

THE IMPACT OF
PLATO Learning, Inc.
TECHNOLOGY

in
**Hawthorne Elementary/
Junior High School
Hawthorne, NV**

CRF and ASSOCIATES, INC.
March 2004

Table of Contents

Executive Summary	3
Introduction	4
About Hawthorne Elementary/Junior High School	5
About PLATO Learning, Inc.	6
About Orion	6
About the Study	7
Research Tools	8
Focus Group Findings	9
Teacher Expectations for the Technology Project	9
Impact of Staff Development on the Technology Program	10
Teachers' Focus Group at the End of the 2002-03 School Year	12
Teachers' Focus Group Following Fall 2003 Semester	15
Student Focus Group	17
Student Focus Group #2	18
Parent Focus Group	21
Survey Results	23
Teacher Survey	23
Administrator Survey of Student and Teacher Usage	26
Administrator Survey of Technology Integration	27
Student Acquisition of Technology Skills	29
Findings	30
Recommendations Resulting from Exit Conferences	32
Conclusion	33

Executive Summary

This report outlines the experiences of Hawthorne Elementary/Junior High School as the staff strives to increase student performance and prepare students for a rapidly changing world by adopting a technology-based approach to teaching and learning.

In selecting the PLATO Technology program, Hawthorne provided students, teachers, administrators and parents with regular access to computers and the Internet. During the course of the study, NetSchools was purchased by PLATO Learning, Inc. Therefore, the platform is referred to in this report as PLATO.

As individual school reports indicate, use of the PLATO solution:

- Increased professional competencies of teachers and administrators in using technology to accomplish educational objectives.
- Increased access to and acceptance of technology and appropriate support.
- Increased technological and information literacy of students.
- Increased use of technology to help students reach challenging academic standards.
- Increased student engagement in learning activities.
- Increased use of technology to facilitate instruction that meets the needs of students with different learning styles and skill levels.
- Increased dialogue between school and parents to make technology more accessible to the community.
- Increased academic performance of students.
- Assisted with the implementation of the No Child Left Behind Act.

The results are based on surveys of the instructional leader at the Hawthorne Elementary/Junior High School, i.e., the principal, who used modified versions of instruments developed by the SouthEast and Islands Regional Technology Consortium (SEIR·TEC) for teachers to assess student and teacher use of technology. The authors adapted instruments from the PLATO Technology Program's Professional Development Services and conducted focus groups. They also examined a wide variety of data provided by the schools, including scores from various standardized and state assessments, to illustrate progress.

The surveys showed growth on more than two-thirds of the measures for both students and teachers, based on the administrators' perceptions. This encompassed not only actual usage of technology applications but also attitudinal shifts. While further study is necessary to assess the long-term impact of implementation of the PLATO program, these preliminary findings suggest that the program provides a usable framework for integrating technology into K-12 schools that has a positive impact both on student performance and school community involvement.

Introduction

On January 8, 2002, President Bush signed into law the No Child Left Behind Act of 2001 (NCLB). This new law represents his education reform plan and contains the most sweeping changes to the Elementary and Secondary Education Act (ESEA) since it was enacted in 1965. It changes the federal government's role in kindergarten-through-grade 12 by asking America's schools to describe their success in terms of what each student accomplished. The act contains the President's four basic education reform principles: stronger accountability of results, increased flexibility and local control, expanded options for parents, and an emphasis on teaching methods that have been proven to work.

School systems across the country are using innovative instructional strategies and professional development drawn from scientifically based research to help students attain the knowledge and skills they need to meet higher state standards and the increased demands of today's workforce.

Elementary and secondary school systems, as well as colleges and universities, are spending increasingly more money on instructional technology. Last year, educators spent more than six billion dollars in supporting technology initiatives. These initiatives have increased access to technology. Today, there is slightly more than one computer for every five students. The ratio of students to an Internet-connected computer is almost as good.

Nonetheless, parents, teachers, administrators, school boards and legislators across the country are concerned about the effectiveness of technology use in schools, and homes. They are interested in how best to integrate technology into instructional strategies. If federal, state and local resources for technology are to continue to increase, the effectiveness and impact of technology and its various uses must be prominently demonstrated.

Educators must think broadly about fully integrating technology into the school community and, by extension, the community at large. Linking technology with instructional objectives to increase student performance on state assessments and other standardized tests is an important beginning. However, used creatively and strategically, technology also contributes to other goals and positive educational outcomes, such as developing critical thinking skills, facilitating research abilities, learning special applications and using e-mail to communicate with experts and other students around the world. Schools have a tremendous opportunity to teach community members to use technology as a tool to enhance learning in and beyond the classroom walls.

In order to measure more comprehensive uses of technology, traditional practices for measuring the impact of technology in education need to be broadened. Information is needed not only on the skills and knowledge that students gain from using technology but also its impact on teacher methodology, organizational change and outcomes at different stages of implementation. Input from teachers, students, parents and administrators is crucial as we evaluate the impact of technology.

In this study, CRF and Associates examined the impact that PLATO technology made at Hawthorne Elementary/Junior High School. This report is a summary of the findings.

About Hawthorne Elementary/Junior High School

Hawthorne Elementary/Junior High School is located in Hawthorne, Nevada, a small, rural town in west-central Nevada near the California state line. Las Vegas is 300 miles south; Reno is 140 miles north. Hawthorne is one of four schools in the Mineral County School District.

Hawthorne serves 453 students in grades K-8, some of whom are bused 30 miles or more each way from other parts of Mineral County. The student population is 65% white, 15% African American, 10% Latino, and 10% Native American. Hawthorne is a Title 1 school, and 19% of students participate in special education programs.

Hawthorne is divided into three units -- primary, elementary, and junior high. One principal oversees all three units. Additionally, all three units share an attendance secretary, the library, a library aide, and the cafeteria. Student support personnel, such as Title I and special education aides, work in all three units.

The superintendent is the educational leader for the district and is responsible for staff development. The school district's computer systems engineer is responsible for the installation and maintenance of the hardware, software, and network capabilities in the building.

Prior to the implementation of the PLATO Technology, there were 84 computers in Hawthorne Elementary/Junior High, all of which had Internet access. The student to computer ratio was 4:1. Computers were located in the technology lab and the library. At least one computer was available in each classroom, used primarily for the Accelerated Reader Program and the teacher's data management. In the school's 2001-2002 annual performance report, technology was identified as an essential part of enriching student learning and providing a successful learning environment.

Before PLATO, teachers at Hawthorne noted that students used computers mainly to play games. Teacher use of computers was inconsistent at best. Some teachers used computers to make their lesson plans, but few used computers to prepare materials for their students. Teachers identified technology literacy and the lack of training as their biggest barriers.

Staff members expressed a desire to use technology to engage students, to bring their subject matter to life, and to give their students more access to resources. They wanted students to expand their repertoire of computer skills beyond those required for games. Teachers also anticipated being able to work with students on the computer, guiding them through interactive activities using the LCD projector.

Teachers recognized that they needed "tons of staff development" in order to accomplish their lofty goals. They expressed a willingness to attend training before the school year began and during vacations, as long as the training met their individual technology needs and helped them integrate technology use into their teaching.

Finally, teachers saw the PLATO program as an opportunity for students in grades 6, 7 and 8, the target population, to develop confidence and to empower themselves by gaining access to a world of information. They also anticipated that students would share their technology knowledge with members of their family and community.

About PLATO Learning, Inc.

For more than 40 years, PLATO® Learning, Inc. has been a leading provider of computer-based and e-learning instruction for kindergarten students through adult learners, offering curricula in reading, writing, math, science, social studies, and life and job skills (PLATO Instructional Solutions). The company also offers an innovative assessment and accountability product line (PLATO Assessment and Accountability Solutions) and standards-based staff development (PLATO Professional Services). With thousands of hours of objective-based, problem-solving courseware, plus assessment, alignment and curriculum management tools, standards-based curricula facilitate learning and school improvement, helping schools meet the requirements of *No Child Left Behind*.

PLATO Learning acquired NetSchools, Inc. on May 8, 2002. NetSchools was founded on the principle that all children deserve an education that meets their individual learning needs and fulfills the age-old dream of giving them the one-to-one support they need to achieve their greatest potential. NetSchools was the pioneer in one-to-one e-learning and accountability solutions for both transforming and reforming the nation's schools.

The company offers three wireless laptop solutions for schools. Constellation™ includes a wireless laptop computer for most students and teachers for home and school use, and a local wireless network that allowed high-speed connectivity. StarClassroomSM provides wireless student laptops on a mobile cart, and StarTeacherSM provides every teacher with a printer and wireless laptop.

About Orion

In addition to providing a laptop for every student and teacher for school and home use, two other essential components for technology integration must be addressed in order to improve student achievement, namely, accountability to standards and staff development. To accomplish this PLATO provides Orion.

