

**U.S. DEPARTMENT OF COMMERCE  
National Telecommunications & Information Administration**

Evaluation of the  
Telecommunications and Information Infrastructure Assistance Program

**Case Study Report**

**Harlem Environmental Access Project (HEAP)  
94057**

**New York, New York**

Site Visitor: Kyle Snow

Dates of Visit: May 26-27

# PREFACE

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The following case study report is being issued as part of TIIAP's ongoing evaluation initiatives designed to learn about the effects of TIIAP funded projects. This report is one in a series of twelve based on in-depth case studies conducted in 1999 to study three subjects: (1) issues particular to rural communities (2) issues particular to urban communities, and (3) challenges in sustaining information technology-based projects. The case study reports give us evidence about the special challenges that each project faced and provide information for a better understanding of factors that can facilitate the success of such projects.

In addition to being urban or rural, the case study projects were selected because they involved distressed communities, represented innovative models for services, and affected measurable community outcomes. The case studies, conducted under contract by Westat, an independent research firm, consisted of extensive review of project files and records, interviews with project staff, representatives of partner organizations, and project end users. In addition to the 12 individual reports, a summary of findings across the projects is also available on the NTIA website.

NTIA wishes to thank the case study participants for their time and their willingness to share not only successes but also difficulties. Most of all, we applaud your pioneering efforts to bring the benefits of advanced telecommunications and information technologies to communities in need. We are excited about the case studies and the lessons they contain. We believe that these projects provide a unique insight into the variety of ways to eliminate "the digital divide" which exists in our nation. It is through the dissemination of these lessons that we can extend the dividends of TIIAP funded projects nationwide.

We hope you find this case study report valuable. You may obtain other case study reports, a summary of findings of the collected case studies, and other TIIAP publications through the NTIA website ([www.ntia.doc.gov](http://www.ntia.doc.gov)) or by calling the TIIAP office at (202) 482-2048. We also are interested in your feedback. If you have comments on this, or other reports, or suggestions on how TIIAP can better provide information on the results and lesson of its grants, please contact Francine E. Jefferson, Ph.D., at (202) 482-2048 or by email at [fjefferson@ntia.doc.gov](mailto:fjefferson@ntia.doc.gov).

Stephen J. Downs, Director  
Telecommunications and Information Infrastructure Assistance Program

<b>Project Name</b>	Harlem Environmental Access Project (HEAP)
<b>City/State</b>	New York, NY
<b>Grant Recipient</b>	Trustees of Columbia University in the City of New York
<b>OEAM Number</b>	94057
<b>Application Area</b>	Education, Culture, and Lifelong Learning
<b>THAP Grant Amount</b>	\$450,000
<b>Match Amount</b>	\$651,919
<b>Date of Site Visit</b>	May 26-27, 1999
<b>Site Visitor(s)</b>	Kyle Snow
<b>Abstract</b>	<p>The Harlem Environmental Access Project (HEAP) is a partnership of Columbia University, the Environmental Defense Fund (EDF), and public schools in Harlem. The project, administered by the Institute for Learning Technologies (ILT), is designed to connect the information resources and expertise of Columbia, EDF, and the Internet with students and teachers in five schools and one public library in the New York City Economic Empowerment Zone. ILT provides technical expertise and support and EDF contributes content knowledge and teacher support. Each school has established a website with environmental information and student projects (and other information).</p> <p>Partner schools were recruited by the Empowerment Zone through a Request for Participation process. Teachers from the five selected schools attended a 2-week professional development workshop where they learned the basics of developing web-based classroom lessons, especially pertaining to environmental issues. Throughout the project, ILT and EDF staff visited schools and provided ongoing support.</p> <p>Through HEAP, a number of students and teachers have learned to utilize technology to find and present information about the environment. Additionally, HEAP served as a model for a larger project, the Eiffel Project, currently funded by the U.S. Department of Education. This project extends the HEAP approach to a larger number of schools in Harlem, helping to bridge the technological divide that otherwise may separate these schools from others in the city of New York.</p>

## **A. Background**

### **Community Characteristics**

This project serves the communities surrounding Columbia University. Located in Upper Manhattan in New York City, Columbia rests on the edge of Harlem and other neighborhoods that constitute the New York City Economic Empowerment Zone. The Empowerment Zone includes large portions of Harlem and portions of the South Bronx, comprising a population of 200,000 people with high incidences of poverty and illiteracy. The Zone includes four public school districts. Historically Columbia has been perceived as aloof or indifferent toward the community, which has hurt Columbia's efforts at community outreach. The project was an attempt to "lower the barrier between traditional 'haves' and 'have-nots' of the information world."

