

Bridging the Gap Evaluation Report

October 20, 1999

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BRIDGING THE GAP EVALUATION REPORT

Executive Summary

Overview

As technology becomes more commonplace, there is a growing awareness that not all segments of society have access to the technology needed to keep pace with the changing times. The disparity is most acutely apparent for students from wide ranges of socioeconomic backgrounds. While students from more affluent homes have use and access to computers and the Internet on a regular basis, those with fewer means must often rely on what is available within their school curriculum. The disparity between the two groups becomes larger and larger as those who have access to technology within their homes become more proficient at using the tools of the next century, and those without that access fall further behind.

Two Minneapolis-St. Paul Metropolitan Area suburban/rural school districts recognized the importance of providing technology within the homes to students whose economic circumstances prohibited such access. The project, called “Bridging the Gap”, was designed to reduce disparities between technological “haves” and “have-nots” by capitalizing on existing technological infrastructures and family advocacy programs/services in school districts to increase the technological skills and competencies of the students and their families. The United States Department of Commerce, through a Telecommunications and Information Infrastructure Assistance Program (TIIAP) grant, funded the project. The project was implemented in August 1997 and was completed in August 1999.

The Bridging the Gap project is a shift from traditional training/support approaches because students and parents worked side-by-side in settings that facilitated their needs. Key to the theoretical framework guiding this project was access to computers within the home. Each family was provided with a state-of-the-art laptop computer for use during the project. Successful participation by students and their families resulted in ownership of the laptop computer. In addition, the project included collaboration among the business sector and public sector in providing the infrastructure for the project to work. There were four strands to the project including the following:

- Information Technology Training
- Family Computer Use and Parent/Child Interaction
- Linkages for Ongoing Support and Follow-up
- Large Scale Access Strategies

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The project included an extensive evaluation effort. Several indicators of success were measured during the course of the project, including specific technology outcomes such as student and parent knowledge of software and increased use and interest in computers. Global outcomes such as student achievement, attendance and parent job opportunities were also measured.

Findings suggest that the project was highly successful and can serve as a model for “bridging the technology gap” by providing access and increased opportunities for parents and students who do not have the financial means to access technology or the understanding of the importance of technology to their children’s educational success.

Findings

Strand 1: Information Technologies Training included five desired outcome areas.

1. Student and parent joint participation in technology training;
2. Student knowledge and use of software;
3. Parent knowledge and use of software;
4. Student interest in computer technologies; and
5. Parent interest in computer technologies.

All outcome goals were achieved or exceeded, except for student and parent participation, which fell just short of the 90 percent training attendance goal. Findings and recommendations are given below. *The training resulted in high interest, use, and knowledge of technology for both the students and their parents.*

Student and Parent Joint Participation in Technology Training

- Eighty percent of families beginning the project completed the required 48 hours of training.

Increase Student Knowledge and Use of Software

- All students increased their computer competency during their participation in the project.
- Students increased their use of computers for schoolwork and other activities.

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Increase Parent Knowledge and Use of Software

- At the onset of the project, parents reported considerably less comfort with computers and software than their children did. At the beginning of the project, only half of the parents were comfortable with basic computer and software manipulations, e.g. opening, closing and saving files. However, by the end of training, all parents reported improvement in their computer skills.
- Nearly all parents were interested in computers throughout the program and expressed importance of computers in their future learning activities and work environments. As training proceeded, parents' comfort increased.

Increase Students' Interest in Computer Technologies

- Nearly all students were interested in computers throughout the program and appeared eager to learn. Teachers reported a high level of motivation by the participants. Students increased their use of computers for schoolwork and other school-related activities.

Increase Parents' Interest in Computer Technologies

- Nearly all parents remained interested in computers throughout the program. Many reported that being involved in the project had changed their lives as they now felt they could compete with others in the work place. Parent participants were particularly articulate about how the project had affected their view of technology and education. They reported understanding the importance of computers in their children's education and were grateful for the opportunity to have one in the home.

The desired outcomes for **Strand 2, Family Computer Use and Parent/Child Interaction** were met or exceeded.

Increase Family Members Use Computers.

- All family members used computers for various school, work, or recreational tasks. There was more use by siblings than expected. This was a primary focus of the project. The goal was met and exceeded.

Increase Parent/Child Interaction.

- On average, weekly parent/child interaction time was nearly 3.5 hours per week, compared with a goal of 2 hours per week. Parents and students reported spending more time with each other in a positive environment. The children often served as teachers to the parents, changing the dynamic of the home. In addition, the child's position in the home was often elevated as they were the reason all members of the family had an opportunity to have a computer.

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Global Outcomes

In addition to specific technology outcomes, global outcome areas were identified to investigate links with the project and other areas such as student achievement and parent work-related opportunities. The following desired outcomes were assessed.

For Students:

- Increased academic achievement;
- Improved attendance rates;
- Increased homework completion; and
- Increased use of media resources.

For Parents:

- Increased parent involvement in the schools;
- Decreased transiency; and
- Increased work-related opportunities.

While it is not possible to rigorously determine cause and effect of global outcome parameters due to limited data and the large number of variables, it is interesting to note trends in behaviors.

For Students

Increase Student Achievement.

The project was implemented in January 1998; consequently, academic data reflected one-half year of instruction. Additional academic data will be available in an addendum after fall 1999 test results are analyzed.

- Student achievement data from the Metropolitan Achievement Test-7th Edition were available for 60 percent of participating students. On average, study participants made one year's growth in reading and math during the academic year, with slightly better performance in math. Students who began the project but did not complete it showed mixed results, with reading scores improving more than one year and math scores improving less than one year. All other students showed one year's growth, on average.

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Increase Attendance Rates

- On average, project participant's absentee rates were similar to their non-participating grade peers.

Increase Homework Completion

- Survey findings suggest that participation in the project had a positive impact on homework completion for some students. Parents and students reported that access to computers and the Internet motivated them to do a better job. Parents perceived that students produced a more "quality product" with access to computers.

Increase Use of Media Resources

- Survey findings suggest students were using the computers more often and for more school-related tasks. Parents reported their children were watching television less and using computers more. Many reported an increase in knowledge-building use such as accessing websites related to the children's interests.

For Parents

Increase Parental Involvement in the Schools

- Principals reported many instances where parents who had been alienated from the schools were now participating in the volunteer programs or coming to school on a regular basis. In some cases, parents who had been openly hostile to the school and its personnel were asking to repay the school through volunteer work for the opportunity they had been given through the project.

Decrease Family Transiency

- Only four percent of the project participants moved out of the two districts involved in the project. Though there are little data to compare past mobility rates of this population, anecdotal data indicate that this is comparatively low. In addition, parents reported trying to find housing within one of the two school districts so they could continue with the project.

Increase Work-related Opportunities

- Most parents reported that the project increased their use of technology on the job and 25 percent reported changes to their job-related activities, including promotions.

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Summary of Qualitative Findings

Focus groups were conducted with students, parents, and principals to assess project effectiveness in several areas. The most helpful aspects of the project were increased computer literacy and improvement in school and job skills. The greatest school-related difference in children was increased motivation to learn. Behavioral differences in children were primarily noted in their use of time, including decreased television viewing, replaced by time spent with the computer. Principals noted positive impacts on discipline. Parents felt their participation positively impacted their job performance and provided opportunities to consider new or different jobs. Principals also noted increased family involvement in school.

Parents and children reported increased time together as a result of the project. Teacher/student roles often reversed with parents and children. In a few cases, students felt their parents were spending too much time on the computer and not enough time with them.

Focus groups results suggest the project was highly successful in meeting desired outcomes with several positive unintended consequences.

Throughout the project parents articulated their strong feelings about the project and its effect on their families. In many cases, parents were in tears when describing the difference the project had made to their families. They explained what it felt like to be out of the mainstream in the technology area. They described the alienation of feeling that they may never understand what the rest of society was using and taking for granted. Parents discussed the difference it made for their children to be educated on a level-playing field, where their income did not make the difference to their children having an opportunity to learn like students who come from families with higher incomes.

Principals told of the difference in behavior for students involved in the project. At one school students come from apartment buildings where the residents are mostly low-income. She described the difference in conversation as the children came off the bus; rather than discussing the sometimes-violent incidents of the previous evening, the students discussed the software they were using.

The children were equally as articulate in discussing the difference the project had made to their lives. They described how it felt to hand in projects that were not completed on word processors as many of their other classmates. They described increased self-esteem as they were now like all the other students.

Implications

The project was clearly a success in all areas in which it was evaluated. The impact of the project was even greater than hypothesized by the project designers. The depth to which parents and their children feel alienated and how this impacts their motivation to learn was clearly evident in the surveys and focus group findings.

Moving this type of program to large scale is critical if the technology gap is to be narrowed for many of the families in American society. The model implemented through Bridging the Gap can be used in school districts and communities throughout the country. There were several elements that are necessary for communities contemplating such a project.

1. The technology infrastructure must be in place within the school district to support the learning of the students and the parents.
2. A technology leader must be a champion of the concept and bring it to reality.
3. The business community must be on board providing the services at reduced or no cost to those without the financial means (Frontier Communication provided this for this project.).
4. Training MUST accompany any home computer leasing or give-away project.
5. Students and parents should be involved together in the training.