PLATO's Orion is an integrated curriculum management and assessment system for schools. It provides schools with instructional management tools to facilitate achievement, alignment, assessment and accountability for students, teachers, parents and administrators. Orion is a web-based application that allows teachers to match a specific objective within their state standards to over 47,000 pre-screened, correlated educational web pages, as well as to a school's existing software programs and textbooks. In addition, these searches can be immediately applied to a lesson plan template, with assignments delivered directly to students and their parents via an integrated calendar tool.

With the Orion assessment tool, teachers can test their students online and, based on the results, the students will receive immediate individual academic assistance plans, including remedial activities drawn from a database of correlated resources. In addition, PLATO provides extensive professional development services to ensure that teachers understand and are comfortable with the capabilities of the technology.

PLATO makes the claim that these professional development services are designed to ensure systemic change within a school's environment. Each school begins with an implementation plan, followed by the gathering of the necessary school resources to place within the Orion system so teachers will have a clear picture of all the resources available to them to execute standards-based lesson plans and assignments, as well as assessments. A comprehensive professional development plan is then formulated to help teachers utilize Orion for lesson planning and creation of student activities, as well as utilizing the assessment options within Orion.

About the Study

The purpose of this study is to present a summary of the impact and benefits of the PLATO technology in the Hawthorne Elementary/Junior High School. Throughout this report, the following questions will be addressed to assess the extent to which the school has achieved its objectives for the use of the PLATO technology.

- What are the characteristics of the school?
- How has technology impacted student learning and instructional activities?
- Does technology seem to work for all students, including special populations?
- How do teachers use technology?
- How is technology being integrated into instruction, curriculum, management, and, indeed, the culture of the school?
- What changes occur at different levels of implementation?
- How does technology impact the relationship between the school and parents? Between the school and the community?

The report focuses on four objectives that were established to evaluate the effect of the PLATO program on students, teachers, parents and administrators:

1. Increase professional competency of the teachers and administrators in using technology effectively to reach challenging academic standards.
2. Increase technology and information literacy skills of students.
3. Increase community involvement in learning technologies.
4. Improve the learning environment by using digital content and networked applications to further standards-based instruction.

Research Tools

School data that serves as evidence in this report was acquired through school reports, surveys completed by school administrators and staff, focus groups, press releases and other media documents, school websites, and information reported to PLATO.

A modified version of the Teacher Technology Survey, developed by the SouthEast and Islands Regional Technology in Education Consortium (SEIR·TEC) was one of the instruments used in gathering data for the Administrator Technology Survey.

CRF and Associates adapted the Technology and Integration Gauge, developed by SEIR·TEC, to collect information. Discussion items from SEIR·TEC's Professional Development Idea Workshop were used in one of the focus groups. SEIR·TEC is one of six regional technology in education consortia (R·TEC) funded by the U.S. Department of Education's Office of Educational Research and Improvement. SEIR·TEC is composed of educational organizations committed to providing information, professional development, and technical assistance for educators in the southern states, Puerto Rico and the U.S. Virgin Islands, in order to support and promote improvement in teaching.

CRF and Associates, Inc., used an adapted version of PLATO's Teacher Technology Survey and Assessment to gather information on student and teacher technology skills. In addition, during the 2002-03 and Fall of 2003 school year, at least seven focus groups were conducted at the school. These focus groups elicited information regarding teacher expectations, staff development and teacher, student and parent perceptions about the impact technology integration had on student learning.

The schools also provided a wide variety of other data, including samples of students' work.

Types of data requested of the school are both quantitative and qualitative. Quantitative data consists of students' scores on assessments and other tests. Where appropriate, textbooks, tests, student products, teacher grades, discipline reports and attendance reports were reviewed. Qualitative data were gathered from focus groups, surveys, staff and parent meetings, interviews and products from school personnel and students.

Focus Group Findings

During the 2002-03 school year and the fall semester of the 2003-04 school year, researchers conducted seven focus groups with administrators, teachers, students and parents from Hawthorne Elementary/Junior High School. Richard L. Fairley, Ed.D., former Director of the National Title I Program, retired senior executive in the U.S. Department of Education and a principal in CRF and Associates, and Mary Jane Mikuriya, M.A., former Title I administrator and evaluator for the San Francisco Public Schools and former project leader at the U.S. Department of Education, acted as facilitators for the focus groups.

Teacher Expectations for the Technology Project

Pre-Implementation Focus Groups for PLATO Evaluation

Hawthorne Elementary/Junior High School, Hawthorne, NV October 10, 2002 Time: 1 hour
3 Participants: Principal, one 6th grade teacher and one 7th/8th grade teacher

Project plans called for the sixth, seventh and eighth graders to use the PLATO laptop computers and program. Teachers had access to computers at school, and some teachers also have computers at home. Some teachers do not and prefer not to use computers. Most teachers said they do not use computers to prepare materials for students. Those that reported using educational technology do so primarily for making lessons but not preparing materials for students. The school's computer lab offered mostly games.

In anticipating the PLATO project, teachers felt their lack of knowledge was the biggest barrier to using technology. There had been little formal training for staff members, and those staff members who were computer literate said they had to learn what they knew on their own. Training on methods of teaching specific curriculum using computers or any technology had not yet started.

Teachers felt technology could be useful in making subject content more interesting, by accessing the Internet to provide more up-to-date information and more visuals than the textbooks students were using. Teachers would like to see students research certain topics and, in so doing, engage the students and bring the subject matter to life.

The educators believed students should see technology as a critical tool for their future careers and personal lives, not simply as a computer used to play games. They felt students should begin developing computer literacy at earlier grades if they are to become proficient.

Participants in the focus group felt the most interesting uses of technology for teachers at Hawthorne would be:

- Teachers and students being able to work together;
- Teachers knowing having access to each students computer screen in order to monitor student work; and

- Using the computers in combination with an LCD screen to model lessons to demonstrate certain critical points.

With the PLATO technology, teachers expected each student and each teacher to become computer competent. Staff members also indicated they would like to see the program and laptops help parents and grandparents learn to use computers.

In order to feel comfortable using the computer in the classroom as a teaching tool, teachers were adamant that they would need “tons” of staff development, including options and individualized training. They said training should not be a one-time activity but should be scheduled before school started and during vacations. They wanted the training to meet the technology needs of each teacher.

Staff felt that there should be an exit test for computer literacy for teachers as well as for students to determine whether the program is a success or not. The teachers wanted to be able to integrate computers into their teaching.

The teachers sensed that students with personal laptop computers would develop confidence and a sense of self-worth and would empower themselves to expand their ideas of who they want to be. Daily access to the Internet would enable students to be cognizant of the ever-changing world in which they lived.

Impact of Staff Development on the Technology Program

Focus Group for PLATO Evaluation

Hawthorne Elementary/Junior High School, Hawthorne NV Feb. 11, 2003 Time 1.25 hours
3 Participants: Superintendent, Principal and Computer Systems Engineer.

Impact of the Technology Program ...

... on Teachers

The PLATO Laptop computer program requires a drastic change in teaching practices, from the blackboard to computer integration. Teachers reported that, although they struggled with the technology, they found it easier than they had thought after just two sessions of PLATO training. They were pleased with the PLATO trainer and wanted more technology training. Teachers worried about storage, the special powerstrips and what to use the laptops for. The computer lab teacher modeled integration of technology and, as a beginning point, worked with language arts teachers on how to appropriately use the laptops and Internet in daily lessons. Teachers were still hesitant to use computers for planning.

... on Students

At this point, the school was just beginning to assign laptops to students. Students without laptops were anxiously asking for them. The educators reported that students with computers were less frustrated when required to make corrections, because they only have to redo mistakes instead of the entire document. Students are eager to do more with computers. Teachers felt the students' interest in

computers, but they were not integrating technology into the curriculum as fast as students would like. For those students with computers, the principal reported a 90% decrease in discipline referrals for misbehavior. Special education students also liked the computers and seemed more focused on their learning.

... on Administrators

The introduction of the PLATO project required the administrator to oversee and monitor the project and arrange for scheduling and support for the special PLATO training.

... on Community and Others

Focus group participants hoped parents would be able to access school information through email, obtaining copies of assignments, class information, and the child's grades. Staff members anticipated using the computers for communication with parents who live far away from the school. Hawthorne Elementary School is in a regional consortium with other schools in small communities. Administrators envisioned the school being a model community resource in technology for the other small community schools to visit and learn from.

The Relationship to the Local Technology Plan

The District Technology Plan is approved by the state. It is an ongoing process whereby technology is a critical element in supporting the school's 2003-2004 project-based learning in four core areas; the plan also calls for teacher access to student achievement data. Technology must identify individual student needs and target where teachers must focus teaching for individual student remediation.

Delineation of Responsibilities

Professional Development

As the educational leader, it is the superintendent who is responsible for professional development of staff at Hawthorne and other district schools.