### **Project Overview**

**Problems/Disparities the Project Was Originally Designed to Address.** The HEAP project was funded as a demonstration project in the area of education, culture, and lifelong learning, with a secondary focus being community networking. Three primary objectives were identified by the project:

- To provide Internet access to a pilot group of public schools in Harlem.
- To provide environmental data and information to the teachers and students at these schools.
- To connect the schools to the expertise and information resources of Columbia University (specifically, the Institute for Learning Technologies, ILT) and the Environmental Defense Fund (EDF).

During the site visit, project staff made it clear that the project entailed a two-step process, connection then utilization, which was necessitated by the extreme lack of connectivity to the Internet of schools in Harlem. Thus, connectivity was a large first step, which, once taken, allowed to the Internet the project to proceed in terms of content (i.e., environmental content), but also had the long-term implication of a connection to the Internet long after the TIIAP grant ended. Thus, there was an additional premium placed on teacher professional development.

**Technical Approach Utilized During the TIIAP Grant Period.** The technical approach taken during this project entailed the development of a local area network (LAN) in each partnering organization (where needed), and a subsequent connection to Columbia University as a gateway to the Internet. The Institute for Learning Technologies (ILT) had in place a LAN and direct connection to the Internet through Columbia University. The Environmental Defense Fund (EDF) did not have an existing LAN, so it was installed by ILT, and a connection with ILT made via T1 lines. Each of the partner schools and the library had in place different degrees of local networking, so each was handled individually. Specifically, HEAP staff made the decision to try to utilize existing technologies within each partnering organization. Where possible, ILT installed an Ethernet-based LAN, though in at least one case the project worked to integrate the Ethernet network with an existing Token Ring network. The LAN allowed partnering organizations to share their local resources, while the T1 connection to Columbia allowed for high-speed access to the Internet. Columbia served as the gateway to the Internet through its connection as a downstream concentrator for NYSERnet.

Besides the physical infrastructure installed, ILT worked with staff at each partner site to train their staff to use the computers and technology to deliver instruction. EDF staff provided content-specific training and support to the teachers. ILT provided each partner with web space for their web-based work, as well as e-mail accounts for staff. Together, the support offered by ILT and EDF was geared toward building the infrastructure and hands-on knowledge for using it.

**Project Status at the Time of the Site Visit.** Although the project has grown in the number of partner schools and changed its content focus away from environmental issues, the basic structure remains. The infrastructure installed, including both hardware and web-based information structures, was maintained in each of the partner schools, but the active program of teacher development and classroom involvement of staff from EDF had ended. The project still utilizes similar technologies, with Columbia University serving as the hub and gateway to the Internet through NYSERnet. Both EDF and the public library ceased to be partners with ILT after the HEAP project had ended. In large measure, the HEAP project had evolved into the Eiffel Project (discussed below), which continued to apply the same basic model of activities to a larger number of schools with funding from the U.S. Department of Education.

## **B. Community Involvement**

The relationship between Columbia University and the surrounding community, especially Harlem to the north and east, has at times been very difficult. In some ways it is reflective of the “town versus gown” struggle of many college and university environments. However, according to project staff, this struggle was often exacerbated by the failure of some of Columbia University’s attempts at connecting to the community. Thus, developing a successful working relationship between Columbia and the residents of Harlem was challenging. In the discussion of partnerships that follows, this challenge is an important subtext.

### **Characteristics of the Grant Recipient Organization**

The TIIAP grant was awarded to the Institute for Learning Technologies, a unit within Teachers College at Columbia University ([www.ilt.columbia.edu](http://www.ilt.columbia.edu)). ILT was founded in 1986 to advance the role of computers and other information technologies in the classroom. The Institute “seeks to empower the creative reform of education” by:

1. Implementing, according to constructivist principles, real-world projects using multimedia and network technologies to create sophisticated learning environments.
2. Sponsoring exploratory development and participatory design efforts to discover the academic potentials of emerging technologies.
3. Sustaining public policy initiatives that mobilize broad coalitions of interested parties from academe, government, and industry in order to transform education.

