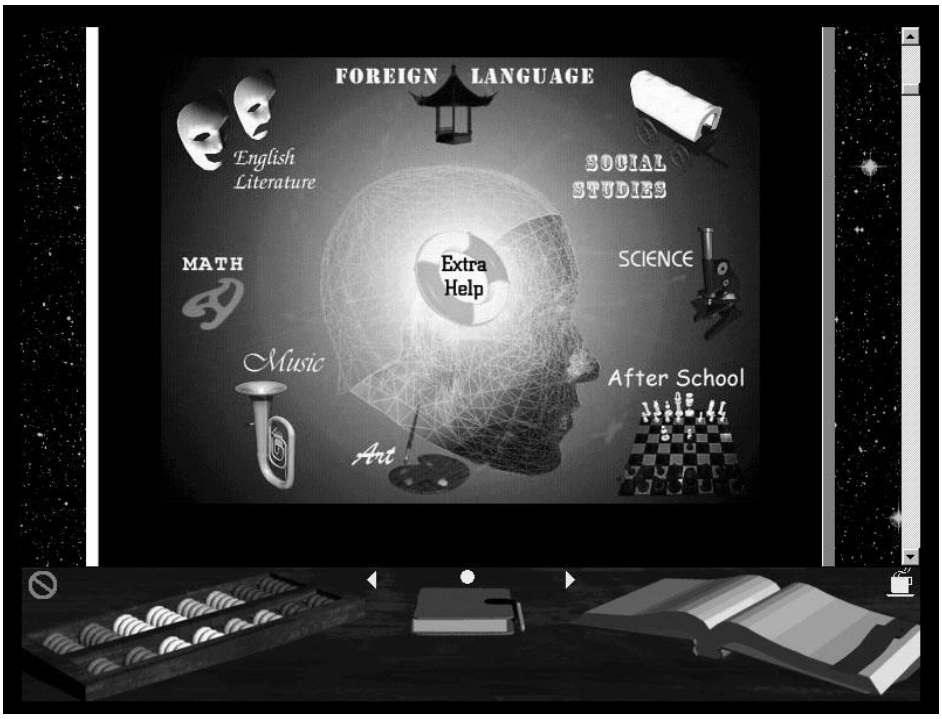
A team from Brooklyn College and the high schools facilitated the Learning Café project. Courseware is typically produced by teams of individuals with a range of areas of expertise (Yang, Moore, & Burton, 1995). The project team for the Learning Café consisted of a Project Director, a Project Coordinator, two Software Technical Advisors, two Curriculum Developers, two Multimedia Designers, and four High School Coordinators. These team members brought expertise in high school and college education, educational technology, programming, art and design, and a variety of college subjects to the project.

The Café project required purchasing equipment and furniture for each high school. Brooklyn College built new computer labs at two of the high schools and augmented equipment in existing computer labs in the other schools. The College installed T1 lines and servers and networked the computer laboratories at each high school. Each school also received adaptive equipment for persons with disabilities.

## Learning Café Curriculum

The sequence of virtual study offered in the Learning Café began with a course for high school juniors in information literacy: this entailed learning the process of recognizing a need for, and then gathering and using information (http://academic.brooklyn.cuny.edu/library/virtualcollege/info-literacy/Toc.html). After taking the information literacy course in the fall, the junior year students progressed to an online critical thinking and writing course in the spring semester.

**Figure 1: Lesson from the Information Literacy Curriculum**




High school seniors began the fall semester learning the College Board's ExPan software, for choosing, applying to, and paying for college. Seniors also learned to build their own Web pages as part of their college application process. Teachers were trained to use Netscape Composer as well as the ExPan software and worked directly with students using these applications. High school seniors were then eligible to take for credit one of three online Brooklyn College courses in English, Biology, or History. These courses were developed and taught by Brooklyn College professors who were not part of the project team.

## Pedagogy and Technical Issues: The Custom Browser

While developing the curriculum for juniors, the project team realized a potential problem: students who accessed the lessons through Windows 95, the standard personal computer operating system, may be computer novices who would find the many Windows options confusing and/or distracting. More sophisticated users, on the

other hand, might be tempted to customize the environment in such a way that the computer could not be used to run the Learning Café. Moreover, to re-configure the computers would be time-consuming for the high school teachers and administrators.

To circumvent this potential obstacle, the project team approved a software interface for the junior level curriculum that simplified computer use and restricted the types of activities allowed. This software interface did not apply to the senior course curriculum, since their access to the college credit courses was entirely through the Web.

