

Nevada Educational Technology

Interim Evaluation Report

July 2010

Submitted by the Wexford Institute, a division

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Executive Summary

Wexford evaluators found Year 1 of the Educational Technology Implementation Fund grant to be typical of many first year projects. Districts got a late start in implementing their projects, some planned activities were changed and others were postponed to Year 2, and most of the technology use was teacher-centered rather than student-centered. Evaluators found no major red flags in terms of district's implementation of their project plans. The following are highlights from the Year 1 evaluation of the Implementation Fund grant:

- Most districts got started with their project between January-March 2010
- Grant funds reached over 42,000 students and 1,100 teachers in 258 schools across the state
- Of the \$2.1 million awarded in Year 1, 63% was allocated toward technical services
- Collectively, districts used grant funds to buy 495 workstations, 137 netbook computers, 114 laptops, and 84 iPods
- 11 districts supplemented their educational technology grant money with district funds, county bonds, Title IID, Title IIA, Title V, and other state money in order to implement their proposed project
- Student outcomes include increased engagement, peer collaboration, improvement in the quality of student work, and decreased behavior problems
- Teacher outcomes include increased use of technology for administrative tasks, increased use of email to communicate with parents, increased collaboration across grade and subject levels, and changes in teaching style from teacher-centered to student-centered

- One-quarter of the teachers report using their grant funded technology more than half of the class period or the whole class period
- Project directors' satisfaction with the extent to which teachers are using technology ranges from "extremely" to "not at all"
- Fifty-nine percent of teachers cited "existing curricular demands" and 49 percent cited "limited time to revise lesson plans" as the main barriers keeping them from doing more with technology than they are currently doing

Introduction

The intent of the Educational Technology Implementation Fund Grant is to support district projects that are focused on the improvement of student achievement, student engagement, and/or the technology skills of students and teachers. To that end, the state's 17 school districts proposed to address these priorities through an investment in one or more broad funding categories set forth in the grant RFP: high quality content material, professional development, technical services, infrastructure, and innovative pilot projects. Within these categories, districts responded to the grant RFP with priority needs that ranged from replacing hardware that was more than five years old, to implementing a one-to-one netbook program with middle school students, to funding the participation of just one teacher in the Nevada Pathway Project.

Wexford Institute conducted a Year 1 evaluation of Nevada's Educational Technology Implementation Fund Grant. Evaluators focused the evaluation on capturing the unique successes and challenges experienced by each district. It is through this lens that evaluators were able to gather a sense of districts' internal capacity to maximize the benefit of the Implementation Fund money for students and teachers. This Interim Report provides a summary of statewide implementation of grant-funded projects as well as a brief snapshot of the impact of the grant within each district. Some parts of the report include more extensive contextual narrative to help the reader better understand the data; however, the focus of the Interim Report is on providing an overview of statewide implementation and outcomes for Year 1 rather than a detailed description of each district's implementation of the grant funds.

Framing the Year 1 Evaluation

There are challenges inherent in evaluating any statewide project and the evaluation of the Nevada Educational Technology Implementation Fund Grant is no exception. The major challenge evaluators faced in framing the evaluation is that few districts were funded to implement

comprehensive programs. In particular, finding connections between an isolated investment in infrastructure and impact on student learning is very difficult. Equally as challenging is measuring the impact of investing in new equipment in the absence of professional development. Evaluators were further challenged to seek out project implementation and impact data that would provide the Commission on Educational Technology and other readers with a good sense of how the use of grant funds was having an impact across the state while not losing sight of the various starting points from which districts began implementing their respective projects.

Given these challenges, Wexford focused the Year 1 evaluation on documenting 1) the allocation of grant money in each of the five broad categories for which districts received funding; 2) statewide outcomes related to teacher and student use of technology, and 3) districts' specific challenges and lessons learned.

Wexford made a conscious decision to frame the data presented in the Interim Report in such a way that the reader gets a larger sense of the statewide impact of the grant and a snapshot of implementation within each district. To that end, evaluators intentionally chose not to report the data in a way that focused more attention on one district over another based on the amount of the district's grant award or proposed level of implementation. Looking ahead, readers of the Interim Report can expect the Final Report to include a discussion of outcomes that is framed within a richer, context-based narrative for each district.

Report Outline

In order to fully describe the implementation and outcomes from Year 1, this report is divided into two parts. Part One begins with a discussion of data collection strategies followed by an overview of implementation across the state. This summary of statewide implementation includes data on grant expenditures within each district and funding category. Part Two provides summary data in

response to key evaluation questions and concludes with a brief discussion of lessons learned and evaluator reflections.

PART ONE

Data Collection

Wexford utilized multiple methods (i.e., web-based, face-to-face, and telephone) to gather the data presented in this report. The depth of data collected varied across districts, depending on the level of implementation in which they were engaged during Year 1. At a minimum, project directors in every district provided data regarding grant-funded expenditures via Wexford's online database and participated in a face-to-face or telephone interview. With the exception of initial project director telephone interviews that occurred between December 2009 and January 2010, most of the data in this report were gathered between April-May 2010. The various data collection methods are described below.

Online Database

Wexford developed an online database to gather common data about project participants and grant-funded expenditures across all districts. Each project director was provided with a username and password to access the database; Wexford's evaluators and Nevada's State Educational Technology Director, Dr. Kim Vidoni, were the only individuals with access to data across all districts. The database includes the following forms: Summary Data, Participants, Hardware, Software, Professional Development, Network Equipment, and Internet/Computer Safety. Each district project director only had access to the forms that were applicable to his/her grant implementation. Wexford provided face-to-face and telephone support to project directors to show them how to login and use the database.

Project directors were responsible for uploading information into the database and evaluators accepted all data as valid and complete. If it was deemed to be more feasible for the evaluator to enter certain data (such as Technology Integration Specialist work logs) then the data were provided by the project director and input by an evaluator.

The Summary Data form was used to gather information about the total number of student and teacher participants at each grade level and the total amount of grant money spent in the five major funding categories. The other forms were developed for project directors to provide detailed information about their expenditures such as total units purchased and distributed to students and teachers. The Professional Development form includes input fields related to the number of participants, the type of training, content covered in the training, date(s) of the training, and the format of the training (i.e., face-to-face, online).

Online Surveys

The evaluator's goal in designing the online surveys was to collect as much common data across districts as possible, while also capturing specific details related to each district's grant-related endeavor. All of the surveys included a standard set of demographic questions that targeted variables such as teachers' grade level, number of years teaching, age, and gender. Evaluators developed two forms of the online survey; one for teachers who had participated in grant-funded professional development and one for teachers whose districts had used grant funds to purchase equipment, instructional programs, and/or upgrade network infrastructure.

Professional Development Feedback Survey

The Professional Development Feedback Survey was adapted for teachers in Carson City and Washoe County who participated in SMART Board and Promethean training, teachers in Clark County who completed Vegas PBS TeacherLine courses, teachers in Nye County and Lincoln County who received technology support from their grant-funded Technology Integration Specialist, teachers in Douglas County who participated in ActivBoard and ActivExpression training, and teachers in Elko County and White Pine who received technology training as part of their participation in the Nevada Pathway Project.

District Technology Feedback Survey

The Technology Feedback Survey was adapted for teachers in Clark County who received FASTTMath accounts, teachers in Humboldt County who received new workstations, teachers in Mineral County whose network computing system had been updated with spam and web filtering software, teachers in Pershing County who received iPod Touch devices, and teachers in Storey County who received audio enhancement systems.

Survey Response Rate

Links to online Teacher Feedback surveys were administered in one of two ways. Either Wexford used teacher email addresses provided by the project director to contact teachers directly, or Wexford provided project directors with a URL to the online survey and he/she emailed the link to teachers. Wexford consulted with project directors to determine, on a district-by-district basis, which method would be used to administer the survey.

A total of 729 participating teachers in 13 school districts received an email request to complete either a professional development or technology use feedback survey. Teachers in Esmeralda, Eureka, Lander and Lyon County school districts did not receive a link to either online survey for the following reasons: 1) Wexford was not able to make a connection with the Esmeralda project director until late May when teachers were no longer available to complete the survey; 2) the project director in Eureka county informed evaluators that teachers would not complete the survey and did not send them the URL to the survey that evaluators had developed; 3) the project director in Lyon County asked that evaluators to wait to survey teachers until after the infrastructure upgrade was complete; and 4) Lander County was waiting until summer 2010 to begin project implementation, therefore, evaluators determined that it was not necessary to survey teachers in Year 1. It should also be noted that the respondents from Clark County represent only those teachers who received TeacherLine reimbursement or who used the FASTTMath program. Clark County teachers in schools

that received new workstations or servers will complete the survey in Year 2.