Technology Infrastructure

The Mineral County School District's computer systems engineer is responsible for installing and supporting the hardware, software and network at both Hawthorne and Schurz, the two county schools with PLATO programs.

Communication of Results

The Superintendent and School Board will inform the community about the PLATO laptop computer program, using the website and local newspaper. When the students are able to take the laptops home, school leaders expect that the students themselves will be the best communicators about what the laptops are enabling them to do in school and at home.

Evaluation and Reflection

Part of the PLATO program involves training for parents on the use of the laptops. Being a school in a rural area means that many students take the yellow school bus to school. Being able to communicate with parents of bused students via email is an eagerly anticipated option.

With the data driven federal requirements of No Child Left Behind, staff members are seeking ways to provide more timely targeted remedial help to students. They are discussing how best to utilize the PLATO program, which allows Hawthorne students to take computer-generated, simulated assessments at any time and obtain instant feedback. With PLATO, teachers will be able to receive more frequent analysis of an individual student's capabilities rather than being dependent on current system of annual normed tests results. The computer-generated analysis of what students do not yet know will help identify what remedial help is needed.

Teachers' Focus Group at the End of the 2002-2003 School Year

Focus Group for PLATO Evaluation

Hawthorne School, Hawthorne, Nevada May 28, 2003 Time: 1 hour
8 Teacher Participants: 2 6th Grade teachers, 5 7th/8th Grade teachers and a Band/Choir teacher

Note: Computers were made available to teachers on 9/27/02. The distribution of laptops to students began in the spring 2003 semester

The following summarizes teachers' responses to seven questions asked in the focus group session.

1. How has technology improved the *learning environment*?

The laptops empowered students to access information beyond that available in their textbooks, especially in Social Studies. For instance, the computers enabled students to gather more information about the war in Iraq, where family members are serving in the military. Teachers reported that students were "jazzed" about research projects that required writing and sharing. They said that students who would not usually do work outside the classroom were doing so with laptops.

2. How has technology impacted student activities?

Teachers shared several examples:

- Students worked on family projects.
- Students did individual research about a specific country.
- Students developed TV commercials.
- Students did more individual research and seemed to prefer using computers rather than their books.

3. Is there evidence that students have increased their academic performance?

On teacher made tests?

There was some evidence of increased academic performance, but it should be remembered that, at this point, all sixth, seventh and eighth grade students had had laptops for only three months; they were still at the exploration stage, as were teachers.

In their grades?

Teachers said students' grades on assignments improved somewhat with access to laptops, because they were more likely to complete assignments on the computer. They said students were doing more

and better research on their science projects with their laptops. They also cited the typed, rather than hand-written, reports that students were submitting.

In their attendance?

Attendance has never been a problem at Hawthorne; however, teachers noted that some late arrivers now come in early in order to use the computers.

On discipline reports?

Teachers said they use laptops as an incentive to do schoolwork and improve behavior. Laptops are considered a privilege for students. With a personal computer, students increased time on task and showed pride in the quality of their projects. They wanted to produce professional looking projects. Students have to place laptops facing teachers, and students can be seen helping peers as well as their teachers.

4. Does the use of technology seem to work for all students?

For regular students: Teachers said the computers seemed to increase student interest and motivation. Student work improved. Teachers found it easier to read student work and said the computers encouraged individualization and creativity.

For Special Education students: Special Education students feel it's a privilege to use the laptops. Teachers said they are more interested in the subjects, are able to work at their own level and pace, and have increased their time on their assignments.

5. How do teachers use technology?

Instruction

A few teachers used an LCD projector to demonstrate the use of computers.

Teachers were pleased that each student had his or her own laptop to write on and that the printers were in the classroom, rather than in a room down the hall. Teachers reported using PowerPoint presentations for the first time.

Curriculum

Laptops expanded curriculum with research beyond the textbook; for example, students studied other countries in depth, looking up their national anthems and touring the countries on-line, seeing pictures of special sights. One example teachers cited was the colorful visual and auditory studies of NASA projects.

Management

A few teachers gave students a printout of all student assignments and their progress reports. Some teachers sent attendance, grades and comments via e-mail. All teachers completed computer-generated report cards.

6. Explain if and how the technology program has increased parent involvement in the education and technologies.

Parents came to technology classes and signed an agreement for the take-home laptops. Students encouraged parent attendance, because they wanted to be able to sign out the computer. Parents are eager to view student assignments to be sure students have the right assignment. Teachers said they look forward to being able to e-mail parents to keep them current on their child's activities.

7. Give a specific example of something that you did and are proud of as a result of the laptop program. Explain why it made you proud.

Teacher, Grade 6

In the sixth grade classroom, each student chose a country to research. They wrote a 3-5-page paper and a TV commercial or radio broadcast, based on a current event from a newspaper article from the country they were studying. Most of the children were very excited about doing the papers and research. They wanted to be allowed to work on their projects for hours at a time.

While teachers have learned many new things with the computers, they have not fully utilized the PLATO program because of a lack of time. Having the laptop program here has made a huge difference in teaching and relating to the students with technology.

Teacher, Grade 6

For the Lewis and Clark assignment, students used "Time for Kids," a National Geographic special study of the month. They went online to find material not contained in textbooks. The students printed reports containing maps, pictures articles about the historic trip. Students gained much knowledge and skills in doing assignments in history, anthropology, maps, geography, International Relations, etc.

Teacher, Grade 5-12 Band/Choir

For teaching the students Rock and Roll History, the teacher put a chapter outline into a PowerPoint presentation that included links to pertinent websites to music samples (like the American Bandstand theme). This definitely grabbed students' attention.

Teacher, Grade 7-8

In teaching English, students with laptops used them for the writing assignments and printed their work in the classroom.

Teacher, Grade 7-8

The teacher reported doing little with the laptops, citing a lack of training. She said she hoped to take a laptop home over the summer and work with it. She said she was particularly interested in accessing math websites which would bring math "alive" for her students.

Teacher, Grade 7-8

In US History, the computers were for an exploratory assignment to learn about Indian Tribes and culture. The teacher expressed pride in the interest and effort that most students put into the project and their presentations.

Teacher, Grade 7-8

The teacher said students were always excited to use the laptops, For the Science Fair, the laptops made research easier and more complete. Students also used the computers to type their papers and produce information for the backboard. Students also used the laptops to research the planets.

Teacher, Grade 8

Eighth graders found sites on Google.com related to the Donner Party. Students took notes on the site to use in writing a persuasive letter to encourage authorities to send rescue efforts to help the Donners. The project was directly correlated to one of the eighth grade writing standards, i.e., write a persuasive paper. Using the laptops gave all students access to research information beyond the limited resources of a small school library.

Teacher Focus Group – Following Fall 2003 Semester

Focus Group for PLATO Evaluation

Hawthorne Elementary/Junior High School, Hawthorne, NV January 13, 2004 (end of first semester) Time: 1 hour
3 Teacher Participants: 7th and 8th grade Science, English Teachers and Computer Teacher

Note: Beginning in fall 2003, students could check out laptops for the entire school year.

1. How has technology improved the *learning environment*?

Teachers were trained in PowerPoint along with the students this school year. PowerPoint presentations have been done on book reports, grammar, and the solar system. Teachers said students liked to do research and create reports using their computers.

2. How has technology impacted student activities?

The focus group participants reported that children were excited about learning on the computer and doing schoolwork with the computer. An assignment, such as a book report, engaged students using laptops. Even shy children were willing to present their PowerPoint book reports in front of the class.

3. Is there evidence that students have increased their academic performance?

On textbook tests?

There was some evidence of increased academic performance, and staff members are looking forward to more improvement as staff and students become more familiar with the technology.

In their grades?

Teachers said students turn in computer assignments more often than their written assignments.

On discipline reports?

Teachers reported fewer, if any, discipline problems when students were working on the computers, due to increased student interest. They also cited increased time on task.

Other?

Teachers noted that the students' interests have changed now that they have laptops. They are more interested in laptop projects that challenge their creativity than simply playing computer games, as they had done in the past.

4. Does the use of technology seem to work for all students?

For regular students

Seventh and eighth graders learned how to take notes from a teacher modeling notetaking on her computer with images projected on a screen. The students copy notes on their computers and refer to their notes for exam preparation.

Special Education students

At Hawthorne, special education students are integrated in regular classrooms. Teachers said the special education students felt equal to peers when using technology, because they are in regular classes, helped by fellow students as regular class members. Special education students seemed more comfortable with computer assistance in the math program than do regular students.

5. How do teachers use technology?

Instruction & Curriculum

Teachers used Story Web, a program which lends itself to computer-based instruction. Staff members said they need more training in instruction and curriculum integration and are enthusiastically waiting for such training.

Management

Some teachers used a laptop for grades. However, staff members said they wanted training on how technology can help them with classroom management options.