With the reduced cost of computers comes the opportunity for communities to consider implementing this type of project. This project would not have occurred without the assistance of the federal government. Their role in replicating this type of project is critical to large-scale implementation. Though this is a small project, findings suggest the benefits to the children in their learning and motivation are large as well as the benefits to the parents, many of whom found increased work opportunities as a direct result of their participation in the project. This is a project that deserves further consideration for large-scale implementation.

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Introduction

Section A: Introduction

“Bridging the Gap” is a unique and innovative project designed to reduce disparities between technological “have and have not” families in two Minneapolis-St. Paul Metropolitan Area suburban/rural school districts. The project was designed to capitalize on existing technological infrastructures and family advocacy programs/services in school districts to increase the participating students and their families’ technological skills and competencies. The United States Department of Commerce, through a Telecommunications and Information Infrastructure Assistance Program (TIIAP) grant, funded the project. The project was implemented in August 1997 and will be completed in August 1999. Bridging the Gap was evaluated throughout its implementation. This document reports evaluation findings and conclusions for activities completed through December 1998. The bulk of the activities was implemented during this time period. An addendum to this report will be submitted in fall 1999 that will include an evaluation of the activities not completed at this time.

“What we wanted to demonstrate with our project was that access to technology enhances student learning.”

Denise Griffith,
Project Director

The Bridging the Gap project is a shift from traditional training/support approaches because students and parents worked side-by-side in settings that facilitated their needs. Laptop computers, training, and ongoing support were provided to 138 low-income fourth graders and their parents in six elementary schools. Key to the theoretical framework guiding this project was access to computers within the home. Each family was provided with a state-of-the-art laptop computer for use during the project. Successful participation by students and their families resulted in ownership of the laptop computer.

This project was conceived with input from families in the two participating school districts who voiced concern that their children were at academic disadvantage with their peers who had access to computers and the Internet at home. Two school districts were selected for this program, Minnesota Independent School District 196 (Rosemount, Apple Valley, Eagan) and Independent School District 191 (Burnsville, Savage, Eagan). These districts enroll over 38,000 students with a wide range of social and economic characteristics. Both school districts have extensive classroom access to computers, software, and the worldwide web, in addition to offering comprehensive training

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"Our goal was to empower families through access to technology."

Denise Griffith,
Project Director

programs. However, large disparities still exist in student access to technology at home.

Bridging the Gap was designed to serve as a model for tapping existing technology and human resources for other school districts that have technology infrastructures. Rather than adding more services, the goal of this project was to enhance delivery of existing services and strengthen collaborative efforts and relationships among school districts and other programs. The Adult Basic Education Program, Family Service Collaborative and other community groups were approached to aid in the implementation of the project. Early Childhood Family Services coordinated childcare assistance during training sessions. Frontier Communications provided phone lines, including installation and monthly service fees for families who did not have home phone service or whose phone service was terminated during the project. Through project collaboration critical support and follow-up were also available via existing service providers. Continuing evaluation and assessment of the project were ongoing, aiding in the development of strategies for wider adoption.

A.1 Student and Parent Characteristics

Participant Selection. One hundred thirty eight fourth-grade students (1997-1998 school year) from six elementary schools were chosen to participate in the project. All fourth-grade students whose families qualified for free or reduced lunches were asked to consider participation in the project. Lunch status was used as an initial screening variable to identify low-income families within the school districts. Candidate parents and guardians were asked to complete a Parent/Guardian Interest Notice Form and an Application for Participation Form. These forms addressed current access to home computers, family structure information, financial information, requirements and obligations of participating in the program (e.g. 50 hours of training and activities were initially required of parents and students). Selection for project participation was based on this and other information. A project team of classroom teachers, family services school advocates, principals, English-as-Second-Language teachers and Title I teachers made the final selections.

Initially parents were concerned about their participation being perceived as labeling them as poor or low-income. A smaller

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number of families than anticipated agreed to participate in the project. Given this barrier, the project leaders decided to open the applications to low-middle income families. Having more economic diversity in the program seemed to alleviate some of the perception issues that were barriers to participation for some families. Selection criteria data based on Free and Reduced Lunch (FRL) is reported in Table A.1.

Data were collected that provided information about the academic achievement, attendance habits, and computer literacy of the participating students in fall 1997. Students completed an interest and computer literacy self-assessment survey. The participants' teachers also completed a computer literacy checklist for each student. In addition, parents also completed a computer literacy checklist prior to beginning the training.

Student Academic Profile. Only four of the elementary schools were able to provide academic data on the participants due to the testing and evaluation schedules within the school districts. The *Metropolitan Achievement Test-7th Edition (MAT7)* was administered to students from Independent School District 196 as part of the school districts' annual assessment regimen. Prior to the onset of the project (fall 1997), the average normal curve equivalent for participating students on the total reading battery was 54.8 and 57.7 on the total math battery. The average normal curve equivalent for the remainder of the fourth grade students was 59.5 in reading and 60.7 in math. School District 191 did not administer a test on an annual basis. Therefore, academic data for fall 1997 are only available for approximately 60 percent of the participants.

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Table A.1: Selection Criteria Based on Free/Reduced Lunch

Project Phase	Category*	No. of Families	Percent
		N	%
1	1	74	54%
1	2	62	46%
Moved or Dropped Out of the Program	1	22	79%
Moved or Dropped Out of the Program	2	6	21%
2	1	52	48%
2	2	56	52%

"We were worried that there may be a stigma attached to participating, but actually the kids were really proud to be a part of it. Opening it up to all fourth grades helped as well."

Denise Griffith,
Project Director

* Applicant families were screened for inclusion in the project utilizing two sets of criteria.
Category 1: Families that meet FRL profiles with no "modern" computer technology in the home
Category 2: Families that are within \$30,000 of FRL profiles with no "modern" computer technology in the home

Student School Attendance Profile. Attendance records of participating students were reviewed. Attendance rates were calculated by counting the number of days the child missed during the first semester of the fourth grade. Since technological training did not begin until the beginning of the second semester, first semester attendance data are used as a baseline measure. On average, students participating in the project missed an average of the school days the first semester of the fourth grade similar to their peers who were not part of the project.

Student Report of Computer Literacy. Students completed a checklist on their computer abilities. The majority of the students reported being able to do basic computer skills. They also reported a high level of interest in the computer. Teachers reported less technological proficiency in the participants. These data are reported in Section C.

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Parent Report of Computer Literacy. Most parents reported being comfortable powering up and shutting down the computer and using the keyboard, and, to a lesser degree, using a printer. But, high percentages of parents were generally uncomfortable with most other computer-related skills. Only about half of the parents felt comfortable opening, creating, saving a file, and using a word processor. Parent respondents were most uncomfortable creating multi-media presentations and using graphics programs.

A.2 Project Plan

Bridging the Gap is a two-year project with four project strands.

- Strand 1: Information Technologies Training
- Strand 2: Enhanced Family Computer Use and Parent/Child Interaction (Formerly Enhanced Home to School Communication)
- Strand 3: Linkages for Ongoing Support and Follow-up
- Strand 4: Large Scale Access Strategies

Strands 1 and 2 were implemented during Year 1 (1997-1998 academic year). Strands 3 and 4 were implemented during Year 2 with final data available in fall 1999. Desired outcomes were identified for each strand. Strand 1 and 2 outcomes are presented in Section C. In addition, global outcomes for students and parents are identified for this project. These were outcomes that were not directly addressed in the training and project design, but were hoped to be second order effects of the project. These included increased student academic achievements in reading and math, increased attendance rates, and increased computer-use for school-related projects. Increased interaction between the parent and child and increased work-related opportunities were global desired outcomes for parents. End of Year 1 global outcomes are included in this report (See Section E). Findings should be reviewed with caution, however, as the project was in operation for only half of the 1997-1998 school. Additional data will be available in the fall 1999 addendum to this report.

Strand 1: Information Technologies Training, provided training by experienced district trainers on hardware and software applications in a variety of content areas and physical

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settings that met student and families' needs. Parent and parent-child training classes were held at a variety of locations in the two school districts. Parents could choose from a wide menu of options that accommodated their work and family schedules. Students met after school on a regular basis for student training. Additional training in vocational skills, budgeting, and English-As-A-Second language were also available.

Strand 2: Enhanced Family Computer Use and Parent/Child Interaction involved facilitating home computer use by the entire family and increased parent/child computer-related interaction on school-related tasks. Strand 2 activities were made possible as a result of Strand 1 training and support activities. In addition, enabling families' access to email, word processors, and other computer communications vehicles were available to encourage home-to-school communication.

Strand 3: Linkages for Ongoing Support and Follow-up, (to be completed in Year 2) is designed to capitalize on existing school and community programs to ensure success in the program. These services include training to access on-line local, state, and national services programs for information on housing, services for disabilities, and food sources. Families without phone lines are provided phone lines. Follow-up will be achieved through regular meetings with students and families held during Year 1 and Year 2.