The Learning Café browser was developed by a multimedia designer with a client application distributed on CD-ROM that served as the interface for the junior curriculum. It launched on startup and could be terminated only by an instructor who knew the password. It provided access only to the intended content and to other applications needed for the online courses.

**Figure 2: Outside the Learning Café**


Upon startup, the browser retrieved the server's Internet address, the locations of the shared files, and other customized information from an initialization file. It checked the Internet connection, and in the event the lessons and/or database were inaccessible via the Internet, then the lessons were retrieved from a local source. Although student

performance records could not be maintained on the local source, it at least permitted students to continue to work until the server, network, or connection was repaired.

The browser's timer tracked how long the computer was idle. If not used for a given time period (specified in the initialization file), the browser closed any windows it had generated and returned to the opening screen, waiting for the next student to sign on. This ensured that all students entering the Learning Café could log in without confronting materials opened by a pervious user.

Although many of the lesson pages listed links to related Web pages, the project team wanted students, early on in their lessons, to focus on Learning Café content and avoid the distractions of surfing. Therefore, in the early sessions (how many is specified in the initialization file) students were limited to browsing only those domains referenced by the lesson pages. Later on, after gaining a clearer understanding of the Internet through the information literacy exercises the student was free to roam the Internet without restrictions.

## The Database

The Learning Café software technical advisor designed a relational database, tied to the junior curriculum and the custom browser, to support and supervise students taking online courses with the Learning Café. Databases are being used more and more in Web-based instruction to gather information about student access, progress, and understanding (Arnow & Barshay, 1999; Wade & Power, 1998). The Filemaker Pro database system, running locally in each of the high school Learning Cafés, offered customized Web pages that reminded students of what lesson they were on and provided links to up-to-date lesson pages. The database was also used to generate quizzes at the end of each lesson, automatically grade the multiple-choice portions of those quizzes, and enable a student to go on to the next lesson.

**Figure 3: Welcome Page in the Lessons**


At the same time, this database system gathered information about who was doing what in the Learning Café. Instructors and administrators could then use this information to gauge student progress and assign grades.

Instructors were given a special password for the Learning Café that allowed them to access and update information gathered by the database system. Instructors could see every quiz that their students had taken and assign grades to the short answer portions. They could then use the quiz grades, exercise responses, and information about student access to assign grades to the individual students. Additional administration Web pages enabled staff to define new classes, add students to those classes, and track Learning Café usage.

**Collaboration Issues**

The Learning Café functioned as a testing ground for collaboration between different institutions of learning. The success of this project depended on the full cooperation of all members of an interdisciplinary team from a variety of work environments, each with its own culture. Cooperation was required for all phases of the project including technical development, lab installation, and the delivery of the Learning Café curriculum by the high school partners.

Many of the strategies employed contributed to the program's success. Yet some of the strategies would have benefitted from changes in implementation and led to greater success in college/high school collaborations. The following assessment and evaluation explores what went right -- and what went wrong -- with the Learning Café

project. Other inter-institutional partnerships could greatly benefit from the issues identified and the recommended solutions.

## Technical Development

Technical development -- creating the browser, database, and lesson pages -- proved to be the most successful collaboration. The curriculum developers sketched their ideas of what the lesson pages should look like and then discussed these ideas with the multimedia developers.

The multimedia developer who designed the Learning Café browser also worked closely with the technical advisor building the database. Although these collaborators were from a variety of disciplines, all were affiliated with institutions of higher education and, therefore, had similar expectations for the project.

**Figure 4: Multimedia Enhanced Exercise**


Key to the success of this endeavor was the development process. Developing the lessons in the hypertext mark-up language (HTML) format easily allowed for fluid content, extensive dissemination, and the migration of the lessons from the browser to a totally Web-based environment. The collaborators worked on a common document or program, and communicated frequently.

Nevertheless, the project's limited time frame and budget constraints prevented the project team from creating lessons with true state-of-the-art multimedia effects. Despite innovations in multimedia production software that cut down on necessary production time, the number of hours needed to produce multimedia software will always exceed the number of hours of software produced. Macromedia, creator of Shockwave and the applications that generate online multimedia, suggests that 100 hours of development time should be allowed to create every one hour of multimedia-enhanced courseware. In addition to requiring extensive production time, multimedia professionals command high salaries and production houses are an equally costly alternative. Although some developers may give educational institutions a break in price, most will not (Davies and Brailsford, 1994). With limited time and resources, the Learning Café project media designer could implement only a small portion of what was desired.