In the culture of the school

Teachers said projects had been developed that involved both teachers and students (i.e. endangered species and book reports). They reported that students were learning techniques for improving their computer skills from one another. They are talking to each other about how to improve their work, and the results have been better quality student reports.

6. Explain if and how the technology program has increased parent involvement in the education and technologies.

Lots of parents were anticipating being able to have e-mail conversations with teachers. Teachers said parents have computers at work, if not at home. However, the school's computer system for e-mailing parents is not up and running quite yet

Student Focus Group

Focus Group for PLATO Evaluation

Hawthorne Elementary/Junior High School, Hawthorne, Nevada May 28, 2003 Time: 1 Hour
10 Student Participants: 6 6th Grade, 1 7th Grade and 3 8th Grade students

Note: Computers were made available to students 2/24/03.

1. Tell the ways you use computers to do school work

Students said they researched and wrote reports on different countries. They used their laptops to make tourist commercial videos on the different countries from the information they obtained. Every morning, sixth graders practiced keyboarding before doing their research and report writing. Eighth grade students talked about writing a letter to the Governor of California, requesting he save the Donner party. Four students in this class are preparing a DVD yearbook for fourth through eighth grade classes.

2. As a result of using computers do you feel you pay more attention to your schoolwork? If so, explain why.

Students said they looked forward to coming to school in order to use the computers. All students agreed they paid more attention to school when they were working on the laptops, because, unlike workbooks, the computer has visuals, action, and sound to make the schoolwork more interesting.

3. Tell how computers have changed your interest in learning and in school.

All students felt that their assigned subjects or topics were more interesting, because they could access the Internet to get more current information than that available in the books in the libraries. Many students said they do not have an Internet connection at home, so the teachers stay late with students to enable them to work on the Internet. Students who have take-home computers are often seen on the lawn of the school, before and after school time, because students must be near the school for their wireless laptops to have Internet access.

4. Are there activities you do now outside the classroom as a result of the laptop program?

The students who take computers home felt they had a better chance of getting more information on assigned topics. Students without Internet access at home said they took advantage of CD-Rom programs such as Grolier's Encyclopedia. Students said they helped their parents and siblings become more proficient on computers, based on what they have learned in school.

5. Give a specific example of something that you did and are proud of as a result of the laptop program. (These students have had their laptops for 3 months.)

- For a report on Peru, I made a tourist commercial to present to the class. I'm proud of it because I did it on my own. I have pictures fading in and out with words and music. I help others learn to do it, because my report was really good. Ms. D, my teacher, said she was proud.

- I am proud of my tourism movie to Madagascar. I think that I will get a good grade, because I think that it looks more professional with music and sound effects.
- I made a one-minute commercial on Chile as part of my five-minute oral report. I am proud of it, because it took a lot of work and I feel that it helped me with learning how to use the iMovie program.
- In four weeks, I wrote a three-page report on a country that I didn't know anything about. At first I didn't think I could do the report, but I did. I can teach others to do the same thing.
- I am doing a report on Norway, and the Internet helped me find information on the country and gave me many different ideas to expand my report. Microsoft Word enabled me to type my report. When I was done, it made me feel good that I accomplished a report on my new laptop.
- I made a slide show in Apple Works that had an alien talking to a cow and much more! That will help me in Mr. F's class next year, because he wants us to do the same thing. I am proud because I will be a step ahead. I'm happy I learned how to use the DVD program.
- I took pictures and used them for my movie that I made with iMovie.
- A yearbook movie is what I did. It took work to accomplish using iMovie software. It is 30 minutes long. I am proud that I learned to use and was able to help teachers to use the iMovie program.
- After taking pictures of people, and events in our school, the laptop system helped me put it all together and create a movie. It was very successful and entertaining for others to watch. I am proud of creating a movie, because it gave me an opportunity to entertain people with my creation. My movie is about our school, the children and teachers in it; it is serving as a yearbook for our school.

6. What do you think your computer knowledge will enable you to do for your future?

The student participants cited better research skills, knowledge of how computers work and keyboarding as some of the skills they have acquired. Looking to their future, they noted that they would be able to access information on college entrance and job requirements. As future parents, they said they would be better able to help their own children with projects. One student is interested in learning the computer because he wants to become a technology specialist.

Student Focus Group #2

Focus Group for PLATO Evaluation

Hawthorne Elementary/Junior High School, Hawthorne, NV January 13, 2004 (end of 1st semester) Time: 1 hour
13 Student Participants (4 special education students included): 5 7th Grade and 8 8th Grade students

1. Tell the ways you use computers to do school work

Students were pleased to describe how they designed and furnished their dream house using the AppleWorks drawing program. They researched what furniture they wanted from pictures they found

on websites; they also studied the cost of the furniture. One student wanted a TV with a 20-foot screen for his dream house only to learn that his dream TV did not exist yet. Several students indicated they tracked stock movements; using an Excel spreadsheet, they recorded and analyzed the price changes and total value of their selected stocks. One student said he researched rifles used in the Civil War. Several eighth graders were excited about being able to design the school newspaper and include digital photos and graphics using programs on their laptops.

2. As a result of using computers do you feel you pay more attention to your schoolwork?

When classmates present work using PowerPoint, the students agreed that they pay more attention and gain a better understanding of the topic. They said the subject of the presentation is much more interesting with graphics, sound, photos, and maps.

3. Tell how computers have changed your interest in learning and in school.

With personal laptops, students said they were eager to gather more information about what they were studying. Students were delighted to find so many kinds of current maps on the Internet. They said they were excited about and more interested in assignments that require research and allowed them to use their individual creativity, such as a project designing and costing out their dream house.

4. Are there activities you do now outside the classroom as a result of the laptop program?

A student designed a flier for a church's Thanksgiving dinner. Several students were pleased to be able to help friends and family use their home computers. Students reported being proud to show students from other schools how their wireless laptops work.

5. Give a specific example of something that you did and are proud of as a result of the laptop program.

- I am pleased to be using laptops. I like to do homework on my laptop. I used PowerPoint for an English project on grammar. I chose predicates, writing problems using predicates and giving examples of predicates. For our in-class presentation, we got to make a slide show. It was neat because when you press down the space bar, it goes on to the next slide.
- Another student reported he too made a PowerPoint presentation -- on indirect objects. He completed a five-page presentation that described everything he knew about indirect objects. They come after action verbs you know. He was happy to report that he got a really good grade.
- In Social Studies, a girl shared how she went to www.google.com on the Internet. She was delighted to find a lot of information for her report on women at war.
- A boy disclosed, "I am proud of my history report. The laptop helped me get a map and information about South America fast. The website was Google advance search. I went to Peru and discovered that there is a 400-year-old art museum."
- A girl revealed that, "In Mr. P's class we look for a country's information on the Internet to do a report on. The laptops are cool fun. When we're done with our assigned work, we can go look up things on the Internet. I got pictures of tigers. I made a movie about dogs. When I went to the ocean, I came back and made another movie."

- One student reported, “I put out a school newspaper each week” using my laptop. I am proud it gets out on time. There are neat clippings from the computer. Our laptop helps us with our writing skills. There are many neat things on our laptops that help make our newspaper more interesting. It has improved our newspaper since last year.
- Another eighth grade girl wrote, “I can upload pictures from a disk onto a website for the yearbook. I am proud because it really improves the yearbook!”
- One boy had many observations about his life since he has received his wireless laptop. He observed that students have been doing drawings on their laptops. They design a house and do measurements and percentages on them. He said, “One time I did a really cool drawing on my laptop. My parents liked it and said that it was good.” The boy wrote he liked being able to go on the Internet to get pictures of cars. He researched the Wright Brothers and is doing a report on them. He recounted how he made a certificate for some people, including his mom and dad, “a really cool dad certificate.” He said his grades had improved since he got his laptop.
- One girl feels very appreciative that her laptop captures her creative energies. “On my laptop I have made a movie. The movie had lots of skits that my friends and I acted out. It took a long time to make, but it was fun. I wouldn’t have been able to have that much fun in class without the laptops.”
- One boy felt he had become a better student because of his laptop. “Before I got this laptop, I was not familiar with computers. I like this computer because I can type quicker than I can write freehand,” he said. He was proud of the quality of his work and his better grades on assignments. “My mom is finally proud of my grades. I’m happy. I guarantee my grades would go way down without the use of my laptop. I am now also interested in Geography because I can find out what’s out there.”

Special Education students’ reports:

- We had to type a book report on our laptop for English and Reading. I don’t usually do my book reports. I was pleased, because I got a good grade.
- One boy wrote, “I built a house and financed it. I used AppleWorks and the Internet. I also made a car using the Internet. To make the car I picked the body, the insides, the outsides, the rimes, and the tires.”
- Another boy wrote, “I built a Hummer 2. I used my laptop to go to the website to get pictures of Hummers. I saw the insides of them and saw the colors of them. I put the parts together and built it.”
- Another boy was proudest of the certificate he designed. “I made my dad a Best Dad in the World certificate as a surprise,” he said. “It made him smile.”