Strand 4: Large-Scale Access Strategies, involves business, community, and educational leaders collaborating to identify strategies for initial and on-going large-scale access to technology. Strand 4 activities will identify strategies to apply similar programs on a statewide or national basis.

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Evaluation Approach

Section B: Evaluation Approach

B.1 Methodology.

Desired outcomes for this project were established apriori and included in the project proposal. Several methods were used to gather data on the effectiveness of the project. These included quantitative and qualitative methodologies such as surveys, checklists, record review, and focus groups. In addition, participants were asked to complete Computer Use Logs for review by project staff and the evaluator.

Global outcomes were measured by standardized tests administered through the school district assessment process, teacher checklists, and attendance records. A general description of instruments and procedures is found in Appendix A.

B.2 Data Sources

Student and Parent Surveys. Students and parents were surveyed at the beginning of the project to determine their "comfort level" with using computers and software. They were asked questions about their abilities to perform basic computer tasks including power up and shut down, file manipulations, and hardware use. Students and parents were also asked questions about their attitude toward computers

At the end of Year 1, students and parents were again surveyed about their computer abilities and computer use. The Year 1 survey addressed much more than basic computer task skills including daily computer log-on time, questions of computer use for specific tasks (e.g. homework, work, internet access, etc.), and changes of behavior as a result of having access to computers. Information obtained in the initial survey and the end of Year 1 survey, as well as focus group findings, were used to evaluate desired outcomes of project Strand 1 and 2 and the global outcomes.

Parent, Student, and Principal Focus Groups. Parents and students at each of the Bridging the Gap project sites participated in focus groups in early June 1998. The focus groups were

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Evaluation Approach

scheduled to coincide with the completion of Year 1 training sessions and the completion of the academic year for the elementary students. The purpose of the focus groups was to get an understanding of how participants perceived the impact of the project on their families and to solicit suggestions for project improvement.

Participants willing to meet with an evaluator one-half hour to forty-five minutes prior to a project meeting were chosen by trainers. Thirty-nine parents and thirty students representing thirty families participated in six focus groups. Parent and student focus groups were conducted separately with two different facilitators.

Principals from four of the Bridging the Gap project sites participated in a group discussion to solicit their perceptions of the project. The purpose of the grant, the principal's level of involvement in implementing the grant, issues of implementation, project impact on students and their families, and suggested changes to the project were the focus of the discussion.

Teacher Surveys. Teachers were also surveyed at the beginning of the project to determine their assessments of students' initial "comfort level" with using computers (same questions asked of students). Teachers were also asked to give their assessments of students' attitudes towards computers.

At the end of Year 1, teachers were again surveyed to determine their assessment of project impact on student behaviors including attendance, homework completed on time, motivation for learning, confidence in students abilities, etc. Information obtained in the initial survey and the end of Year 1 survey were used to evaluate desired outcomes of project Strand 1 and Strand 2.

Achievement Tests. One of the school districts administers the *Metropolitan Achievement Test –7th Edition (MAT7)* on an annual basis to all elementary school students. The MAT7 is a norm-referenced standardized achievement test. For the purposes of this evaluation, only total reading battery and total math battery normal curve equivalents were used in the analysis

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of increased achievement. The other school district involved in this project administered the *Iowa Test of Basic Skills (ITBS)* on a bi-annual basis. The *ITBS* is also a norm-referenced standardized achievement test. Since the district administers it on a bi-annual basis, scores are only available for third and fifth grade years. These data will be analyzed in the addendum to the final report.

Attendance Records. Fourth grade attendance records were reviewed for all students. Actual training did not begin until the second semester of fourth grade, so an analysis of attendance was made of first and second semester records.

Transiency Records. When available, transiency records were reviewed of the participants as they compare to all fourth-grade students.

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Year 1 Evaluation Findings

Section C: Year 1 Evaluation Findings

C.1 Strand 1: Information Technology Training

In Strand 1 the focus was on improving parent and student knowledge and use of computers and on increasing student and parent interest in computer technologies. The following table summarizes Strand evaluation activities. A detailed discussion of each desired outcome follows the table.

Table C.1: Outcomes, Data Sources, Goals, and Summary Findings for Strand 1

Desired Outcome	Data Source (See Appendix A)	Goal	Summary Finding
1. Students and parents participate in technology training	Training session attendance records	90% training session attendance	80% of families beginning the project completed at least 48 hours of training
2. Student knows computer software and its implementation	Initial student surveys; initial and post teacher survey	75% of students express comfort with computer	More than 80% of students comfortable with computer and software
3. Parent knows computer software and its implementation	Initial and post parent surveys	100% improvement in parent self-assessment of computer skills	All parents reported increased knowledge of computers and software
4. Students are interested in computer technologies	Initial and post student surveys; initial and post teacher surveys	All students express interest in computer technologies	Over 90% expressed interest in computers and over half reported increased use of computers for schoolwork.
5. Parents are interested in computer technologies	Initial and post parent surveys	All parents express interest in computer technologies	Over 90% expressed interest in computers and most families spent several hours each week working together on computers

"My dad has gone from not even knowing how to turn on the computer to using the Internet and reading email."

4th-grade student

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Year 1 Evaluation Findings

“One of the moms from the training became the resident trouble shooter of their housing complex because she was becoming skillful at using the technology.”

Eileen Abrahamson,
Project Trainer

Desired Outcome:

- *Students and parents participate in technology training with ninety percent of participants completing required number of training sessions.*

Finding:

- *Eighty percent of families beginning the project completed required training.*

The first outcome addresses parent and student participation as measured by their combined (total family) attendance at training sessions. Eighty percent of the original participants successfully completed 48 hours or more of required training sessions and family project. The remainder of participants initially committing to the program either dropped out or moved out of the two school districts.

As the end of Year 1 approached, several families were one to two hours short of the requirement and there was little opportunity to make up sessions. Project directors decided to reduce the number of required hours to 48 hours at that point. These data are reported in Table C.2.

Table C.2: Training Session Attendance Data

Training Status	Percent of Initial Participants (n=138) %
Students and parents completed Minimum of 48 hours of training	80
Family did not complete project requirements	14
Family moved out of district and did not complete training	04
Family was removed from program due to rules violation	01

Note: May not add to 100 percent due to rounding.

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Year 1 Evaluation Findings

Desired Outcome:

- *Students know computer software and implementation with at least seventy-five percent of students expressing comfort with computer*

Finding:

- *Outcome was met and exceeded.*

“Students gained confidence in themselves when other classmates would ask them for help with the computer.”

Elementary Principal

At the start of the project more than 80 percent of students reported they had moderate to high degree of comfort working with the machine. Clearly, participating students had access to computers prior to their involvement in this program (presumably at school). Not only did students generally feel comfortable with computers and software, they entered the program with positive attitudes about computers. They also had knowledge of how computers could help them. Students' prior knowledge and experience with computers emphasizes the value of providing access to computer technology at home. Most students had basic computer skills, allowing them to make use of the machines as soon as they received them. All students increased their computer competency as a result of their participation in the project. Initial Student Survey results are summarized in Table C.3.

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Year 1 Evaluation Findings

Table C.3: Initial Student Self-Assessment of Comfort with Computer (Fall 1997)

How comfortable is the student with:	Rated High Level of Comfort (4or5) %	Rated Medium Level of Comfort (3) %	Rated Low Level of Comfort (1 or 2) %
Power up & shut down a computer (n=135)	73	13	13
Use a printer (n=134)	72	09	19
Insert & use a CD-ROM (n=133)	60	07	33
Use a keyboard effectively (n=134)	59	23	18
Open, create and save a file (n=135)	54	18	27
Use a word processing program (n=131)	50	12	38
Use graphics & draw tools (n=133)	49	11	40
Manage information on a disk or file (n=135)	38	10	51
Work with and create a multimedia project (n=135)	31	14	56
Use a telecommunications service (n=133)	15	11	74

Note: Not all percentages add to 100 due to rounding

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Year 1 Evaluation Findings

At the beginning of the project, teachers were also asked if they felt students could accomplish computer-related tasks, such as powering up and shutting off a computer and keyboarding independently. In general, teachers reported that between 50 and 60 percent of participating students could perform skills independently, the exception being working with multi-media programs and equipment. Students reported approximately the same level of comfort with basic skills, and a higher percentage of students assessed themselves as being proficient in more complicated computer areas than did their teachers. Teachers also reported positive comments from students about the project and that student participants seemed eager and ready for this opportunity to learn. A summary of the initial teacher survey findings is reported in Table C.4.

"Students were more confident during computer lab."

Elementary Principal

Table C.4: Initial Teacher Student Computer Skill Assessment Survey (Fall 1997)

Students can do the following skills independently:	Students Reported as Proficient (n=115) %
Power up and shut off a computer	62
Use a printer	59
Use correct keyboarding	58
Use a word processing program to create a final document	57
Use a CD-ROM	41
Work with multimedia programs and equipment	06

BRIDGING THE GAP EVALUATION REPORT

Year 1 Evaluation Findings

“On the second year of the grant, when I was no longer working with the children, one of the children from the grant (who lived in the Chancellor Manor complex) would come to the homework center at Chancellor Manor (a Burnsville Area Learning Center program for after school) that I was working at after school and help the younger students use the computers.”