With the exception of the TeacherLine feedback survey, which was administered to Clark County teachers in April 2010, all surveys were administered in May 2010. The overall response rate was exceptionally high at 76 percent. Table 1 shows the breakdown of surveys administered and survey responses by district.

Table 1. Teacher Feedback Survey Response Rate by District

District	Surveys Administered	Responses Received	Response Rate
Carson City	106	88	83%
Churchill County	1	1	100%
Clark County	421	326	77%
Douglas County	16	16	100%
Elko County	3	3	100%
Humboldt County	42	32	76%
Lander County	-	-	-
Lincoln County	8	8	100%
Lyon County	-	-	-
Mineral County	54	27	50%
Nye County	40	26	65%
Pershing County	8	7	88%
Storey County	16	13	81%
Washoe County	13	12	92%
White Pine County	1	1	100%

Teacher Interviews

During site visits in April and May 2010, evaluators conducted face-to-face interviews with teachers in Carson City, Churchill County, Douglas County, Lincoln County, Nye County, Pershing County, and Washoe County. Project directors determined the schedule for teacher

interviews in advance of each site visit. Evaluators used a structured interview protocol to conduct interviews that lasted between 10-30 minutes depending on teachers' schedule and the amount of information they had to share about their experience in the grant-funded project.

Project Director Interviews

Evaluators used a structured interview protocol to conduct interviews with project directors in each district. Face-to-face interviews were conducted with the project directors in Carson City, Churchill County, Douglas County, Lincoln County, Nye County, Pershing County, and Washoe County; the other project directors were interviewed over the phone. Each interview lasted between 30-60 minutes.

Technology Trainer Interviews

Evaluators conducted face-to-face interviews with the Master Teachers who provided SMART Board training in Carson City, the SmartLab facilitator in Churchill County, and the Technology Integration Specialist in Lincoln County. Due to scheduling conflicts, the interview with the Technology Integration Specialist in Nye County was conducted over the phone and Washoe County's technology trainer was not available for a face-to-face or phone interview. Evaluators used a semi-structured interview protocol with the technology trainers because it provided the flexibility needed to gather project specific details and probe further into data gathered through teacher and project director interviews. Tech trainer interviews lasted between 20-45 minutes.

Classroom Observations

Evaluators used a structured observation protocol to capture teacher and student technology use data in Douglas County, and Washoe County.

Student Surveys

Evaluators administered two surveys to students at Lincoln County's Meadow Valley Middle School. The first survey was administered in December 2009 when the students received their netbook, The second

survey, designed to serve as a baseline measure of students' technology skills and typical use of the netbook at school and at home, was administered in May 2010.

Additional Data

Clark County provided end-of-the-year FASTTMath implementation and progress reports for each participating school and a monthly spreadsheet of TeacherLine reimbursements. Lincoln County shared the results of a parent survey developed by the project director and technology integration specialist. Mineral County provided a report of the district's web traffic that included the education and reference sites most frequently visited as well as the number of users who visited them and the length of time district computers were logged onto the sites.

Table 2. Number of Participant Interviews Conducted During Site Visits

District	Teacher	Project Director	Technology Trainer
Carson City	4	1	4
Churchill County*	-	1	1
Douglas County	4	1	-
Lincoln County	3	1	1
Nye County	3	1	1
Pershing County	5	1	-
Washoe County	7	1	-

*Note: the "Technology Trainer" interviewed in Churchill County is the SmartLab facilitator

Participants

Students

The \$2.1 million in Implementation Fund grant money awarded to the 17 school districts provided direct or indirect benefit to approximately 10 percent of the students in the State. Across all districts, students impacted by grant-funded high quality content, technical services, professional development and/or infrastructure totaled 42,564. By grade level, the greatest percentage of students impacted by the grant was high school students (37%), followed by elementary school students (33%) and middle school students (30%).

To put the numbers in context, Wexford developed two data tables that illustrate the reach of grant funds by schools within each district, and by students within the district. Table 3 shows the percentage of schools within each district that received some benefit (as defined by the funding categories) from the grant; Table 4 shows the number of students within each district that received a direct or indirect benefit from the grant funding. Wexford considers the student as an end user when categorizing those who received direct benefit from the grant (i.e., had classroom or computer lab access to new equipment, had access to upgraded wired or wireless connectivity, or engaged with high quality content). Wexford considers students who indirectly benefited from grant funding to be those whose teachers participated in professional development and brought new skills and knowledge to the classroom.

Table 3. District-wide Percentage of Schools Impacted by Implementation Fund Grant

District	Number of Participating Schools	Number as a Percentage of All Schools in the District
Carson City	6	67%
Churchill County	1	14%
Clark County	197	59%
Douglas County	7	64%
Elko County	2	6%

District	Number of Participating Schools	Number as a Percentage of All Schools in the District
Esmeralda County	3	100%
Eureka County	3	100%
Humboldt County	7	54%
Lander County	5	100%
Lincoln County	1	11%
Lyon County	9	53%
Mineral County	3	100%
Nye County	1	6%
Pershing County	3	75%
Storey County	2	50%
Washoe County	7	8%
White Pine County	1	14%

Districts, such as Lander County and Mineral County, made district-wide investments in infrastructure, which had an impact on 100 percent of the districts’ students. Small districts such as Esmeralda County and Eureka County, which used grant funds to make a district wide investment in equipment were able to reach all of their students. Pershing County, another small district, was able to reach 52 percent of its students through an investment in iPod Touch devices, and replacement workstations. Comparatively, when small districts, such as Churchill County, Lincoln County, and White Pine County used funds to support one grade level or one teacher, district-wide, fewer students benefited. The purpose of discussing the data in this way is not to equate quantity with quality, but merely to point out the reach that grant funding had relative to the type and level of investment districts made.

The data in Table 4 indicate that the various projects for which districts used their Implementation Fund grant money had a direct or indirect impact on students ranging from a low of one percent of the district’s students in Elko County to a high of 100 percent in Esmeralda County, Eureka County, Lander County, and Mineral County.

Table 4. Number and Percentage of Students Directly or Indirectly Impacted by Grant Funding

District	Total Number of Students Impacted by Grant	Total as a Percentage of All Students in the District
Carson City	2332	29%
Churchill County	260	6%
Clark County	26810	9%
Douglas County	1500	23%
Elko County	139	1%
Esmeralda County	66	100%
Eureka County	251	100%
Humboldt County	1076	32%
Lander County	1144	100%
Lincoln County	84	8%
Lyon County	4014	45%
Mineral County	588	100%
Nye County	1350	22%
Pershing County	371	52%
Storey County	275	63%
Washoe County	2184	3%
White Pine County	120	8%

Teachers

Based on the numbers project directors entered in the online database, over 1100 teachers across the state participated in Implementation Fund Grant projects. Fifty five percent of the grant participants were elementary school teachers; 27 percent were high school teachers, and 18 percent were middle school teachers. Collectively, they represent the teaching staff at 258 schools across the State. Wexford used online feedback surveys to collect demographic data on participating teachers. The data below are representative of almost half (49%) of the teachers.

Demographic Profile of Survey Respondents

Teachers who completed the survey had an average of 12 years of teaching experience with a range of one year (n=17) to 45 years (n=1). Males and females were represented 54 percent and 46 percent, respectively. The greatest percentage of respondents (29%) indicated that they were 50 years old or older; only 3 percent (16 of the 17 first year teachers) were aged 22-25. Most respondents clustered around the 31-45 year old age range. Most teachers (38%) were in self-contained elementary classrooms. The majority of middle school and high school teachers teach in core content areas including English/Language Arts (15%), Mathematics (13%), Social Studies/History (5%), and Science (11%). Participants also included Special Education teachers (7%), Computer/Technology teachers (4%) and other staff who were not in a regular classroom such as counselors, speech pathologists, librarians, and curriculum specialists (8%).

Table 5. Participants' Average Number of Years Teaching

Years	Number	Percent
1	17	3%
2-5	115	21%
6-10	139	26%
11-15	107	20%
16-20	75	14%
21-25	42	8%
26-30	28	5%
30+	19	4%

Table 6. Subjects Taught by Participating Teachers

	Frequency	Percent
Reading/English/Language Arts	81	15%
Mathematics	69	13%
Social Studies/History	26	5%
Science	59	11%
Special Education	38	7%
Computer/Technology	21	4%
Self-Contained Elementary Classroom	206	38%
Other	42	8%

Table 7. Participants' Teacher Certification Route

	Frequency	Percent
College/University undergraduate certification program	283	52%
College/University post-bachelor	222	41%

certification program		
Alternative certification program	33	6%
Not certified*	4	<1%

* Represents paraprofessionals

Table 8. Participants' Gender

	Frequency	Percent
Female	250	46%
Male	292	54%

Table 9. Participants' Highest Level of Education

	Frequency	Percent
Bachelors Degree	187	35%
Masters Degree	176	33%
MA +15	91	17%
MA +32	51	9%
MA +Advanced Studies Certification	4	<1%
Doctorate	3	<1%
Other	30	6%

The write in responses to "other" for teachers' highest level of education included associates degrees; college credits, but no degree; earned credits beyond the bachelor's degree; two bachelor's degrees; and two master's degrees.