6.What do you think your computer knowledge will enable you to do for your future?

Students who described themselves as technologically competent said they felt their computer knowledge would help their future - in school and with work. Students agreed their knowledge of computers would help them get a job that requires Internet experience.

Parent Focus Group

Focus Group for PLATO Evaluation

Hawthorne School, Hawthorne, Nevada May 28, 2003 Time: 1 hour
5 Parent Participants of 6th, 7th, and 8th Grade students

1. Before your child started using computers, what experience did you have with computers?

One parent had no experience, and four were familiar with computers.

2. As a result of using computers in school, have you seen changes in your child's attitude to learning and school? If so, give specific examples.

Parents said their children showed more respect and a sense of ownership for their laptops. The students assumed more responsibility for their own work on the computers. Parents said, with the computers, the children were proud of their learning and anxious to show their parents their reports and good grades. "It is the first time to see our children excited about doing homework!" one parent said. The children liked the computers and were anxious to learn more uses of the computer. Children learned how to focus on topics and to do searches on the Internet, which is important since the library does not have current books and periodicals. Some parents noticed their children were arriving early and staying late at school to work on the laptops, which only provide Internet access within the wireless range at school.

3. Have there been benefits for you and your family from your child's use of the computer, such as buying things or services on line, e-mail communication, interest in learning the computer, interest in adult education and other...?

One parent reported she already knew how to buy things online, but she has learned to work on the Mac laptop through her child, because "I have Gateway PC at home." Parents were pleased their children were teaching other relatives to use the computer.

4. Since your child started using computers, have you felt a greater need for you and your family to have a computer or gain computer skills?

One parent reported buying a computer so his child could have more time on the computer, since the library limits computer time to one-half hour. Another parent upgraded her computer to provide more computer access for her child. Parents were pleased to learn that computers can be checked out for home use; however, some were made aware of it only at this meeting.

5. Have you been more involved in your child's education/ school since your child has started learning to use the computer?

All parents participating in the focus group said they were already highly involved in their child's education. Parents found the laptops made it easier for them to monitor schoolwork, because their children were anxious to show them their work and demonstrate their computer skills. Their children were so excited about showing their work, they expected their parents to drop everything and look, "NOW!"

6. What specific benefits of learning-to-use-computers do you expect for your child?

Parents were pleased their children were learning computer skills, because they believed this would enable the students to be more successful in the future -- in jobs, in communication, and in gaining needed information.

7. How can the school computer program at this school be of more help to the community?

Parents expressed interest in learning more computer skills themselves. They felt there was a need for computer education at the beginner's level to complement the fast-moving, accelerated, community college courses. Although a school partnership with Great Basin Internet Service (GBIS) has been set up to help community members learn to use the computer, it has not yet been implemented. Some parents would like the technology expertise of the school to provide training for homegrown family businesses, especially in this small community of Hawthorne, where the economy is poor. Some parents would like help in upgrading their existing entrepreneurial businesses with computers.

Survey Results

Teacher Survey

The data gathered and displayed in these graphs reflect the findings from the Teacher Technology Survey and Assessment adapted from a PLATO Professional Development instrument. The survey reports teachers' technology skills before and after project implementation.

Growth was seen in 43 of the 50 areas measured. The areas where growth was not evident centered on the creation and manipulation of web pages, and more advanced uses of e-mail software such as creating folders and using options and services. Few teachers at Hawthorne have developed these capacities to date.

On the other hand, Hawthorne teachers greatly increased their capacity to operate computer hardware, to manage the computer desktop, to use e-mail, to access Internet resources by navigating the world wide web, and to use peripheral hardware such as LCD projectors, scanners, and digital cameras. At the time of the survey more than 75% of the staff could perform these tasks. A majority of the staff used technology to enhance their lesson planning, delivery, and medium of instruction. Hawthorne experienced a 50% increase in the number of teachers perceived to be competent in using technology to supplement curriculum with internet resources, to teach students basic computer functions, how to use e-mail and Internet, and to use Microsoft word. This increased capacity demonstrated an increasing familiarity with technology schoolwide and sets the groundwork for more extensive use.