Eileen Abrahamson,
Project Trainer

In surveys conducted at the end of Year 1, teachers reported over half of the students improved their use of media and technology for classroom-related projects. Students reported more use of computers for homework, information gathering, writing, and communications. Teachers and students both reported improvements in homework completed on time, academic performance, motivation, and student confidence in their learning abilities. In Tables C.5 and C.6 student evaluation of computer use and teachers' perceptions of student behavior changes attributed to project are presented. These findings suggest that students have incorporated computers into their lives at school and at home.

BRIDGING THE GAP EVALUATION REPORT

Year 1 Evaluation Findings

Table C.5: Student Computer Use Survey During and After Training (Fall 1998)

Use of Computer	More %	The Same %	Less %
To find information for my other interests (n=80)	69	29	03
To write papers (n=80)	66	21	13
For homework, in general (n=81)	63	25	12
To find information for school assignments (n=80)	60	30	10
To write letters or notes (n=78)	54	32	14
To communicate with friends or family (n=78)	49	31	21
To get books from the library (n=78)	12	50	38
To communicate with my teacher (n=79)	11	52	37

"It is more fun to work with the computer now because I know more about it and what to do with it. I know how to use it for my homework."

4th-grade student

BRIDGING THE GAP EVALUATION REPORT

Year 1 Evaluation Findings

Table C.6: Teacher's Perception of Student Behavior Changes as a Result of Bridging the Gap Participation (Spring 1998)

"The teachers involved with this project saw increased academic achievement, in general, for students participating in the project."

Elementary Principal

Behavior	Improved (n=132) %	Became Worse (n=132) %	Stayed the Same (n=132) %
Use of media and technology for classroom-related projects	52	01	47
Confidence in own abilities	45	01	55
Motivation for learning	33	03	64
Satisfaction with own learning	32	02	66
Academic performance	27	05	69
Amount of family involvement	25	02	73
Amount of homework completed on time	15	05	80
Relationships with friends	10	01	89
Amount of parent-initiated communication with teacher	07	02	92
Amount of discipline needed	05	06	89
School attendance	02	02	95

BRIDGING THE GAP EVALUATION REPORT

Year 1 Evaluation Findings

Desired Outcome:

- *All parents know computer software and implementation as measured through parent self-assessment and trainer observation.*

Findings:

- *One hundred percent of parents reported improvement in their computer skills.*

“My mom gets excited because now she can use the computer at work.”

4th-grade student

When parent and student assessments of computer literacy are compared, parents reported considerably less confidence in their technology knowledge. Most parents reported being comfortable powering up and shutting down the computer and using the keyboard, and to a lesser degree, using a printer. But, high percentages of parents were generally uncomfortable with the other technology skills surveyed. Only about half of the parents reported being comfortable opening, creating, saving a file, and using a word processor. Parent respondents were most uncomfortable creating multi-media presentations and using graphics programs.

Compared with students, parents initially felt computers were complicated, made them feel uncomfortable, and seemed difficult to understand. However, survey data at the end of Year 1 indicated that all parents surveyed gained computer knowledge during the project (no parents claimed zero computer knowledge) and many reported an increased knowledge base from a beginning level to intermediate or advanced level.

Survey data indicated that parents were far less comfortable with their computer literacy than their children. Future programs like Bridging the Gap should note this “comfort disparity” between parents and students. Reasons for the disparity could be student access to computers at school and lack of parent access at work or home. If this is the case, the program’s premise of increasing access to technology as a means for increasing the computer as a learning tool for life-long learning may have merit. Initial and post-training parent survey results are reported in Tables C.7 and C.8.

BRIDGING THE GAP EVALUATION REPORT

Year 1 Evaluation Findings

Table C.7: Initial Parent Self-Assessment of Comfort with Computer Skills (Fall 1997)

How comfortable are you with the following:	High Level of Comfort	Medium Level of Comfort	Low Level of Comfort
	%	%	%
Power up & shut down a computer (n=144)	61	15	24
Use a keyboard effectively (n=144)	50	22	29
Open, create and save a file (n=143)	40	9	51
Use a printer (n=144)	39	18	43
Use a word processing program (n=144)	28	19	54
Insert & use a CD-ROM (n=144)	20	13	68
Use a telecommunication service (n=143)	16	12	72
Manage information on a disk or file (n=144)	16	14	61
Use graphics & draw tools (n=144)	12	12	76
Work with and create a multimedia project (n=144)	09	10	82

"My mom is in school and she uses the computer to do her homework at home now."

4th-grade student

Note: Percentages may not add to 100 due to rounding

Note: Low Level comprised of 1-2 ratings, Medium Level comprised of 3 ratings, and High is comprised of 4-5 ratings.

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Year 1 Evaluation Findings

Table C.8: Parent Self-Assessment of Computer Skill Level Pre-Post Training

Skill level	Skill Level (Fall 1997)	Skill Level (Fall 1998)
	(n=80) %	(n=80) %
No knowledge	31	0
Beginner	34	16
Intermediate	29	63
Advanced	06	21

"My mom learned keyboarding and how to use the computer."
4th-grade student

BRIDGING THE GAP EVALUATION REPORT

Year 1 Evaluation Findings

Desired Outcome:

- *Students are interested in computer technologies.*

Findings:

- *Nearly all students report interest in computer technologies.*

“My daughter uses the Internet to dig into subjects she is interested in.”

Parent

Initial student and teacher surveys indicate that participating students were very interested in computers and they appeared eager to learn more about them. Ninety percent of students reported in their initial survey that computers were interesting to them and they felt computers would help them with learning and school. At the project’s onset, teachers reported that over 90 percent were eager to learn.

Teacher survey findings at the end of Year 1 indicate that over half of the students improved their use of computers for school-related work (See Table C.7). Student survey data indicate that a majority of students used computers “more” for homework, to obtain information, and to write letters and communications (See Table C.6). Students’ attitudes are reported in Tables C.9 through C.11.

Student interest in computers should be considered as a requirement for program participation, rather than a desired outcome. It’s possible (or even likely) that student interest reported here was active before their participation in the Bridging the Gap Project and that access to computers at home enabled that interest to increase.

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Year 1 Evaluation Findings

Table C.9: Initial Student Attitudes toward Computers (Fall 1997)

Attitude	Percent Responding Positive (n=132) %
Computers will help me with learning & school	92
Computers are interesting for me	90
Computers seem important to my future	86
Computers are something I've wanted to learn or get better at	84
Computers seem logical and understandable to me	70
Computers seem complicated	30
Computers make me feel uncomfortable	10

“Several children rode the same bus to school each day. The principals experience was that the discussion upon arriving at school often centered on the crisis at home or on the bus; the project seemed to divert discussion to the computers and their training.”

Elementary Principal

BRIDGING THE GAP EVALUATION REPORT

Year 1 Evaluation Findings

Table C.10: Initial Teacher Survey on Students' Attitudes toward Computers (Fall 1997)

Student Attitude	Attitudes of Students Reported by Teachers (n=117)
	%
Is very eager to learn	92
Is hesitant to learn	06
Doesn't seem interested in computers	02

"Carlos has been helping others in the computer room. I have also observed him using 'computer lingo' quite confidently. This grant has had a positive effect on him. He loves having a computer at home."
4th-grade teacher

Table C.11: Initial Teacher Survey on Students' Perceptions of Project (Fall 1997)

Has student commented about what they are going to do or learn in this program?	% (n=116)
Yes (99% positive comments)	68 (79)
No	32 (37)

BRIDGING THE GAP EVALUATION REPORT

Year 1 Evaluation Findings

Desired Outcome:

- *All parents are interested in computer technologies.*

Findings:

- *All parents indicate interest and increased skills in technology areas.*

Parents, like their children, expressed high interest in computers (95 percent wanted to learn about computers or get better using them). Most parents indicated that computers were interesting to them and they saw the importance of computers in learning and in their future. Parent survey findings at the end of Year 1 indicate parents used the machines an average of 3.4 hours per week together with their children, and some parents spent twice this amount and more. Parents also reported that they used the computers for work, personal use, email, and Internet access. These data suggest that the training had an impact on computer interest and use.

Data gathered from parent focus group illustrates the change in attitude toward computers and technology (See Section E). Many parents discussed their initial fear of technology and their lack of confidence in learning about computers. They reported how the training changed their attitude and the role their children played in helping them understand and embrace technology.

“Now my dad can help me with my homework.”

4th-grade student

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Year 1 Evaluation Findings

Table C.12: Initial Parent Survey of Parent's Attitudes toward Computers (Fall 1997)

"I am learning how to actually use the computer for schoolwork."

4th-grade student

"I've become more self-disciplined-I can make things better and faster."

4th-grade student

Attitude	Percent of Parents Responding Positively (n=146) %
Computers will help me with learning and school	97
Computers are something I've wanted to learn or get better at	95
Computers seem important to my future	90
Computers are interesting to me	89
Computers seem logical and understandable to me	50
Computers seem complicated	45
Computers make me feel uncomfortable	26

Note: More than one parent from a family may have completed the survey.

