Raggio Research Center for STEM Education at the University of Nevada

2012 State Technology Needs Assessment

Report to the Nevada Commission on Educational Technology & the Nevada Department of Education

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Executive Summary

The State Technology Needs Assessment Report for 2012 (STNA 2012) is a summary of data collected over a period of several weeks, by surveying the teachers, technology coordinators, and parents of the 17 school districts in Nevada. The data reflect that Nevada school districts are trying to meet the goals set forth in their district technology plans—many modeled after the State Educational Technology Plan written in 2009—and that teachers and classrooms are making use of recent investments in technology. For example, 99% of Nevada classrooms have at least one computer for teacher administrative use (i.e. attendance, lunch count, etc.), and approximately 52% of these computers are more than 3 years old. This percentage is virtually unchanged from the STNA 2010; however, in 2010, 74% of classroom computers for teacher instructional use were 4-10 years old. This comparison indicates that the age of teacher computers is newer in 2012 than it was in 2010. In fact, a survey of district technology plans indicates that most districts are now on a 4-5 year buying cycle to maintain updated equipment. Evidence exists of classroom technology use across a survey of small and medium districts, which show an average of 40% of teacher respondents use technology 80 or more days with their students. According to district Technology Coordinators, many districts are still updating essential infrastructure such as installing T1 lines and necessary hubs and switches for Internet connections. Moreover, access to effective professional development for teachers in instructional integration of technology is a major concern across the state.

In spite of some modest gains since STNA 2010, Nevada's classrooms remain deficient in technology and currently fail to meet the minimum requirements for the upcoming Smarter Balanced Assessment Consortium electronic testing in 2013-2014. Evidence of the lack of preparedness includes responses from the sampled number of teachers that responded (2,019) indicating that 25% did not have a computer dedicated for student use and only 34.5% reported having more than three computers for students to use (up from 20% as reported in STNA 2010). However, 42% responded that they have laptop carts available for their classrooms, unchanged from STNA 2010. While there is an increase in some classroom devices, the technology, infrastructure, and personnel/training is still insufficient for the upcoming needs of electronic-based testing. Still, Nevada schools are investing in technology; however, their rate of investment may not be sufficient to meet future technology demands.

Due to current paradigms, the data reflect a small shift in technology purchases. Fewer classrooms have an LCD projector (64% in STNA 2010, 58% in STNA 2012) whereas more classrooms have an interactive whiteboard (29% in STNA 2010, 54% in STNA 2012). The Nevada Educational Technology Survey (NETS) revealed even higher numbers for interactive whiteboards, where they are in 68% of small district classrooms, 57% of medium district classrooms, and 61% of large district classrooms. One explanation for this shift in technology over the past two years could be that as LCD projector bulbs burn-out, schools are unable to fund the steep bill for another; or it could be that the increasing popularity of and pedagogical content for interactive whiteboards (with an attached LCD projector) make them a more attractive purchase. Small (24%) districts have more mobile devices than medium (17%) or large (19%). However, there still seems to be an alarming trend of increasing student-to-computer ratio (75% of classrooms exceed a 5:1 ratio or have no computers at all available for student use.)

According to survey results, 96% of classrooms have an Internet connection but only 33% of respondents categorized the Internet connection speed as quick or very quick. Additionally, only 63% of respondents reported that the Internet connections in their classrooms were dependable, while 62% agreed that they could access the websites they needed for instructional purposes, and 47% categorized the Internet filter as "too restrictive". Moreover, 88% percent of teachers perceive themselves as competent to find effective instructional materials on the Internet; however, many Technology Coordinators mentioned that teachers need instruction on how to integrate the Internet into classroom instruction effectively. Although the majority of teachers feel well prepared or very well prepared to integrate technology effectively in their classroom instruction, survey data reveal that teachers feel less prepared than they did in STNA 2010, indicating that their preparation has not kept pace with the changes in education-related technology.

In STNA 2010, respondents stated that they were generally prepared to use technology and that there was an adequate system in place for technical support. Overall, teacher perceptions of preparedness have declined in STNA 2012. Although most of the teachers were neutral when responding to questions about professional development from local institutions of higher education and regional professional development programs, many rated the quality of professional development programs provided by their school and district on the low end of the spectrum. They also continue to acknowledge many challenges to implementing professional development, including effective programs, funding, and training personnel, not to mention some reticence on the part of teachers. This could mean that teachers are

unable to keep up with the fast pace of technology in the face of other demands upon them, such as the upcoming implementation of the new Common Core State Standards. However, it could also be that teachers have an increased understanding of the complex pedagogy surrounding technology integration, and now realize that their technical skill in using technology tools is not paramount to "effective instruction". They are beginning to know how much they do not know.

Further, parents are generally supportive of their children's use of technology, especially as it might translate into 21st Century job skills, and they feel that classroom technology is critical to their child's success later in life. However, many parents are unsure of what technology students and teachers use in the classroom and are suspicious of technology that seems more like entertainment than education. Most parents said that funding for technology is inadequate and that current classroom technology is out of date and substandard. It is unclear if schools are communicating effectively with important stakeholders about technology-related issues.

Planning continues to be critically important and Technology Coordinators report that they look to the Nevada Department of Education (NDE) to lead in technology planning. Most districts modeled their plans after the State's plan, but claim that lack of funding hinders the implementation of these plans. Additionally, upcoming computer-based testing raises concerns for Nevada Technology Coordinators who cite lack of bandwidth, personnel training, and devices as primary concerns.

As a Governing State member of the Smarter Balanced Assessment Consortium, Nevada schools must be ready for computer-based testing by the 2014-2015 school year. Planning for implementation and allocating appropriate funding in the upcoming 2013 legislative session are crucial steps in this effort.

Teacher comments regarding the inadequacy of equipment and infrastructure also indicate that Nevada's classrooms remain in urgent need of support at all levels for consistent and increased funding; significant high-quality and prolonged professional development for teachers; and technologies that actively engage students in learning, while allowing for computer-based testing.

Preparing for the use of computer-based testing is a necessity in the State of Nevada. Additionally, increasing the prevalence of laptops and/or other portable technology devices (iPads, tablets, etc.) in classrooms throughout the state would have a positive impact on student technology literacy, expand

the possibilities of teaching and learning styles within the classroom setting, enable adoption of digital textbooks, and facilitate a textbook adoption cycle that would save money and align with changes to State standards. However, in order to maximize the use of these types of technologies, districts need to be able to provide adequate hardware and software, reliable access to the Internet, expand bandwidth capabilities, encourage and require professional development centered on technology literacy, and provide teachers throughout the districts with technological support, which many districts currently cannot provide.

A unique timing opportunity existed following STNA 2010 when all of these changes were first emerging; however, Nevada is now in a position where it must react to changes already in process, and do so in a condensed timeframe. Time, although short, still exists to examine critically these aspects of educational technology in Nevada, make changes that serve the students, as well as meet the upcoming requirement for computer-based testing, and do this in a carefully examined, planned, and executed manner. Because of the potential for increased costs in the absence of good planning, this is the fiscally responsible thing to do. Moreover, investing in educational technology can help provide Nevada schoolchildren with the education, training, skills, and experience they need to be competitive in the 21st Century.

Purpose

The purpose of this Report is to present the findings of the 2012 State Technology Needs Assessment (STNA) for Nevada school districts. The needs assessment was guided by the requirements set forth in SB184 (sections 19.1d, 19.6a-b, and 27.1-27.3) and by the first needs assessment conducted in 2008. To address these requirements, the following research questions guided the STNA in 2008 and 2010, and remain the guiding questions in 2012:

1. *What is the current status of the state and district educational technology plans?*
2. *In what ways can educational technologies, such as computer-based assessments, laptop computers, and Web-based tools, improve instructional development, delivery, and assessment in Nevada?*
3. *What is the current capacity of schools in Nevada to influence the achievement of students with educational technologies?*
4. *How prepared are Nevada teachers to integrate technology into their classrooms?*

Needs Assessment Design

The sources of data for the State Technology Needs Assessment (STNA) 2012 were web-based surveys distributed to teachers, technology coordinators, and parents from each of the 17 counties in Nevada. The research team distributed the surveys primarily through the offices of the district superintendents. All school district superintendents received, via fax and email, an introductory letter to make them aware of the process and the information that would be requested (Appendix A). Additionally, the team sent emails to superintendents requesting that they forward the information to their site-based administrators and teachers. The letters explained the process, included embedded hyperlinks to the surveys, and asked for assistance with the distribution of the various surveys (Appendix A). The purpose of this step was to ensure that the emails would reach teachers and avoid issues with the districts' firewalls. The research team copied each district's Technology Coordinator on all communications regarding STNA 2012. The district Technology Coordinators also received personalized emails containing links to the Technology Coordinator Survey (Appendix A).

The research team distributed the Parent Survey component of STNA 2012 through various methods. Initially, the team emailed each superintendent the survey hyperlink with directions for forwarding the email to school principals. The research team asked principals to forward it then to parents. The team then followed up with a parent-only email formatted for easy forwarding (Appendix A). Additionally, the Nevada Parent Teacher Association (NVPTA) used its communication networks to distribute the county-specific links (Appendix A). The research team communicated to parents that almost any electronic device that could connect to the Internet could also access the parent survey. In addition to email, several districts posted their Parent Survey link on their school and district websites, as well as the parent accessible areas of their student information systems (e.g. Infinite Campus and PowerSchool). Moreover, several districts and PTAs used social media to distribute the survey. Eureka County went so far as to provide the parent survey link in the local paper and the high school newsletter. The RRC provided Storey County with 200 printed copies of the parent letter and hand delivered them to the school district office. Esmeralda County printed the parent survey and mailed it to parents with addressed stamped envelopes. The research team monitored response rates to each survey and followed up with emails and phone calls as needed. Overall, the districts were supportive.

The STNA 2012 surveys contained the same questions as the STNA 2008 and 2010 surveys in order to maintain consistency of data and allow for comparisons among the years. As with STNA 2010, the director of the Raggio Research Center (RRC) submitted the research protocols to the University of Nevada, Reno Institutional Review Board (IRB) in the Office of Human Research Protection (OHRP), which deemed STNA 2012 exempt from IRB oversight.

Constraints

The STNA 2012 received 50% of the funding provided for STNA 2008, just as it did for STNA 2010. Additionally, whereas STNA 2010 experienced a timeline compressed by several weeks, STNA 2012 was subject to a drastic reduction in its timeline (by approximately 3 months). The project actually began later than the reporting date required by NRS 388.795 §6. This reduction in time and funding resulted in a decrease of resources available to conduct the study and prepare the report. Additionally, because STNA 2012 started late, several rural counties reported (via superintendents' emails) that their response rates would not be as high as they would like because the school year was winding down or had already ended. These unintentional, yet very real constraints, contributed to this report, which lacks some of the

depth of the STNA 2008, but contains the full breadth of data collected and closely resembles the report from STNA 2010. The one notable exception is the absence of any interviews—the combination of the compressed timeline and the low level of funding simply did not allow for the inclusion of interviews in STNA 2012.

Teacher Survey

The 39 questions on the teacher survey used for STNA 2012 were the same as those answered by the teachers in the surveys in 2008 and 2010 (Appendix B). However, whereas STNA 2008 and STNA 2010 classified districts based upon size of student population and then invited a specific number of teachers to participate, STNA 2012 provided all teachers in all districts the opportunity to participate. Teachers received emails that contained district-specific links to the survey, housed on Survey Monkey (www.SurveyMonkey.com), where they provided their responses. The collection process was anonymous and aggregated by district. Once downloaded, the RRC researchers removed possible identifying information (notably computer IP addresses), and then coded, sampled when necessary, and further aggregated the data into one large state-level dataset. In total, 6,327 teachers attempted the survey; however, the number of completed surveys was 4,509 (2,924 of which were from Clark County and 418 from Washoe County). Completion rates ranged from 57.5% (Lander County) to 100% (Esmeralda), with an average of 77%. The vast majority of the incomplete surveys contained no data other than demographic and categorical data (i.e. male/female, years in the field, etc.). The RRC research team sampled the responses from Clark and Washoe Counties in a way that preserved and represented the elementary, middle, and high school populations and provided power (statistical representation of the teacher population in each county) based upon the estimated number of teachers in each county. The research team decided to include all of the responses from all other counties in an effort to preserve statistical power and the integrity of the data (decreasing the sample size in the small and medium counties would result in an overall state sample that limited the accuracy of the results from those counties). The result was an overall sample of 2,019 completed teacher surveys.

The Teacher Survey contained questions designed to determine technology capacity of classrooms, schools, and districts, which included items such as:

Do you have an LCD projector in your classroom?

Do you have computers that students can use?

The Teacher Survey also contained questions designed to gauge preparation and professional development, which included items such as:

> *How would you rate the quality of the professional development opportunities provided by your district?*
>
> *How well prepared are you to integrate technology into the classroom?*

Technology Coordinators' Survey

All district Technology Coordinators received an individualized email that included a hyperlink to a district-specific 25-item, web-based questionnaire (Appendix C), also conducted via Survey Monkey. Most of the questions were open-ended and focused on technology planning, classroom capacity, school resources, teacher preparation, and professional development. Of the 17 possible respondents, 16 completed the survey; Churchill County did not respond to the Technology Coordinator Survey.

Parent Survey

With the help of district superintendents, principals, the Nevada Parent Teacher Association (NVPTA), and some commendable individual efforts, the Parent Survey (Appendix D) was available to parents throughout the state and received a large number of responses. The Parent Survey consisted of seven items; one of which regarded county of enrollment, one asked the grade level of the student(s), three "yes, no, or not sure" questions about technology use and expectations, and two "yes or no" questions related to technology-related comments and concerns. Each of the final five questions provided an opportunity for comments and/or explanation if the respondent felt so inclined; many respondents provided comments for the three "yes, no, not sure" questions, while the vast majority chose not to provide comments or concerns on the last two questions. The RRC research team modified the question-response format for STNA 2012, but preserved the questions from STNA 2010. The impetus behind this was that a survey comprised of all "open-response" questions might produce a lower response rate than one with "yes, no, not sure" and "yes or no" questions with the opportunity to provide comments. Because of the high percentage of parents that included comments, further iterations of the STNA should include a qualitative data analysis component, designed specifically to analyze these comments.

The parent component of STNA 2012 includes 2,626 responses from *all* 17 districts in the state, whereas STNA 2010 included responses from just seven districts. Additionally, of the 2,635 respondents that started the survey, 2,626 (or 99.66%) completed it. The research team believes that the slight modification in question-response format contributed significantly to this high completion rate —a modification that may increase the completion rate in Teacher Survey components for future STNAs (for more on this, see the Recommendations Section of this report, page 89).

Other Data Sources

This report also includes data from the State Educational Technology Plan, district technology plans, technology related resources from other states (e.g. websites, laws, etc.), the Nevada Educational Technology Survey (NETS), and related research publications where applicable.

Results

Organization

This report contains results organized by the research questions. First is a snapshot of the technology plans of both the state and the districts and some information on technology planning. The next section addresses the findings regarding specific initiatives. The third section addresses the questions regarding teacher preparation and professional development in technology integration. The fourth section contains the results from the parent survey.

District Categories

Assessing and describing the technology needs of a state as large and diverse as Nevada is challenging because of its geography, economics, and the great variations that exist in the State's districts and schools. The unique needs of each district, school, and classroom are products of these variations. As in the 2008 and 2010 report, this report will refer to large, medium, and small school districts using the conditions listed in Table 1.

Table 1 District Size Definitions

Size	Student Enrollment	Districts
Small	< 2,000	Esmeralda, Eureka Lander, Lincoln Mineral, Pershing Storey, White Pine
Medium	2,000-20,000	Carson City, Churchill Douglas, Elko Humboldt, Lyon Nye
Large	>20,000	Washoe Clark

Technology Plans

The primary sources of information for this section are the surveys of Technology Coordinators and a review of the state and district educational technology plans.

District Technology Plans

Each of the 17 school districts in Nevada has an educational technology plan, a majority of which mirror the State of Nevada Educational Technology Plan (2009-2014). Most plans maintain three common goals for focus: infrastructure & connectivity, professional development, and instructional integration. Ten of the Technology Coordinators surveyed described the use of a technology committee as the main source of school and district technology planning. Some Coordinators from the smaller districts identified themselves or site administrators as the sole source of technology planning; or, conversely, smaller districts rely on the district technology committee to drive school site technology planning. Two Technology Coordinators mentioned that schools previously wrote technology plans but now they include a technology component in their school improvement plans (SIPs).

Of the 16 districts that responded to the Technology Coordinator survey, nine mentioned the use of site or district technology committees. In some districts, each school site has a technology committee for site planning and is required to write a site technology plan for submission to the district. Many have a district technology committee, which typically consists of representatives from schools in the district. Other schools rely solely on the District Technology Plan to drive their goals and purchases. Storey County has collaborated with the Storey County IT Department (an outside agency) to handle their

current IT needs. Currently, the outsourced IT is responsible for moving forward with planning for future needs of the district. Senior staff and the superintendent provide input to Storey County IT, which then creates proposals, which in turn, the school board accepts or rejects—therefore there is no technology committee. A survey of the technology plans reveals that many districts plan for a 4-5 year computer hardware rotation cycle.