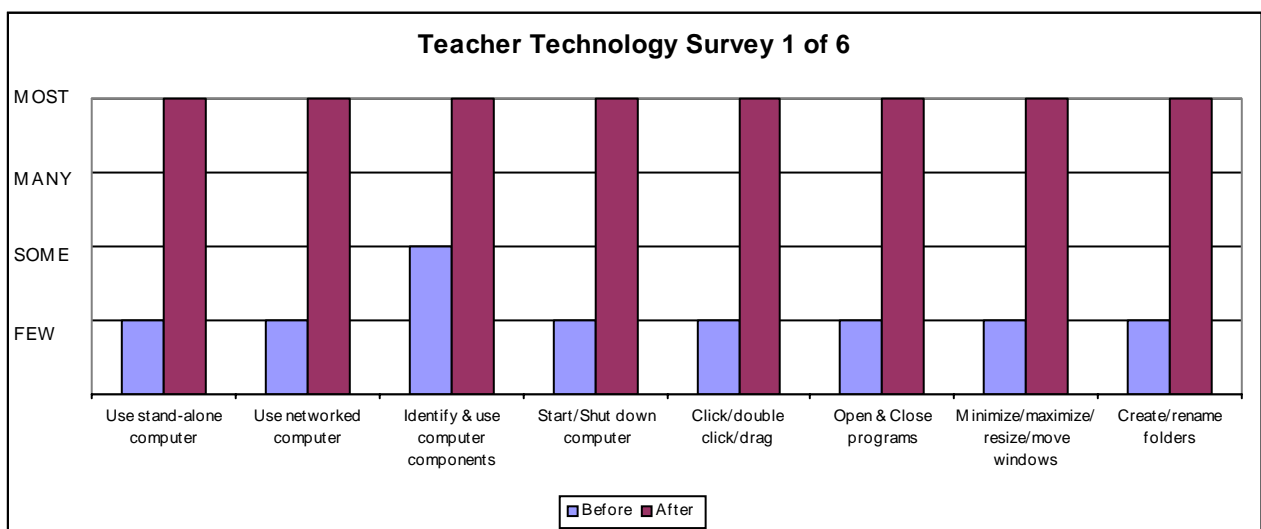
SCALE

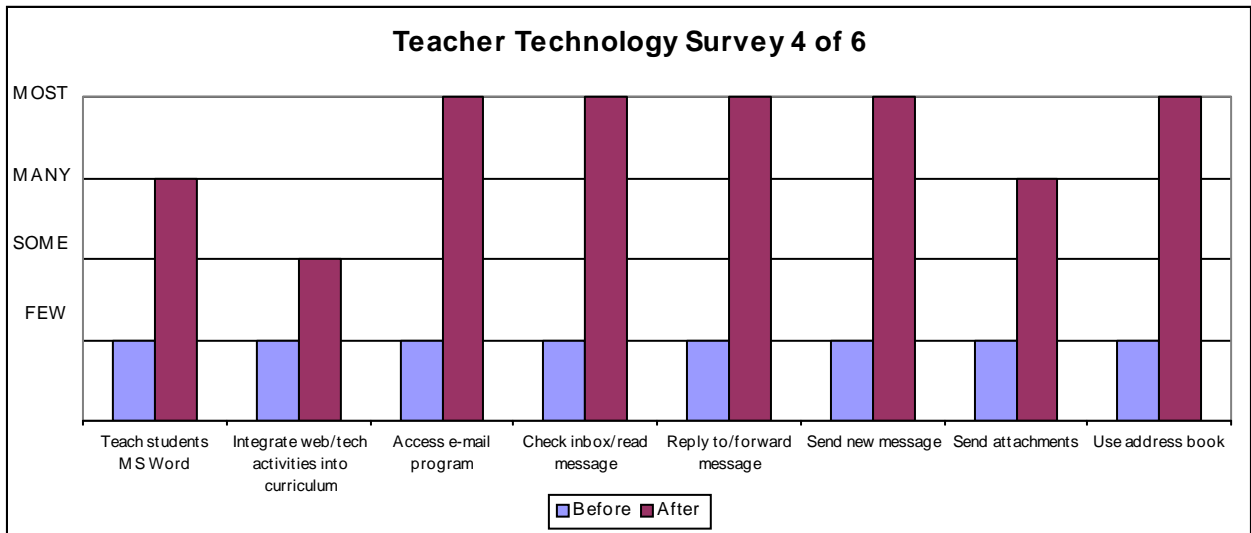
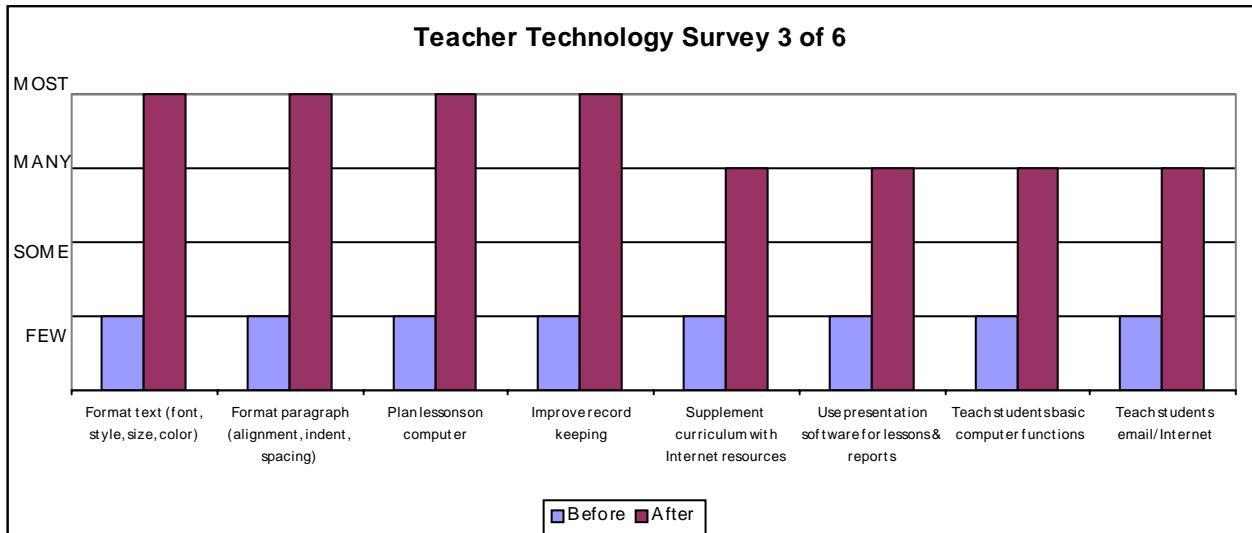
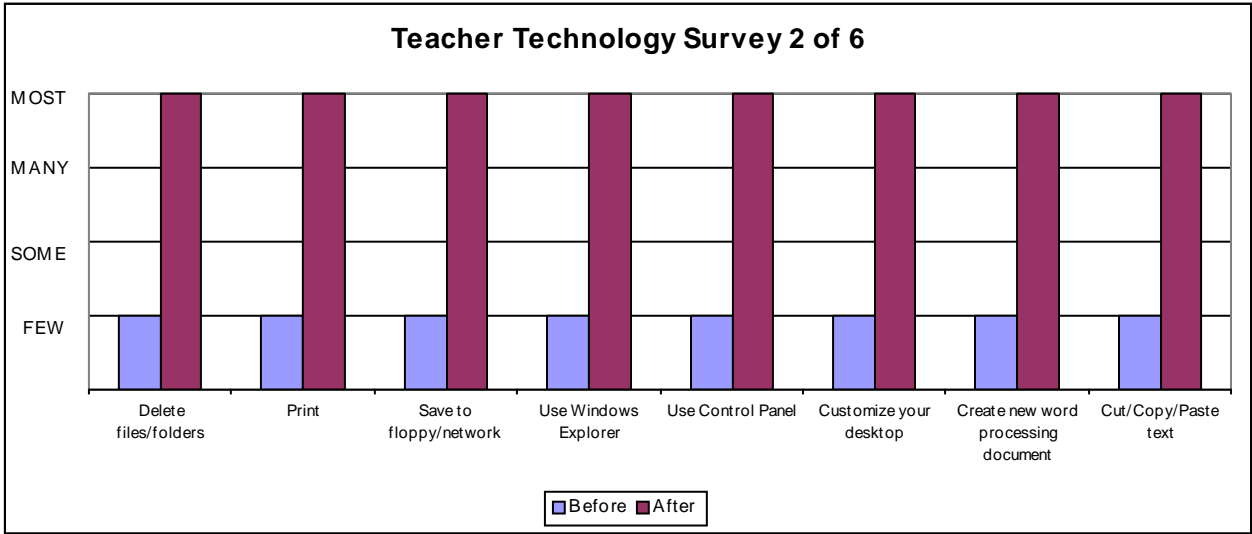
FEW – less than 25% of the group

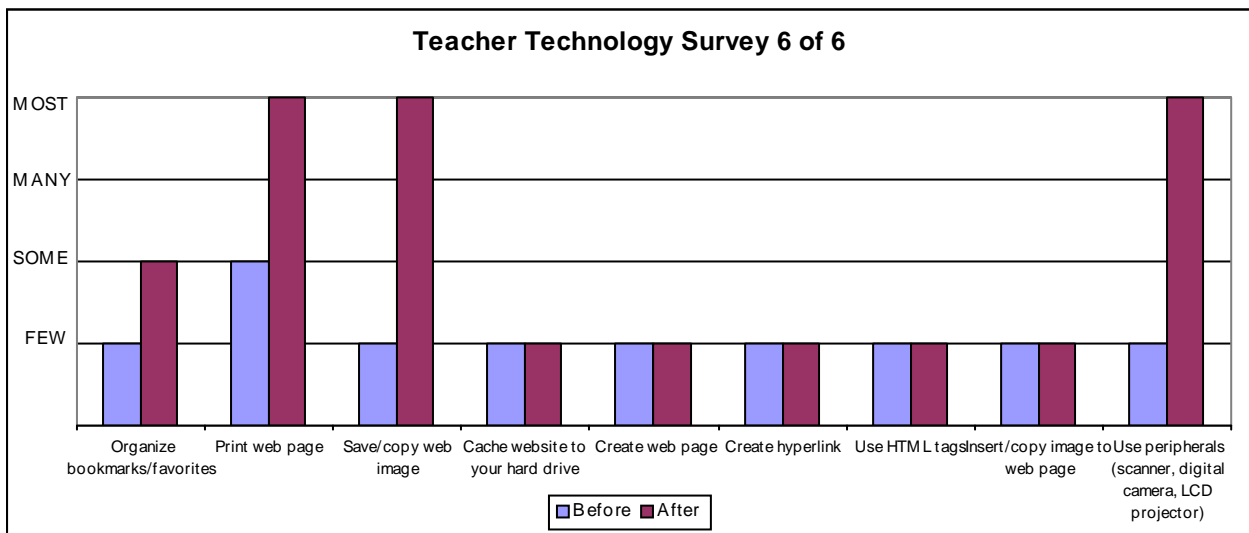
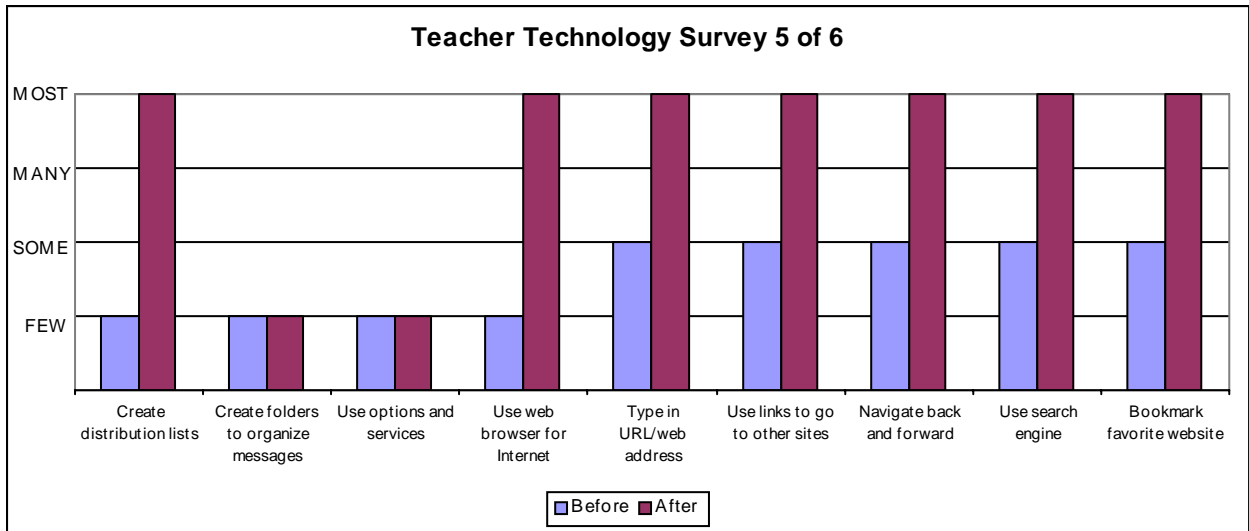
SOME – 25% to more than 50% of the group

MANY – more than 50% to 90% of the group

MOST – more than 90% to 100% of the group







Administrator Survey of Student and Teacher Usage

The data gathered and displayed in the following graphs reflect the findings from the Administrator Survey, adapted from the SouthEast and Islands Regional Technology in Education Consortium (SEIR·TEC) Teacher Technology Survey, completed on January 13, 2004. The survey, which retained its validity and reliability, assessed the impact of technology on the students, the technology used with students, and teachers' use of technology.