C.2 Strand 2: Family Computer Use and Parent/Child Interaction

Strand 2: Family Computer Use and Parent/Child Interaction activities focussed on family use of computers and increased parent/child interaction as a result of access to the computers. Strand 2 activities were sequential to Strand 1 and designed to follow Strand 1 training activities. The following table summarizes Strand 2 outcomes, indicators, goals, and achievements. Following Table C.13 is a detailed discussion of each desired outcome.

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Year 1 Evaluation Findings

Table C.13: Family Computer Use and Parent/Child Interaction Outcomes, Data Sources, Goals, and Summary Findings for Strand 2

Desired Outcome	Data Sources	Goal	Summary Findings
1. Family members use computers	Computer Use Logs, Student, Parent, and Teacher surveys	All family members use computers	All family members used computers
2. Parent and child interact more often	Student and parent focus groups, post student survey	Parents and children interact on the computer at least 2 hours per week	On average, weekly parent/child computer interaction was 3.4 hours

Desired Outcome:

- *All family members use computers.*

Findings:

- *Parents and students report computer use by all members of the family.*

A sample of Family Computer Use Logs indicates that all family members used computers, with most sessions being one to two hours long. Parents often used the computer for Internet access, sometimes for several hours each day. Student computer use ranged from becoming familiar with Windows (e.g. launching programs, using peripheral devices such as CD ROM's, printers, and floppy drives, etc.) to playing games, to using the computer for homework. Computer Use Logs indicate that computers were used as "tools".

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Year 1 Evaluation Findings

“One of the fourth grade boys was not very happy about attending the training classes right after school. He wanted to go home and play. He had an 8th-grade brother, who at first asked if he could just come to the training instead of his younger brother. When I told him there had to be a fourth grade student involved, the older brother decided to come to the fourth grade training after school and sit with his younger brother. The older brother wanted his younger brother to become interested in computers so that he could have a good job when he grew up. He kept telling the children sitting near him how well a person skilled on the computer gets paid, and how many jobs there are for people with computer skills. The older brother’s involvement kept the younger brother on task and learning throughout the training.

Eileen Abrahamson,
Project Trainer

Fall 1998 Survey data also indicates that all family members used computers. Many students spent more than one hour each day and a small number of students reported spending more than 3 hours each day on the computer. About half used the computer less than one hour each day. Focus groups findings confirm the multiple users within families. Parents reported extensive computer use by older siblings and indicated that this had a positive outcome for academic achievement for older siblings.

Students reported using computers more often and for a wide variety of purposes including schoolwork, obtaining information for other interests, writing letters, and for communicating with friends and family. Computer use seems to have decreased students’ use of the library (checking out books). Also, students reported limited use of computers for games and “other” uses.

At the end of Year 1, parent survey findings indicate that a majority of families used the computers from five hours per week to more than ten hours per week. About one-third of families used them from one to five hours each week and a small percent of parents reported less than one hour total family computer use per week. Parents reported that students used computers most frequently (students reported that parents were primary users), parents’ use was second, and siblings used the computer the least (similar results to Student Survey).

Family members most frequently used the computers for homework and work, games, personal use, and Internet access. Interestingly, games were not a primary use for students. Survey and focus group findings suggest that families used the computers on a regular basis— an important goal of the Bridging the Gap Project. Survey results are presented in Tables C.14 through C.17.

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Year 1 Evaluation Findings

Table C.14: Parent Report of Number of Hours per Week Family Used Computer (Fall 1998)

Hours per Week of Computer Use	Percent of Families (n=59) %
Less than 1	05
1 to 5	29
5 to 10	39
More than 10	27

Table C.15: Student Report of Student Computer Use (Fall 1998)

Self-Reported Hours per Day on Computer	Percent of Students (n=81) %
Less than 1	51
1-2	41
More than 3	09

Note: Percentages may not add to 100 due to rounding.

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Year 1 Evaluation Findings

Table C.16: Parent Report of Family Computer Use (Fall 1998)

Computer use	Student (n=73) %	Parent/Guardian (n=81) %	Sibling* (n=73) %
Homework/work	77	33	42
Educational games	75	09	55
Video-type games	38	19	34
Personal use	34	65	21
Email	30	59	16
Internet	71	77	47

"This has helped the whole family."

Parent

*Note: Not all fourth grade students had siblings. Percentages are calculated from the total number of forms returned.

Table C.17: Student Report of Most Frequent Computer Users (Fall 1998)

Family Member	Used Most Often (n=81) %	Used 2 nd Most Often (n=81) %	Used Least Often (n=81) %
Parent/ Guardian	44	22	26
Siblings*	16	14	53
Me	40	52	04

Note: Not all respondents had siblings. Some respondents did not answer all items.

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Year 1 Evaluation Findings

Desired Outcome:

- *Parent and child interact more often (at least 2 hours/week).*

Findings:

- *On average, parents and children interacted at least 3 hours per week.*

Students were asked to rate various aspects of the project including the quality of the time they spent with their parents. Most students rated “time with parents” as “excellent” or “good”, suggesting the parent/child interaction was of a positive nature. About one-third of parents reported spending one hour per week working with their children on the computer, another third spent from two to four hours per week, and another third more than five hours each week. The average number of parent/child interactions on the computer was over 3 hours per week. These findings suggest that the project plan of involving the entire family in training and computer use is a source of increased parent/child interaction related to the child’s education. In addition, 41 percent of students reported the amount of time they spend with their parents increased as a result of this project (See Table C.18).

“A rather large family from one of the schools chose to come on Saturday mornings to training so that all the members of the family could get the computer training. The Saturday morning training took place at the Jr. High here in Burnsville. Each Saturday this family would all come – mom, dad, two older sisters, fourth grade student, and sixth grade brother. They would all sit side by side in the lab and discuss what they were learning.”

Eileen Abrahamson,
Project Trainer

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Year 1 Evaluation Findings

Table C.18: Student Self-Assessment of Project Impact on Behavior (Fall 1998)

Behavior	Improved %	Worse %	Same %
My use of media and technology for classroom projects (n=80)	75	03	21
My friendships (n=79)	44	04	51
My schoolwork (grades, projects, etc.) (n=79)	68	03	28
Satisfaction with my own learning (n=79)	65	0	34
How excited I am about learning (n=79)	63	01	34
Amount of homework I complete on time (n=81)	49	0	49
Amount of time I spend with parents (n=80)	41	05	53
How confident I feel about what I can do (n=80)	74	0	25
School attendance (n=80)	26	0	74
Amount of discipline I need (n=80)	24	01	74

Note: Percentages may not add to 100 due to rounding.

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Year 1 Evaluation Findings

Table C.19: Parents' Perception of Project Impact on Child's Behavior (Fall 1998)

Behavior	Improved %	Worse %	Same %
Use of media and technology for classroom projects (n=70)	80	0	20
Confidence in his/her own abilities (n=71)	73	0	27
Motivation for learning (n=72)	71	0	29
Satisfaction with his/her learning (n=70)	63	0	37
Academic performance (n=69)	58	0	42
Amount of homework completed on time (n=70)	41	01	57
Amount of time spent with parents (n=68)	37	01	62
Amount of discipline needed (n=70)	33	0	69
Relationships with friends (n=71)	23	0	77
School attendance (n=71)	13	0	87

"My daughter is spending less time watching TV now."

"My kid's schoolwork is less sloppy."

Parents

Note: Percentages may not add to 100 due to rounding.

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Year 1 Evaluation Findings

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Year 2 Activities

Section D: Year 2 Activities

Results of Year 2 activities will be included in the final report. Descriptions for Strands 3 and 4 are taken from the initial proposal and included here for the reader's information.

D.1 Strand 3: Linkages for Ongoing Support and Follow-up

This project capitalizes on established partnerships that include the Family Services Collaborative, Adult Basic Education, Early Childhood Family Services, Enhancing Student Learning Through Technology (ESLTT), and Frontier Communications. Participants will be provided support to ensure student and family success in the program via existing Family Services Collaborative Advocates. These advocates currently work with families in the participating schools, and will participate in several components of the project.

D.2 Strand 4: Large-Scale Access Strategies

Business, community, and educational leaders will collaborate to develop strategies for large-scale replication of this model to other communities and school districts. Feasibility will first be determined by success of Bridging the Gap under the optimum conditions of the current project.

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Year 2 Activities

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Global Outcomes

Section E: Global Outcomes

One of the goals of the Bridging the Gap project was to empower at-risk low income students and their families by giving them the technological access and training they will need to become lifelong learners and successful in the workforce of the 21st century. Several global outcomes were measured in hopes that links would be made between the project and school and work behaviors.

Global outcomes were measured at the beginning of the project and at the end of Year 1. It should be kept in mind that cause and effect is difficult to determine when so many variables are a part of reaching successful outcomes in the areas of academic achievement, attendance, and transience. Caution is advised in the interpretation of these the Year 1 findings. An attempt was made to discern the impact of the project through focus groups, surveys etc. The following data should be interpreted with those findings in mind.