In addition, inadequate monitors and RAM on some of the computers in the Learning Café labs diminished the quality of the presentation. Because the funding provided to the project was insufficient to equip all lab computers with headphones, audio enhancements could not be applied to either the Learning Café browser or the lessons.

## Lab Installation

Coordinating the installation effort proved to be the another challenging part of this task triggered in large part by a difference in calendars between college and high school terms. Due to delays in equipment orders and the phone company's installation of the T1 lines, the Café installation occurred during the summer rather than the spring. Local wiring issues, equipment delivery delays and difficulty in checking the network complicated an already complex installation that involved IBM, The City University of New York Instructional Technology and Information Services Office, Bell Atlantic, and the Brooklyn College systems staff. College personnel were working on the project during the summer months but the high school coordinators were either not available or could meet only briefly during this time. Most of the communication was via e-mail but did not have the immediacy that a physical presence or even cell phones could have provided. Furthermore, it was often difficult to access the high schools.

## Delivering the Learning Café Curriculum: The High School Partners

Development of technology and the lab installation were not the only phases of the project that were challenging to the collaboration. The high school coordinators chosen by the high school principals to work on the Learning Café project were well-qualified for the job. Three were assistant principals and one an experienced teacher. Initially, the team met weekly to develop curriculum content and software; however it

soon became apparent that the high school coordinators could not keep up with a weekly schedule. In addition, the coordinators were asked to provide administrative assistance related to the installation of the cafés, solicit teacher participation, support training and see to the implementation of the curriculum. The high school administrators were enthusiastic about receiving computers, furniture and Internet access. Nonetheless, they found it very difficult to meet the demands of their full-time jobs, and, in addition, assist with the coordination of the installation of the cafés and coordinate the project at their individual schools.

The Learning Café project employed an outside evaluator to review the project upon completion. After interviewing the high school coordinators, the project evaluator concluded that integrating the Learning Café program in to the high schools proved more demanding than the coordinators had expected. One coordinator commented that he "already had a full-time position with a heavy workload at the school, and managing the Learning Café site proved to be too great a challenge" (Martinez-Pons, 1999).

The College initiated the Learning Café project with the intention of forming a collaboration with the high schools, but the high school coordinators did not view the project as a partnership and continued to view it as Brooklyn College's project. Therefore, the high school coordinators sometimes had difficulty accepting responsibility at critical periods during the project. Brooklyn College did not have authority to supervise high school principals or coordinators to ensure full participation of the high schools. Cooperation between the institutions was entirely voluntary. This made it difficult to ensure that problems or issues were solved in a timely manner. This problem is germane to many college/high school collaborations (Pratt, 1991).

In addition to the cooperation of the high school coordinators, delivery of the Learning Café curriculum also required the cooperation of the high school teachers. Close involvement of the high school faculty is critical in any high school/university collaboration (Rakow & Robinson, 1997). The college set up MCI Internet connections in each high school and at the homes of each teacher involved in the project so that they could preview the information literacy, critical thinking, and writing lessons as they were created and placed on a conference Web site for review. Although the curriculum developers had ultimate responsibility for the content of their courses, it was essential that the high school partners agree with what was planned to present to their classes. Nonetheless, very few of the high school teachers scheduled to teach the course monitored the Web site or offered suggestions about the curriculum.

In addition, miscommunication or misunderstanding regarding funding for teacher training led to added confusions: high school coordinators assumed that the college would pay the teachers for additional time spent in curriculum development and training, while the college assumed that this would be part of the high schools grant matching responsibilities. Brooklyn College hosted two, four- hour training sessions in the fall 1997 semester when the curriculum and software were complete and the proposed starting date was at hand. The intensive training period was an opportunity for hands-on practice and interaction with the developers, but was not long enough to allow for major revisions the teachers may have recommended on their first encounter with the lessons at the training sessions. Consequently, if the teachers were confused by or disagreed with lesson content or features at the time the curriculum was delivered, they chose to by-pass portions of what was offered and students were short-changed. As a result, some students did not complete exercises requiring participation in the threaded discussion software incorporated into the exercises most likely because their teachers were not trained sufficiently in the tool to pass the skill on to the students.

Furthermore, the teachers, who received initial training in the automated administrative functions available within the browser and through the database program, did not use these features or ask for the follow-up instruction that may have been needed. Tests were not graded with the automated system; instead, a number of teachers requested that the multiple choice quizzes following each information literacy lesson be printed out for the students and marked by hand.