Since STNA 2010, five of the 17 districts have published updated technology plans—Churchill County (2011-2014), Humboldt County (2011-2014), Nye County (2011-2015), Storey County (2011-2013), and Washoe County (2012-2015). Clark County (2010-2013), Lincoln County (2009-2012), Lander County (2009-2014), and Mineral County (2008-2011) are reportedly in the process of reviewing and/or updating their plans; however, they have not yet published them. As of the writing of the STNA 2012 report, several of the district technology plans have expired with no update: Eureka County (2006-2011), Mineral County (2008-2011), and White Pine County (2007-2010). Three of the district plans expire this year—Douglas County (2009-2012), Lincoln County (2009-2012), and Pershing County (2008-2012) (http://www.doe.nv.gov/Tech_TechPlan_Districts.htm). The following is a brief synopsis of the district plans that have been updated (Churchill, Humboldt, Nye, Storey, & Washoe Counties).

Churchill County School District (CCSD) is integrating the International Standards for Technology Education (ISTE) into their plan and placing more emphasis on students attaining technology and 21st century skills for college and career readiness. The CCSD has a video production lab, a SMART lab, a STEM lab, and is preparing for upcoming computer-based assessments. They are incorporating interactive technology and requiring teachers to participate in professional development (PD) that accompanies the technology. Additionally, CCSD now provides virtual schooling to homeschooled, homebound, and distance education students as well as military dependents.

Humboldt County School District (HCSD) is focusing on building infrastructure and connectivity that enhances instruction by replacing existing T1 lines with fiber optic strands and rerouting T1 lines or replacing lines to remote sites with licensed microwave. Additional endeavors include replacing routers and switches, creating district images of software to quickly replace or update systems, and increasing technical staff to support infrastructure and systems. Further, they are aligning professional development (PD) with local, state, and national standards and using technology teams to provide onsite PD for all site staff, including IT staff; retooling current professional learning communities as

forums for sharing technology ideas; and including technology integration as a focus area on district evaluation forms. Finally, the HCSD is intentionally restructuring technology hardware and tools for use with Common Core State Standards (CCSS) and increasing student access to computers.

Nye County School District (NCSD) will continue to identify infrastructure resources within the district and state and maintain an inventory of technology equipment within the district and each school site on a five-year PC rotation. They have goals of full wireless coverage at all schools, a sufficient number of support technicians, and upgrades to servers and software. In supporting PD, NCSD will focus on integrating technology into the PD of administrators and teachers; focus on technology integration strategies for legacy, current, and emerging technologies; and review online PD programs for educators for possible future use. Technology will be integrated into all classrooms through the development and implementation of new strategies, such as, working with SIP teams, aligning middle school technology courses to the Nevada Educational Technology Standards and integrating them into all content areas with special emphasis on CCSS, and evaluating 8th graders' technology skill competency, as per the stated goal of No Child Left Behind, that all students be technologically literate by 8th grade (Cech, 2008).

Storey County School District (SCSD) has outsourced technology to the Storey County IT Department. Comparing the 2008 and 2011 technology plans, there are a large number of older machines with an obvious recent purchase of machines. For example, in 2008 Hugh Gallagher Elementary had 46 machines running Windows XP. In 2011, they added 13 new machines making the new total 59. Virginia City Middle School had 68 machines in 2008 and 94 machines in 2011. This supports their goal of purchasing new machines for 25% of staff each year and maintaining a five-year replacement cycle. The SCSD has updated its technology standards (K-5, 6-8, and 9-12) and Critical Issues—goals and objectives. These standards include fewer goals and updated indicators, which include better student outcomes with increases in daily performance, on proficiency exams, and within career readiness.

Washoe County School District (WCSD) is also focusing on creating college and career readiness for graduates by implementing technology skills, Levels 1 through 5 ("teacher-directed" through "self-paced online instruction"), into their curriculum. The WCSD will continue its commitment to creating 21st Century Schools and Learners by expanding on the goals of infrastructure and connectivity, professional development, and instructional integration through a more robust integration of technology, such as:

- Deploying and maintaining a robust infrastructure that supports programs such as bring-your-own-device (BYOD) and/or a one-to-one computing environment that enables equitable access throughout the district;
- An expanded PD plan for training staff to use and integrate technology in classrooms and curriculum throughout the District; and
- The integration of 21st Century Learning and Tools made available to all teachers and students through technology-integrated curriculum, increased availability of tools and resources, and support of the District through funding specific to technology integration.

State Technology Plan

Since STNA 2010, the State Educational Technology Plan (2009-2014) is still in place and has received no revisions. The original plan was the product of a collaboration, which utilized experts from both outside and inside the state including the International Society for Technology in Education (ISTE), the Nevada Commission on Educational Technology (CET), the Nevada System of Higher Education (NSHE), rural and urban Nevada businesses, the Nevada Parent Teacher Association, and the Corporation for Public Broadcasting. ISTE provided facilitators to help guide the process. The result was a comprehensive plan to guide Nevada through five years of focus on the goals of optimizing infrastructure and connectivity, professional development, and instructional integration. Many of the districts used the State of Nevada Educational Technology Plan (State Plan) to draft their own technology plans, utilizing the same three primary goals. Using the State's framework, districts have created their own goal statements, rationale, and benefits for learning; determined the reality for their own schools and districts; and created a matrix of targets to meet by the expiration of their plans.

Technology Plan Impact

Regarding technology planning, the State Plan serves as a guide, or blueprint, for several of the districts. Technology Coordinators reiterated the priorities listed in the State Plan, such as maintaining a focus on *collaboration* as a specific district goal. The goals of the State Plan—infrastructure & connectivity, professional development, and instructional integration—inform the goals of a majority of district plans, though several districts have recently increased and diversified the scope of their district plans.

However, Three Technology Coordinators stated that neither they nor senior district personnel had ever seen the state plan.

District plans drive technology goals and decisions and establish standards for technology purchases and use. Though the district plans inform school sites, each site and district must address its unique circumstances and priorities, taking into account funding and changes in educational technology issues.

Funding & Guidance

In response to the surveys distributed, Technology Coordinators indicated that a lack of funding was the biggest challenge faced by many of the districts across Nevada. A few districts described plans to apply for grant funding in order to purchase updated software and hardware for their students, as well as funding for repairs on technology equipment that is currently in use and bandwidth upgrades for schools. Technology Coordinators indicated that while state technology guidelines serve as references for most districts, it is difficult to implement many of these standards without adequate funding.

When asked about the major sources of funding for technology in each district, Technology Coordinators repeatedly stated that funding for such endeavors remains inconsistent. Many districts rely on grants, bond funding, and direct funding from the school district budget; however, with the exception of Eureka County, funding is scarce. The themes that emerged from the technology coordinators related to funding included:

- Inconsistent funding
- Reliance upon bonds, grants, and direct funding from district budget lines
- Using Title I money when appropriate
- One-time expenditures that serve to supply technology but not service or support it
- E-Rate—The FCC's "Schools and Libraries Program"

Two other themes that emerged from the Technology Coordinator survey results were the need for better planning and the need for a statewide technology purchasing and integration plan. Planning is necessary because the introduction of technology without it results in underuse. The statewide purchasing and implementation plan is necessary to create a consistent technology environment with adequate funding, statewide. Many of the coordinators surveyed expressed the need for adequate

funding not only to purchase updated technology, but also to sustain technology support and professional development in technology integration.

Many of the coordinators mentioned that their districts have become very creative at stretching the limited funding they have. For instance, one Technology Coordinator mentioned that salvaging parts from older technology and using them to maintain current technology is one way the district has kept computers working for 9-10 years. Others mentioned that teachers, administrators, and technology coordinators donate time to create solutions and workarounds to overcome insufficient technology.

For guidance, many Technology Coordinators look to the State Plan. Many districts also rely on technology committees consisting of representatives from each school in the district to discuss technology planning for their district. The consistency of technology committees meeting times differ from district to district.

Smarter Balanced Assessment Consortium

Computer-based high-stakes testing is on the horizon; in fact, the 2013 Nevada Legislative Session is the final session before Nevada is supposed to have this capability in its schools. Since the introduction of the Common Core State Standards (CCSS) Initiative in 2010, two national consortia—the Smarter Balanced Assessment Consortium (SBAC) and the Partnership for Assessment of Readiness for College and Careers (PARCC)—have formed to affect a change to current testing practices in a move to electronic assessments (Schaffhauser, 2011). Nevada joined the SBAC as a Governing State. The current timeline for full implementation of SBAC assessments requires all member states to administer their assessments electronically in the school year 2014-2015, with selected sites participating in pilot testing during the 2012-2013 school year. In order to administer these electronic assessments, public education systems, including those in Nevada, must be equipped with at least the minimum technology requirements capable of administering them. In June of 2012, SBAC released new hardware purchasing guidelines for all states within the consortium. Additionally, SBAC is set to release legacy specifications in August of 2012, which will include the oldest operating systems supported by SBAC applications. The SBAC applications will be open-source so there will be no software costs; however, Nevada districts will undoubtedly experience costs associated with necessitated hardware in terms of network capability,

bandwidth, devices capable of delivering the assessments, and related human capital expenditures required to complete the work.

The consortium collected information from governing states during the spring of 2012 using a Technology Readiness Tool. In Nevada, only 15% of school districts completed the SBAC Technology Readiness Tool. According to the Technology Readiness Tool, the dimensions of local readiness include a survey of the kind of devices in the schools and how they compare with the minimum specifications necessary to conduct testing; the ratio of devices to test-takers; the status of network and infrastructure; and finally, appropriately trained staff placement (http://techreadiness.org/t/TechnologyReadinessTool/training/player.html)

SBAC Member-States

The SBAC has two levels of membership, which are Governing and Advisory. Governing states include California, Connecticut, Delaware, Hawaii, Idaho, Iowa, Kansas, Maine, Michigan, Missouri, Montana, Nevada, New Hampshire, North Carolina, Oregon, South Carolina, South Dakota, Utah, Vermont, Washington, West Virginia, and Wisconsin. Advisory states include Alabama, Colorado, North Dakota, Pennsylvania, and Wyoming. Governing states have committed fully to SBAC and have a vote in policy decisions, while advisory states participate in work groups and provide guidance for development of the assessment system, but have no vote. This section serves to provide a brief summary of what some Governing states are doing to prepare for SBAC implementation including technology compliance and preparation for full-scale electronic assessments. The states selected (Idaho, Wyoming, & South Dakota) are comparable to Nevada because of their size and inclusion in SBAC; however, the three states are in various stages of implementation and preparation.

Idaho

In 2009, Idaho joined the CCSS initiative and adopted the CCSS in January 2011. Later that year, the Idaho legislature enrolled a series of laws intended to improve the presence and use of technology throughout Idaho's public education system. The three laws in Idaho, known as the "Students Come First Legislation", specifically addressed modernizing schools, labor issues, and pay for performance. Labor issues and pay for performance analyses exceed the scope of STNA 2012; however, the modernizing schools legislation from Idaho is applicable.

One of the laws requires Idaho schools to provide and support one-to-one mobile computing devices for all students in grades 9-12 over a three-year phase-in period. This law also requires that teacher computers follow a four-year replacement cycle. Additionally, the laws set specific spending requirements for district-level technology-related expenditures. Furthermore, the law specified how the school districts could spend the money. Among the approved expenditure categories were: (a) installation, repair, replacement, and support of wireless technology in each public high school; (b) high quality digital learning resources and software linked to state and local curricula, including lessons, content, and assessments (formative and summative) and collaboration systems; (c) classroom technology that assists teachers' instructional delivery; and (d) professional development and training that promotes effective use of technology by all school stakeholders and integrating technology and learning (Senate Bill [S.B.] 1184). The Idaho law also requires the Idaho State Department of Education (ISDE) to fund teacher professional development designed to train high school staff in the use of mobile computing devices and integration of the devices into the curriculum.

In terms of its role within SBAC, Idaho is a Governing member state. Additionally, Idaho has made it a priority to be at the forefront of online assessment (ISDE, 2010). To help ensure that public schools in Idaho are prepared for SBAC assessments, the ISDE has made 21st Century Classrooms a top priority. The state will invest $13 million each year in classroom technology, including hardware and necessary professional development (ISDE, 2012). By appropriating the available resources, Idaho will establish a one-to-one computer ratio in each high school, give teachers classroom tools, and provide teacher training (Idaho State Department of Education [ISDE], 2012). The state will pay for the repair, maintenance, security, and support of one-to-one devices; however, districts will determine the allocation and use of devices.

Certain accountability measures exist in Idaho regarding the State's technology initiative, as expected with the expenditures in the magnitude required to attain sufficient technology. Specifically, the Idaho State Board of Education (ISBE, 2005) established basic educational technology standards for continuing educators. These standards require 90% of all certificated personnel to demonstrate mastery of required basic technology standards by the end of the school year 2000-2001. After that school year, administrators had to provide justification for any certificated personnel that had not met the standards. Additionally, technology competencies became part of annual professional development

plans for each certificated employee. The ISBE requirements include an assessment (Idaho Technology Competency Exam) of basic technology competencies as the metric for mastery of technology skills, or The Idaho Technology Portfolio Assessment, which demonstrates proficiency. The ISBE used the foundational standards of the International Society for Technology in Education (ISTE), as the standard for the basic technology competencies. The ISBE requires annual reporting of the number of total personnel (certificated, administrative, and certificated instructional) and the number of total personnel demonstrating technology competency (ISBE, 2005).

Wyoming

In Wyoming, as part of the executive branch of government, the State Department of Education falls under the state technology policies. In 2010, Wyoming created a state policy for the Information Technology Coordinating Committee that requires the establishment and implementation of statewide technology policies, standards, and procedures for all agencies within the executive branch of government (State of Wyoming, 2010). The law addresses staff training, curriculum integration, and network connectivity in and among schools; the goal of which is to provide equal access to educational instruction and information. The law also requires districts to submit annual technology plans in alignment with the state requirements.

Unlike the Idaho statewide system, Wyoming requires each district to act independently to create technology plans that adhere to state requirements. However, in 2009, the Wyoming School Boards Association (WSBA) adopted a resolution regarding technology in schools. The resolution included, in part: (a) more teachers to teach technology, (b) one-to-one computer ratios in all schools, (c) renovating infrastructure to support one-to-one environments, (d) infrastructure in new schools to support one-to-one environments, (e) technology personnel to support these systems, and (f) adequate training facilities and professional development to support technology initiatives (WSBA, 2009).

The WSBA (2009) outlined the minimum technology and required associated costs. For classrooms, on a 5-year replacement cycle, the recommended technology included LCD projectors, two replacement bulbs, an interactive whiteboard, a document camera, an audio enhancement device, integrated systems (CATV, video, audio), adequate electrical and/or extended batteries for one-to-one laptop use, and a scanner. The WSBA also emphasized the need for professional development and set an expenditure minimum of $50,000 (increased based upon district size) for PD. As for one-to-one

computing, the WSBA recommended, on a 3-year replacement cycle, laptops for each student and teacher, additional laptops for every two staff members, and printing stations. The WSBA also provided standards for testing/curriculum and vocational labs that included, also on a 3-year replacement cycle, computer testing labs with 25 computers for every 25 teachers at the K-8 levels, and computer labs for each career cluster (e.g. agriculture, finance, health science, etc.) at various levels. The full technology breakdown is available at http://www.wsbawy.org/_pdf/2012/June%202012/publications/Wyoming%20School%20District%20Technology%20Plan%202009.pdf p. 8.

The WSBA technology plan included technology-related professional support staff at adequate levels. Their plan also dictated specific thresholds for bandwidth and other connectivity-related technology. Additionally, the WSBA also set forth software requirements. Furthermore, the group included security measures required by all schools, as well as metrics to measure the influence of the technology initiative. In all, the cost of implementing the WSBA Foundational Technology Plan was over half a million dollars (>$500,000) for each school district.