Table 10. Participants' Age

	Frequency	Percent
22-25	16	3%
26-30	58	11%
31-35	80	15%
36-40	89	16%
41-45	81	15%
46-50	63	12%
50+	155	29%

Other Participants

Based on the data entered into the online database, a total of 28 administrators within Carson City, Clark County, Elko, Lander, Lincoln, Mineral, Washoe, and White Pine County participated in the grant. Project Directors also reported a total of 45 "other" district

staff that were either recipients of grant-funded equipment and/or professional development.

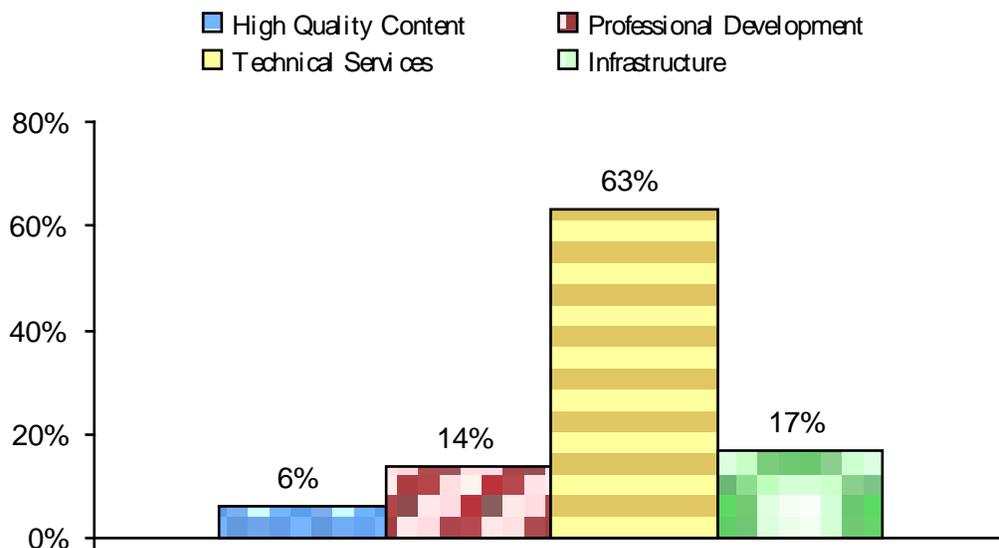
Table 11. Number of Grant Participants by District

District	# of Schools	Teachers			Students			Admin.
		Elem.	Middle School	High School	Elem.	Middle School	High School	
Carson City	6	106	-	-	2332	-	-	6
Churchill County	1	-	1	-	-	260	-	-
Clark County	197	275	49	67	8250	7840	10720	2
Douglas County	7	7	6	3	150	900	450	-
Elko County	2	-	1	2	-	61	78	1
Esmeralda County	3	4	2	-	42	24	-	-
Eureka County	3	13	2	15	131	39	81	-
Humboldt County	7	5	2	35	150	60	866	-
Lander County	5	30	12	27	574	176	394	9
Lincoln County	1	-	8	-	-	84	-	1
Lyon County	9	138	87	78	1738	1020	1256	-
Mineral County	3	20	17	17	300	133	155	6
Nye County	1	-	-	40	-	-	1350	-
Pershing County	3	8	3	1	158	145	68	-
Storey County	2	6	-	10	112	-	163	-
Washoe County	7	-	-	13	2184			2
White Pine County	1	-	-	1	-	-	120	1
Total::	258	612	203	296	13937	12926	15701	28

Grant-Funded Expenditures

Across funding categories the greatest percentage of money (63%) was spent on technical services. Clark County, Lincoln County, and Washoe County School Districts each used a portion of their grant money on consultant services, but most of the technical services money, across districts, was spent on equipment such as workstations, servers, laptops, netbooks, interactive whiteboards, interactive tablets, learner response systems, and iPods.

Figure 1. Percentage of Grant Money Allocated Toward Each Funding Category



The smallest percentage of grant money (6%) was allocated toward high quality content, which included Clark County's purchase of the FASTTMath integrated learning system, Churchill County's purchase of the SmartLab 21st Century Learning curriculum, a couple of math software titles purchased by Lincoln County, productivity software purchased by Elko County, and iPod

Apps purchased by teachers in Pershing County. Grant money allocated toward infrastructure and professional development accounted for 17 percent and 14 percent, respectively, of total expenditures related to the major funding categories of the Educational Technology

Implementation Fund Grant. Of the nearly \$280,000 allocated toward professional development, just over half of that (\$141,545) was spent on trainer salaries and stipends. In Carson City, each of four Master Teachers received a \$1500 stipend for conducting SMART Board training. In Lincoln and Nye County the professional development money funded a part-time and full-time Technology Integration Specialist, respectively, and in Washoe County, a portion of the full-time salary and benefits of the district's Interactive Technology Coordinator.

Funding for the pilot project category is not include in this total because the cost of implementing Lincoln County's pilot project is subsumed within the expenses associated with the other four funding categories and because Washoe County did not begin their pilot project in Year One and thus did not incur any costs associated with it. The total amount of Year 1 grant money spent within the four main funding categories totaled \$1,985,218, or 95 percent of the total grant money awarded in Year 1. The remaining five percent was spent, across districts, on teacher stipends, general supplies, professional development related travel, and indirect costs.

Table 12. Total Expenditures Across Funding Categories

District	High Quality Content	Professional Development	Technical services	Infrastructure
Carson City	-	\$23,983.03	-	-
Churchill County	\$26,016.15	-	-	-
Clark County	\$84,450.00	\$119,999.21	\$809,809.39	\$245,900.00
Douglas County	-	-	\$29,135.15	-
Elko County	\$1,387.88	-	\$41,652.95	-
Esmeralda County	-	-	\$19,065.52	-
Eureka County	-	-	\$17,996.00	-
Humboldt County	-	-	\$23,154.60	-
Lander County	-	-	-	\$19,657.65
Lincoln County	\$2,851.29	\$12,906.01	\$60,502.50	\$17,906.45
Lyon County	-	-	-	\$44,221.24

Mineral County	-	-	-	\$17,479.00
Nye County	-	\$62,638.76	-	-
Pershing County	\$1,000.00	-	\$16,675.00	-
Storey County	-	-	\$20,480.80	-
Washoe County	-	\$60,000.00	\$193,689.00	-
White Pine County	-	-	\$12,483.44.00	\$176.98.00
Total:	\$115,705.32	\$279,527.01	\$1,244,644.35	\$345,341.32

District Implementation Across Funding Categories

Most districts (n=12) received grant money to support implementation in one funding category. Lincoln County was the only school district awarded grant money in each of the funding categories. As shown in Table 13, the number of districts funded in each category included: three for high quality content, six for professional development, two for pilot projects, 11 for technical services, and six for infrastructure. A discussion of how districts used grant funds to support project implementation in these funding areas follows.

Table 13. Categories of District Grant Awards

District	High Quality Content Material	Professional Development	Pilot Projects	Technical Services	Infrastructure
Carson City		X			
Churchill County	X				
Clark County	X	X		X	X
Douglas County				X	
Elko County				X	
Esmeralda County				X	
Eureka County				X	X

District	High Quality Content Material	Professional Development	Pilot Projects	Technical Services	Infrastructure
Humboldt County				X	
Lander County					X
Lincoln County	X	X	X	X	X
Lyon County					X
Mineral County					X
Nye County		X			
Pershing County				X	
Storey County				X	
Washoe County		X	X	X	
White Pine County		X		X	

High Quality Content Material

Churchill County School District

Churchill County used all of its grant money to buy the curriculum components associated with Creative Learning Systems' SmartLab. The SmartLab is physically, a configuration of workstation "islands" and instructionally, a curriculum designed to engage students in STEM-based hands-on learning "engagements" that promote critical thinking, problem solving skills, collaboration, and communication skills. The SmartLab was installed in Churchill County Junior High, and the SmartLab course was offered to 8th grade students. The engagements are developed around projects within the following areas: Alternative Energy, Circuitry, Computer Graphics, Computer Simulation, Mechanics & Structures, Multimedia, Publishing, Robotics & Control Technology, Science and Data Acquisition. The role of the SmartLab facilitator is to orient students to the curriculum, monitor their ePortfolios, keep

the lab in operating condition and make sure that students have all the components they need to complete the engagements.