In addition, because of insufficient training in the custom-built and commercial software employed in the project, the computer lab technicians at the high schools found it difficult to troubleshoot technical problems. Furthermore, the high school teachers and technicians were not adequately trained to keep the Web server up and running. The server -- the computer holding the database and the online content -- was located in the classroom in each of the high schools, leaving this vital part of the Learning Café open to tampering and abuse. When the server shut down, or the system suffered interference the high schools relied on Brooklyn College staff to get it up and running again. Accidently or intentionally, high school students and staff could -- and did -- move files around, modify database records, and delete important files.

Software as well as hardware presented coordination issues. Brooklyn College did not effectively communicate to the high schools the purpose of the custom built browser to control student access to the computers in the Learning Café laboratories. Consequently, because the high schools wanted to use the Learning Café computer labs for other purposes, the Learning Café browser did not run as intended. Students launched the browser from the Windows operating system and systems were left open to tampering. The browser became just another application that the students had to

learn, instead of the primary application that introduced students to the other applications.

Seniors enrolled in the Brooklyn College credit courses did not require special technical applications because the courses were entirely Web based. The seniors did however did periodically have questions and needed hands-on assistance with the software. A high school teacher was not assigned to this role. This oversight would take its toll on both the virtual students and professors. College faculty expressed frustration that there was no high school teacher to contact to determine how students were progressing or to ascertain why they had not heard from a student in three weeks. The professors did not know if the student was ill, or had dropped out, or needed some additional help. One of the Brooklyn College professors stated ,"a structure of client-side support needs to be built, involving high school teachers, administrators, and parents" (Berardi, 2000). Clearly, many high school students continue to need some guidance and supervision in the distance learning classroom. (Fyock, 1995).

The limited involvement the high school partners offered to the Learning Café project underscores a significant cultural difference between high school and college faculty. Secondary school teachers are paid to teach a set of classes and prepare curriculum– both require a great deal of time. For college faculty, instruction comprises a small part of their performance evaluations where research and outside projects are equally important. Outside projects are integral to a college professor’s progress on a promotion and tenure track. High school teachers are evaluated solely on their classroom performance. Work on outside projects uses valuable time they needed for their classes. No release time was afforded teachers or coordinators for the Learning Café project. In addition, there was no credit or reward for time spent on the project.

**Lessons Learned**

Although the Learning Café Project team had initially perceived that the technical issues would be the most challenging aspect of the project, the greatest challenges proved to be in the implementation of a collaborative partnership. With relatively minor changes in budgeting, planning, and understanding, the dynamics of the collaboration might have changed significantly for the better.

In a partnership with a high school, a college would do well to give the high school significant ownership of the project. The needs of teachers as well as administrators must be considered in planning the partnership. Teachers are more likely to be enthusiastic if they contribute to the design of the curriculum and are adequately trained for online course delivery.

While the following recommendation was intended for faculty in higher education, the Learning Café experience demonstrates the same is true for teachers in K-12 schools.

"The integration of distance education into mainstream higher education compels post-secondary institutions to reduce existing barriers to faculty participation by compensating, rewarding, and training faculty at levels commensurate with those of traditional instructional activities and to provide instructional and administrative support services designed to ensure student access to high-quality instructional program." (Olcott and Wright, 1995)

Providing monetary or release-time compensation for program development assistance is crucial to project success. Literature on technology implementation in higher education strongly recommends training and the allocation of funds for training. (Findley and Findley, 1997, and Low, 1991). In addition, training should occur in the school where the teacher is based. Because the project is likely to be above and beyond the regular responsibilities of those who act as high school coordinators, their funding needs must be recognized in the project proposal stage. Furthermore, principals who agree to participate must determine how the high school administrator assigned will be able to assume the added responsibilities.

The absence of technology skills on the part of the teachers contributed to their lack of involvement and difficulty with the browser and database despite the fact that the College offered training. The level of teacher training built into the Learning Café project overestimated the degree of teacher technological expertise. Furthermore, training for using technology in teaching is so critical that it should be considered regardless of whether a high school is involved in a distance learning project (Gallo & Horton, 1994). A recent survey by the National Center for Education Statistics found that only 20 percent of teachers feel ready to integrate computers into their classrooms (1999). Institutions of higher education need to incorporate more technology training in teacher education courses. This training should continue in high schools when teachers are in service in fully-equipped teacher training labs (Guernsey, 2000). In addition, if a high school partners with a college in a distance learning project, the sponsoring institution needs to provide school-based technology experts to train and mentor the high school teachers and assistant principals in the use of technology with teaching. Moreover, a sponsoring institution needs to provide adequate technical (hardware, software and multimedia) support for any computers it installs. Lastly, a sponsoring institution or the high school itself needs to provide meaningful and appropriate teacher rewards for those teachers who participate in the project. With this type of support, a high school teacher should be assigned to act as a liaison/monitor between the virtual high school students and the professor teaching the college Web-based course.