The WSBA (2009) stated that technology-related professional development was the most critical budget item in terms of achieving the stated technology goals. Reiterated was the importance of ongoing, sustained professional development in successfully integrating and using technology in the classroom. Based on the ISTE 2008 standards for professional development, the WSBA (2009) set forth seven conditions for successful implementation of educational technology:

1. Effective professional development for teachers in the integration of technology into instruction is necessary to support student learning.
2. Teacher's direct application of technology aligned to local and/or state curriculum standards.
3. Technology must be incorporated into the daily learning schedule (i.e., not as a supplement or after-school tutorial).
4. Programs and applications must provide individualized feedback to students and teachers and must have the ability to tailor lessons to individual student needs.
5. Technology use incorporated in a collaborative environment is most effective.
6. Project-based learning and real-world simulations must be the focus of instructional technology.
7. Effective technology integration requires leadership, support, and modeling from teachers, administrators, and the community/parents. (p. 11)

As for accountability, the WSBA (2009) does not provide teacher or school-level technology proficiency or competencies as the ISBE does. However, the accountability measures they focus on are in the form of school-level performance metrics as indicators of success, which stem from the research regarding technology initiatives in schools. These indicators include: (a) improved attendance and discipline rates, (b) broader array of learning resources and experiences for students, (c) improved student attitudes toward school, (d) improved parent attitudes toward school, and (e) increased student achievement. In June of 2012, The Wyoming State Board of Education (WSBE, 2012) had a work session that included updates to the state's professional development for teachers. One of the requirements for teacher PD in Wyoming is a focus on the instructional and student learning uses of technology. They also identified the use of technology under school improvement, facilities, and budget. The WSBE (2012) also included, under technology, professional development in the use of technology, as well as the development of evaluation strategies to determine the effect of technology on instruction and student learning. The WSBE (2012) also requires each district to include strategies for building and maintaining infrastructure and connectivity in their annual technology plans.

South Dakota

South Dakota is a governing state within SBAC and adopted the CCSS in 2010. Since adopting the CCSS, the South Dakota Department of Education (SDDE) launched a three-year Common Core Professional Development (PD) series to provide educators with a systemic model to implement the CCSS using 21st Century skills. The new plan, *South Dakota: Investing in Teachers,* is a one-time investment of $8.4 million over three years to offer targeted training and PD opportunities. One major aspect is for curriculum creation and creating teams that will design a blueprint for delivering CCSS for each subject and grade level, including suggested resources and a timeline for Mathematics and English Language Arts (ELA) teachers. When the Curriculum Curation Team completes the blueprint, the professional development will be available (South Dakota Department of Education [SDDE], 2012).

South Dakota has had a technology plan since 1995. The plan priorities remain focused on quality educators and leadership, equity and access, learner achievement, professional development, technology integration, and infrastructure. Several of the successful state initiatives include the following:

- **Digital Dakota Network (DDN)**—a statewide Intranet with worldwide connectivity used by school districts to communicate with one another, with guaranteed levels of service; most

schools have a minimum of T1 connectivity installed and maintained by the state at no cost to the schools.

- **K-12 Data Center**—this entity oversees the DDN; the SDDE financially supports this center, which supplies Internet, email, web hosting, and other technology support services for all South Dakota schools.
- **DDN Campus—**(like Infinite Campus and/or PowerSchool) a student information system, used daily by K-12 staff to create class schedules, record attendance and student grades, was created to meet the requirements of South Dakota Codified Law 13-3-51 (SD Law).
- **Technology for Teaching and Learning (TTL)**—a series of intensive training seminars that provide all educators with skills to use technology effectively as teaching and learning tools.
- **South Dakota Virtual School (SDVS)—**a virtual school established in response to SD Law that acts as a clearinghouse of approved distance learning courses offered to middle and high school students taking advanced courses, needing credit recovery, experiencing scheduling conflicts, or for schools without qualified staff in certain content areas.

In response to SD Law, which requires all public schools to administer annual writing assessments, the state adopted an online formative assessment model for grades 5, 7, and 10 to assess literacy and provide immediate feedback on essay and summary writing activities. Since 2008, they have implemented a statewide technology literacy assessment (TLA) for eighth graders. The following are current goals for South Dakota in terms of educational technology:

- **Effective use of technology in education**—including access and alignment;
- **Professional development (PD)**—including technology integration professional license endorsement programs and tracking systems for PD;
- **Healthy infrastructure—**building on previous work funded and accomplished by the State of South Dakota, which wired all 170 school districts with telephone, cable, and fiber optic wires, upgraded electrical wiring, and installed more outlets in classrooms, SDDE has established reliable connectivity and continues to do so at no cost to the schools;
- **Increase community involvement and stakeholder communications through use of technology***;*
- **Support instructional integration**—through the SDDE 21st Century Master Teacher Academy which uses the “train the trainer model”;

- **Data collection and usage**—to track student learning and share teacher and student data including assessment data.

The SDDE is implementing a new system called the *Next Generation Accountability Model* that is based on several key indicators: (a) Student achievement; (b) High school completion (high school) or academic growth (elementary/middle school); (c) College and career readiness (high school) or attendance (elementary/middle school); (d) Effective teachers and principals; and (e) School climate. Using a 100-point index called the School Performance Index (SPI); each indicator receives a numeric value to total 100 points. Currently in a phase in period, this accountability model will be in full implementation during the 2014-2015 school year. Using the SPI Indicator #4 for Effective Teachers and Principals, the quantitative measure of student academic growth in one school year accounts for 50% of the performance rating (p. 8 http://www.doe.sd.gov/secretary/documents/AccounSum.pdf).

Computer-Based Testing in Nevada

According to the SBAC website (www.smarterbalanced.org), if Nevada districts lack the infrastructure to support computer adaptive testing, SBAC will make available a paper-and-pencil option for up to three years after implementation, but districts will incur all costs associated with paper-based administrations. Beginning in 2011, Nevada participated in a transition-plan-assessment tool from the PARCC and the SBAC to help identify infrastructure gaps and plan for future needs. However, even though SBAC asked each district to participate in this readiness exercise, few of the districts provided the data needed. Overall, Nevada is still not ready for widespread electronic testing and schools are in jeopardy of being inadequately equipped. The following recommendations for hardware purchases are the minimum guidelines from SBAC:

- Hardware: 1 GHz processor, 1 GB RAM, 9.5 inch screen size, screen resolution of 1024 x 768;
- Operating system of either Windows 7 or Mac 10.7;
- Internet connection and;
- Additional accessories such as headphones and physical keyboards.

Nevada school districts can meet the requirements using desktops, laptops, tablets, or virtual desktops that meet the aforementioned specifications. A one-to-one initiative is a possible solution to this

readiness issue. Currently, Lincoln County School District in Nevada is in its second year of a district-wide one-to-one pilot for 5th-12th graders. Successful implementation of this initiative in Lincoln County could act as a model for other Nevada districts.

Currently Nevada school districts are utilizing their technology dollars in a variety of ways. Most are investing in infrastructure, professional development, and instructional integration per the State and District plan; however, there is also investment specific to each district. The STNA 2012 provided information pertaining to district-specific technology initiatives; namely, through individual initiatives, districts have a variety of grant-funded programs that are specific only to that district. For example, Lincoln County is currently piloting a one-to-one initiative for all 5th–12th graders. Additionally, they have used funds from the Carl Perkins Grant to purchase technology for graphic arts and business classrooms. When appropriate, they use Title I funds to purchase technology. Lyon County funds technology by using E-rate funding with Board approval of the district's 11% share, through State and other technology grants, as well as through the established IT budget. When asked, each District Technology Coordinator cited different sources of funding used to implementing their technology plans. Due to the inconsistency in unified planning, unstable sources of funding, and a variety of needs in each district, it is difficult to make a summary of Nevada Plan similar to South Dakota, Wyoming, or Idaho. Aside from the 2009-2011 Nevada Pathway Project, no single statewide effort for infrastructure, professional development, or instructional integration exists to the knowledge of the RRC research team.

The STNA 2012 survey asked the district Technology Coordinators about the opportunities and challenges associated with computer-based testing in their districts. As in STNA 2010, a majority identified current infrastructure and access to adequate technology as the largest continuing challenges faced by their districts. Many coordinators noted the lack of devices and personnel availability, poor internet access, and inadequate bandwidth capabilities as significant obstructions to implementing computer-based testing. They also noted that training for teachers in both the new testing environment, as well as using data to individualize student learning is necessary, but currently lacking.
One Technology Coordinator from a district that participates in some computer-based testing stated that Measure of Academic Progress (MAP) testing has been successful. The main concern for implementing this type of testing, however, is ensuring that sufficient financial, equipment, and personnel resources are available to put this assessment strategy into practice successfully.

When asked about their thoughts on using computer-based testing for high school proficiency exams (HSPE), many of the technology coordinators stated that they saw many advantages. Examples of potential advantages to this technology application included instant results so teachers can individualize learning, a controlled environment, and increased student computer use and literacy.

Some of the disadvantages noted were the lack of technological capabilities within their district (i.e. not enough computers and bandwidth available to accommodate all of the students that will need to take the exams), and a lack of personnel and software needed in order to support this type of testing within the districts. Additionally, some Technology Coordinators commented about the need to change current HSPE testing polices. In particular, some stated that with the current technology and without expanding the number of computers or other devices capable of administering the exam, an expansion of the testing window would have to occur. This is similar to the test window expansion this year to accommodate the writing exam in 5th and 8th grades. The expanded window was necessary because Nevada schools did not have the technological capacity to administer the writing assessments to every student who needed to participate in the typical one-day testing window. Again, pursuing a one-to-one initiative, such as the Lincoln County School District pilot, is a possible solution to the problem of lack of infrastructure.

Currently, barriers to computer-based testing remain in all districts in spite of enthusiasm for it. Using technology in the testing process provides students with technology interaction opportunities and provides teachers with a resource that yields fast and accurate student data from which they can base changes in curriculum to better prepare their students. Increasingly, data-driven decision-making by teachers and administrators is necessary, and computer-based testing allows teachers to analyze and respond to student progress in a timely and efficient manner. In addition to convenience and accuracy, computer-based testing also allows for reduction in paper use, printing costs, and postage associated with paper tests. Furthermore, new Nevada laws (Assembly Bill [A.B.] 229, 2011) require student achievement data to comprise 50% of evaluations for teachers and principals. The transition to computer-based testing will enable teachers and principals to make instructional decisions in real time, based upon student test results. However, according to Technology Coordinator survey responses, not all teachers know how to analyze, interpret, and use data to adjust individualized instruction for students. This necessitates training and professional development in basic data analysis.

Educational Technologies Improving Instructional Development and Delivery

The goal of technology integration into the curriculum at all grade levels has the support of a variety of local, state, and national stakeholders such as educators, legislators, students and their families. In order to encourage and facilitate this process, the state of Nevada must take the necessary steps to foster technology efficacy among its teachers so they can provide their students the 21st Century technology skills needed to succeed as they move into the workforce. The purpose of this section is to focus on specific technological needs stated by the technology coordinators surveyed, and the role laptop computers and other portable devices, as well as web-based collaborative technologies have in education.

Expanded Use of Laptop Computers and Other Portable Technology Devices

When asked about the opportunities and challenges associated with the expanded use of laptops by students and teachers, a majority of the Technology Coordinators stated that the impact would be positive overall, but that teachers would need professional development in how to effectively engage students and change current classroom culture. Though not all coordinators agreed, most cited increased student engagement and students' current technology skill levels as the greatest opportunities presented by laptop computer use. Research supports this notion. In a summary of research on laptop initiatives, Argueta, Huff, Tingen, and Corn (2011) found that laptop use increased student engagement and motivation, two things that support learning. Their article is one of the most comprehensive reviews of early-implementation one-to-one initiatives.

When questioned about challenges presented by increased laptop use, many coordinators cited inadequate funding for purchase and maintenance, lack of wireless Internet access, and proper technology support for teachers and students. Two coordinators even stated that guaranteeing the security of the laptops would present problems within their districts. One coordinator stated that each district should keep in mind that while this type of technology integration might benefit some, it might

not benefit others. Argueta et al. (2011) support this notion as well. Laptops might distract some learners and might have no effect in some content areas.

Nevada Pathway Project

The Nevada Pathway Project was a statewide, collaborative, online professional development program created to help administrators and teachers offer 21st century learning experiences for Nevada students. The project had two main objectives: 1) to change teacher behavior in the classroom, and administrator beliefs and practices with educational technology through online professional development; and 2) to create effective professional development using 21st century pedagogy, such as the Technological and Pedagogical Content Knowledge (TPACK) model (www.tpack.org), identify appropriate bundles of effective classroom technology resources, and identify best practices for professional development for teachers and principals (Vidoni, Lady, Asay, & Ewing-Taylor, 2010.) Made possible with a $4 million American Recovery and Reinvestment Act (ARRA) grant through the Enhancing Education through Technology (EETT) program of the U.S. Department of Education, the project started in the fall of 2009 and ran through the spring of 2011. The Pathway Project included 125 teachers, 45 administrators, district technology coordinators from all 17 counties, university faculty from both UNR and UNLV, school district professional development staff, and an advisory committee including personnel from the Nevada Department of Education.

The Nevada Pathway Project was an award-winning endeavor, receiving the distinguished Best Practices Award from the Partnership for 21st Century Skills. The Pathway Project accomplished this by placing disruptive technologies (iPods, iPads, laptops, and a variety of Web 2.0 tools) in the hands of administrators, teachers, and students; and through aggressive professional development (PD) training to change school culture around technology through influencing the beliefs and practices of teachers, administrators, and students. Because of its success, policy-makers and other stakeholders now have a model to guide future purchases and programs (http://www.cosn.org/Portals/7/docs/NCTET_Report.pdf). The Pathway Project success provides evidence that investment in infrastructure, effective and sustained professional development on the integration of educational technology in the classroom, and technology hardware and software can increase student engagement.

Although many educators feel that increased educational technology improves student achievement, research supporting this position is incomplete (Argueta, Huff, Tingen, & Corn, 2011). In fact, only some of the analyses of one-to-one initiatives support the idea that laptops increase student achievement (Argueta et al., 2011). However, these types of technology initiatives have indicated improvement in certain content areas, such as writing. Research on one-to-one initiatives also reports mixed findings on the effect of the initiatives on attendance and student discipline (Argueta et al., 2011). The research generally supports the notion that one-to-one initiatives have a positive effect on students' technology skills, learning and innovation skills, communication and collaboration skills, and self-directed learning skills, which are essential 21st century skills. Part of the explanation for the lack of research supporting one-to-one initiatives is that they are relatively new to education, which limits the number of large-scale research projects dedicated to them. However, preliminary research indicates that the integration of educational technology, when implemented effectively, contributes to an environment more conducive to learning, and reshapes pedagogy in a way that should stimulate higher levels of achievement.

Successful models require effective leadership, professional development, and infrastructure. Planning plays a vital role in the success of these initiatives as well. Argueta et al. (2011) recommend the following for successful implementation of one-to-one initiatives:

- Develop a thorough implementation plan and train teachers before distributing digital devices;
- Ascertain that the school or district has the appropriate technological and leadership infrastructures to run the program;
- Secure strong buy-in from all stakeholders, including district and school leadership, teachers, students, parents, and the community;
- Construct a leadership team with an eye toward members who will commit long-term to the initiative and support it;
- Provide continuous professional development that is aligned with teacher needs;
- Ensure continuous availability of efficient technical and instructional support personnel;
- Enact policies for the appropriate use of digital devices and resources; and
- Use data from project evaluations to inform and improve future program decisions. (p. 15)

At a recent Commission on Educational Technology (CET) meeting in Carson City, the CET created a committee to investigate a one-to-one initiative in Nevada.

Digital Textbooks

According to the *Digital Textbook Playbook*, included in and endorsed by the Federal Communications Commission (FCC) and the U.S. Department of Education (ED), the United States spends more than $7 billion a year on textbooks, and many children use textbooks that are 7-10 years old that contain outdated material (Federal Communications Commission [FCC], 2012). Both ED Secretary Arne Duncan and FCC chief Julius Genachowscki unveiled a plan for schools to switch from print to digital textbooks by 2017. This plan aligns with the FCC's National Broadband Plan and ED's National Education Technology Plan (Tomassini, 2012). Many states have extensively adopted laptops and other portable technology devices in efforts to reach this goal. Recently, the 135,000-student San Diego School District adopted a $15 million plan to supply 25,700 iPads to students (Tomassini, 2012). The result of this initiative is approximately one iPad for every five students, in addition to their current technology levels.

Cost-savings Associated with Digital Textbook Adoption

The increase of laptop computers and other digital devices in some Nevada school districts has provided more opportunities for teachers and students to combine education with technology successfully. One of the benefits to increasing laptop use and access among teachers and students is the potential transition from traditional textbooks to electronic textbooks. Some Technology Coordinators identified some of the issues that the switch from hard copy to electronic textbooks would present, such as a lack of funding for the purchase of electronic books, finding an electronic source that has quality educational material, and the increased technical support needed in order to implement this transition.

According to figures cited by the Digital Textbook Collaborative from Project RED, a school of 500 students could save between $35 and $250 per student per year by switching to digital textbooks (Tomassini, 2012). This savings includes the costs of tablet computers. Another benefit of electronic textbook adoption is that electronic textbooks remain current.

Internet Use

In the responses collected, Technology Coordinators stressed the importance of Internet use among both teachers and students in the classroom. When asked to identify the ways in which teachers can

effectively utilize the web to support their teaching, coordinators suggested the use of the Internet as a tool to increase online learning opportunities for students, as a way to extend the learning day using a closed social networking platform, as a research tool, and as a resource for communication and collaboration with other educators. Many coordinators also noted that teachers could use the web as a great source for finding new, innovative ways to teach numerous subjects by creating professional learning networks (PLNs) and utilizing vast online resources.