The SmartLab experience is almost entirely student-led. After going through an orientation period students, working in teams of two, start from their web-based home page to plan their learning activity for the period. SmartLab comes with a Project Planner flowchart so students always know where they are in an engagement (i.e., what they have completed and what they need to do next). Teacher assistance with using technology tools is at a minimum because students are encouraged to use the Atomic Learning video tutorials to learn how to use a technology tool they have not used before. Each engagement is developed at three levels of difficulty. The facilitator encourages students to begin at Level One, but they are not required to do so and each team makes their own decision about where to begin. Student work within an engagement includes writing objectives for the day, working through the activities, and using the ePortfolio to document what they did and what they learned. Churchill County purchased five islands, and each island includes three engagements. The SmartLab facilitator estimates that students enrolled in the spring semester were able to complete 10 of the 15 available engagements.

When asked by an evaluator how he knew the SmartLab was working, the junior high principal stated, "I'll get an idea from high school teachers a few years from now. I can ask them have you noticed these things about our students. It's going to be hard to measure. We can measure tech skills, but that's a secondary objective for the class. The primary reason for the class is to teach work skills."

Clark County School District

Clark County School District used a portion (6%) of its grant money to buy FASTTMath software for 130 teachers in 10 schools. FASTTMath is an integrated learning system that engages students in various games and activities to build fluency in addition, subtraction, multiplication, and division math facts. FASTTMath is a prescriptive program that requires 15 minutes of practice per day for a minimum of three days

per week. The program includes built in assessments, student reports that teachers can download, and implementation and progress reports that the district administrator can generate at the classroom, school, and district level.

The end-of-year implementation and progress reports reveal that across participating schools, only 43 percent of enrolled students used FASTTMath the recommended three or more times per week. The level of implementation varied across school sites from eight percent to 64 percent. While most schools did not fully implement FASTTMath with all of their students, the implementation reports provide data that indicate that using the program as recommended has a positive impact on students' fluency with math facts. The data show that across participating schools, students who used the program three or more times a week showed a 36 percent gain in progress toward achieving fluency compared to a nine percent gain achieved by students who used the program less than three times a week.

While allowing that the rate of implementation was likely impacted by the program not being installed until March 2010, the project director is still concerned about the low level of teacher participation. She is, however, committed to supporting teachers in their implementation for Year 2 by providing more professional development support to ETSSs, teachers, and administrators, and sharing monthly summary reports with administrators.

Lyon County School District

Lyon County did not use grant funds to pay for high quality content, but the grant-funded investment in infrastructure is expected to increase student access to the A+nywhere Learning System courseware program. In the first semester of the 2009-10 school year 204 Lyon County School District students were enrolled in A+nywhere Learning. Most of them (n=135) were enrolled for credit recovery; an additional 69 students were considered distance education students, taking courses because they were medically homebound, had been expelled, or were seeking credit advancement. With the network upgrade of routers

and switches, the project director anticipates that the number of students enrolled in and completing courses will increase by 50 percent over the fall enrollment to over 300 students. At the time of this writing, the spring enrollment and course completion data were not available.

Lincoln County School District

Lincoln County used a small portion of its grant money to buy math-related software titles and a license for Passport to the Internet, an online tutorial/simulation program that teaches elementary and middle school students about topics such as online safety, protecting their privacy, discerning the authenticity of online information, and cyberbullying. In response to a survey administered by Wexford after students completed the training, 81 percent of the students indicated that they had an understanding of what cyberbullying is and 73 percent felt that the training had taught them how to safely surf the Internet.

Professional Development

Teachers in Carson City, Douglas County, and Washoe County received training on the use of interactive whiteboards. A cohort of four, SMART Board certified, Master Teachers provided training to Carson City teachers. Washoe County teachers were trained on the use of the Promethean suite of interactive devices including the whiteboard, student response system, tablet, and document camera. Teachers in Douglas County participated in the Washoe County Promethean training through an EETT grant partnership and therefore did not have to use Implementation Fund money to pay for professional development. Clark County used grant money to support online teacher professional development by reimbursing teachers who successfully completed courses through Vegas PBS TeacherLine.

Lincoln County and Nye County used grant money to fund a Technology Integration Specialist (TIS) position. Lincoln County hired a part-time TIS to provide one-on-one training support to teachers at Meadow

Valley Middle School. Nye County hired a full-time TIS to provide training and support to teachers at Pahrump Valley High School.

To capture the full scope of teachers' professional development during the 2009-10 school year, Wexford asked project directors to use the online database to record details of each grant-related professional development activity. The online form includes input fields to record the month in which the training was offered, the total number of contact hours for each training, the number of participants, provider type (i.e., district technology coordinator, site based master teacher), delivery method (i.e., face-to-face, one-one-one, online), and the type of sessions (i.e., one time training, just-in-time, one session in a series). A total of 188 professional development activities were entered into the database, ranging from one hour "just-in-time" training to three-day technology skills and integration sessions; CUE Conference attendance was also recorded. Table 14 shows the number of professional development offerings provided, by district, in each month from September 2009 - May 2010. Note that the TeacherLine courses are not included in this table, but are discussed later in the report.

Table 14. Number of Professional Development Sessions Offered by Month and District

District	Sept. 2009	Oct. 2009	Nov. 2009	Dec. 2009	Jan. 2010	Feb. 2010	Mar. 2010	Apr. 2010	May 2010
Carson City	-	-	-	-	6	8	4	-	1
Douglas	-	-	-	-	1	1	1	1	1
Elko	-	-	-	-	2	4	3	1	-
Esmeralda	-	-	-	-	-	-	-	6	-
Lincoln	-	1	-	-	6	2	1	-	1
Nye	2	18	20	10	7	4	6	4	17
Pershing	-	-	-	-	-	1	-	-	1
Washoe	5	2	1	1	2	2	5	1	2
White Pine	-	-	-	-	-	5	1	1	17

The data in Table 14 reveal interesting findings about the implementation of teacher professional development. For various

reasons, districts that provided teacher professional development did not begin doing so until January 2010. The Master Teachers at Empire Elementary School in Carson City wanted to be SMART Board certified before starting their training for other teachers in the district. They completed their certification process in December 2009 and offered their first workshop in January 2010. Note that the six sessions offered in Carson City in January reflect one session at each of the participating elementary schools, not one cohort of teachers attending six different training sessions. Douglas County's project director developed a training schedule based on the resources available to him through an EETT grant partnership with Washoe County. The start of professional development in Elko was also affected by the date when equipment was distributed to teachers. Elko County and White Pine County teachers participated in training based on the Nevada Pathway Project implementation schedule.

For the purpose of tracking teacher participation, only those teachers in Washoe County who received a new grant-funded ActivBoard were considered participants. Table 15 shows that Washoe County offered a number of training sessions each month from September 2009–May 2010. However, because a portion of Washoe County's Interactive Technology Trainer's salary was paid out of Implementation Fund money, and the trainer facilitates workshops for teachers in Washoe and other counties, it is difficult to filter out which training applies specifically to the teachers who received new boards and which to district teachers who already had an ActivBoard. This explanation is provided to communicate that evaluators cannot say for certain how many hours of training the teachers who are considered grant participants received and when the training began.

Of the \$18K that Pershing County received in its Year 1 award, only \$1200 was approved for professional development. This was not enough to cover the \$5900 cost of vendor-provided Apple training. In February 2010, an Apple sales representative provided teachers with a brief session covering basic operation and functions. The project director was made aware of free online tutorials and guides to using the iPod

Touch and shared these with teachers. Teachers who received the iPod Touch devices did not receive formal training on how to use them in their classroom until May 2010 when funding from another district grant was used to pay for a full-day training session.

Table 15. Teacher Professional Development Hours in Structured Training Sessions

District	Number of Sessions Per Teacher	Hours Per Session	Total Hours Per Teacher
Carson City	5	20	20
Douglas County	5	1.5	7.5
Pershing County	2	3/8	11
Elko County	10	5/1	46
Washoe County*	Varies	1-16	Varies
White Pine County	24	½ - 2	22

Table 15 shows that teachers who participated in structured professional development sessions (i.e., face-to-face or online training on a specific topic organized by the trainer) related to using grant-funded equipment, engaged in an average of 8.5 sessions and 21 hours of training for the entire school year. The number of sessions ranged from a low of two in Pershing County to a high of 24 in White Pine County.

Teachers in Esmeralda County, Lincoln County and Nye County received one-on-one training and the number of training hours varied greatly across the districts. In Esmeralda County six of the district's eight teachers received five hours of just-in-time training on how to use the Interwrite Mobi Tablets that were purchased with grant funds. This training began in April 2010 following receipt of the Mobi Tablets in March. In describing the training, the project director, who is also the district technology coordinator, said, "The training is done by me, one-on-one with each teacher. This tends to give the best results to the teachers; they ask more questions and with the equipment in their hands they get very comfortable with the [it]. After the first or second session we then add the students for more training and

questions." A more detailed discussion of the training provided by Nye County and Lincoln County's Technology Integration Specialist, as well as an overview of the professional development experience of Clark County teachers who completed TeacherLine courses is presented below.