A distance learning project of the scale of the Learning Café project could benefit from the expertise of a full-time technical coordinator to oversee technical decisions and assume responsibility for coordinating the myriad technical issues that arise. Although a full-time technical coordinator was assigned to the project, because of his other responsibilities at the College, he did not have adequate time to devote to Learning Café issues. A technical coordinator could ease the establishment of new or updated networked classrooms and troubleshoot all software problems. Many problems and delays could be eliminated or minimized if a technical coordinator is present at project meetings where decisions are made on the purchase and installation of equipment and software. Distance education courses require many more resources than a typical on-campus course. As a result more technology assistance, hardware, software, travel, and other coordination activities require a great deal of institutional resources. (Gatliff and Wendel, 1998).

Finally, any successful implementation of educational technology requires involvement of the multimedia designer in all phases of the project. This ensures that adequate technology is specified and adequate time and funds are budgeted. It also helps to keep expectations realistic, so that all parties might be satisfied with the outcome.

Even with the presence of a single technical coordinator, distributed computer servers can lead to a proliferation of problems that could be avoided if this hardware and software are centralized. If a network server is physically located at the sponsoring institution where access is restricted to technically capable staff knowledgeable about the distance learning partnership, and its workings and its goals, the server would not be as vulnerable as it would be if each server is located at a participating high school. The sponsoring institution could take full responsibility for administration of the servers used to deliver course content and perform administrative functions such as student tracking and grading.

## Project Evaluation

The grant evaluation showed the effectiveness of the Learning Café project. First, student attitudes toward computers were substantially correlated with the usefulness of Web training, gain in writing skills from critical thinking and writing course and effectiveness of training in the use of Web tools. Second, writing skills were substantially correlated with the usefulness of Web training and effectiveness of training in the use of Web tools. Lastly, the usefulness of Web training was substantially correlated with the effectiveness of training in the use of Web tools (Martinez-Pons, 1999).

## Conclusion

The lessons learned in the Learning Café project clarify what is necessary for successful distance education collaborations and are confirmed by the broad-based recommendations identified in the National Network for Collaboration (NNC), *Collaboration Framework* (1995). The *Collaboration Framework* provides guidelines to assist practitioners in a variety of universities and community-based collaborative programs, not specifically involving distance education. Based upon the Learning Café project findings, the following recommendations, more specific to a distance education collaboration, should be considered:

- Involve all participants in planning, setting goals and identifying outcomes for the collaboration process.
- Develop guidelines on how the collaboration will operate on a day-to-day basis.
- Establish effective leadership.
- Be aware of cultural differences between collaborators.
- Be aware of the politics of each organization.
- Establish and maintain open communication.
- Develop an effective training program for instructors.
- Insure full-time technical support during project implementation and throughout the collaboration.
- Insure full-time administrative support for instructors, students and coordinators.
- Provide compensation or release-time for individuals involved in a project above and beyond their regular responsibilities.

Collaborations can be difficult to establish and challenging to maintain but the benefits and rewards can be great. Together, the Learning Café partners developed creative strategies for overcoming traditional barriers to access. Brooklyn College has shared its comparative electronic and academic wealth with students at these four inner-city high schools. Through the Learning Café collaboration Brooklyn College positioned four public high schools on the information super highway and gave them the resources to continue solidly along this path.

Fully-equipped computer laboratories were established in each of the four schools, high-speed Internet access was introduced, and software and content allowing for distance learning became a part of the high school curriculum. As technology continues to make communication faster, easier, and more convenient, remote access to education, libraries, and services will only increase. Sharing of resources, whether they be teachers, technology, information or students will become even more inviting and cost effective. Technology has created the means for successful collaborations. Partners must recognize the complexities of collaboration and address the multiplicity of issues involved in entering into a collaboration. The Learning Café

recommendations can help collaborators identify many of the important issues, avoid potential problems, and achieve greater success.

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