Results from the teacher survey corroborate the Technology Coordinators' responses; 67% of teachers reported using the Internet for instructional purposes during the last 60 minutes of instructional time (Figure 1).

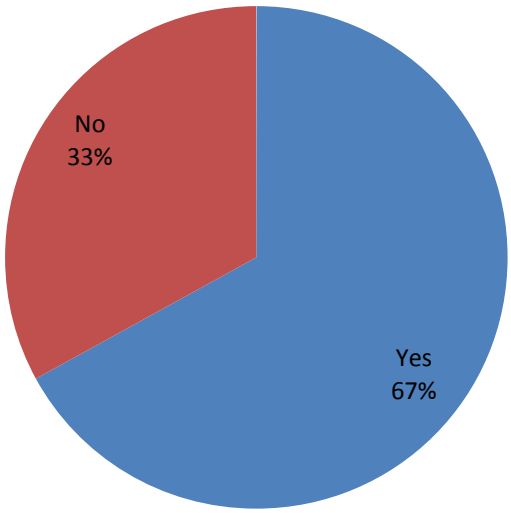


Figure 1: Teacher instructional use of the Internet during the last 60 minutes of instructional time

In response to questions regarding Internet use in the classroom, Technology Coordinators listed a variety of ways that teachers are currently utilizing the Internet in their classrooms and integrating web-based materials into their curricula. For example, teachers are using YouTube and the Khan Academy, learning management systems (LMS) such as Blackboard and Moodle, Edmodo as a sheltered social networking site *and* as an LMS, and taking students on *virtual fieldtrips.* The coordinators surveyed also stated that teachers within their districts are encouraging students to use interactive whiteboards to present material and to access the Internet to complete class assignments and research.

Technology Coordinators also stated that teachers within their districts frequently use the Internet as a collaboration tool. A majority of the coordinators surveyed indicated that teachers within their districts rely on the Internet to communicate with other teachers through e-mail, video conferencing and virtual meeting software, including Skype, and social networking sites. Teacher survey responses indicate that they are using the Internet to communicate and collaborate (Figure 2).

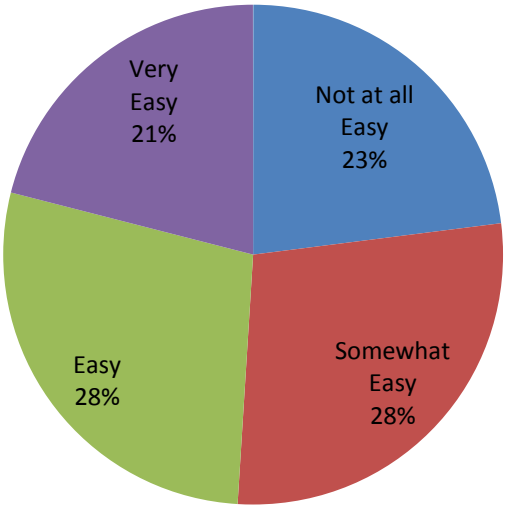


Figure 2: Teachers' responses regarding ease of using technology to collaborate in the development of instructional materials.

When asked to list the greatest challenges associated with Internet use by teachers within their districts, an overwhelming majority of Technology Coordinators identified insufficient bandwidth and inadequate professional development opportunities as the greatest challenges. Coordinators stated that because of the lack of training, many teachers do not know how to incorporate Internet use into their curricula effectively. Other challenges to Internet use by teachers provided by the Coordinators included strict Internet filters and a lack of adequate software and virus updates on classroom computers, a lack of funding for the purchase of current equipment, and limited access to computers.

Nevada's membership in the SBAC necessitates a solid plan to implement computer-based testing. Additionally, in order to create a technologically literate student body in Nevada, public education must devise a way to incorporate technology in a way that would save money and align with the new Common Core State Standards as well as other changes in state standards. Portable technology devices coupled with unifying technologies increase student access and teacher abilities to meet a variety of

learning styles in the classroom and increase opportunities to adopt and integrate digital textbooks that are easily updated and more cost effective. However, access to these devices alone will not guarantee success in the classroom. Districts need to be able to provide reliable access to the Internet for each device through expanded bandwidth capabilities. Additionally, districts will need to require technology-related professional development that provides teachers with technical skill in instructional integration based on a sound pedagogical model. In this way, teachers receive the skills and pedagogy necessary to integrate technology effectively into their lessons. This feat will require technological as well as instructional support for these professionals.

As stated in the Executive Summary, but worth reiterating, a unique timing opportunity existed following STNA 2010 when all of these changes were first emerging; however, Nevada is now in a position where it must react to changes already in process, and do so in a condensed timeframe. Time, although short, still exists to examine critically these aspects of educational technology in Nevada, make changes that serve the students, as well as meet the upcoming requirement for computer-based testing, and do this in a carefully examined, planned, and executed manner. Because of the potential for increased costs in the absence of good planning, this is the fiscally responsible thing to do. Moreover, investing in educational technology can help provide Nevada schoolchildren with the education, training, skills, and experience they need to be competitive in the 21st Century.

Current Capacity of Nevada Schools

Survey Results

The RRC research team sent survey requests to all 17 districts' Technology Coordinators; 16 of the 17 responded. All teachers in Nevada had the opportunity to participate in the Teacher Survey, provided their district's superintendent had their email address. In total, 4,509 teachers completed the survey, which, after sampling, became a sample of 2,019. As for the Parent Survey, the total number of responses is approximately proportional to the percentage of students in each school district, by district category. The RRC research team decided that because the actual number of parents in each district is unknown, this proportional strategy was the best available, as well as the most comprehensive. Table 2 shows the response frequencies from each district, by category of respondent.

Table 2: Number of Respondents by District and Category

District	IT Coordinator	Teachers (Total)	Teachers (Sample)	Parents
Carson City SD	1	75	75	57
Churchill County SD	0	89	89	35
Clark County SD	1	2924	501	768
Douglas County SD	1	80	80	321
Elko County SD	1	290	290	196
Esmeralda County SD	1	4	4	3
Eureka County SD	1	13	13	5
Humboldt County SD	1	93	93	88
Lander County SD	1	23	23	16
Lincoln County SD	1	34	34	52
Lyon County SD	1	136	136	255
Mineral County SD	1	11	11	6
Nye County SD	1	209	209	285
Pershing County SD	1	30	30	10
Storey County SD	1	25	25	11
Washoe County SD	1	418	351	494
White Pine County SD	1	55	55	24
Total	**16**	**4509**	**2019**	**2626**

Technology Coordinator Surveys

The STNA 2012 collected the following information from 16 district Technology Coordinators. The survey asked each coordinator a series of questions regarding the software and technical support provided to teachers and the technological capabilities of the classrooms within their district.

The Technology Coordinator survey asked respondents to describe the technological capabilities of a typical low-end classroom, a typical middle-end classroom, and typical high-end classroom in their district. Questions addressed issues such as computer and projector availability, Internet capability, and any other types of technology currently available for teacher and student use in their district. Finally, the survey asked for an approximate percentage of the classrooms in their districts that closely fit the classroom descriptions they provided.

Technology Coordinator Survey Results

The following table displays the survey responses by the Technology Coordinators when asked about the level and type of technology in the typical low, middle, and high-end classroom in their district. Table 3 presents the results for all 17 counties by district and by classroom technology level.

Table 3: Responses to "Describe a common low-end, middle-end, and high-end classroom that a visitor might see in your district. The three classrooms should represent your view of the low, middle and high-end in terms of technology availability in your district. In your description include the approximate number, age and condition of the computers in the room, the presence or absence of a projector, the Internet connection capacity and any other technologies that might be available."

County	Common Low-End Classroom	Common Middle-End Classroom	Common High-End Classroom
Carson City	**Computer:** 1 computer **Projector:** Yes **Other Technologies:** Interactive Whiteboard Internet Printer	**Computer:** 1 computer **Projector:** Yes **Other Technologies:** Interactive Whiteboard Internet Document Camera Printer	**Computer:** Laptop cart or Multiple computers **Projector:** Yes **Other Technologies:** Interactive Whiteboard Document Camera Internet Printer
Churchill	**Computer:** Did not respond **Projector:** Did not respond **Internet Capabilities:** Did not respond **Other Technologies:** Did not respond	**Computer:** Did not respond **Projector:** Did not respond **Internet Capabilities:** Did not respond **Other Technologies:** Did not respond	**Computer:** Did not respond **Projector:** Did not respond **Internet Capabilities:** Did not respond **Other Technologies:** Did not respond
Clark	**Computer:** 1 teacher computer Possible 1 student computer 3-5 years old **Projector:** Yes- shared **Internet Capabilities:** Yes **Other Technologies:** Computer lab for remediation/practice programs	**Computer:** 1 teacher computer 1-2 student computers **Projector:** Yes **Internet Capabilities:** Yes **Other Technologies:** Mobile cart of handhelds or laptops for teacher checkout for classroom use Computer lab for remediation/practice programs	**Computer:** 1 teacher computer 2 student computers 1:1 Laptop, handhelds or student-owned devices **Projector:** Yes **Internet Capabilities:** Yes **Other Technologies:** Interactive Whiteboard Electronic books/ePubs Web 2.0 tools like podcasts, blogs & wikis Use of blended learning opportunities

County	Common Low-End Classroom	Common Middle-End Classroom	Common High-End Classroom
Douglas	**Computer:** 1 teacher computer 1 student computer **Projector:** Not specified **Internet Capabilities:** Yes **Other Technologies:** Whiteboard	**Computer:** 1 teacher computer 1 student computer **Projector:** Yes **Internet Capabilities:** Yes **Other Technologies:** Whiteboard VCR/DVD television	**Computer:** 1 teacher computer 1 student computer **Projector:** Not specified **Internet Capabilities:** Yes **Other Technologies:** Interactive Whiteboard Whiteboard VCR/DVD television
Elko	**Computer:** 1 teacher computer Possible 1 student computer **Projector:** Yes **Internet Capabilities:** Yes **Other Technologies:** Interactive Whiteboard	**Computer:** 1 teacher computer 2-3 student computers **Projector:** Not specified **Internet Capabilities:** Yes **Other Technologies:** Interactive Whiteboard Computer lab	**Computer:** Laptop cart iPod cart **Projector:** Not specified **Internet Capabilities:** Yes **Other Technologies:** Interactive Whiteboard
Esmeralda	**Computer:** Did not respond **Projector:** Did not respond **Internet Capabilities:** Did not respond **Other Technologies:** Did not respond	**Computer:** Did not respond **Projector:** Did not respond **Internet Capabilities:** Did not respond **Other Technologies:** Did not respond	**Computer:** **All** classrooms have: Computer Laptop cart iPod cart **Projector:** Not specified **Internet Capabilities:** Yes **Other Technologies:** Interactive Whiteboards SKYPE Elmo
Eureka	**Computer:** 1 teacher computer Access to laptop cart **Projector:** Not specified **Internet Capabilities:** Yes **Other Technologies:** Interactive Whiteboard	**Computer:** 1 teacher computer 1-5 student computers Access to laptop cart **Projector:** Not specified **Internet Capabilities:** Yes **Other Technologies:** Interactive Whiteboard	**Computer:** Laptop cart iPad cart **Projector:** Not specified **Internet Capabilities:** Yes **Other Technologies:** Interactive Whiteboard

County	Common Low-End Classroom	Common Middle-End Classroom	Common High-End Classroom
Humboldt	**Computer:** 1 teacher computer 2 years old **Projector:** Not specified **Internet Capabilities:** Not specified **Other Technologies:** Access to computer lab	**Computer:** 1 teacher computer 2 years old 3-4 student computers >8 years old **Projector:** Not specified **Internet Capabilities:** Not specified **Other Technologies:** Not specified	**Computer:** 1 teacher computer <5 years old 5 student laptop computers <5 years old **Projector:** Not specified **Internet Capabilities:** Not specified **Other Technologies:** Interactive Whiteboard Elmo
Lander	**Computer:** 1 teacher computer-Older with (Win 03) **Projector:** Not specified **Internet Capabilities:** Not specified **Other Technologies:** None	**Computer:** 1 teacher computer 4 student computers **Projector:** Not specified **Internet Capabilities:** Not specified **Other Technologies:** Interactive Whiteboard	**Computer:** 1 teacher computer (Win 03) 4 student computers (Win 98) **Projector:** Yes **Internet Capabilities:** Not specified **Other Technologies:** Interactive Whiteboard Elmo
Lincoln	**Computer:** 1 teacher computer **Projector:** None **Internet Capabilities:** Not specified **Other Technologies:** None	**Computer:** Netbooks for each student **Projector:** Not specified **Internet Capabilities:** Yes **Other Technologies:** None	**Computer:** 12-20 desktop computers Students might bring Netbooks **Projector:** Yes **Internet Capabilities:** Yes **Other Technologies:** Interactive Whiteboard 1-2 high quality printers/plotters Laser engraver, CNC machines, Embroidery machines
Lyon	**Computer:** 1 teacher computer **Projector:** Not specified **Internet Capabilities:** Yes **Other Technologies:** Audio enhancement	**Computer:** 1 teacher computer 1-6 student computers or other devices **Projector:** Yes **Internet Capabilities:** Yes **Other Technologies:** Interactive Whiteboard	**Computer:** 1 teacher computer 1-6 student computers Laptop/tablet cart **Projector:** None **Internet Capabilities:** Good **Other Technologies:** Interactive Whiteboard Student response system

County	Common Low-End Classroom	Common Middle-End Classroom	Common High-End Classroom
Mineral	**Computer:** 1 teacher computer 3-5 student computers **Projector:** Yes **Internet Capabilities:** Yes **Other Technologies:** iPads	**Computer:** 1 teacher computer 3-5 student computers **Projector:** Yes **Internet Capabilities:** Yes **Other Technologies:** Interactive Whiteboard iPads	**Computer:** 1 teacher computer 3-5 student computers **Projector:** Yes **Internet Capabilities:** Yes **Other Technologies:** Interactive Whiteboard iPads
Nye	**Computer:** 1 Teacher computer **Projector:** Yes **Internet Capabilities:** Yes **Other Technologies:** None specified	**Computer:** 1 Teacher computer 1-2 Student computers **Projector:** Yes **Internet Capabilities:** Yes **Other Technologies:** Document Camera	**Computer:** 1 Teacher computer 4-8 Student computers Laptop carts **Projector:** Yes **Internet Capabilities:** Yes **Other Technologies:** Document camera Interactive Whiteboard iPads
Pershing	**Computer:** 1 Teacher computer (Win XP) 1 Student computer **Projector:** None **Internet Capabilities:** Yes **Other Technologies:** None	**Computer:** 1 Teacher computer (Win XP) 4 Student computers **Projector:** Yes **Internet Capabilities:** Good **Other Technologies:** Interactive Whiteboard	**Computer:** eMINTS (15 Computers) Teacher iPad **Projector:** Yes **Internet Capabilities:** Yes **Other Technologies:** Interactive Whiteboard Document camera
Storey	**Computer:** Not specified **Projector:** Not specified **Internet Capabilities:** Not specified **Other Technologies:** Not specified	**Computer:** 1 teacher computer **Projector:** Yes **Internet Capabilities:** Yes **Other Technologies:** Interactive Whiteboard	**Computer:** 1 teacher computer **Projector:** Yes **Internet Capabilities:** Yes **Other Technologies:** Interactive Whiteboard School computer lab

County	Common Low-End Classroom	Common Middle-End Classroom	Common High-End Classroom
Washoe	**Computer:** 1 Teacher computer **Projector:** Not specified **Internet Capabilities:** Not specified **Other Technologies:** Not specified	**Computer:** 1 Teacher computer 1-2 Student computers **Projector:** Not specified **Internet Capabilities:** Not specified **Other Technologies:** Interactive Whiteboard	**Computer:** 1 Teacher computer 1-2 Student computers Laptop cart iPod cart **Projector:** Not specified **Internet Capabilities:** Not specified **Other Technologies:** Not specified
White Pine	**Computer:** Not specified Students use word processing programs **Projector:** Not specified **Internet Capabilities:** Not specified **Other Technologies:** Not specified	**Computer:** Not specified Students use Internet to research information/use specific applications to meet educational needs **Projector:** Not specified **Internet Capabilities:** Yes **Other Technologies:** Not specified	**Computer:** Not specified Students use technology to communicate with students worldwide and work collaboratively to develop projects **Projector:** Not specified **Internet Capabilities:** Yes **Other Technologies:** Not specified

The information presented in Table 3 shows that classroom technology availability varies among districts in Nevada, as well as between classrooms within the same district. Based on the information provided by the Technology Coordinators surveyed, a typical low-end classroom in Nevada contains one computer that is older and used only for administrative tasks. A low-end classroom may or may not have access to a projector or reliable Internet. A few coordinators reported that a low-end classroom in their district might include a functioning printer, access to the Internet and a computer lab, and an interactive whiteboard. After taking an average of the percentages of low-end classrooms within each district as reported by Technology Coordinators, approximately 38% of Nevada classrooms, statewide, fall into the "low-end classroom" category, which is about the same as reported in 2010 (37%).