Training Provided by Technology Integration Specialists

The teachers at Pahrump Valley High School in Nye County and Meadow Valley Middle School in Lincoln County had access to an onsite trainer who was available to provide one-on-one assistance with technology skills and integration. Both of the Technology Integration Specialists had similar experiences in fulfilling the responsibilities of their position. They initially struggled to build rapport with teachers and were frustrated by teachers' response to their early efforts to provide support, they spent a lot of time compiling content-specific web-based resources and software solutions with little or no response from teachers about whether or not this was meeting their needs, and a portion of their time ended up being allocated to a tech support role. The Pahrump Valley HS TIS shared, "I was told by the principal to not get into the tech support role, but if I had time I would come over and fix the printer or do quick fixes. I did a lot to make sure projectors were working because I thought that was essential. If those didn't work then half of my ideas I was presenting wouldn't work. I made sure things worked before I introduced the idea to teachers because there is a level of frustration about not wanting to try things if the technology isn't going to work."

The way in which the Technology Integration Specialists came into their position is important to note as it provides context for how their position played out during the school year. Nye County School District required that someone on the district's Reduction in Force (RIF) list fill the TIS position. The person selected for the position was the most ideal candidate on the RIF list because he had previously worked at the high school; however, he was an English teacher and did not have technology integration experience. He was fully committed to the position and made every effort to meet teachers' needs, but

admittedly he felt inadequate to provide relevant and sufficient technology integration support to the math and science teachers because he was not familiar with the content.

Lincoln County School District hired someone who previously worked in the business sector to fill its Technology Integration Specialist position. This person brought many workplace skills needed to be successful in the position, but did not have experience in school settings. She was familiar with technology from a business solutions perspective, but not from an instructional technology perspective, and admittedly had to take time to learn how to use technology that teachers were interested in using in their classrooms. In reference to this learning curve she shared that, "As far as working with teachers they might tell me they want to use Moodle but I have to learn it first. So I created some cheat sheets for them on how to do assignments, lesson, choices, quizzes. I used Moodle to teach Moodle." Additionally, she was not familiar with the middle school curriculum and needed to rely heavily on teachers to communicate their needs, which did not always happen.

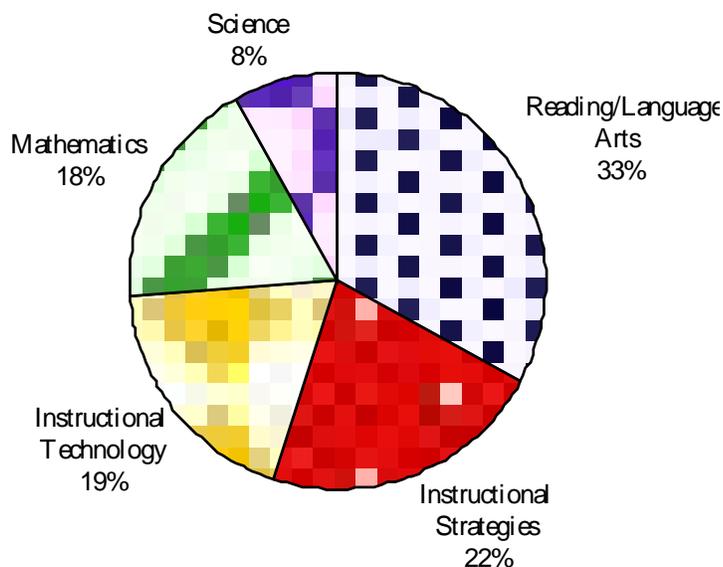
When their total hours of one-on-one support provided are viewed within the scope of an entire school year, the numbers indicate limited interaction with teachers in a one-on-one support role. In her part-time position, the TIS at MVMS logged 361 hours in 54 days on campus for the entire school year, which is the equivalent of about 10 weeks. Wexford analyzed data from her monthly "time and effort" log to determine that within that time period she spent about 14 hours, or four percent of her time, providing one-on-one training support to teachers. This number is adjusted to take into account Lincoln County's 4-day school week, the fact that she did not start her position until the end of November, and that her position was part-time. The TIS in Nye County logged over 80 percent more direct contact hours with teachers (n=88 hours), but given that he was in a full-time position, that still equates to only about eight percent of his time. An analysis of his monthly time sheets indicates that over half of his training time (59%) was spent meeting individually with teachers to

discuss their technology integration needs and/or sharing content-specific web-based resources that could be integrated into the teachers' curriculum. The remainder of his time, that evaluators categorized as "training," was spent showing teachers how to use equipment (11%), helping teachers plan and implement a technology project in the computer lab (18%), or attending subject level Professional Learning Community (PLC) meetings to share content specific technology resources.

Vegas PBS TeacherLine Professional Development

Clark County School District used Implementation Fund grant money to reimburse 291 teachers for completion of 371 TeacherLine courses. Most teachers submitted reimbursement for two-credit courses (58%) followed by three-credit course (18%) and one-credit courses (11%). Over three-fourths of the teachers (76%) completed one course and 21 percent completed two courses. Just two percent of teachers completed three courses, and one percent completed four courses. Vegas PBS TeacherLine courses are offered in five main categories: Instructional Strategies, Instructional Technology, Reading/Language Arts, Mathematics, and Science. One-third of the teachers (33%) completed a Reading/Language Arts course; 22 percent completed an Instructional Strategies course; 19 percent completed an Instructional Technology course, 18 percent completed a Mathematics course, and eight percent completed a Science course.

Figure 2. Percentage of Teachers Completing Courses in Each Course Category



Pilot Project

Lincoln County and Washoe County were the only districts that proposed pilot projects. Lincoln County's pilot project is a one-to-one netbook project at Meadow Valley Middle School. The project director plans to use lessons learned from this year to expand the netbook project to four other schools in the district. Key components of the one-to-one project include allowing students to take the netbook home and using the netbook to transition students from hardbound to electronic textbooks. Washoe County proposed to explore cloud computing from the perspective of cost savings and increased student access to district-provided software. This project is not likely to get underway given that the Washoe County project director retired in June 2010 and his vacant position is not going to be filled.

Technical Services

Eleven of the 17 school districts used grant funds to pay for technical services, the majority of which were the purchase of hardware such as servers, workstations, netbooks, and laptops. Funding for technical services was also used to pay for equipment installation and network training for IT staff.

Table 16. Equipment Purchased with Implementation Grant Funds

District	Technical Services
Clark County	Teacher Workstations School Servers Contracted equipment installation
Douglas County	Interactive whiteboards Learner response systems
Elko County	Teacher Laptops Teacher and Student iPods
Esmeralda County	Interactive Tablets
Eureka County	Teacher Workstations
Humboldt County	Teacher Workstations
Lincoln County	Teacher and Student Netbooks Digital Cameras HD Video Cameras
Pershing County	iPod Touch Netbooks
Storey County	Audio Enhancement Systems
Washoe County	District Server Interactive Whiteboards Learner Response Systems IT Network Training
White Pine County	Teacher Laptop Teacher and Student iPods

The data in Table 17, below, are compiled from the information project directors entered into the online database. Statewide, The largest

number of units purchased was 495 workstations, followed by 137 netbooks, 114 laptops, and 84 iPod Touch. Twenty-five or fewer units of equipment such as student response systems (n=24), document cameras (n=20) and servers (n=16) were purchased with grant money. The number of monitors purchased is lower than the number of workstations because in most cases the cost of the monitor was included in the cost of the workstation. The total cost of workstations is equal to about 18 percent of the total Year 1 funding; workstations, laptops, and netbooks combined equal about 25 percent of Year 1 funding.

Table 17. Number and Cost of Equipment Purchases Across Districts

Equipment	Units Purchased	Number of Districts	Total Cost
Server	16	2	\$102,795.00
Workstation	495	4	\$371,609.41
Monitor	43	1	\$3,612.00
Laptop	114	4	\$99,577.30
Netbook	137	3	\$51,615.12
Interactive Whiteboard	10	2	\$32,033.65
Interactive Tablet	11	2	\$4,255.28
Document Camera	20	2	\$10,803.76
Student Response System	24	2	\$31,897.00
iPod	84	3	\$14,505.75
Audio Enhancement System	14	1	\$19,460.00
Digital Cameras	5	1	\$3,229.27
Video Cameras	12	3	\$7,175.02

Infrastructure

Six of the school districts used grant funds to pay for infrastructure. While all of the districts spent their infrastructure money in Year 1, three of the districts will not begin their upgrades until summer 2010. Clark County used grant money to pay for the annual renewal of its filtering and Novell licensing software. This investment allowed the district to remain CIPA compliant and therefore

eligible to apply for eRate funding. Eureka County will begin installing a wireless networking system in three of its schools in summer 2010. Lander County used all of its grant money to replace network switches; the installation will begin in summer 2010. Lincoln County used some of its grant money to support installation of a wireless network at Meadow Valley Middle School. Lyon County used all of its grant money to upgrade core switches and routers to improve student access to the district supported A+nywhere Learning System. The upgrade is only partially completed and will continue in summer 2010. Mineral County used its grant money to buy spam, web filtering, and antivirus software. The web filtering software was installed during the 2009-10 school year and the other software will be installed during summer 2010.