In addition, it should be noted that technical training began in January 1998 and was completed by fall 1998. This is a short period of time when looking at academic outcomes. Therefore, an addendum to this report will summarize academic changes over two years. The following indicators, linked to activities in the four major strands, were measured (baseline versus end of project data) in Year 1 to determine project impact:

- Student achievement in reading and math;
- School attendance; and
- Transience (Family mobility).

Desired outcomes, data sources, goals, and summary findings are presented in Table E.1.

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Global Outcomes

Table E.1: Desired Outcomes, Data Sources, Goals, and Summary Findings for Global Areas of Impact

Desired Outcome	Data Source	Goal	Summary Findings
For Students			
1. Achieves academically	MAT 7 and ITBS Total Reading and Math Scores Teacher Survey Parent Survey Student Survey	One year's academic growth in reading and math	On average, all completing the study made one or more year's growth. Individually, 51% made one or more year's growth in reading and 62% made one or more year's growth in math.
2. Attends school	School Attendance Records	Rate similar to school district average	Students absenteeism rates are high and stay stable over the course of the project.
3. Completes homework	Teacher Survey Parent Survey	90% compliance	Teachers, parents, and students report an increase in homework completion for many participants.
4. Uses media resources	Teacher Survey Student Survey Parent Survey	100% participants increase use by at least 25%	Highest percentage of students report this as a behavior change due to the project
For Parents			
1. Parents are involved in child's education	School conference records Principal Focus Group	100% participation in conferences	83% of parents participated in the spring 1998 conferences.
2. Family remains in school attendance area	Record Review Parent Focus Group	No goal established	4 % of the original participants moved out of the attendance areas.
3. Parents seek work-related opportunities	Parent Survey Parent Focus Group	No goal established	25% of parents report a positive change in job situation as a result of the project.

"I read more."
4th-grade student

"We like to laugh when we work on the computer; we have fun learning new things."
4th-grade student

BRIDGING THE GAP EVALUATION REPORT

Global Outcomes

E.1 Student Academic Achievement Outcomes

Desired Outcome:

- *Students achieve at least one year's growth in reading and math.*

Findings:

- *On average, students who completed the study made one year's growth in reading and math.*
- *Individually, 51 percent of the students who completed the study made one or more year's growth in reading and 62 percent made one or more year's growth in math.*

Students in four of the six elementary schools completed norm-referenced standardized achievement tests in the fall of 1997. These were the students attending the school district that had a policy of annual testing. Students in the other two schools were given the test in fall of their third grade year and are not tested again until fall of their fifth grade year (fall 1999). Consequently, data are only available for approximately 60 percent of the participants. Results are presented for these students.

Caution should be taken when interpreting these findings as many factors influence an increase or decrease in achievement scores, including competent teaching, curriculum, student motivation, etc. These scores can be used to look for trends and when combined with the information provided by the parents, students, and teachers may be used to verify or confirm their perceptions of the project's impact on academic achievement.

Achievement test scores were compared for three groups: 1) students completing the required training, 2) students who entered the study but did not complete the training, and 3) all other grade peers in the four elementary schools who did not participate in the study. Normal curve equivalents were compared on the *Metropolitan Achievement Test-7th Edition* total reading and total math batteries. Only those students for whom

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standardized test scores were available for both fall 1997 and fall 1998 were included in the analysis.

On average, study participants made one year's growth from the fall the study began until the training ended. More study participants made progress in math than in reading, with 51 percent making one or more year's growth as measured by normal curve equivalents and 62 percent made one or more year's growth in math.

Study participants who did not complete the training (n=13-16), on average demonstrated lower levels of achievement in reading and math at the onset of the project. On average their reading scores improved more than one year and their math scores decreased over the course of the year.

Students who did not participate in the study (n=290-300) had little to no change in their NCE scores indicating one year's growth. These data are presented in Table E.2.

Table E.2: Achievement Test Score Comparisons for Study Participants, Study Dropout, and Study Non-participants (in Normal Curve Equivalents-NCE)

	Mean NCE Reading Fall 1997	Mean NCE Reading Fall 1998	Mean NCE Math Fall 1997	Mean NCE Math Fall 1998
Study Participants (n=71-76)	54.8	54.4	57.7	58.3
Study Dropouts (n=13-16)	48.0	50.8	50.4	47.0
Grade Peers Non-Participants (n=290-300)	59.5	58.7	60.7	60.8

Note: The size of each group varies greatly and should be taken into account when reviewing the data. Number of participants vary do to data being unavailable. Non-Participants include those students for whom there is fall 1997 and fall 1998 data available.

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Teacher, parent, and student survey findings support that a high percentage of students changed their academic performance as a result of the project. Teachers reported that 27 percent of the study participants improved their academic achievement as a result of the project. Sixty-nine percent of the students reported that they received better grades and were better students as a result of the project. Parents concurred, with over 50 percent reporting increased academic achievement due to Bridging the Gap participation.

E.2 Student School Attendance

Desired Outcome:

- *School attendance would be similar to the school average.*

Findings:

- *There was little to no change in attendance patterns for participants during Year 1.*
- *Attendance patterns were similar to non-participants.*

On average, project participants and non-participant grade peers missed the same number of days during the first semester of fourth grade. Both participants and non-participants were absent more during the second semester. Reports from school district administrators indicate that there was a contagious flu circulating during the second semester that affected attendance rates for all students in the school districts.

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E.3 Student Homework Completion and Use of Media and Technology for Classroom Projects

“Katy word processed many of her writing assignments and had things turned in on time.”

4th-grade teacher

Desired Outcome:

- *Ninety percent compliance in homework completion.*
- *All participants increase media and technology use for classroom projects by at least 25 percent.*

Findings:

- *Forty-nine percent of the students reported improved homework completion due to participation in the project.*
- *Teachers reported 15 percent of students completed more homework on time due to their participation in the project.*
- *Forty-one percent of parents reported increased homework completion due to their child’s participation in the project.*
- *Three quarters of the students reported increased use of media and technology for classroom projects.*
- *Teachers reported over half of their students increased their use of media and technology for classroom projects.*
- *Eighty percent of parents reported their child’s use of media and technology for classroom projects increased.*

Survey findings suggest that participation in the Bridging the Gap Project had an impact on homework completion for some students. Parent focus group findings suggest that students had a more positive attitude toward school and their schoolwork. Parents and students both reported access to the computer and the Internet motivated them to do a better job and gave them a sense that they could produce a better product. Although teachers did not report as high a percentage completing their homework due to the project, they did report that a high percentage of students now used the computer for completing classroom assignments. Findings suggest that the quality of work completed may have been affected by computer access and may have been interpreted

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as more homework completed in the eyes of children and their parents. Producing a quality product was one of the ways parents perceived the “playing field” between the “haves” and “have-nots” being leveled, and may be a positive unintended outcome of the project.

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E.4 Parent Global Outcomes

"A mom also began taking courses at the Vo. Tech. for computer technology, because she recognized that she was able to figure out how things were working. This mom was on public assistance, and began to see that she could actually support her family if she had computer skills."

Eileen Abrahamson,
Project Trainer

Desired Outcomes:

- *One hundred percent participation in spring parent teacher conferences.*
- *Parents seek work-related opportunities.*
- *Families remain in the attendance area.*

Findings:

- *Eighty-six percent of participating parents attended spring parent-teacher conferences.*
- *Seventy-seven percent of parents report the project having a positive impact on the use of technology in school or on the job.*
- *Twenty-five percent of parents report positive changes in job situation as a result of participation in the project.*
- *Only four percent of the original participants moved out of the attendance areas.*
- *Parents report considerable changes in their lives due to participation in the project.*

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Table E.3: Parent's Self-assessment of Personal Changes as a Result of the Project (Fall 1998)

Action	Has Improved %	Has Become Worse %	Has Stayed the Same %
Use of media and technology for personal use (n=70)	93	0	07
Use of technology in my job or at school (n=70)	77	0	23
Confidence in my abilities (n=71)	76	0	24
Awareness of my child's educational needs (n=71)	61	0	39
Interaction with fourth/fifth grade student (n=72)	51	0	49
Awareness of programs and services available at my child's school (n=71)	48	0	52
Job situation (promotion, new job, etc.) (n=68)	25	0	75
Communication with child's teacher (n=72)	24	0	76

"I have more respect for my kids and what they have to know to be successful."

Parent

Findings from focus groups suggest that Bridging the Gap made a considerable impact on parents in many areas. Parents were quite emotional about the benefits of having a tool they believed was beyond their reach. They discussed the role the training had in facilitating a positive relationship with their child, the importance of computer access for older siblings, the impact on both parent and student confidence. More directly, over 77 percent of parents reported the project had affected their use of technology on the job with 25 percent reporting specific changes to their job situations including promotions and new jobs.

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“One of the lap top families had a very strained relationship with the school. They were surprised when I called them and encouraged them to participate in the grant. Throughout the training they were very good about attending all the training classes. Their fourth grade daughter attended all of the children’s classes and both mom and dad attended the evening and Saturday classes. Around March the father (who worked as a trash collector) shared that he had collected over 500 boxtops for education to donate to the school. He said he had all of the guys looking through the trash and saving them for him. He said he felt he just had to give something back for all that was given to him and his family.