A typical middle-end classroom in Nevada contains a computer for teacher use and administrative tasks and between one and five computers for student use. More often than not, the classroom has Internet access and access to a projector. Coordinators reported other technologies available in a middle-end classroom, which include interactive whiteboards, checkout availability of other technology (e.g. a mobile cart of handhelds or computers), and access to a computer lab. After taking an average of the

percentages reported by the coordinators surveyed, approximately 48% of Nevada classrooms fall into the "middle-end" category regarding technology access, compared to 42% based on STNA 2010 findings.

Finally, based on the collected responses, a typical high-end classroom in Nevada contains a computer for teacher use and administrative tasks and access to multiple computers for student use. This access includes laptop carts, computer labs, or access to iPods/iPads or other tablets. Internet access is available, as well as access to a projector, if a projector is not available in each classroom. Other technologies found in high-end classrooms in Nevada include interactive whiteboards, a printer, a document camera (ELMO), access to SKYPE, and Web 2.0 technologies. Atypical technology resources for high-end classrooms include one-to-one devices for students, embroidery and CNC (industrial) machines, a laser engraver, student response systems, and iPads. After taking an average of the percentages reported by the coordinators, approximately 19% of Nevada classrooms fall into the "high-end classroom" category regarding technology access, compared to 16% in 2010. Please note, the sum of these percentages is 105% because of rounding and variation in reporting; however, the percentages are a representative estimation of the frequencies of each type of classroom statewide.

A major theme emerged from the Technology Coordinator survey results—bandwidth. Every Technology Coordinator, either directly stating or indicating through connectivity related concerns, included comments specifying their concerns on the bandwidth capabilities of their districts. Many mentioned the need to replace existing "ancient" wiring with fiber connections. Additionally, they stated the need for improved switches, routers, and hubs capable of handling the increased amount of network traffic. In the SBAC states previously mentioned, each state has a definite focus of increasing bandwidth. From the STNA 2012 Technology Coordinator findings, sufficient bandwidth is an issue for every Nevada school district. With the inevitable increase of networked devices on the horizon throughout Nevada's schools, districts must develop strategies to increase the amount of bandwidth within their schools.

Teacher Surveys

The following information, collected from a sample of surveys completed by 2,019 teachers from 17 districts in Nevada, is statistically representative of the technology available in the state. These data describe the technology environment in Nevada's classrooms and provide a snapshot of available technology. Table 4 displays the number of responses from each school district. The number of

responses in Table 4 is the responses analyzed and reported for this report. The research team sampled the responses from Washoe and Clark School Districts in a way that was representative of the composition of each District's teacher population. The percentages reported throughout the report are representative of the entire teacher population within Clark and Washoe School Districts. The research team did not sample the reset of the responses. Instead, the team analyzed all responses from all other counties—sampling would have either had the effect of dilution or overrepresentation because of the different response rates from the different size counties.

Table 4: Responses frequencies from each district after sampling.

	Frequency	Percent
Carson City	75	3.7
Churchill County	89	4.4
Clark County	501	24.8
Douglas County	80	4.0
Elko County	290	14.4
Esmeralda County	4	.2
Eureka County	13	.6
Humboldt County	93	4.6
Lander County	23	1.1
Lincoln County	34	1.7
Lyon County	136	6.7
Mineral County	11	.5
Nye County	209	10.4
Pershing County	30	1.5
Storey County	25	1.2
Washoe County	351	17.4
White Pine County	55	2.7
Total	**2019**	**100.0**

The STNA 2012 asked teachers to report the year in which they began teaching. The range of years spanned from 1964 to 2012 (Figure 3). The mean (average) beginning year was 1996, the median (50th percentile) was 1997, and the mode (most reported year) was 2006. The teacher sample of respondents has a slight negative skew, which means that more teachers have been teaching in Nevada for a shorter

number of years. Based on the median year of 1997, 50% of teachers started teaching during or before 1997, while the other 50% of started during or after 1997. The range of years reported as the first year teaching was 48. However, the 50% that started during or before 1997 had a range of 33 years, while the 50% that started during or after 1997 had a range of 15 years.

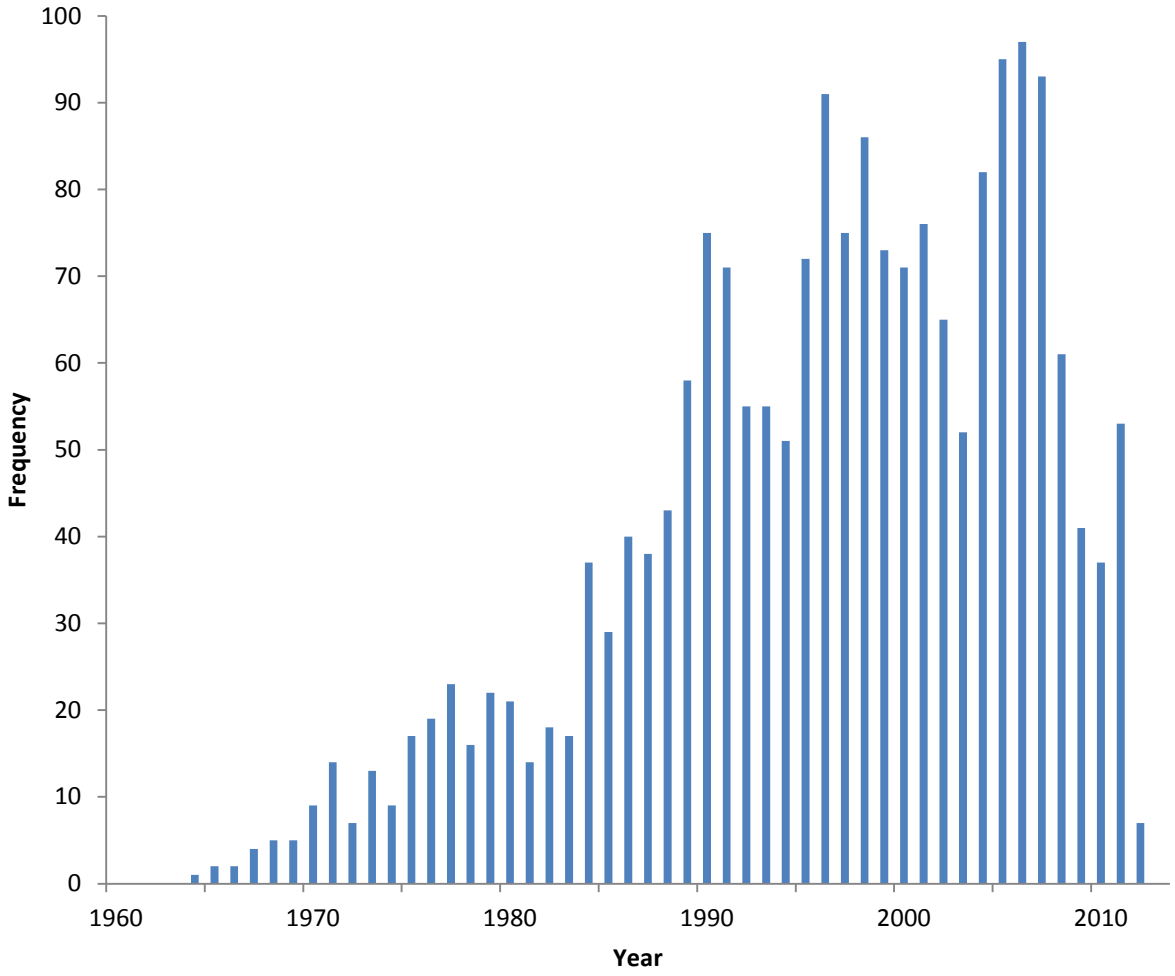


Figure 3: Respondents' responses to "In which year did you begin teaching?"

The STNA 2012 also asked teachers to report how long they have been teaching, in general, and how long they have been teaching in their current school. Figures 4 and 5 display their responses.

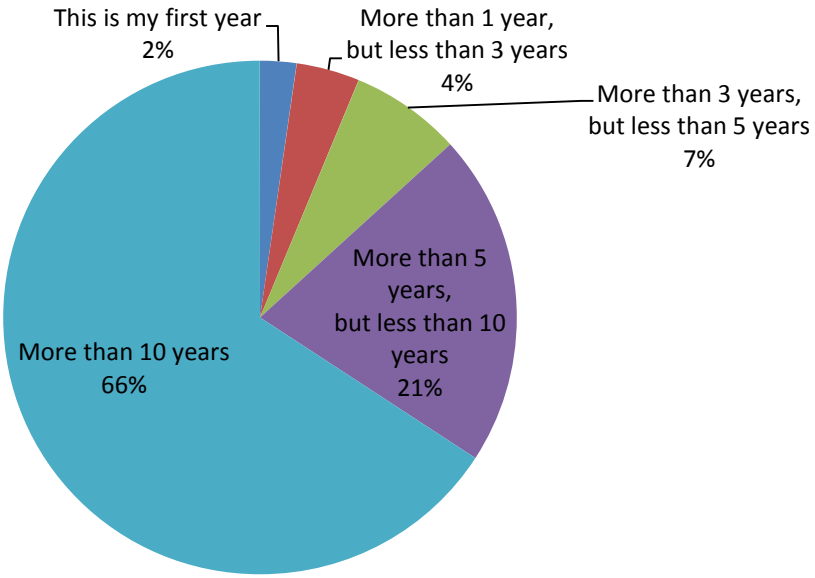


Figure 4: Respondents' responses to "How long have you been teaching?"

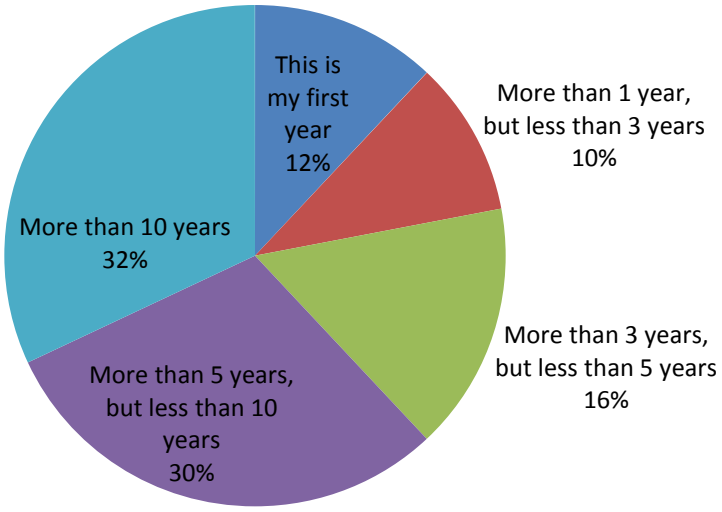


Figure 5: Respondents' responses to "How long have you been teaching in your current school?"

Additionally, STNA 2012 asked teachers to indicate the type of school in which they worked. These levels were “Elementary school (K-5 or K-6)”, “Middle school (6-8, 6-9, 7-8, or 7-9)”, “High school (9-12 or 10-12)”, “Elementary/Middle school (K-8)”, and “Other (please specify)”. The “other” category included responses from teachers in special education departments, correctional facilities, other grade combinations (1-6, 5-6, 7-12, K-4, K-12, etc.), early childhood, and many more placements that are atypical. Figure 6 displays their responses.

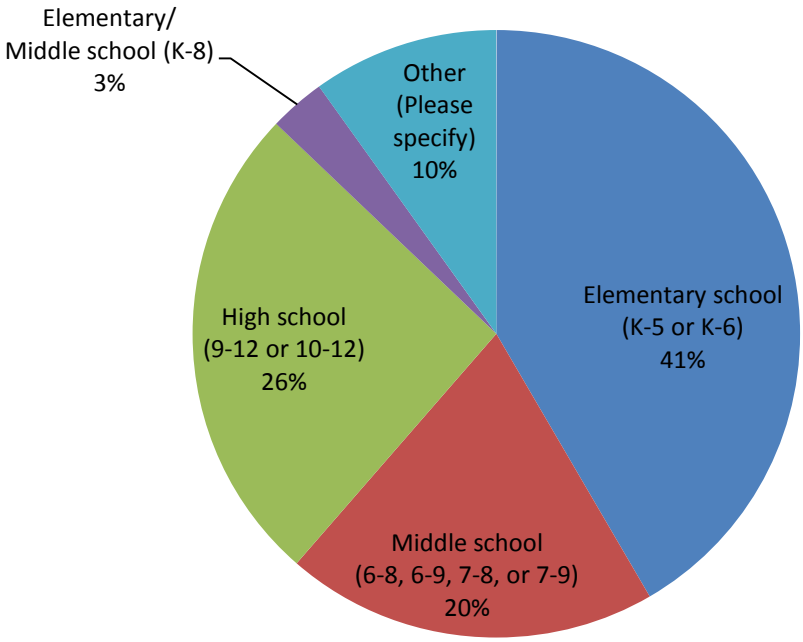


Figure 6: Respondents’ responses to “In what type of school do you work?”

These sample characteristics may affect teacher responses to questions in the STNA 2012 survey regarding their perceptions; however, it should have little, if any, effect on their responses not based upon their perceptions. The possible relationships between and among school district, the number of years teaching, number of years taught in the same school, school type, and teacher perceptions may be of value to future STNA iterations; however, this inquiry exceeds the scope of STNA 2012.

Of the teachers surveyed, 99% of respondents stated they have a classroom computer for teacher administrative tasks. The age of these computers ranges between "New" and "10 or more years old" and, interestingly, about 14% of teachers did not know the age of their computers and 3% reported their computer age as "Old" (Figure 7).

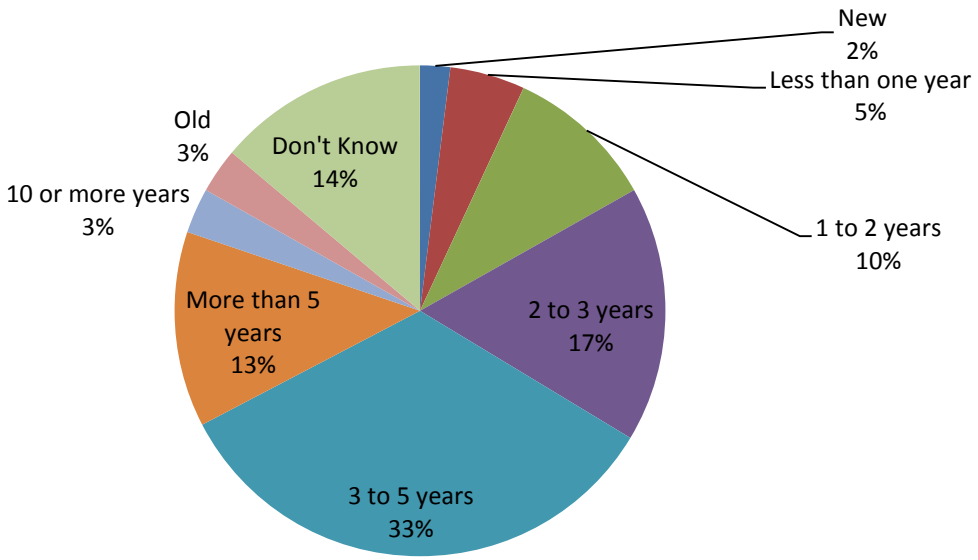


Figure 7: Age of Teacher Computer

Figure 8 displays the technology currently available in Nevada classrooms throughout the state. Of the teachers responding to the survey, 58% percent stated they have an LCD projector, down from 63% reported in STNA 2010. Additionally, 31% noted they could project from a computer to a TV (unchanged from STNA 2010), and 54% said they have an interactive whiteboard, up from 29% in 2010. A digital camera is available in 19% of classrooms (unchanged from 2010) and 10% have a digital video camera compared to 9% in STNA 2010. Document cameras and handheld or mobile devices are available in 25% and 19% of classrooms, respectively.