Supplementing Implementation Fund Grant Money

Some project directors indicated that they had to supplement Implementation Fund grant money with other funding sources to complete their Year 1 activities. In order to accurately document the amount of supplemental funding districts required Wexford asked project directors to record this information in the online database. Based on data collected in the online database, 11 districts supplemented their educational technology grant money with district funds, county bonds, Title IID, Title IIA, and Title V money, as well as other state funding. Examples of districts supplementing their ed tech grant money include Carson City using \$6600 in Title IIA funding for the four staff members at Empire Elementary School to go through the SMART Board training certification, Nye County using \$11,000 in EETT funds to cover the full cost of salary and benefits for the technology integration specialist hired to work at Pahrump Valley High School, Pershing County adding \$7000 in district funding to complete its workstation order and an additional \$2900 from another district grant to pay for a full day of Apple professional development.

Part Two

Year 1 Outcomes

How have grant funds impacted student engagement?

The investment in technology that lands directly in students' hands has a tremendous impact on their level of engagement with the learning process. Regardless of the technology (interactive whiteboards, netbooks, iPod Touch, SmartLab), the majority of teachers indicated that their students were more engaged when they were using technology. Teachers reported the following behavior as it relates to student engagement:

- Students becoming more interested in the writing and peer review process
- Students exhibiting pride of ownership in caring for their netbook
- Students working above and beyond the requirements for their assignments
- Students helping each other problem solve and troubleshoot
- Students who typically did not raise their hand in class were doing so for the opportunity to use the interactive whiteboard
- A decrease in behavior problems
- Students in classrooms with audio enhancement systems are more attentive and spend more time on task

Teacher Comments about Student Engagement

The netbooks have been a wonderful learning tool in the classroom. I have seen student's who hated to write or read enjoy researching information on the Internet. I have also seen struggling students teach other students how to use programs.

It has kept my students engaged in the learning process. I teach the lesson and then they get to use that information on the touch by

playing a game related to that subject. It is very visual and motivating and also incorporates a lot of different learning styles at once.

Students are more engaged during lessons in which the smartboard is used.

Interactive smartboard lessons keep students engaged and striving for understanding. ESL students' vocabulary acquisition has improved dramatically with visuals and activities.

When I was in the other lab teaching a regular computer class, they drove me nuts. They were all on an IEP and some had discipline plans. They were a very tough class. When they were here [in the SmartLab] they became a different class. I had zero discipline problems. Kids would get mad when they couldn't come over here. I loved having that class over here. It's a good example of how kids want to be doing things. I didn't get the best projects, but they were working and probably learning things they wouldn't get otherwise.

It's been so positive because they are so much more focused. It's amazing. When I have something for them to do on the netbook even if it's not different from what I would have done before but I'm just using the netbook for it they are just tuned in. The thinking can't be different because the assignments aren't that different. I think they are just engaged.

How have grant funds impacted teachers?

The grant funds have afforded teachers many opportunities related to the use of technology including:

- Getting previously reluctant teachers to use available technology
- Spending more time preparing lessons
- Giving more thought to how they can engage students in the use of technology
- Changing their teaching style from teacher-centered to student-centered
- Collaborating more with other teachers, increasing overall productivity
- Increasing use of technology for administrative tasks
- Increasing use of email to communicate with parents and other teachers

- Utilizing more web-based resources

Of all the data collected in response to the question, "How has your planning and instruction changed since receiving the [fill-in-the-blank] technology?" the teacher response below truly epitomizes what is meant by using technology to change the way teachers teach and students learn. The teacher from Meadow Valley Middle School in Lincoln County talks about moving beyond worksheets (i.e. teacher-centered) and using technology to engage students in authentic learning while releasing control of the learning process.

What comes to mind is what I did today. Before having the netbooks all of the planning was very teacher oriented. I was picking the text they were reading, what to make copies of for everybody. I was picking what examples of things they would be reading. After the netbooks I am trying to have the kids make more choices. In terms of what they are reading and what examples they can find. Here's an example. Today we were reviewing for test they are taking on Wednesday. I had them go on the Internet and find examples of the terms that they will be needing for the test. Instead of preparing something ahead of time, making copies and handing it out, they were getting on the Internet and finding examples of a metaphor. They were sharing with the class and we were discussing it. I thought it was effective because I didn't know ahead of time what they would find so they go to see me thinking. I was on the spot. So they saw me thinking out was this a metaphor or a simile. I was able to participate more in the discussion. It felt more engaging because I didn't rehearse it ahead of time. And they knew that. I thought it went well today.

The Technology Integration Specialist at Pahrump Valley HS in Nye County shared that over the course of the school year more teachers had become interested in using technology.

The second half of the year was much better than the first half. I think there are at least two teachers in each department who are going to do something that is technology based. That's 8-10 teachers who will carry the torch of using technology in the classroom

In my initial classroom observations, there was very little technology being used. Some science teachers were using PowerPoint and most had notes on an overhead. I sat in with a class for the whole week and

then come back with some suggestions of ways they could add technology components. I had to convey to the teachers that teaching in the 21st century is more visual to keep the kids engaged. I would show them how to search for things. It all came down to them needing to know what search terms to use. They were afraid of the unknown. These were teachers that have been teaching for 20 years + so it was hard to get them to think of new things, but it was eventually successful.

In addition to the positive outcomes related to the grant, there are also unintended consequences. These include:

- Increased teacher awareness of everything they *don't know* about technology
- Increased frustration and subsequent feelings of guilt that they don't have time to do more with technology
- Increased frustration with limited troubleshooting skills and/or inadequate tech support
- Increased frustration with limited resources to acquire more, newer, or better technology and/or additional professional development training

Change in Teacher Practice

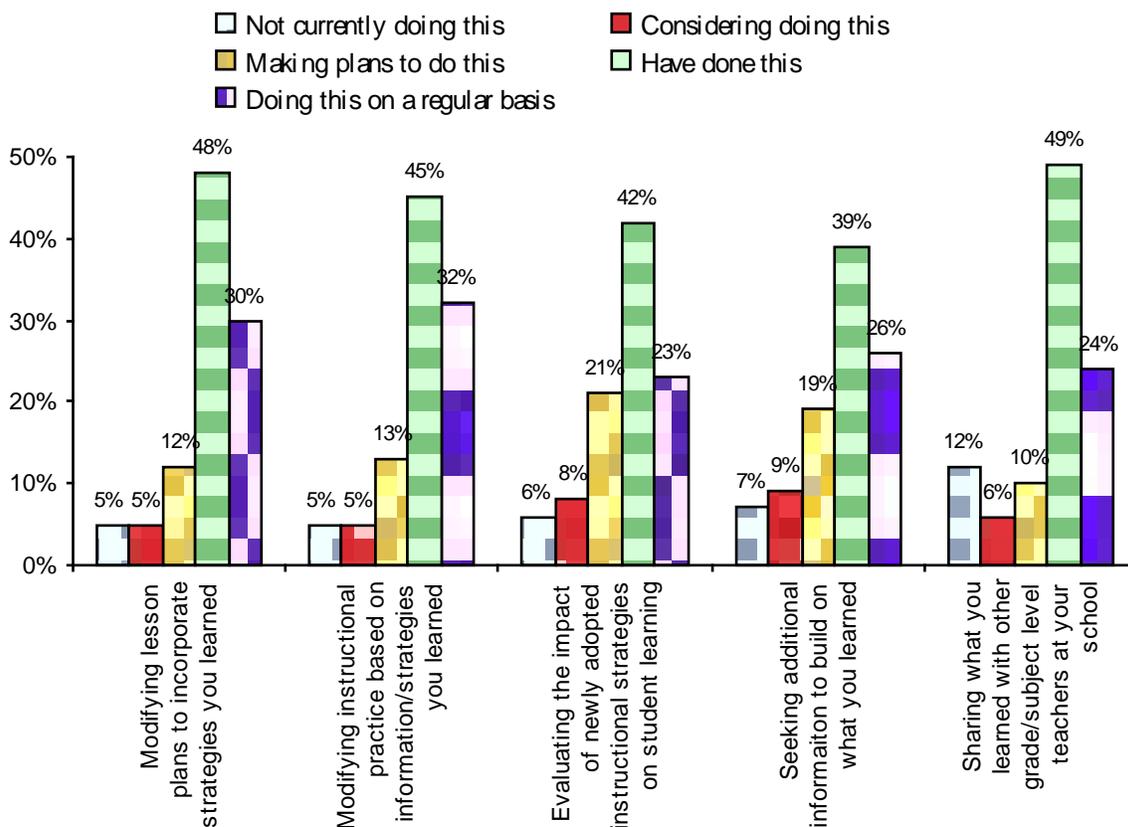
During face-to-face interviews with teachers, evaluators asked them to describe how their teaching and planning had changed as a result of having access to new technology and/or technology-related professional development. Teachers shared that they have an increased enthusiasm for planning interactive SMART Board lessons, they find themselves relying less on information exclusively in textbooks, and increasingly adding more media to their lessons including PowerPoint, United Streaming Video, and music.