While the TIIAP grant was active, ILT also held grants through the Dalton Technology Plan and the Living Schoolbook Project, though the projects funded by these grants were not related to the HEAP project. ILT is funded through the University, private gifts and grants, and consulting income. It also receives corporate support from NYNEX, Bell Atlantic, IBM, Intel Corporation, and Oracle.

### **Partnerships**

**Partners During the Grant Period.** Several levels of partnership during the period of TIIAP funding played a role in the project’s ultimate success. The largest partner was the New

York City Economic Empowerment Zone. This organization of business and community leaders in Upper Manhattan was central to the development and implementation of the HEAP project. This group was responsible for selecting the partner schools following a Request for Participation (RFP) issued by ILT describing the goals of the HEAP project. The Empowerment Zone has continued to work with ILT on the Eiffel Project. The project director felt that the success of HEAP, including its ability to attract a number of interested schools, resulted from the relationship between ILT and the Empowerment Zone, which legitimized the role of ILT in the public schools in Harlem, and helped to remove potential barriers to project implementation.

The major partner identified by HEAP was the Environmental Defense Fund. EDF previously had limited technological infrastructure, but through HEAP it became one of the first environmental groups with an Internet presence. EDF provided matching funds to purchase computers for the partner schools and provided in-kind matches of scientific expertise in helping teachers design units concerning the environment for use during HEAP.

The six partner schools and one public library partner were connected to the Internet through HEAP. The six schools were selected from more than 15 schools that had responded to the RFP. The schools selected came from the four districts composing the Empowerment Zone (at least one from each zone), and included one private school. The public library was selected due to its central location relative to the participating schools.

Each of the partnering schools and the public library were provided with the technical infrastructure necessary to connect a small number of computers to the Internet via a gateway at ILT and Columbia University. This infrastructure included wiring and computer hardware and software that in all cases was an improvement in the previously available systems.

**Partners Since the Grant Period.** Since the TIAP grant ended, and the relationships between ILT and the schools stopped revolving around HEAP activities, ILT has continued to have a relationship with most of its partners through the Eiffel Project. The partnership between the public library and ILT has not continued through this new project, however. Although it is not clear why this partnership ended, part of the reason suggested by library staff was that the library has since been linked with the New York Public Library wide area network (WAN), providing many of the services previously provided by ILT. The Eiffel Project now connects nearly 70 schools, half of which are overseen by ILT (the others are connected with the Center for Collaborative Education, which is funded by Annenberg). HEAP

project staff made clear that the depth and scope of the relationships they had with these schools were the result of ILT's experiences with HEAP.

## **Community Outreach**

**Involving Community Stakeholders.** Staff members from ILT worked closely with many community organizations prior to HEAP to ensure its success. Once the idea of connecting local schools to the Internet via ILT and Columbia seemed feasible, the content partner (EDF) was selected and brought into discussions about the project. EDF was selected because its goals were consistent with the need for environmental awareness among inner-city residents, and its staff was interested in working with a direct educational outreach project.

To implement HEAP, ILT staff worked with members of the Education Subcommittee of the Upper Manhattan Empowerment Zone to develop and circulate an RFP through which local schools "applied" to participate in the HEAP project. Thus, partners were brought on through formal and informal processes.

The RFP was issued to schools in the Empowerment Zone, and 15 responded with formal applications. The RFP described what the HEAP project planned to do and how it would be achieved. The RFP also laid out the responsibilities that would fall upon the school through the project. Members of the Empowerment Zone, not ILT,<sup>1</sup> ultimately selected the participating schools using their own criteria. The criteria included a desire to include one school from each of the four districts in the Zone, and a public library as a central location.

It should be noted that there was little consideration given to the current (at the time of the RFP) state of infrastructure at potential partner schools. Compounded with ILT's concerns about incorporating whatever degree of infrastructure was available, this led to delays in implementing the technical components of the project (see below). Although the delays proved frustrating, the project director did not regret how the schools were selected, and indeed he was somewhat disappointed that the RFP process was not followed in the Eiffel Project.

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<sup>1</sup> The fact that the Empowerment zone and not ILT selected the schools was important for community support and buy-in. The director of ILT said that many of the past efforts of Columbia to involve the surrounding community had been met with resistance because they were not perceived by stakeholders as community collaborations.