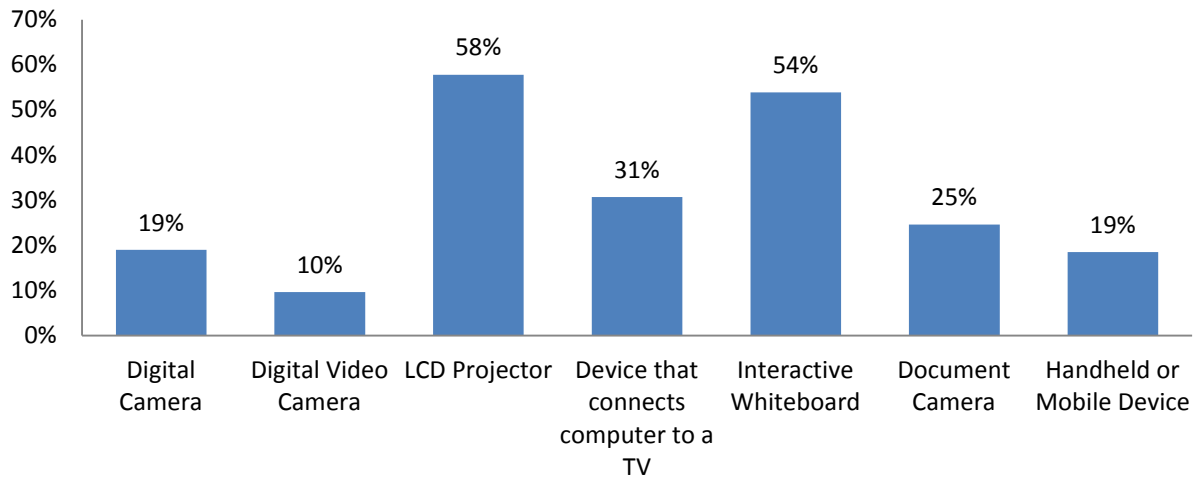
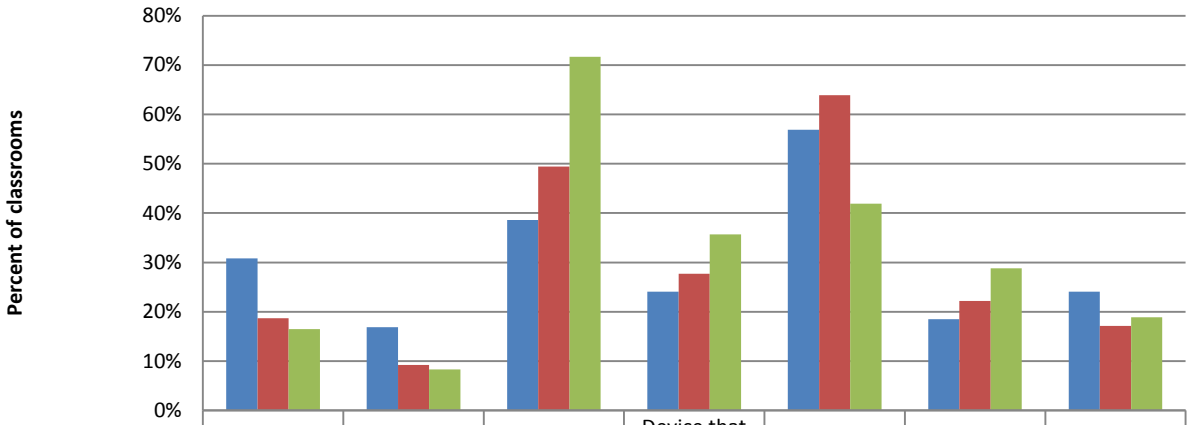


Figure 8: Statewide responses to "Which of the following technology equipment do you have in your classroom all the time?"

Among all surveyed districts, the technology available in classrooms varied, especially by district category (small, medium, or large). Figure 9 provides a breakdown of the technology available in classrooms by percentage by district category.



	Digital Camera	Digital Video Camera	LCD Projector	Device that connects computer to a TV	Interactive Whiteboard	Document Camera	Handheld or Mobile Device
Small Districts	31%	17%	39%	24%	57%	19%	24%
Medium Districts	19%	9%	49%	28%	64%	22%	17%
Large Districts	17%	8%	72%	36%	42%	29%	19%

Figure 9: Responses to "Which of the following do you have in your classroom all of the time?" As responded by small, medium, and large districts.

Of the respondents, 75% stated that they had at least one computer in their classroom for student instructional purposes, up from 62% since STNA 2010, a 13% increase. Since STNA 2010, the number of

students per computer has changed. Figure 10 displays the number of students per computer reported in 2010, while Figure 11 displays the number of students per computer in 2012. The two figures make it apparent that the number of classrooms with zero computers has gone from 25% in 2010 to just over 19% in 2012—a 6% decrease. However, 75% of classrooms exceed a 5-1-ratio or have no computers available (56% responded 5 or more students per computer, 17% responded "no computers for student use", and 2% reported "not applicable", which the team interpreted as no computers available for student use). Although this is only a single data point, the responses indicate that Nevada school districts may be experiencing an alarming trend, one of a higher student-to-computer ratio, which could increase the difficulty of effective implementation of computer-based assessments and decrease each student's access to technology.

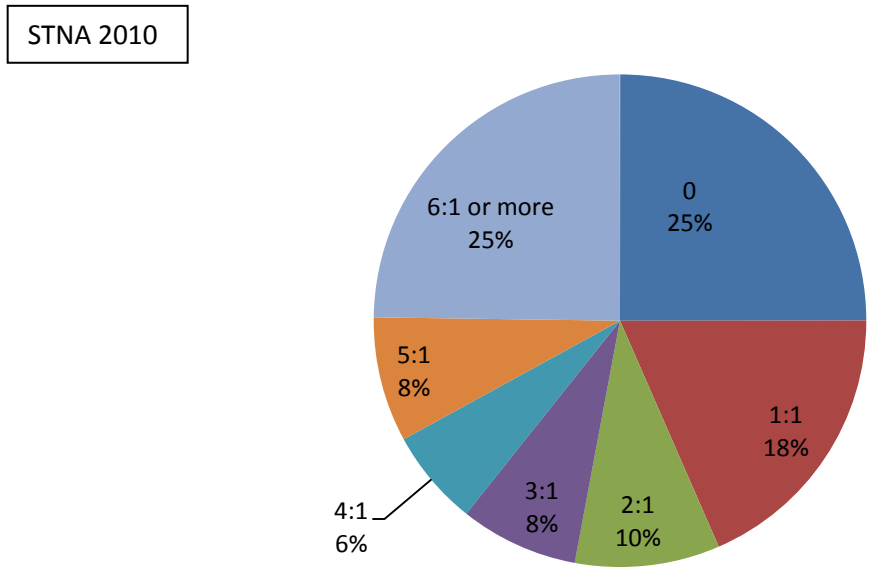


Figure 10: Number of Students per Computer During a Typical Class STNA 2010

STNA 2012

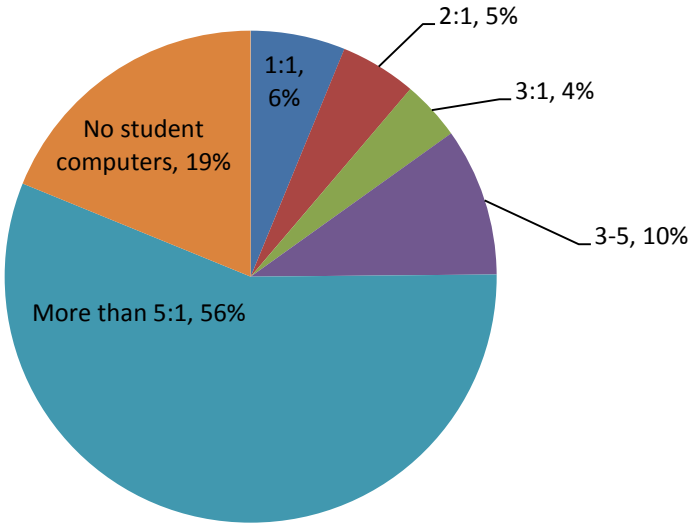


Figure 11: Number of Students per Computer During a Typical Class STNA 2012

When asked whether the computers in the classroom were in good working order, 57% of respondents answered in some form of agreement, 15% were neutral, and 28% answered in some form of disagreement. Figure 12 displays the responses to this question.

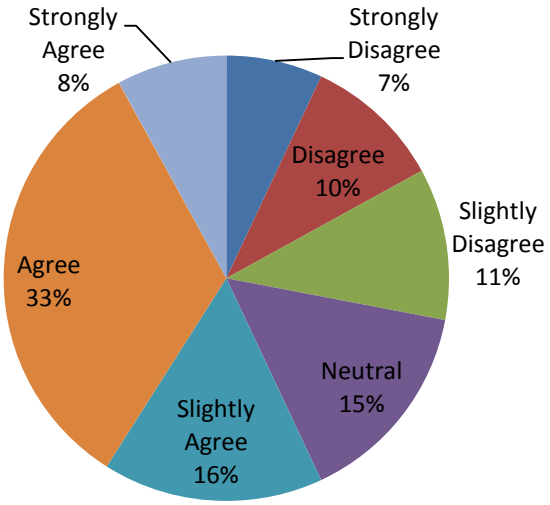
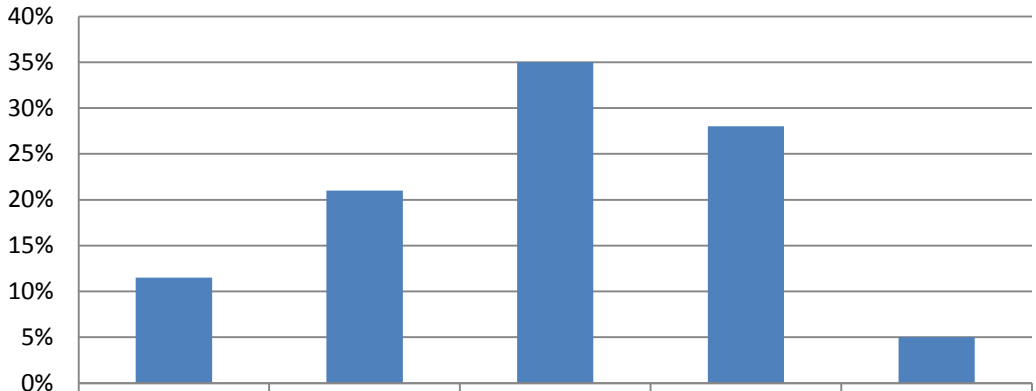


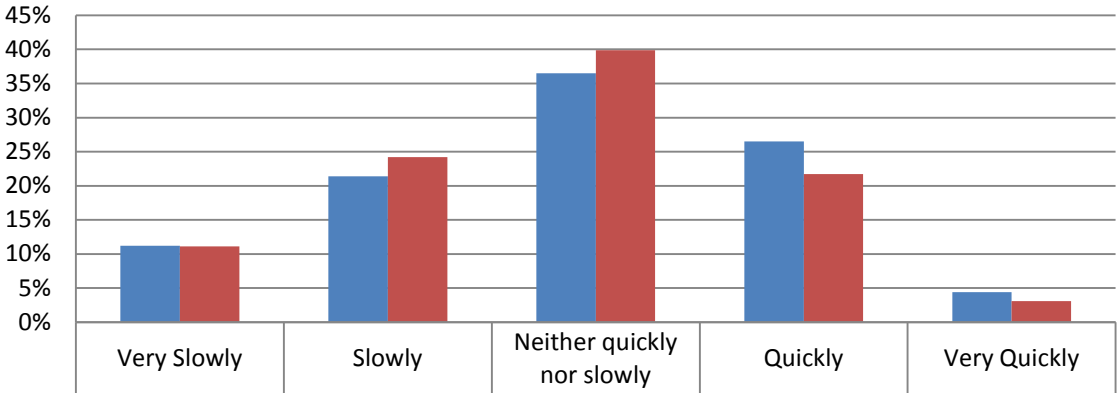
Figure 12: Responses to the statement, “The computers in the classroom are in good working order.”

Regarding access to the Internet, 96% of respondents reported that their classrooms had an Internet connection, approximately the same percentage reported in STNA 2010. Teachers responded to the speed of their Internet connection in terms of how slowly or quickly materials loaded. Figure 13 presents statewide responses, which included “Very Slowly” (11%), “Slowly” (21%), “Neither Quickly nor Slowly” (35%), “Quickly” (28%), or “Very Quickly” (5%). Figure 14 presents the responses for Clark and Washoe school districts, which indicate that most teachers believe that the Internet connection in their classroom is neither quick nor slow.



	Very Slowly	Slowly	Neither Quickly nor Slowly	Quickly	Very Quickly
Percentage of respondents	11%	21%	35%	28%	5%

Figure 13: Classroom Internet Speed is such that Online Videos Begin Playing, Statewide



	Very Slowly	Slowly	Neither quickly nor slowly	Quickly	Very Quickly
Clark	11%	21%	37%	27%	4%
Washoe	11%	24%	40%	22%	3%

Figure 14: Comparison of Washoe County and Clark County: Classroom Internet Speed is such that Online Videos Begin Playing at these perceived rates

Schools

This section explains the technology capacity of schools, including overall access to technology and technology that teachers have in their classrooms.

In STNA 2010, the most common technology available to classrooms was LCD projectors, followed by interactive whiteboards; STNA 2012 results reflect this as well. Figure 15 displays the technology available in classrooms in STNA 2010 and STNA 2012. The most notable difference between the result of STNA 2010 and STNA 2012 is the increase in the percentage of classrooms with interactive whiteboards from 29% in 2010 to 54% in 2012. The increase in interactive whiteboards explains at least part of the decrease in the percentage of classrooms with LCD projectors and devices enabling the projection of computers to TV screens.