In reflecting on how her teaching had changed as a result of using the ActiveBoard, one teacher shared that before she had the board in her classroom she struggled with how to teach the "big idea" using only textbooks. She didn't know how to make learning "real" for students. Now she says, "I have the world at my fingertips and we can instantly

'go, see, interact' and I do not have to worry that I haven't planned for stuff...I no longer have to tell students 'we can see that tomorrow'...with [the ActivBoard] we can see it now." Another teacher shared that with the ActivBoard she feels "less confined" and has the freedom to pull in other ideas and ways to present material to engage her students. In expressing her transition from teacher-centered to student-centered, she told the evaluator, "now I go where I sense my students want me to go."

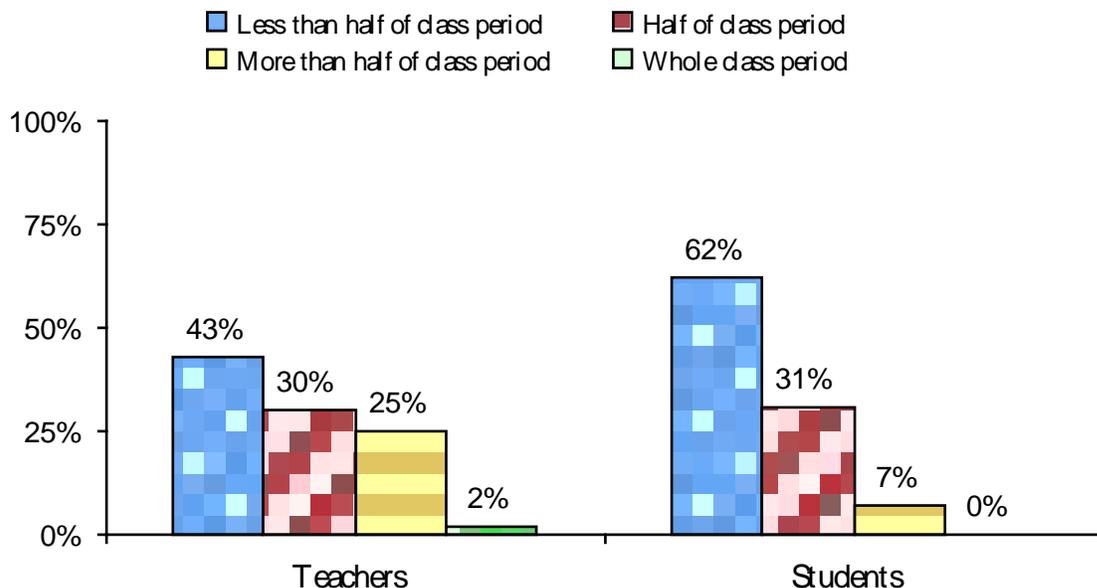
Wexford also used a question on the feedback surveys to gather data on the extent to which teachers were modifying their instruction based on strategies they learned through their training, evaluating the impact of the strategies on student learning, seeking out additional information to expand their knowledge of what they had learned, and sharing what they learned with other teachers. Teachers' responses indicate that the majority of them have engaged in these post-training activities at least once or are doing so on a regular basis. Over three-fourths of the respondents, 78 percent and 76 percent, respectively, indicated that they had modified their lesson plans and their instructional practice based on strategies they learned in their training. Over two-thirds of the teachers reported that they have evaluated the impact of newly adopted instructional strategies on student learning (65%) and sought additional information to build on what they learned (65%). Seventy-three percent of the teachers indicated that they have shared what they learned with other teachers.

Figure 3. Change in Teachers' Professional Practice



In light of data that indicate that teachers are using technology, there is room for improvement in Year 2 to increase the frequency with which it is being used. Evaluators asked teachers to indicate the frequency with which they were using grant-funded technology and just 25 percent of teachers indicated that they use technology for more than half of a given class period; only seven percent of students are using technology for this length of time. Almost one third of the teachers reported that they (31%) and their students (30%) use technology at least half of the class period,

Figure 4. Amount of Class Time that Teachers and Students Use Grant-Funded Technology



Project Directors’ Satisfaction with Teacher Participation

During interviews with project directors, Wexford asked them to describe their level of satisfaction with the extent to which teachers were participating in grant activities and using technology in the classroom. Responses ranged from “extremely” satisfied to “it depends on the user” to “not satisfied.” Those who were very satisfied cited a high level of use and engagement by most or all teachers. Some project directors indicated that elementary teachers were more involved and engaged than middle school and high school teachers. Project directors did offer some allowance for low or non-participating teachers citing that software was installed later than expected, equipment arrived late in the school year (e.g., January - March), or that teachers were possibly involved in too many programs at the same time. Among those who were moderately satisfied or not satisfied, all expressed determination to make program changes in Year 2 to get teachers more actively involved. Only one project director expressed a desire to take equipment away from teachers who were not using it, but this comment seemed to be made out of frustration about not having enough money to buy more equipment for teachers who want to use it while at

the same time having new equipment in the hands of non-participating teachers. A few representative quotes are shared below.

[I am] extremely pleased with the participation at the sites. The growth of the teachers, the skill level of our trainers. The collaboration across the sites and with administrators is something we're very pleased with. Teachers have an increased confidence in using [the SMART Board]. Initially they only wanted to use it as not a tool to be shared with students and now they are opening it up with students to interact alone or in collaborative groups.

[I'm satisfied with] the teachers that have embraced it. I have two that are dragging their feet, but out of everybody who's here I only have two that are dragging their feet and they're my oldest teachers. The others have embraced it and they love getting the interaction with the students.

I've been very pleased. I think that most of the staff will say they haven't used the tech to the degree that they want. I see that as a good thing and an indication that they want to do more. I think we've really seen this as the next step for us in what we've been doing. I've seen a lot of pretty cool things that people are doing. There have been some restrictions due to our technical problems but overall I'm very pleased with staff involvement.

In my opinion it's not widespread enough. But we're starting in little pockets and spreading out. We have 6 teachers here in Hawthorne and two more in Schurz who are feeling comfortable in using technology. Some of that is catching on and so teachers are asking for more training and equipment. I think that's just the nature of old dogs learning new tricks.

[I'm] not necessarily that satisfied with classroom teachers who have the boards. But the lesson learned there is that perhaps a white board in every classroom is not as necessary a technology as previously thought, particularly at the middle school and high school levels. Perhaps the other technologies like the iPods and tablets are more appropriate for the high school. I need to rethink this."

Barriers to Implementation

Evaluators asked teachers to select from a list of common barriers those that were keeping them from doing more than they were currently doing with technology in the classroom. Choices ranged from not having time to process what was learned in professional development training to comfort with the way things are currently done in the classroom, to concerns about classroom management. Multiple responses were allowed and teachers did not rank order the barriers.

The two options that were selected by most teachers were "existing curricular demands" and "limited time to revise lesson plans" at 54 percent and 49 percent, respectively. Limited time to process what they had learned and preparing for state testing were also barriers for 29 percent and 26 percent of respondents, respectively. All of the other barrier options were selected by less than 10 percent of the teachers; respondents did, however, write in comments about additional barriers that they faced. These ranged from "apprehension about technology failures" occurring during a lesson to a few teachers who indicated that they had limited administrative support. Although in interviews some teachers expressed concerns related to students' technology skills, most teachers did not consider this a barrier.

Additional Support Needs

Evaluators also asked teachers to indicate their additional support needs related to implementing the use of technology in their classroom. Only 67 teachers included remarks to this open-ended question, so the responses, while instructive, are representative of only 12 percent of the survey respondents.

Teachers' responses to this question fell into five main categories: time, training, equipment, collaboration, and tech support. The majority of the respondents, 45 percent and 46 percent, respectively, indicated that they needed more time and more training. The need for more time was further qualified by teachers' desire for more time to revise lessons, more time to develop lessons, more time to process what they had learned, more time to practice what they had learned, and more time to implement what they had learned. The desire for more training was qualified by the request for more on-site, one-on-one follow up training, more hands-on training, more modeling during training, more advanced training, more training course options, and a take-away training support guide. Teachers also indicated that they wanted more time to collaborate with one another (18%), needed updated equipment and software (15%), and needed technical support (10%).