**Project Outreach.** Contacting potential end users was achieved primarily through the issuance of the RFP. After each partner school was selected, HEAP recruited a group of teachers who had expressed interest in the project and whose positions were compatible with the intended content of the project. HEAP then provided technical and curriculum development support. Participating teachers and students were largely self-selected through their expressed interest in the project. Project staff at ILT and EDF had a limited role in identifying specific teachers and students to be involved in the project. Each school was represented at a 2-week training seminar, the “HEAP Design Studio” (described below). Once the project had begun and each partner site had connected to ILT, each partner developed a website that described the HEAP project and presented each partner’s related projects.

**Training.** Training teachers to use the Internet and the connectivity provided for by the TIIAP grant was a high priority for ILT. Training was both formal, through a 2-week workshop during the first summer of the grant period, and informal, through onsite technical assistance either from ILT (for technical issues) or EDF (for content issues) staff.

The most substantial training was provided through the HEAP Design Studio. The Studio was designed to “support the development of technologically enriched environmental science curricula.” Each partner sent a team of representatives to the training. Typically these representatives were administrators and/or teachers at the school, but at least two schools also included a student in the training sessions. The workshop was designed to be hands-on, with a series of lecturers to provide substantive content mixed with time for hands-on work with computers. The Studio was designed to be flexible and general, not explicitly geared toward providing direct instruction to the teachers on how to construct a technology-based environmental curriculum. The Studio was subject to an extensive evaluation that was generally favorable. Teachers thought the Studio was well designed to develop their technical skills, though several felt that it could have provided more content-based development strategies.

**Protecting Privacy.** The HEAP project utilized open connections to the Internet for student and teacher access. Although the project linked schools to the Internet, school data were kept on a firewall-protected separate system that was not accessible to students. Student and teacher e-mail security was provided by e-mail software and password protection. There were no systemic web filters employed by the project, and teachers seemed less concerned with the need for such protections.

## **C. Evaluation and Dissemination**

### **Evaluation**

The evaluation plan for the HEAP project included both summative and formative assessments. There was also a formal evaluation of the training program, the HEAP Design Studio, conducted by an outside evaluator. Both evaluations focused on participant satisfaction, though each also explored more detailed questions.

The HEAP Design Studio was formally evaluated by an outside consultant. The evaluation plan included an intake and exit survey (though only the exit survey had a sufficient response rate to be included in the report) and individual interviews. The evaluation focused on issues of (1) workshop design and implementation, (2) match between participant expectations and their experiences in the workshop, (3) satisfaction with content, and (4) teacher concerns about implementing the project in their schools.

The HEAP project itself was not subjected to an evaluation as formal as the Design Studio, but there were some guiding questions. These included questions about the overall success of the implementation of the project (e.g., Is sufficient technical support provided to the schools?), the impact on student learning and environmental awareness (e.g., Do students learn more substantive science content?), and wider community and environmental impact (e.g., Are related projects leveraged off of HEAP?).

The project director stated (during interviews and in the final report) that formative evaluation was more important than was summative evaluation. Briefly, this is because ensuring that the project is running smoothly and providing the intended services is critical to its success, even if that success is difficult to document in a summative report. The findings bearing on the study questions were incorporated into the final project report rather than a stand-alone evaluation report. In general, the project final report concluded that although the partner schools had varying degrees of infrastructure and need, ILT was able to be responsive to their needs for technical assistance. Further, there was evidence of student impact, though this conclusion was based upon anecdotal evidence more than quantitative evidence. Finally, there were indications that other projects (e.g., Digital Dante) were able to capitalize on the HEAP project, especially the infrastructure the project provided.

## **Dissemination**

Information about the HEAP project has been disseminated through the project's web page ([www.ilt.columbia.edu/heap](http://www.ilt.columbia.edu/heap)). The project has also been mentioned in several conference papers presented by project staff. An article in EDF's newsletter for March 1996 described the project ([www.edf.org/pubs/edf%2Dletter/1996/mar](http://www.edf.org/pubs/edf%2Dletter/1996/mar)). In addition, each participating school developed a home page (accessible through the HEAP page) that describes HEAP and the school's projects related to it.

### **D. Problems Encountered**

#### **Partners/Stakeholders**

Although ILT provided technical support for the project, delays in project staff response to partner calls for help sometimes occurred. This was particularly the case with the public library. This potentially large problem, however, was minimized by the availability of technical support within the library itself.