Eileen Abrahamson,
Project Trainer

Principals reported the project had affected the home-school dynamic for some families who had heretofore been alienated from the schools. They related stories of parents who came to them in tears expressing their gratitude for the opportunity to be involved in this project. They also had some parents who felt they needed to “repay” the school through increased involvement and volunteering at the elementary school.

The family stories are quite moving as many saw this project as a ticket to a better life for them and for their children. Since these two school districts have a wide spectrum of socio-economic groups, parents were well aware of the discrepancies in opportunities for their children due to limited income. What they were not aware of was the role technology plays in future success. After being exposed to the computer and technology, they discussed how a home computer was a necessity if children were going to have equal opportunities in the educational world.

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Qualitative Findings

Section F: Qualitative Findings

The following is a summary of information obtained during focus group sessions conducted with parents, students, and principals involved in the Bridging the Gap Project in June, 1998. This summary includes a report of changes to participants identified during the focus group sessions and participants' suggestions for improvements and administrative involvement in the project.

Focus groups were conducted and analyzed using guidelines from Richard A. Krueger's (1994) *Focus Groups: A Practical Guide for Applied Research*. Six focus groups (one at each elementary school) were conducted with groups of parents and six focus groups conducted separately with groups of participating students. One focus group was conducted with principals from four of the six elementary schools and the training supervisor. Groups consisted of 6-12 participants and lasted from one to two hours. Trainers were provided with criteria for focus group participant selection from the evaluator. The findings are presented below and have been included in the preceding discussion on reaching desired outcomes within the project strands.

F.1 Most Helpful Aspects of the Project

Parents were asked to report on what was most helpful about the "Laptop" Project for their children and for them. Their responses fell into five general areas for both the children and for the parents.

- Increased computer literacy;
- Improvement in school/job skills;
- Better use of time;
- Increased self-confidence, self-esteem;
- Increased communication (Internet, email etc.).

"The kids involved in this project don't feel left out because they have what other kids have and know what other kids know."

Parent

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Parents also reported positive changes in their child's behavior that they attributed to the project including increased patience, responsibility, and knowledge of the world. They also reported changes to themselves that included being more aware of their child's work.

F.2 School-related Differences in Children

Parents, students, and principals all reported changes in school-related behaviors. The changes fell into three areas:

- Learning outcomes;
- Study skill outcomes; and
- Motivation outcomes.

Parents reported their children were getting better grades, more interested in learning, and motivated to learn. They could cite specific examples of how their children had changed, including spending more time reading or doing homework. They noted that the children could now be proud of their work, as they were turning in papers and projects that were similar to their peers who had computers in their homes. Principals reported improved schoolwork and academic achievement for many of the participating students.

Students reported that they were using the Internet to access information, their study skills had increased, that "homework was now fun", and that they read more. There was a general sense that having the computer had impacted their studies and their enjoyment in learning.

F.3 Behavioral Differences in Children

While changes in academic outcomes were clearly identified by parents, students, and principals, other changes were also observed and found to be very important to the children and their families. These changes fell into four categories:

- Child's use of time;
- Attitude/Self-esteem;
- Discipline; and
- Social skills.

"This has helped everyone in our family be better at problem solving."

Parent

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In all cases the changes observed by parents were positive. Changes ranged from decreased television viewing to an increase in positive social behaviors. They noted their children had increased self-esteem and motivation. The impact of the child being the “reason” the family had a computer seemed to change family dynamics in a positive way for many of the families. The child was bringing something into the family that resulted in everyone being pleased.

Students echoed their parents in reporting “feeling smarter”, becoming more self-disciplined, decreasing their boredom, “feeling proud.” Some students reported that having the computer had changed their whole life.

Principals noted changes in discipline. For example, one child prior to participating in the project had gone to the principal’s office every day for discipline reasons. After joining the project, he had not visited the office once. Principals also noted changes due to socio-economic factors. At one school a principal noted the change in conversation as the children came off the bus in the morning. While in the past children’s conversation had often centered on a crisis within the home or neighborhood, now students came off the bus discussing a computer or technology issue.

“One child went from being in the office every day for discipline problems, to not being in the office all year long.”

Elementary Principal

Principals also noted that there had been concern that the project’s criteria of being “low-income” may stigmatize the children; the opposite appeared to be the case. Students felt special being involved in the project and having access to the computers; they did not see themselves as poor. Parents also noted this attitude and discussed how having the computer had leveled the playing field for their child so he/she could compete like other middle-class children.

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F.4 Changes to Parents

Parents and children reported many changes to the adults involved in the project. These fell into five categories:

- Computer skills;
- Job-related changes;
- Home-use related changes;
- Self-confidence/Self-esteem; and
- Family involvement in education.

"Families expressed their appreciation for the opportunity to be involved with the parents to principals. Many were moved to tears when explaining what the project had meant for their families."

Elementary Principal

Parents told of being promoted or pursuing new employment opportunities due to the training received through the project. Some had found doing their current job easier because they had the computer skills necessary to do it better. A few had returned to school and found having the computer affected their use of time. They could do research from home and still be with their children rather than having to be at a library or other location. Students provided similar answers when asked how their parents had changed. They discussed how parents had returned to school or were working at home.

Parents were also using the computer and the technology provided for entertainment or personal use. Several parents had used the Internet to plan road trips, communicate with relatives as far away as India, and discover information about their hobbies.

Just as parents reported increased confidence in their children, several parents discussed how their confidence had increased due to the project. This manifested itself in different ways. They had more confidence in dealing with their children and their academic needs and they had more confidence in their abilities to tackle a new skill. Many discussed how surprised they were that they could master the computer when they had been so afraid of it prior to be involved in the project.

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Principals reported changes primarily in the area of family involvement. One family was reported as going from “uncooperative to supportive of the schools.” In another case a parent volunteered to mentor a child whose parents were not following through with the project requirements. They noted increased participation in parent/teacher conferences. In many cases parents thanked principals for the opportunity and told them how important the project had been to their lives. Principals observed a change in attitude toward school for many families who had been previously alienated from school.

F.5 Parent-Child Interaction

Parents and children reported increased time together as a result of the project. This time was spent at the training or at home through talking about the computers, learning together, playing computer games, completing homework, or conducting research. Both parents and children discussed how the children often taught the parents computer skills resulting in a positive change in their relationship.

There were also some negatives in this area. Some children reported parents spending what they considered to be too much time on the computer and not enough time with them. A few others reported parents who denied them access to the computer because they might break it.

“One family went from totally uncooperative with the schools to supportive of the schools.”

Elementary Principal

F.6 Focus Group Summary

The focus groups illustrated the positive impact this project has had on children and their families. Some parents were moved to tears when discussing the impact of the project. While learning the computer skills resulted in many employment and personal outcomes, equally as important were the changes to the parent and child’s self-esteem and motivation to learn. Both parents and children had more confidence in what they could accomplish. Many reported that the project had been a life-changing experience for them. It had opened a world they did not know existed or if they did know, they did not believe it would ever be open to them. Children and parents discussed how the project had made them feel equal—that they had what people of affluence had in their homes.

“Parents expressed how the project had given the families a new sense of hope for their futures.”

Elementary Principal

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"I think having the computer has made Juan's family come to school more often. Juan also seems more proficient on the computer since he has become part of the grant."

4th-grade teacher

The focus group results suggest the project has been highly successful in meeting many of the desired outcomes, with several positive unintended consequences.

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Section G: Conclusions

Bridging the Gap was a highly successful project that met or exceeded most of its goals. The project's thesis was that if low-income families were provided technology hardware, software, Internet access and training within a nonthreatening, supportive environment, the gap between the "haves" and "have-nots" would be lessened. The result would be better outcomes for students and their families. The findings from the evaluation support the relevance of the thesis. Parents and students who had little to no access to technology increased their skills, and in many cases changed their lives. The impact of the project was dramatic and must be considered, as public and private groups examine bridging the economic and educational disparities in American society.

Parents and students alike reported dramatic changes in their lives including job promotions or job entry, increased student academic success, increased confidence and motivation. In addition, participants gained critical technology skills necessary for entering the 21st century. Students and parents did meet the following outcomes over the course of the first year of the project:

- Over three-quarters of the project participants completed the training requirements.
- The majority of parents and students increased their comfort with computer technology.
- Nearly all parents and students reported increased interest in computer technology.
- All family members benefited from the computer with siblings and parents of the fourth grade participants using the computer for work or school related tasks.
- Parents and their children interacted more as a result of the project with both reporting the time as a positive outcome.
- On average, all students completing the study made one or more year's growth in reading and math.

"Now my child has access to what other kids have. We would never have been able to afford this and it has opened a new world to us."

Parent

"It has changed my whole life, so far."

4th-grade student

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- On average, participating students attended school at the same rate as all other grade peers.
- Parent, student, and teacher reports suggest the project had a positive impact on homework completion and use of technology for schoolwork for many participating students.
- A quarter of participating parents found new or better employment as a result of the training.
- Teachers and principals reported many parents who had been alienated from the schools became involved due to the project.