What short-term goals were accomplished in Year 1?

The short-term goal for Year 1 was to get students and teachers using technology. This goal was accomplished to varying degrees in each district. Table 18 provides a snapshot of key ways in which grant funding is impacting student and teacher use of technology.

Table 18. Overview of Student and Teacher Access to and Use of Technology by District

District	Student Use of Technology	Teacher Use of Technology
Carson City	Students engaged in interactive learning as a result of teachers receiving SMART Board training	Teachers using existing SMART Board after engaging in 20 hours of training
Churchill	Students gaining 21 st Century Skills through STEM-based, hands-on learning with SmartLab	
Clark County	Students in 12 schools received new workstations Students in 10 schools had varying levels of interaction with FASTMath instructional learning system	Nearly 300 teachers completed Vegas PBS TeacherLine professional development and implemented new strategies in their classroom
Douglas	Students engaged in learning through the use of ActivExpression learner response system	Teachers manage instructional use of technology by adding ActivExpression, ActivSlate, and ActiView to existing use of Promethean ActivBoard
Elko	Students use iPod Touch and laptop as part of Nevada Pathway Project	Teachers use laptop and iPod as part of Nevada Pathway Project
Esmeralda	Students begin to use ActivExpression learner response system on a limited basis	Teachers receive one-on-one training on use of ActivSlate to accompany existing use of ActivBoard
Eureka		20 teachers receive new workstations
Humboldt		43 teachers receive new workstations; improve productivity and increase computer use

District	Student Use of Technology	Teacher Use of Technology
Lincoln	Each student at Meadow Valley MS receives his/her own netbook for use at school and home. This access facilitates students' use of an electronic mathematics textbook and using email to submit homework assignments.	Teachers increase use of technology to support one-to-one netbook initiative
Lyon	135 students use A+anywhere Learning System to earn a total of 60.75 recovery credits; another 69 students complete 19.5 credits via distance education	
Mineral		Installation of spam filtering software greatly reduces junk mail Initial configuration of new web filtering software blocking teachers from sites to which they previously had access (changes will be made for Year 2)
Nye	Technology Integration Specialist supports economics students in Stock Market game TIS facilitates student participation in Pearl Journalists program in which they learn about writing, editing, and publishing	Teachers receive support on using existing technology and begin to integrate it at varying levels
Pershing	Students in elementary and middle school have opportunity to use iPod Touch	Teachers explore use of iPod Touch across the curriculum (including special education)
Storey		Teachers use audio enhancement system
Washoe	Students engaged in interactive learning as a result of teachers receiving ActivBoard training	Teachers begin to increase use of ActivBoard, ActivExpression, ActivSlate, and ActiView
White Pine	Students use iPod Touch and laptop as part of Nevada Pathway Project	Teacher uses iPod Touch and laptop as part of Nevada Pathway Project

Note: Lander County and Lyon County are not listed because the districts had not begun or completed their infrastructure upgrade

What factors had an impact on project implementation? Most of the districts were able to implement the activities outlined in their project proposal, though some districts experienced a few setbacks. These are outlined below.

Timeline for Ordering and Installing Equipment: One of the biggest setbacks to fulfilling Year 1 project goals was the time in which it took districts to receive their equipment. Only two districts had their equipment ordered and installed by the end of November 2009. Most districts completed equipment installation between January-March 2010. At the end of May 2010, three districts (Clark, Pershing, and Washoe) were reportedly expecting full receipt of all equipment by the middle of July 2010. Clark County School District's delay was attributed to a lengthy bid process to purchase servers and Pershing and Washoe Counties waited until the end of the fiscal year to order their Year 1 computers to coincide with planned summer installation of equipment.

Schedule for Drawing Down Funds: Another factor that had an impact on project implementation was the fact that districts had to draw down their funding across two fiscal years. Some project directors indicated that it would have been easier to implement project plans in Year 1 if they had all of the award money at one time. This seemed to be the case mostly in districts, like Pershing County that did not have all of the money they needed to replace teacher workstations. In order to have all of the new computers for the district's eMints teachers installed at the same time, the project director decided to buy Year 1 computers on June 30 and place the order for Year 2 computers on July 1. Churchill County needed the full amount of its award to buy the SmartLab curriculum so the district made a loan to cover the shortfall and when year 2 funds are drawn down they will be used to repay the loan.

Human Resources: A number of districts are incredibly short on human resources, which impacts how much can get done and the length of time it takes to get things done. Lincoln County's project director has the

support of a fully committed administrator and teaching staff, but the level of responsibility he carries is tremendous. In addition to being the district's technology coordinator he also has teaching and administrative responsibilities at Meadow Valley Middle School (MVMS). He admittedly was pulled thin in trying to juggle everything and some aspects of the project did not get as far along as he had planned. Specifically, plans fell short to have teachers and administrators from other district schools visit MVMS to observe implementation of the netbook project. Looking ahead to Year 2, Elko County, Nye County, and Washoe County have lost their project directors to retirement and there are no plans to fill either position. The Nye County Technology Integration Specialist position was only funded for one year and according to the project director there are no resources available to continue supporting teachers' use of technology next year.

Districts Need More Money: The gaps in some districts are too wide for the Implementation Fund grant to fill. For example, Lincoln County was able to purchase netbooks for all the students at the middle school, but the district does not have a budget to buy software. With the exception of two content-specific software titles, all of the software installed and programs used on the netbooks were open source. In many ways this is resourceful, but, as explained by the Technology Integration Specialist, there are limitations to what can be done with free software and tools. "The free programs don't meet the needs of teachers. For example a teacher wanted to do some student recordings where they were making commercials. They recorded the work but because it was a free program they could only save 30 seconds of the recording. Those are the kinds of things we deal with because we don't have a budget to buy the software that teachers want to use in their class." In another example, Pershing County's project director bought iPod Touch devices, but was only able to buy one per classroom because the district's more immediate priority was to replace computers in eMints classrooms. Teachers received a \$25 iTunes credit to purchase iPod Apps, but in the absence of training and access to only one device, most teachers' implementation efforts were modest.

District Lessons Learned

In reflecting on the Year 1 implementation of their State Educational Technology Fund grant, most project directors were satisfied with what was accomplished. They did, however, offer some feedback related to lessons learned. Evaluators synthesized these comments into the following list:

- Having the right people on board is key to successful implementation of the project
 - The project directors in Carson City and Churchill County believe strongly that they chose the right staff to lead their grant implementation efforts
- An investment in professional development is critical; it must be made early in the project and it must be ongoing
 - The Pershing County project director found that while allowing teachers time to "play" with the technology it is not sufficient to get them using it in the classroom
- It is important to "be ready" for project implementation by having all key players on board
 - Districts that implemented their project with a committed team of players had a good first year despite setbacks because they remained collectively focused on the project goals
 - Districts that did not have everyone on board struggled to implement their projects as planned
- Project leadership is important and necessary to help teachers stay the course
 - Leadership requires face-time with teachers and regular check ins to attend to teachers' needs

Evaluator Reflections

Evaluators had a number of take aways after meeting with project directors, talking with teachers and technology trainers, and observing classrooms. First among them is that a number of districts are trying to plug gaps that the level of funding provided by the Implementation Fund grant are too wide to fill. These districts have settled into an operational mode of doing the best with what they have. On the flip side are districts that could be characterized as

having an embarrassment of wealth. These districts were tech rich even before they applied for Implementation Fund money, but still struggle to get teachers at all levels fully engaged in the use of available technology. Given that districts are at different levels of implementation, evaluators are concerned that project directors are missing an opportunity to develop a forum for sharing knowledge and resources across districts. When asked about the extent to which they were collaborating with other districts, only three project directors indicated partnering with Washoe County for professional development. Following is a list of considerations based on available data.

- Funding for equipment should include a requirement that a minimum percentage of the award be spent on professional development
- Unless use of a specific technology is mandated by a districts' technology plan, project directors should consider voluntary rather than mandatory teacher participation
- District staff who oversee the implementation of state funded technology grants would benefit from communicating on a regular basis to share struggles, success, and lessons learned
- Depending on the focus of the project, districts should have the option to drawn down the full amount of their award in Year 1
- Small districts could benefit from collaborating with larger districts to take advantage of volume discounts when ordering equipment
- Districts that are funded as a consortium should be required to collaborate on at least one technology-related endeavor that promotes effective use of technology
- In Carson City and Lincoln County the project director has a "go to" site based coordinator who helps facilitate the grant; evaluators believe other districts can benefit from assigning someone to that position and perhaps using grant money to pay that person a stipend