The project also noted that the library site was not utilized by students as much as had been hoped, although the HEAP-provided connectivity and equipment had many other users. In the final report, the project director suggests that this problem may be overcome in the future by giving partners specific roles within the project:

The ... Library serves the project effectively as a community-based organization (CBO) proximately located to each school... which provides students in principle with access to HEAP resources after school hours... CBOs need to be equipped with specific functions in mind, and tied directly to particular projects within neighboring schools.

Indeed, this proved to be the case. For example, the library reported that HEAP-sponsored open houses were well-attended by students, as were several "how-to" sessions about finding information on the Internet. When the library was utilized in a specific, project-relevant way, it was used more often than when end users had to use the library's resources on their own.

## **Technology**

The biggest problems encountered by the HEAP project were technical. Once partner schools had been selected and the local network wiring begun, it became obvious to project staff that each of the selected sites had existing infrastructures that varied widely. The staff chose to handle each school's wiring independently, taking advantage of what infrastructure was already present where they could. This reduced the overall cost, but did result in delays in getting some schools connected.

The project also experienced difficulty in stabilizing the T1 connections between partner schools and ILT, compounded by the need for more complex routers that resulted in project staff needing to learn about higher level technologies than anticipated. The delays in T1 connectivity were partially dealt with by providing temporary access via 28.8 modems, allowing the project to continue as planned, though with slower and more limited access than would ultimately be established.

## **E. Sustainability and Project Expansion**

**Strategies Used by the Project to Fund Project Activities Beyond the TIAP Grant Period.** The project director for HEAP acknowledged that HEAP was seen as a pilot project for what would be funded as the Eiffel Project. He saw HEAP as a way of developing a model for other projects linking schools together and to the Internet. Indeed, HEAP played a role in leveraging the funds for the Eiffel Project that is now underway. ILT was able to successfully leverage their experience with HEAP into attaining more funds from other sources to continue the same basic program it had started with HEAP. The project director also acknowledged that the relationships forged during HEAP contributed to the early success of the Eiffel Project.

It is important to note that among the activities undertaken by the Institute for Learning Technologies are research projects funded by Columbia University as well as a large number of publicly funded grants and corporate sponsorships. The Institute is both an internal funding agency (soliciting proposals and making awards) and a project development office competing for grants from external sources. Thus, within the Institute there exists extensive expertise and infrastructure for securing funding from a wide range of sources. When this expertise is coupled with the leverage of a previously funded and successful project (such as HEAP), projects have a clear advantage in gaining additional funding and being sustained.

**Steps Taken to Maintain or Expand TIIAP-Related Partnerships.** HEAP-related partnerships were maintained in some schools through the Eiffel Project, but not maintained with EDF or the public library. It should be noted that EDF was involved with HEAP because of its content, so its withdrawal as a partner after the project ended would be expected, and there was no action that ILT could have taken to maintain it. The partnership with the public library was also not maintained, largely because the library is now connected through the New York City Public Library network, and has no need for maintaining the relationship. It was clear from the site visit that ILT is most concerned with maintaining active relationships with community schools, though they have undertaken activities to actively involve local community-based organizations in their projects. To maintain relationships with the schools, project staff believed that once a school became a partner, providing that school with a high level of support (technical or professional development) created a sense of common purpose between the local schools and ILT. Thus, when ILT went into the community it was seen as a legitimate partner, rather than a university outreach program.

### **Project Expansions**

The most immediate expansion of the project was the development of the Eiffel project. This project, funded for 5 years by the U.S. Department of Education, expanded the practices put in place during HEAP into a larger number of schools. Specifically, the project is designed to develop local networking solutions and connections to the Internet for schools in the Empowerment Zone and similar areas in the south Bronx and Brooklyn. According to the project's "Executive Overview" (at [www.ilt.columbia.edu/eiffel/execover.htm](http://www.ilt.columbia.edu/eiffel/execover.htm)):

The consortium intends to improve the educational experience of disadvantaged children dramatically by connecting an increasing number of New York's urban K-12 schools to the information superhighway, developing and implementing curricular strategies, and providing effective teacher professional development, all in support of the small schools reform movement.

The project staff at HEAP also noted two ventures that they considered expansions. The first of these is Playing-to-Win and the second is HarlemLive. Both of these are community groups that were indirectly nurtured by the HEAP project. Playing-to-Win ([www.playing2win.org](http://www.playing2win.org)) is a community computing center that had been previously shut due to lack of funds. ILT, along

with Boys Harbor, provided funds to re-establish the center. HarlemLive ([www.harlemlive.org](http://www.harlemlive.org)) is an Internet project organized by a former teacher at a HEAP school. It is a nonprofit project that allows students to design and implement an Internet e-Zine. Both of these projects are supported by ILT and consistent with the goals of HEAP, including the provision of access to computers for youth in Harlem and training them how to use the technology.