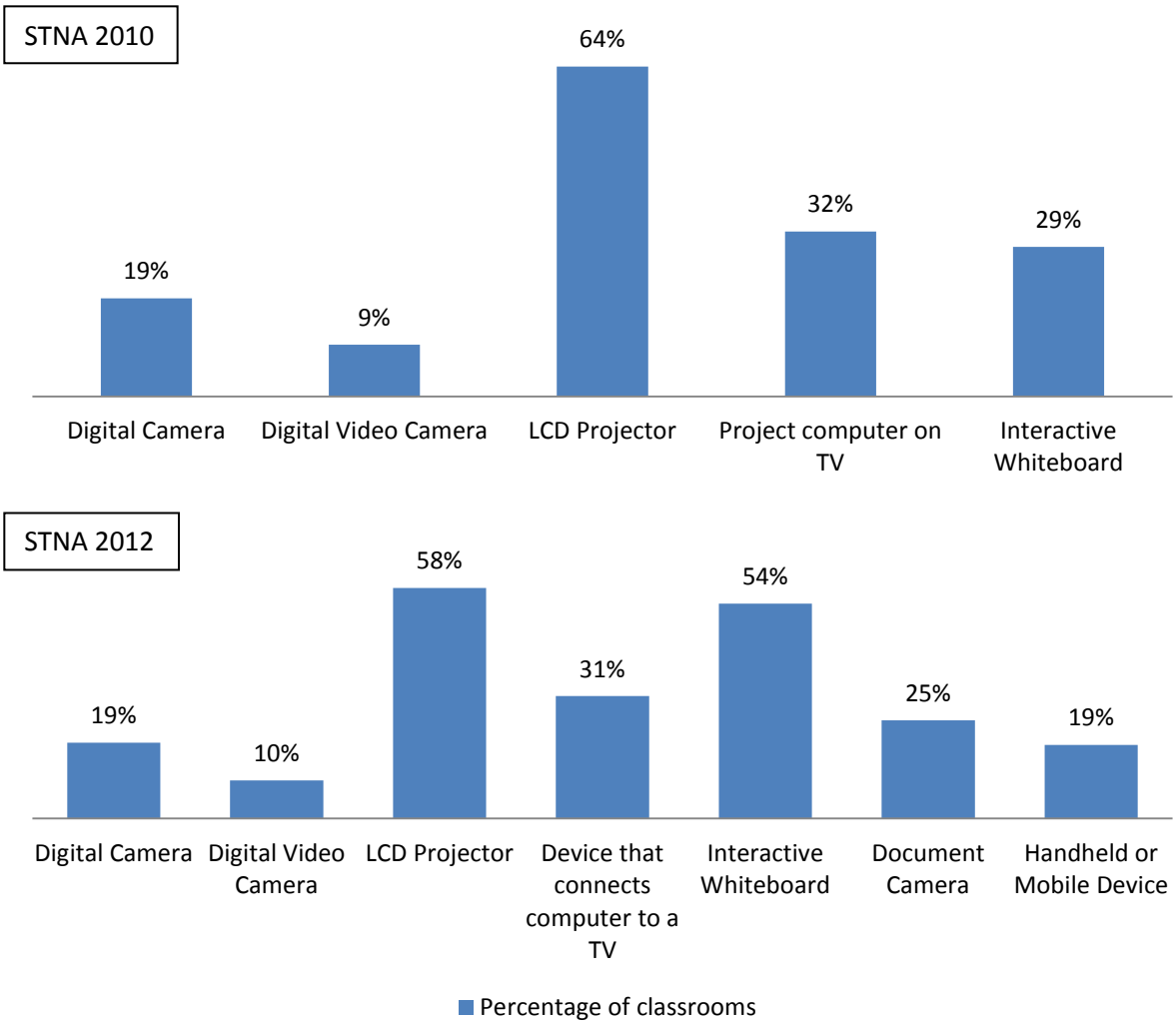
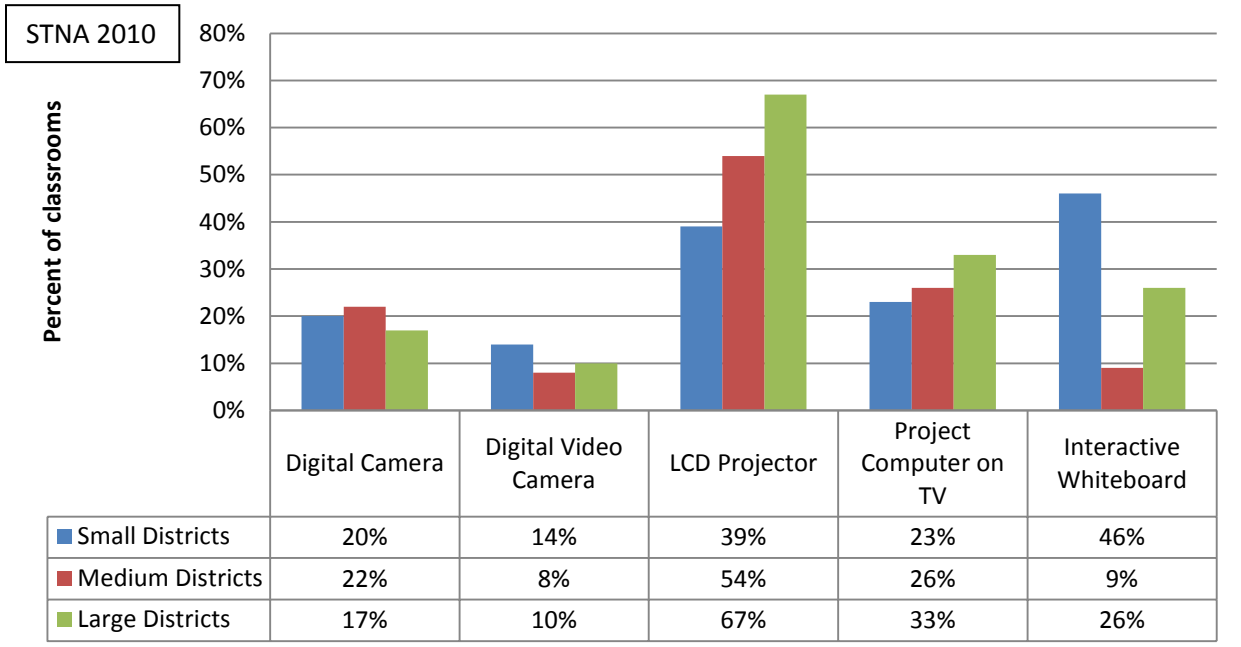
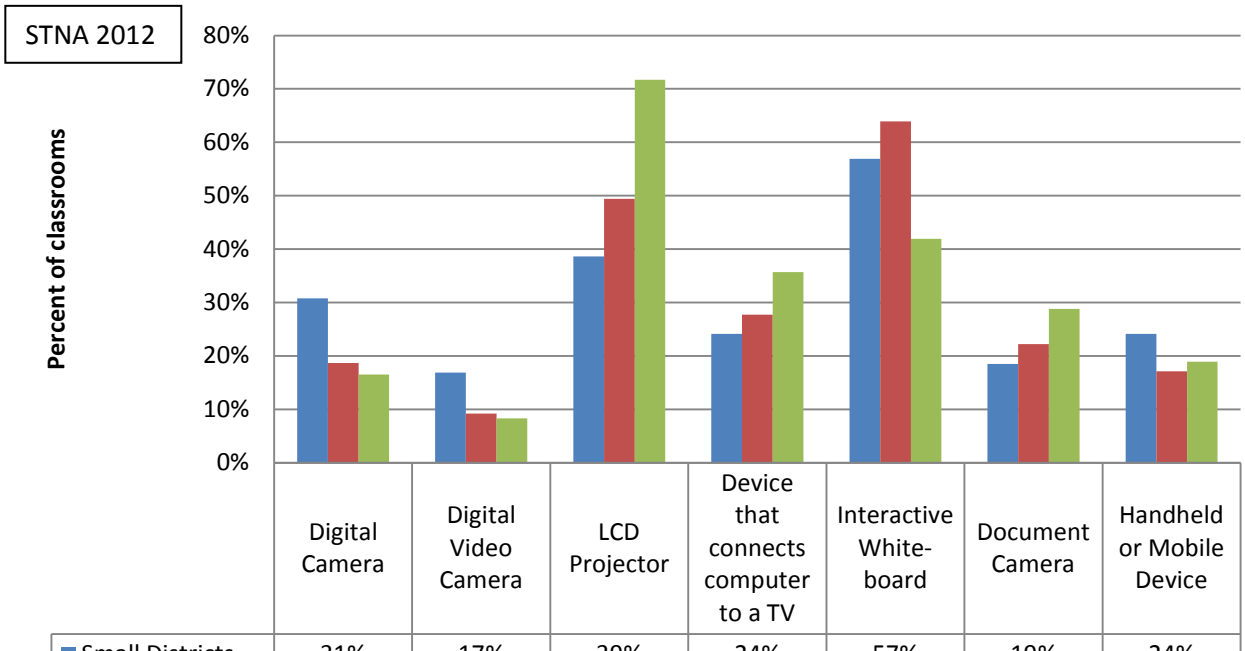


Figure 15: Responses to "Which of the following do you have in your classroom all of the time?" STNA 2010 and STNA 2012

Figure 16 presents a comparison between the STNA 2010 and STNA 2012 findings regarding technology available in classrooms when categorized by large, medium, and small school districts. Again, the most notable difference is the increase in the percentage of classrooms with interactive whiteboards across all district categories.



	Digital Camera	Digital Video Camera	LCD Projector	Project Computer on TV	Interactive Whiteboard
Small Districts	20%	14%	39%	23%	46%
Medium Districts	22%	8%	54%	26%	9%
Large Districts	17%	10%	67%	33%	26%



	Digital Camera	Digital Video Camera	LCD Projector	Device that connects computer to a TV	Interactive White-board	Document Camera	Handheld or Mobile Device
Small Districts	31%	17%	39%	24%	57%	19%	24%
Medium Districts	19%	9%	49%	28%	64%	22%	17%
Large Districts	17%	8%	72%	36%	42%	29%	19%

Figure 16: Responses to "Which of the following do you have in your classroom all of the time?" STNA 2010 and STNA 2012

When disaggregated by county, the variance of the technology available in classrooms throughout the state is more than apparent (Figure 17); however, LCD projectors, interactive white boards, TV projection devices, and document cameras appear to be the most abundant in all counties.

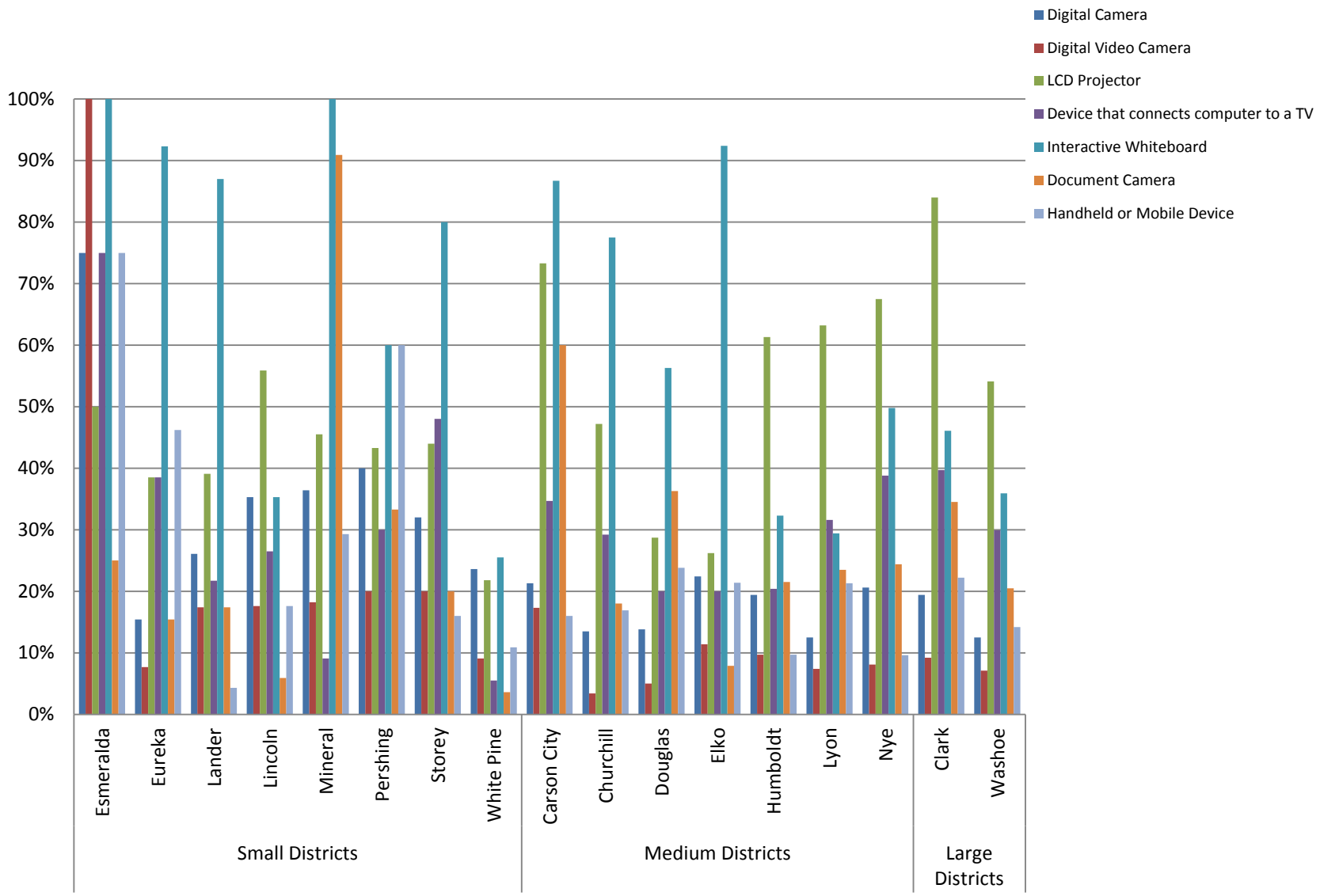


Figure 17: Comparison by School Districts: “Which of the following do you have in your classroom all of the time?”

Teachers also indicated that most of the technology that is not always available in their classroom is available for checkout from a central pool (Figure 18).

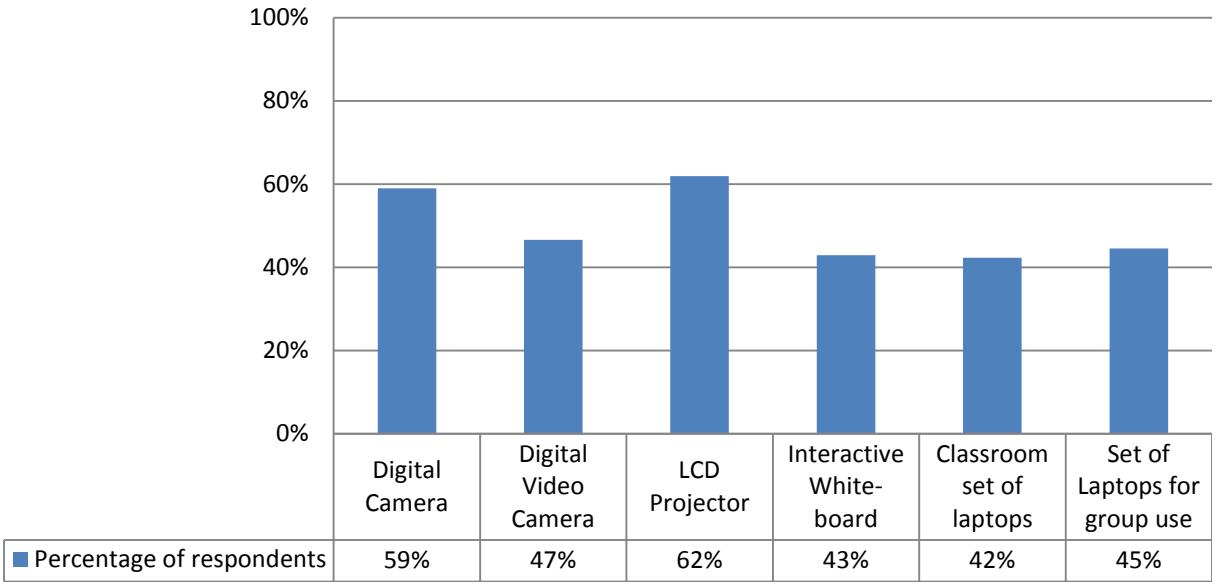


Figure 18: Statewide responses to "Teacher can Sign up/Check-out Technology for a Finite Time in Classroom"

When disaggregated by county, the variance of the technology available for checkout throughout the state is apparent (Figure 19), although LCD projectors, interactive white boards, TV projection devices, and document cameras appear to be the most abundant in all counties. Availability of video cameras, digital cameras, and LCD projectors has decreased since the STNA 2010 report, while the availablility of interactive whiteboards, class sets of laptops, and sets of computers for group work have remained effectively the same (Table 5).

Table 5: Comparison of STNA 2012, 2010, and 2008 Reports on Technology Available via Checkout System

Available Technology-Checkout system	STNA 2012	STNA 2010	STNA 2008
Video Camera	47%	57%	Not reported
Digital Camera	59%	68%	Not reported
Interactive Whiteboard	43%	39%	23%
LCD Projector	62%	78%	59%
Class set of laptops	42%	42%	31%
Set of Computers for Group work	45%	43%	Not reported

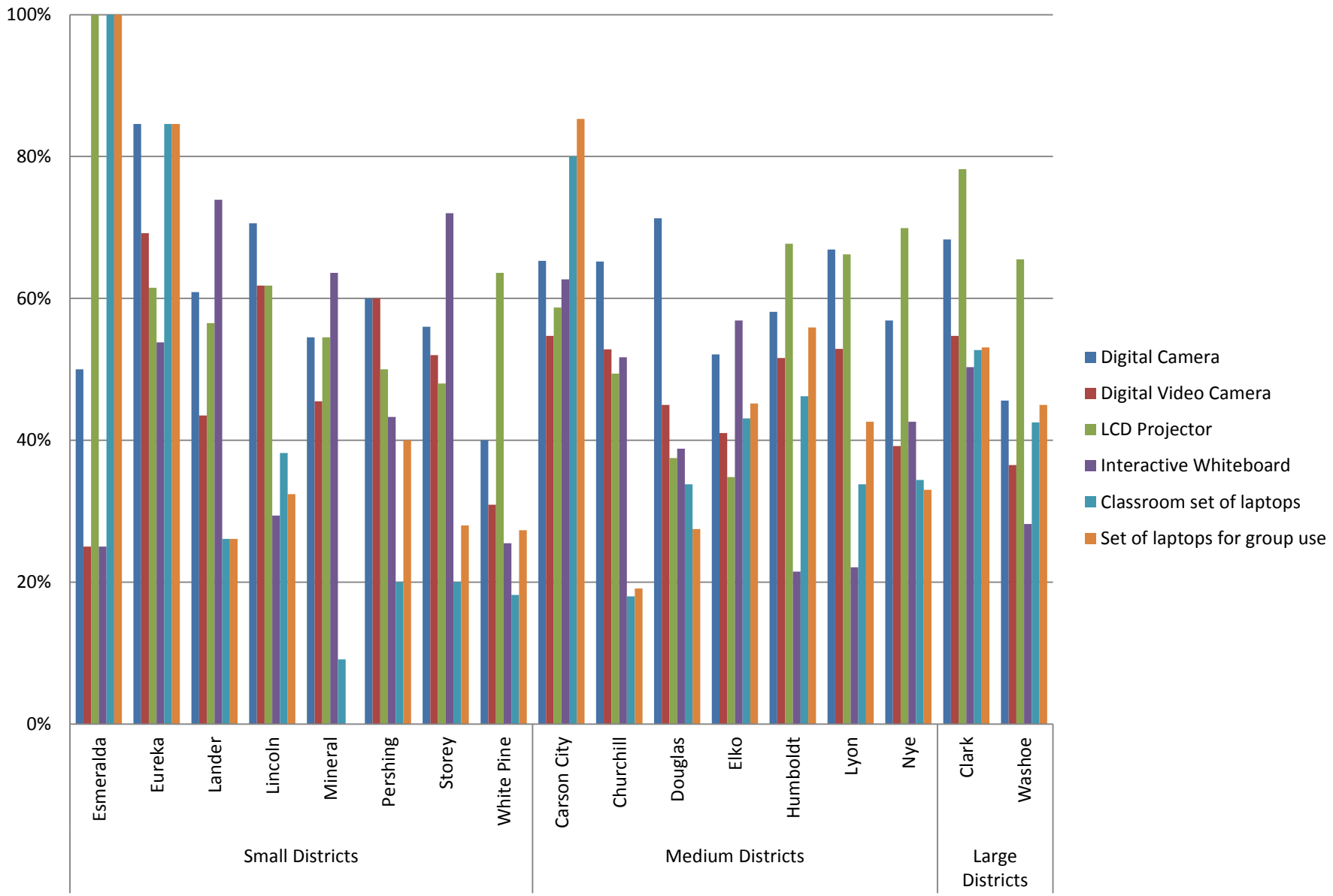


Figure 19: Comparison by School Districts: Responses to "What technology equipment can you checkout for a finite time."