Administrators reported gains in all 15 indicators. The survey showed the vast majority of students used technology as a tool to acquire basic skills, become more critical thinkers, and discover concepts and prove relationships. Hawthorne saw a 100% increase in the use of technology to construct new knowledge and to solve real life problems. More than 50% of students used technology in these ways.

As the student use surveys indicated, technology has also impacted classroom instruction at Hawthorne as more teachers are accessing resources via the web, using available hardware and software, and taking advantage of technology to incorporate a variety of teaching strategies.

Survey results indicated that more than 75% of teachers used word processing, spreadsheet, presentation and e-mail programs as well as the Internet and CD-Rom encyclopedia with their students. Teachers at Hawthorne also integrated technology into their classroom management protocol. More than 75% of teachers used technology to maintain communication with peers, experts and community members as well as to maintain student records. Few teachers at Hawthorne used technology to deliver tutorial and basic skills development programs or to monitor student performance. On the other hand, historically technology has been used to deliver special applications in reading and math, such that there was little room for growth.

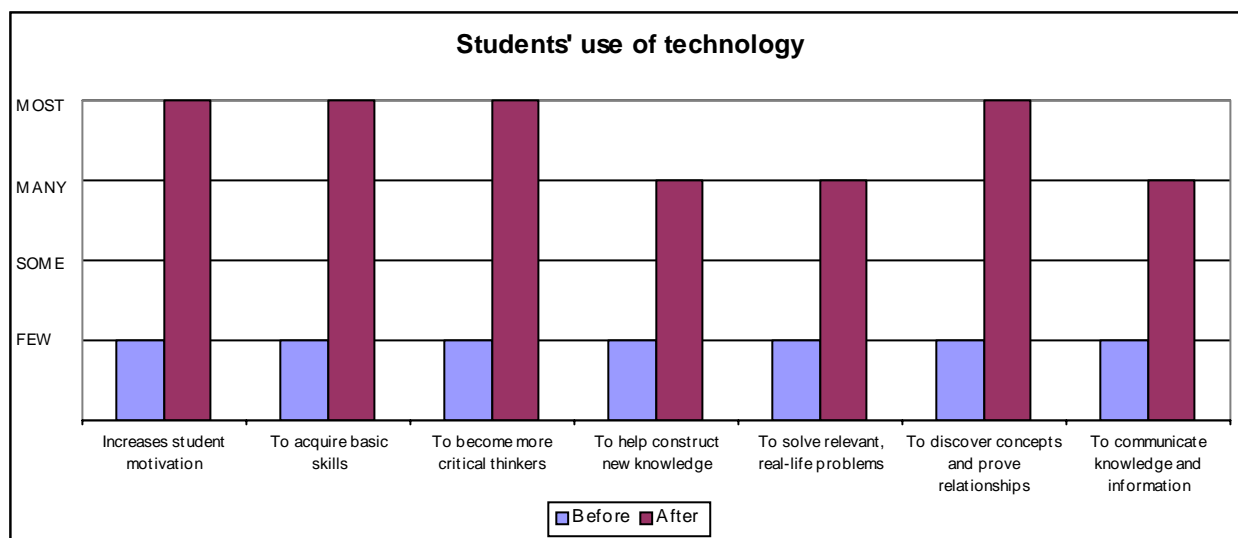
SCALE

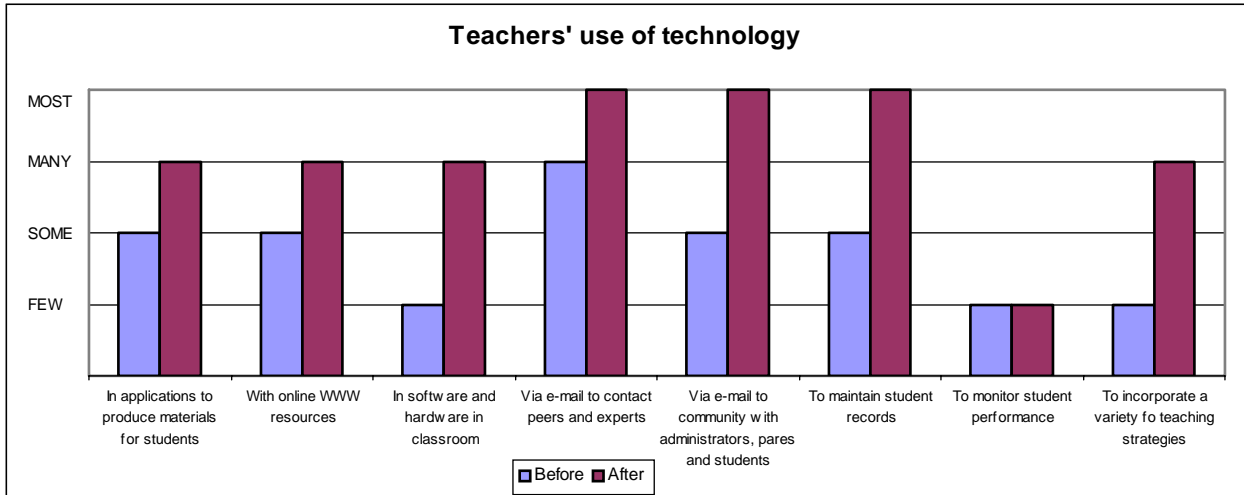
FEW – less than 25% of the group

SOME – 25% to more than 50% of the group

MANY – more than 50% to 90% of the group

MOST – more than 90% to 100% of the group





Administrator Survey of Technology Integration

The graphs on the next page display the impact of technology on teaching and learning in all segments of Hawthorne Elementary/ Junior High School. Administrators identified the level of implementation (minimal, beginning, intermediate, and advanced) described by two or more indicators within each of five domains (student engagement, teacher engagement, availability and accessibility of appropriate resources, organizational support, and community involvement).

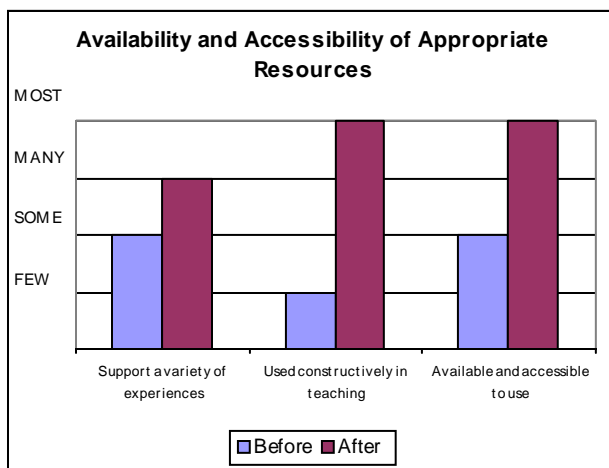
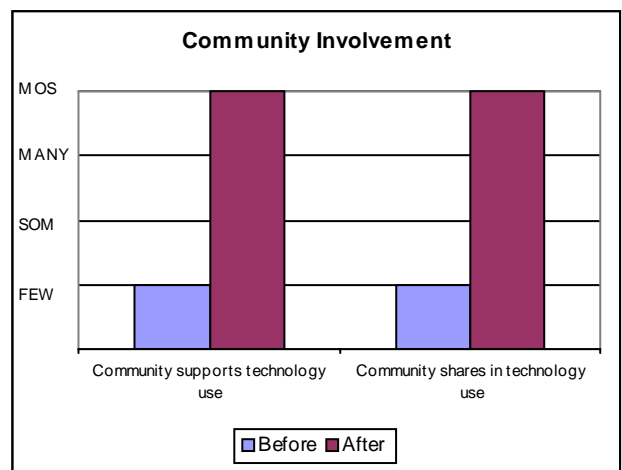
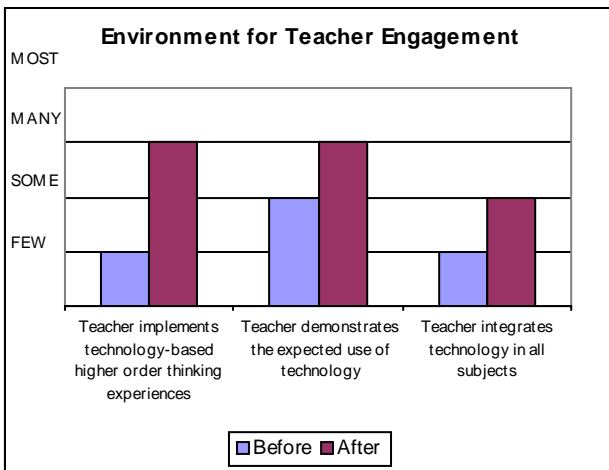
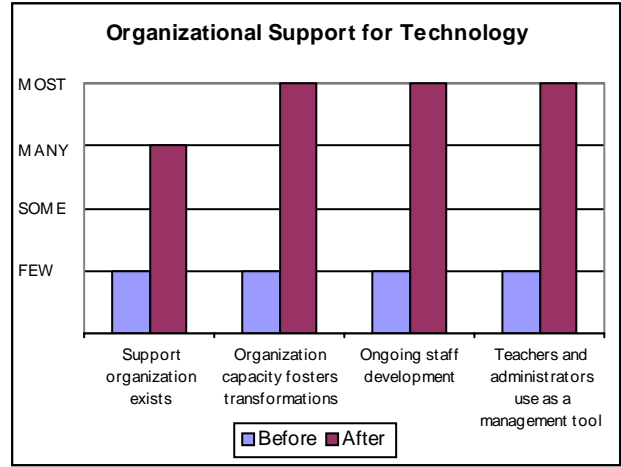
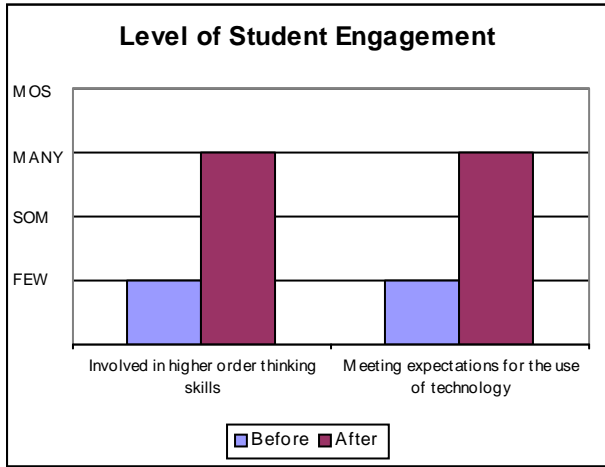
Administrators reported growth in all 14 indicators. They felt the school had reached the intermediate level of implementation in six areas and the advanced level in seven areas. Most categories improved by at least two levels. Administrators reported that organizational support for technology, community involvement, and the constructive use of technology in teaching made the greatest progress, as they have evolved from little or no implementation to advanced stages of implementation where policies and programs exist and operate according to an established plan. Administrators at Hawthorne noted an increase in organizational support, as well as student and teacher engagement. Once plans characteristic of the intermediate stage are implemented, Hawthorne will move toward the advanced stage of technology integration.