## **F. Project Outcomes**

### **Impact on End Users**

There are two types of end users in the HEAP project: teachers and students. In some cases, the impact of HEAP has been the same on both groups. For example, both gained technical knowledge about computers and the Internet. Additionally, teachers and students learned about web page design and the use of e-mail. There were, however, outcomes specific to each group.

**Teachers.** The training components of HEAP were directed at teachers. Teachers at each partner school participated in a 2-week professional development seminar during the summer prior to project implementation. During this workshop, teachers learned about using computers and the Internet and how to use technology in their classrooms. Additionally, they received educational materials about environmental issues (through EDF) that they could use in developing HEAP-related lessons. Several of the teachers involved in HEAP have generalized the project model in their other courses by again coupling the Internet with subject content. Teachers said that the project “provided them with important resources for focusing group projects, as a tool of research, and as a medium for communicating beyond the school.”

**Students.** The students benefited directly and indirectly from HEAP. Direct benefits included access to computers and the Internet that could be applied to HEAP-related projects or to other academic and personal uses. Students learned how to produce web pages, including the technical skills (e.g., HTML) and the content skills (e.g., what information to include and how to present it). Project staff feel that students also were able to use the skills gained through HEAP to help in other courses, especially for conducting research for class projects and reports. According to the project’s final report, “the equipment became something the students learned with, not something they learned about.”

## **Impact on Grant Recipient and Project Partners**

The HEAP grant had a large impact on most of the organizations involved. With the exception of ILT, which already had in place technical infrastructure, all partners benefited through the availability of additional computers and the development of a LAN and connections of the LAN to a WAN including the Internet. Additionally, the relationships formed between ILT and the partner schools, and the Empowerment Zone, have been maintained, and the role of ILT in the surrounding community has been enhanced as a result of the project. Although no longer a partner with ILT, the public library reported that there were more students using the library, especially the computers provided by HEAP, and that they tended to use the computers to work on school work outside of school hours.

## **Replication**

The staff at ILT are aware of several replications of the HEAP project, though they have been actively involved with only two. One is a project just beginning in Patterson, New Jersey. For that project, ILT staff have provided technical assistance and shared materials with the site as it develops its plans. The second project, the North Hudson Electronic Education Empowerment Project (NHEEP), applies a model similar to HEAP to schools in communities in the rural areas of Upstate New York.

## **G. Lessons Learned and Recommendations for Other Communities**

**An On-Site Technology Coordinator is Necessary.** During the project, partner schools developed a staff position of technology coordinator. In some cases, this was a new staff position; in some cases, there was already a position within the schools; and in other schools, this role was assumed by a staff member as a secondary responsibility. This put a large burden on ILT staff to provide support. This was especially the case because the technical approach taken in each school, using existing infrastructure where possible, varied from site to site. HEAP suggests several responsibilities for a technology coordinator:

1. Provide a single liaison for the school—internally and externally.
2. Develop an onsite staff development program.

3. Take general responsibility for hardware and software.
4. Develop and update the school technology plan.

**Participation of the School Principal Is Essential.** Project staff, including ILT, EDF, and partner school teachers, agreed that the support and participation of the school principal was essential to the ultimate success of HEAP in each school. The principal controls scarce resources needed by the project, including money for technical equipment, defining and selecting a technology coordinator (see above); and he or she plays a large role in developing the school's technology plan. Additionally, the principal sets the tone for teachers regarding how technology is viewed and to be used for educational purposes.

**Selecting the Right Partner Schools Is Essential.** To enroll partner schools, HEAP used a modified RFP approach where each school had to apply for participation in the program. This created an early buy-in on the part of the schools, and also provided HEAP with information about schools that would potentially be part of the project. Although schools were selected to represent a geographic distribution, the project did have some choice in which schools would be partners and which would not. This selection process also allowed for a clear statement of goals and expectations for the project, which allowed for clear communication during actual implementation. Additionally, by utilizing a competitive enrollment plan, HEAP could select schools that were able to bring to the project at least rudimentary technical infrastructure.