In addition to the stated desired outcomes of this project, several unintended outcomes were reported as a result of Bridging the Gap Project. These outcomes have import, as they may impact the school performance of elementary students with backgrounds similar to the study participants. These outcomes were in the areas of:

- Educational Relevance;
- Motivation;
- Confidence;
- Social Standing; and
- Family Dynamics.

G.1 Educational Relevance

One of the unintended outcomes was an increased awareness of parents of the world in which their children will be operating as adults. Many parents talked about how they had learned to appreciate the complicated world their children were entering and had gained a greater appreciation for education and the relevance of technology. Many teachers noted that participants' parents were more active in school and took a greater interest in their child's education as a result of the project. This interest seemed to stem from an understanding that their child might have a chance to "move up" in the world if given an education that includes technology. Many parents who may have been resigned

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to their child having fewer opportunities saw that education might make a difference now that they too had access to technology.

G.2 Motivation

Qualitative and quantitative findings suggest that parents, students, and siblings experienced increased motivation in many areas of their lives. These included school completion, work opportunities, and leisure activities. A high percentage of students and their parents reported their children being more motivated to complete school work, read for leisure and use the computer for learning tasks versus game-related activities. Parents discussed how they used the computer to plan trips, increase work skills, communicate with family, and complete volunteer responsibilities. They noted that the computer made these tasks easier and more fun.

G.3 Confidence

It may be expected that participants' confidence in computer skills would increase due to the project. What was unexpected was the increased confidence parents and students reported in all areas of their lives. Parents were quite eloquent in discussing how they felt better about themselves because they now had the skills so often being discussed in the media. They could converse in a knowledgeable manner about cyberspace and feel confident they had entered a world unavailable to them in the past. The lack of availability had made them feel less than others and less capable. Students also noted the increase in their confidence and teachers reported that many students demonstrated increased confidence in their computer abilities and in other areas of their school life.

G.4 Social Standing

Somewhat related to the confidence factor is the change in social standing. Being connected to the cyberworld is a symbol of affluence or job status. Many of the parents discussed how they had been left out of a world that was increasingly passing them by. They did not see any route to entering the world of technology because they would never be able to afford the tools,

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nor did they have the confidence they could learn the necessary skills. The training and the home computer put them on a “level playing field” with those of more affluence and professional status. As a result, they believed that the nature of cyberspace lessened the gap between the “haves” and “have-nots” because the Internet is unable to discern their economic status and they are able to access the same information as all other citizens.

Teachers reported how students who rode the bus from government-subsidized housing often would get into fights before arriving at school. They saw a change in behavior for many students as they began to discuss technology issues and presented a pride in their knowledge and equal access. Students discussed how good it felt to be like the other kids who had computers at home and how their work could now look “good.”

G.5 Family Dynamics

Parents were surprised at how the availability of the computer changed the dynamics among the children. The fourth-grade student took on an elevated role in the family because he/she had brought a treasure into the home. The role was positive for many children who had experienced conflicts with their siblings and now had a bargaining card within the family. Parents also reported less fighting among siblings as they shared the use of the computer to play games or search the Internet.

The dynamics between the parent and child also changed, as the fourth grader often became the technology teacher to the parent. The change in roles resulted in the child being the teacher and providing something of value to the parent. For most families, this was not the usual method of interaction.

G.6 Participant Suggestions for Improvement

Parents and students rated the project high in nearly all areas. The only area of difficulty was in the hardware. Considerable support had to be given, as the hardware was not configured correctly from the company. Delays and downtime were the consequences of the hardware problems. The trainers adapted to the problems, but spent more time than desired on hardware issues that could have been avoided had the computer company provided the correct product.

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Parents had suggestions for how a project such as this could be improved. First, they strongly advocated for the government to continue funding such projects. There was widespread belief that this would make a difference in the lives of their children and of the parents that would result in benefits to society at-large. They articulated that this project was worth the investment. Parents recognized that not all persons in need could receive a computer for training. They suggested a sliding scale or a leasing program be available through the school districts. Key to the success of this project was access to the Internet; they also suggested that the school districts and companies partner to develop strategies for continued access for low-income families.

Parents were adamant in their belief that this project was life changing. Therefore, finding a means for other families in their positions to have this experience was critical to future education and business planning. They believed that the success of this project was in the parent-child training. Just giving low-income families computers would not result in the success experienced by these families and just providing training would not result in success. *The combination of training and home computer access was central to the project's success and to students and parents meeting desired outcomes.*

The success of this project illustrates the potential strength when private and public resources come together to bridge the technology gap. Frontier Communications played a critical role by providing Internet access to families who would not otherwise be able to afford it. The grant monies provided by the federal government provided the necessary hardware and training services resulting in the participants reaching the desired outcomes. The school districts provided qualified trainers and a well-integrated technology system within their school districts. The next step in public policy discussion must be in replicating this project in a large scale. The outcomes of this small-scale project are dramatic and worthy of large-scale consideration by both public and private entities. Many school districts around the country are providing the necessary technology skills to students. The findings from this project suggest that unless those skills are used and enhanced within a home environment, they may not have the impact that is needed. Therefore, public policymakers should consider strategies for providing computer access and

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training in a similar manner within school districts that have already developed their technology infrastructure. The benefits may be far reaching for not only the elementary students involved, but also their parents and siblings.

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Appendix A

Appendix A-Technical Services, Hardware/Software

School districts 191 and 196 are educational technology leaders in the state of Minnesota. Both districts have extensive technical resources and successful technology integration curriculums to draw upon. The school districts use state-of-the-art file servers, data routers, and networking services offering high speed Internet and district-wide email access to every office, media center, and classroom via T1 lines. Software, hardware, and local and wide area networks are similar and compatible with existing local, county, and state service systems.

Industry standard Compaq laptop computers (Pentium 100 MHz processor, color screen, 16Mbyte RAM, CD-ROM drive, 810 Mbytes hard disk), with modems, printers, and software were provided to the project families. Dial-up access to both school districts' wide-area networks was established for access to the Internet and email, and fourth grade web pages were constructed to offer interactive homework and project-based options. The Microsoft Office 97 Suite, Hyperstudio, and Netscape were installed on all computers. In addition, a software library consisting of English as a Second Language (ESL), GED, and vocational skills was established for family checkout.

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Appendix B

Appendix B-Description of School Districts and Schools

The two school districts selected for this project provide an excellent environment to implement this project which addresses technological disparities. Minnesota Independent School District 196 (Apple Valley, Rosemount, Eagan), located in the southeast Minneapolis-St. Paul Metropolitan area, is the fourth largest school district in state. It comprises all or part of seven communities and two rural townships, serving more than 27,000 students in eighteen elementary schools, six middle schools, and five high schools. The district currently grows by 800 students each year and covers over 110 square miles. Neighboring Minnesota Independent School District 191 (Burnsville Eagan, Savage) encompasses approximately 37 square miles and serves 11,500 kindergarten through twelfth grade students in ten elementary and five secondary schools.

Six elementary schools in these two districts were chosen for this study where large disparities exist in student access to technology at home. Both districts have extensive classroom access to computers, software, and the worldwide web and offer comprehensive training programs.

The six elementary schools serve children in kindergarten through fifth (or sixth) grade. The schools' enrollments range from 567 to 691 students. Approximately a quarter of the students receive free or reduced lunch, with the range being from 19 percent to 36 percent.

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Appendix C

Appendix C-Key Personnel

Project Director: Denise Griffith

Denise Griffith was the technology coordinator for school district 196. She is currently the Manager, Systems and Programming, Information Systems at the St. Paul Companies in St. Paul, Minnesota. In addition, Minnesota Governor Ventura has recently appointed Ms. Griffith to the Minnesota Technology, Inc.

Ms. Griffith's experience includes the leadership and implementation of large-scale technology improvement plan for school district 196. During her tenure at the school district, the citizens and the school board designated technology as a high priority. She implemented a large-scale improvement plan that included the engineering and implementation of the school district Wide Area Network, high speed Local Area Networks for each school and an improved telecommunications system and deployment of 1000 workstations across the district.

In addition to these responsibilities, Ms. Griffith was instrumental in proposing and receiving a \$750,000 state grant to train area teachers on integrating technology into their classrooms. She developed and expanded upon a teacher academy that provided hands-on training to teachers from three school districts. These efforts provided the framework for the Bridging the Gap proposal.

The Bridging the Gap concept was conceived by Ms. Griffith and she directed its implementation within School district 196.

Project Co-Director: Steve George

Steve George is the Director of Planning and Information Systems at School District 191. He has spent considerable time in curriculum development and coordination and has chaired the school district's language arts and technology committees. In addition, he has served as a technology trainer and consultant to several school districts throughout Minnesota. Currently, all technology support services within the school district are under the supervision of Mr. George.

Project Coordinator: Penny Damlo

Penny Damlo is the technology coordinator for School District 191. She coordinated the day-to-day operations of the Bridging the Gap Project. Her duties included interface between the two school districts, supervision of trainers, hardware support supervision, and record keeping.

Trainers: Andrew Baldwin and Eileen Abrahamson