The findings of this survey are presented in table format, illustrating the four levels of effectiveness from use **Before** PLATO and **After** PLATO Technology.

SCALE

FEW – less than 25% of the group
 SOME – 25% to more than 50% of the group

MANY – more than 50% to 90% of the group
 MOST – more than 90% to 100% of the group



Classroom Observations:

Student Acquisition of Technology Skills

Over the course of the 2002-03 school year and the fall semester of the 2003-04 school year, researchers visited each classroom in the project, and meetings were held with each classroom teacher. Each student in the program acquired at a minimum the following basic computer skills.

Use stand-alone computer (desktop or laptop)
Use networked computer
Identify & use computer components (keyboard, pointing device, disk drive, CD-ROM)
Start/Shut down computer
Click/double click/drag
Open & close programs
Minimize/maximize/resize/move windows
Create/rename folders
Delete files/folders
Print
Save to floppy/network
Use Windows Explorer
Use Control Panels
Customize your desktop
Create new word processing document
Cut/copy/paste text
Format text (font, style, size, color)
Use web browser for Internet
Type in URL/web address
Use links to go to other sites
Navigate back and forward
Use search engine
Bookmark favorite website
Organize bookmarks/favorites
Print web page
Save/copy web image

Findings

During the 2002-2003 school year and the fall semester of the 2003-04 school year, the PLATO Technology Program implementation at Hawthorne Elementary/Junior High School contributed to:

Increased professional competencies of teachers in using technology to support educational objectives.

- More than 75% of teachers achieved competency in navigating the desktop, managing word processing documents, communicating via e-mail, and gathering resources from the Internet. This is an increase of more than 50%.
- All teachers completed computer-generated report cards. Some teachers sent attendance, grades and comments via e-mail.
- Teachers used Internet research to “expand the curriculum beyond the textbook” and required students to present their findings via technology.
- Seventh and eighth grade teachers modeled note taking on the computer using an LCD projection unit. Students followed along and personalized their notes.
- Teachers integrated the Story Web program into their curriculum and taught it using computer-based instruction.

Increased access to and acceptance of technology and appropriate support.

- More than 75% of Hawthorne teachers reported that technology was available and accessible for use.
- Teachers were pleased with the training they have received from the PLATO trainer.
- Teachers anticipate more instruction in the use of technology and the development of curriculum utilizing technology.

Increased student engagement in learning activities.

- Administrators and teachers reported a significant increase in the percentage of students using higher level thinking skills as a result of technology usage.
- Administrators and teachers said the PLATO project dramatically increased student motivation.
- The PLATO project changed the school culture relative to computer usage, as teachers reported that students were now more interested in laptop projects that allowed them to express their creativity than in playing computer games.
- Special education students felt it was a privilege to work on their laptops.
- Teachers reported that students were “jazzed” about research projects that require writing and sharing.
- Students who did not have Internet access at home often stayed after school for two hours to work on the Internet. Students took advantage of the wireless Internet connection at the school by working on the lawn of the school before and after school.

Increased use of technology to facilitate instruction that meets the needs of students with different learning styles.

- Students reported that they paid more attention when they were working on their laptops because, unlike workbooks, the computer has visuals, action and sound to make the work more interesting.
- Teachers created more options for students using technology. For instance, teachers allowed students the option of writing a three-to-five page paper, creating a TV commercial via iMovie or iPhoto, or developing a radio broadcast.
- Teachers reported that special education students were more interested in the subjects, able to work more easily at their own levels, and increased their time on assignments using the laptops.
- The music teacher created a chapter outline using a Power Point presentation that included websites and links to music samples.

Increased dialogue between the school and community members.

- There was an increased use of e-mail.
- Parents said students were more anxious to share schoolwork generated on the computer.
- Students used the laptops to work on family projects, i.e., one student got information about the war in Iraq, where family members are in military service.
- Students reported helping their parents and siblings become more proficient on their home computer by sharing what they had learned in school.
- Both teachers and parents expressed a desire to increase the use of technology to improve home/school communication.

Recommendations Resulting from Exit Conferences

On March 17, 2004 the Evaluators and Jessica Klippel, the new trainer from PLATO, held three separate meetings with the school systems instructional leaders: 1) meeting with Steven Cook, Superintendent, Mineral County Public Schools; 2) meeting with Hugh Qualls, Principal, Hawthorne Elementary School/Junior High School; and 3) meeting with Joel Hodes, Administrator, Schurz Elementary School. Chris Hegg attended the meetings with Steven Cook and Hugh Qualls. As a result of these meetings the following recommendations are offered.

- 1) A long range training schedule be developed by the trainer and education leader at each school, the first session to be held this school year and subsequent sessions on a regular basis throughout the period of the grant.
- 2) Training sessions should include staff from each school in order to facilitate the exchange of ideas and alignment of teaching strategies and curriculum resources. Principals should attend the next training session and others as appropriate.
- 3) A Trainer of Trainers Model should be included as a part of the training program to ensure an increased, on-site training capability at each school.
- 4) Teacher training should not only present how to integrate technology in the curriculum but help teachers meet the Nevada Technology Standards.
- 5) Technical support and maintenance control should be centralized under the supervision of the superintendent and his staff to relieve the principals of this responsibility and to ensure that similar maintenance procedures are followed.
- 6) The superintendent and principals should visit a more mature laptop technology program in another school district to share their own and gather ideas from educators that have gone through the implementation process.

Conclusion

The PLATO program has significantly increased the capacity of the Hawthorne staff to use technology. The increased availability of resources, as well as student enthusiasm, has propelled many staff members to seek deeper, more comprehensive uses of technology. Staff members recognize the value of technology and the great potential that it has for their school. They have benefited greatly from having consistent access to reliable, functioning equipment. The impact of these resources and the staff commitment is evident in their high levels of reported growth. Nonetheless, they are anxious to receive more training that will allow their skills to match their ambition.

The integration of computers is a recent phenomenon at Hawthorne. Students received computers on February 24, 2003; since then they have become more active and engaged learners. They have shared their knowledge with each other and with members of the community. They are taking increased pride in the quality of their work.

Students using laptops described schoolwork that has increased in relevance. They cited better research skills, knowledge of how computers work and keyboarding as some of the skills they have acquired. Looking to their future, they noted that they would be able to access information on college entrance and job requirements and help their own children with projects. One student expressed an interest in becoming a technology specialist!