**Technical Delays May Be Anticipated, But They Need Not Delay Project Goals.** HEAP staff acknowledged the need for a detailed, reasonable time frame for project implementation. Staff also acknowledged that these time frames often change as delays occur in the implementation of the technical infrastructure. Staff at ILT and EDF pointed out that these delays do not mean that the project must stop. Instead, they suggest that tasks involved in the project be conducted in parallel, so that even if one element (e.g., installing a school's LAN) is delayed, other elements (e.g., developing the WAN, conducting professional development activities, developing curriculum) need not be delayed. Additionally, some delays incurred may ultimately pay higher dividends than if other plans were followed. For example, in several schools, the LAN relied on older technology (Token Ring) than was being used by the project (Ethernet), yet the LAN was complete within the school. Rather than simply replacing the Token Ring with Ethernet connections, the decision was made to integrate the older segments. Although this decision delayed deployment of the technology, it saved time and money related to potential problems of upgrading antiquated computers.

**The Capabilities of Each Partner Need to Be Integrated to Enhance the Project.** Staff connected with HEAP all pointed out that each of the components of the project (ILT, partner schools and library, and EDF) brought unique capabilities to the project that fit together complementarily without a great deal of duplication. ILT brought experience with instructional technology and access to the Internet, EDF brought content knowledge, and schools brought local infrastructure. These pieces fit together to deliver services to the students and teachers. At the same time, the role played by each component was essential to the project's success. ILT staff pointed out that they serve as a resource to help schools and libraries to make technology choices, using ILT's experience to make well-informed decisions. Likewise schools and libraries are able to understand and express the needs of their staff and students to guide the development of educational programming, which is informed by knowledgeable groups, such as EDF.

## **H. Summary and Conclusions**

The HEAP project has been successful at two levels. First, during its period of implementation, HEAP effectively connected students and teachers in the underserved areas of New York City to the Internet. Not only were these students and teachers provided access, but through teacher training developed by ILT and content materials developed by EDF, they were able to use the access to address real environmental issues in their local environment. The second level of success is reflected in the ability of ILT to transform HEAP into a much larger project funded by the Department of Education. While the success of HEAP may have impacted the grant award, the implementation of the HEAP project served to create a greater sense of partnership between ILT and the Harlem community, which should be realized as continued success through the Eiffel Project. A number of factors have contributed to this success.

### **Developing Community Involvement Takes Work, But Provides Rewards.**

Historically, the relationship between Columbia University and the surrounding communities of Harlem has been strained by a number of factors. This difficult relationship has, in the past, stood as a barrier to University-community collaborations. Project staff believed that this difficulty had partly arisen because there was not a sense of collaboration in the past. To build this spirit, the project worked closely with the Empowerment Zone to develop an RFP process whereby schools applied to participate in the project. Importantly, this application was not made to Columbia University, but to the Empowerment Zone, which also selected the partner schools. This created community buy-in, but also gave the project legitimacy in the community. This helped to close

some of the perceived rift between the University and the community. Community support and enthusiasm are now important parts of the Eiffel Project.

**Access with Purpose Is More Effective Than Access Alone.** Although a great deal of attention has been paid recently to the “digital divide,” ILT staff repeatedly said that simply providing access is not enough to help close the gap. They believed that teaching students how to use the information they could access is the only way to close the digital divide. Certainly, HEAP provided basic hardware infrastructure to schools that had otherwise lacked it. Additionally, access to the Internet was provided to schools that had previously lacked it. However, ILT took the next step and trained teachers how to use the computer technology, and EDF staff provided specific content about local environmental issues. This blending of access with purpose is what captured students’ interest and motivated teachers. Simply giving the schools the computers and Internet access may have impacted some, but combining access and purpose impacted many.

**Experience Lends Itself to Success.** The ILT has a history of developing educational technologies. As an organization, it has experience with writing and winning grants. The combination of these factors likely led to the development of the Eiffel Project. In many ways, the HEAP project was a model for the larger Eiffel Project. Through HEAP, ILT developed positive relationships with the community that had not previously been there. The history of training teachers in using technology had immediate implications in how successfully ILT staff could work with participating teachers in developing materials for student use. Likewise, the experience that ILT has had with developing grants in the past allowed them to see the potential role of HEAP in a larger, longer-term goal of generating grant support to apply a similar model to a great many more schools in the community. While many federally-funded projects attempt to leverage one federal grant against another, HEAP has been able to do so successfully. Thus, even though the HEAP project has ceased to exist, it laid the foundations for the currently operating Eiffel Project.