Technical Support

Using a 7-point Lickert scale on level of agreement to the statement, “Time required to get technical assistance is minimal”, 41% were in some level of agreement, while 43% of respondents were in some level of disagreement and 16% were “neutral”. The most reported choice was “agree”, which 18% of respondents chose (Figure 20). Nonetheless, more respondents indicated that they strongly disagreed with the statement than stronly agreed (13% to 6%) and more teachers were in some level of disagreement than agreement. These responses indicate that the time requried to receive technical assistance is more than minimal; however, minimal lacks a definition and is subject to interpretation.

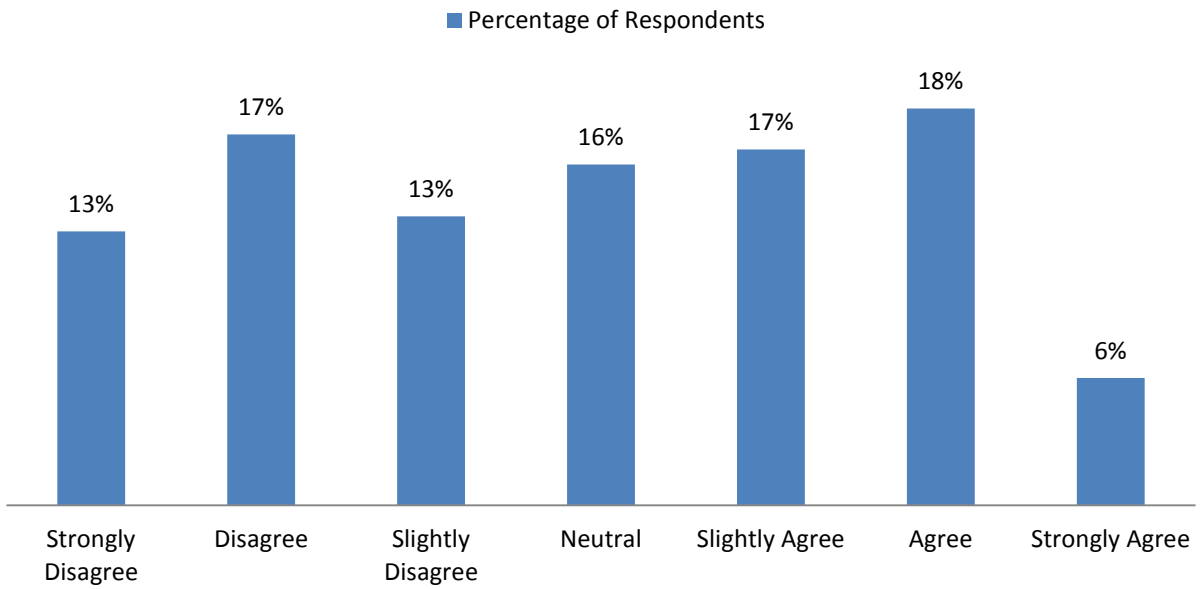


Figure 20: Responses to “Time Required to Get Technical Assistance is Minimal.”

Of the teachers who responded, 49% disagreed when asked if they felt the technical support system was adequate, 16% responded as neutral, and 35% agreed that the technical support system was adequate. This represents a decrease from STNA 2010 in which 46% of respondents agreed that adequate technical support was in place. Interestingly, the 10% decrease in agreement shifted to disagreement, as the percent of respondents neutral to the question remained unchanged (16% in both STNA 2012 and STNA 2010). Figure 21 presents the statewide results of the prompt, “The technical support sytem in place is adequate”.

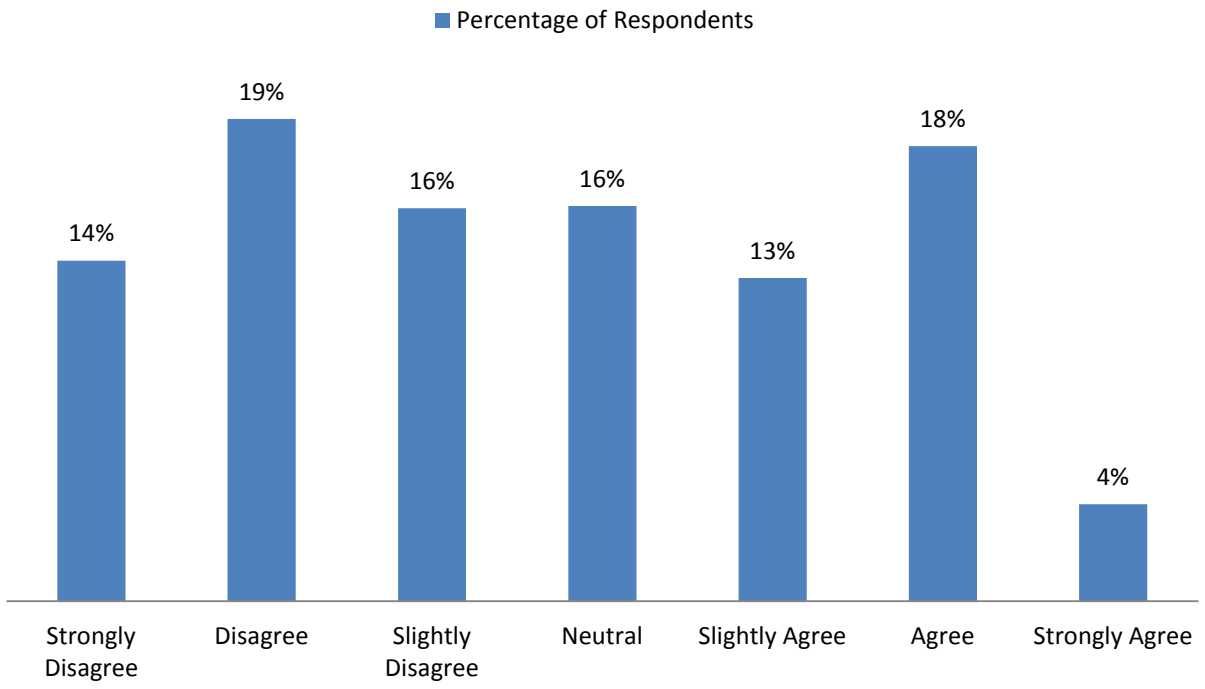
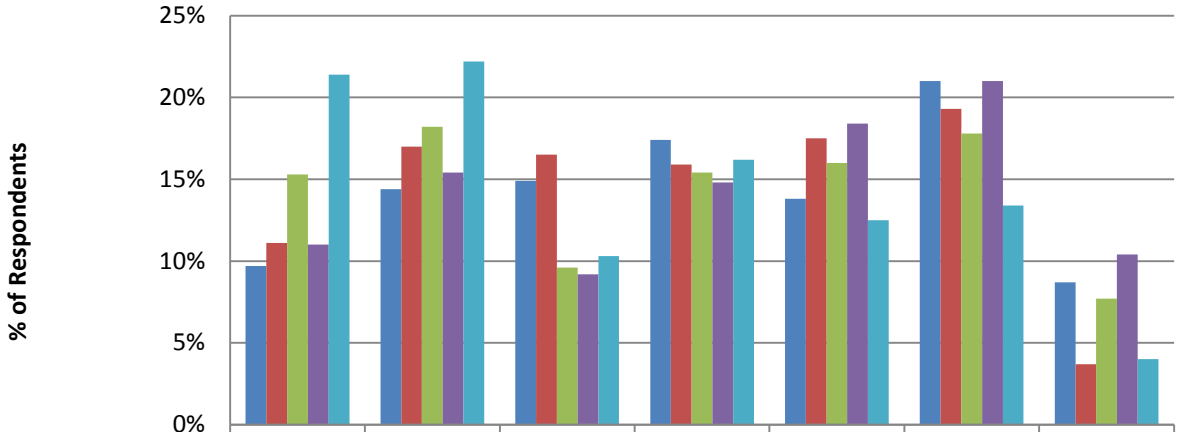


Figure 21: Responses to "The technical support sytem in place is adequate."

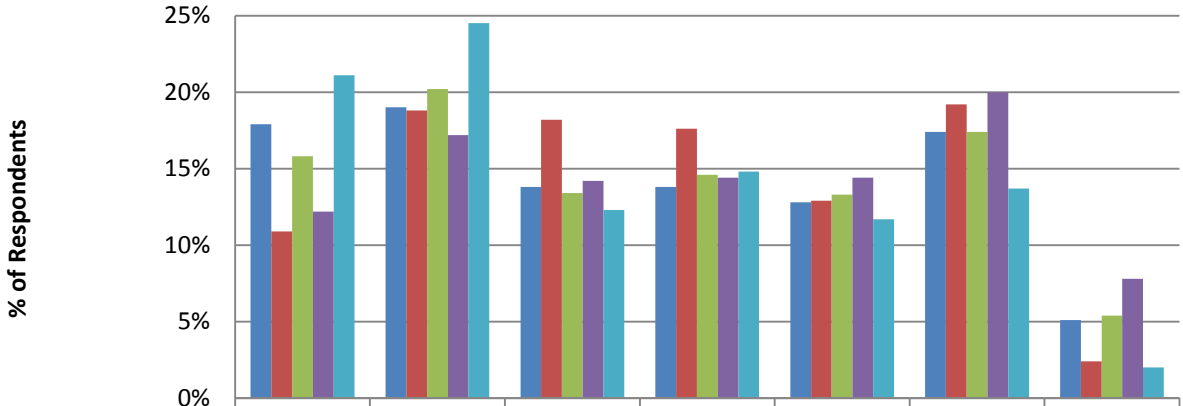
As reported in STNA 2010, in Clark County, 68% of teachers who responded to the survey agreed to some extent that the time required to get technical assistance was minimal and 17% disagreed to some extent that the time was minimal. Teachers' perceptions of whether the time requried to receive technical assistance is minimal have changed since 2010. According to the reponses from the respondents of STNA 2012, only 49% of teachers from Clark County agree that the time to receive technical assistance is minimal, whereas 35% now disagree with the statement, compared to 17% in 2010. In Washoe County, 53% disagreed that the technical assistance response time was minimal, while only 30% agreed. In small districts, 44% of respondents agreed that technical assistance response time was minimal, while in medium districts, 41% of respondents felt the same way. Figure 22 displays the disaggregated results for the statement: "The Time Required to Get Technical Assistance is Minimal". Overall, while teachers across the state do not feel they can get assistance with technology when needed, Clark County teachers are becoming more satisfied with the time it takes to get technical assistance.



	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
Small Districts	10%	14%	15%	17%	14%	21%	9%
Medium Districts	11%	17%	17%	16%	18%	19%	4%
Large Districts	15%	18%	10%	15%	16%	18%	8%
Clark County	11%	15%	9%	15%	18%	21%	10%
Washoe County	21%	22%	10%	16%	13%	13%	4%

Figure 22: Statewide Comparison: "Time Required to Get Technical Assistance is Minimal."

In small districts, 51% of respondents reported that the technical support system in their districts was inadequate, while in medium districts, 48% reported the same. In Clark County, 43% of respondents categorized the technical support system as inadequate, while in Washoe County, 58% of respondents reported the same. In the results from STNA 2010, 53% of Clark county respondents agreed that an adequate system for technical assistance was present, but only 42% of STNA 2012 respondents from Clark County reportedly felt the same way. Overall, from STNA 2010 to STNA 2012, fewer Clark County teachers felt that the system for technical support was adequate, a result which echoed throughout all district categories in STNA 2012 (Figure 23).



	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly Agree	Agree	Strongly Agree
Small Districts	18%	19%	14%	14%	13%	17%	5%
Medium Districts	11%	19%	18%	18%	13%	19%	2%
Large Districts	16%	20%	13%	15%	13%	17%	5%
Clark County	12%	17%	14%	14%	14%	20%	8%
Washoe County	21%	25%	12%	15%	12%	14%	2%

Figure 23: Statewide Comparison of "What is your level of agreement with the adequacy of the current system for technical support."

Nevada Educational Technology Survey

This section provides a summary of the educational technology and technology personnel available in each Nevada school district. The data are from the 2012 Nevada Educational Technology Survey (NETS) from the Nevada Department of Education, in which each school in each district in Nevada self-reported the technology available. The information, disaggregated by district size, is similar to the result from the STNA 2010 survey.

The NETS asked districts to report the number and age of computers connected to the Internet and the Internet connection type. Figure 24 displays the results reported as percentage of computers connected to high-speed Internet or dial-up that are less than or equal to five (5) years old, and older than 5 years.

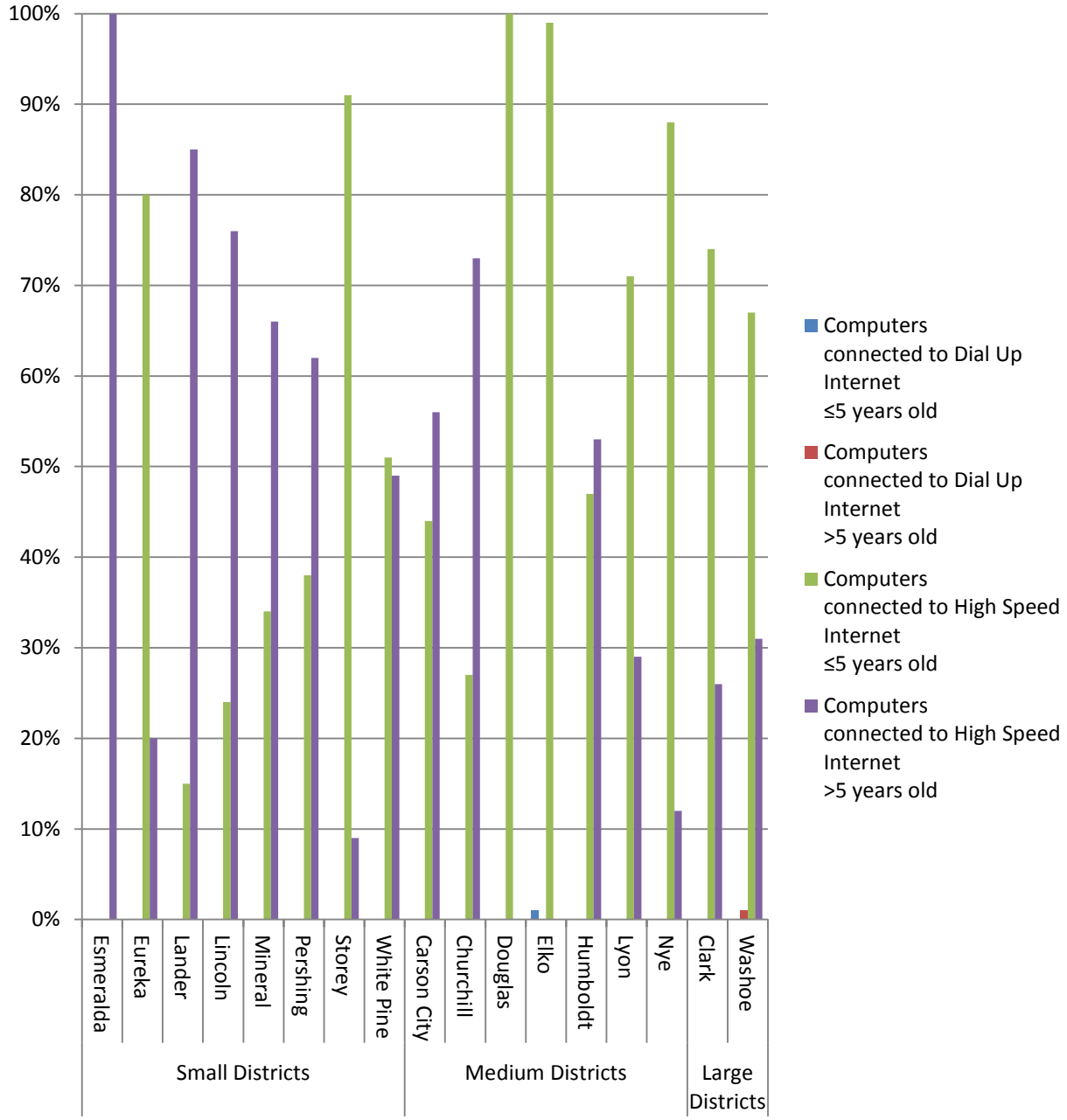
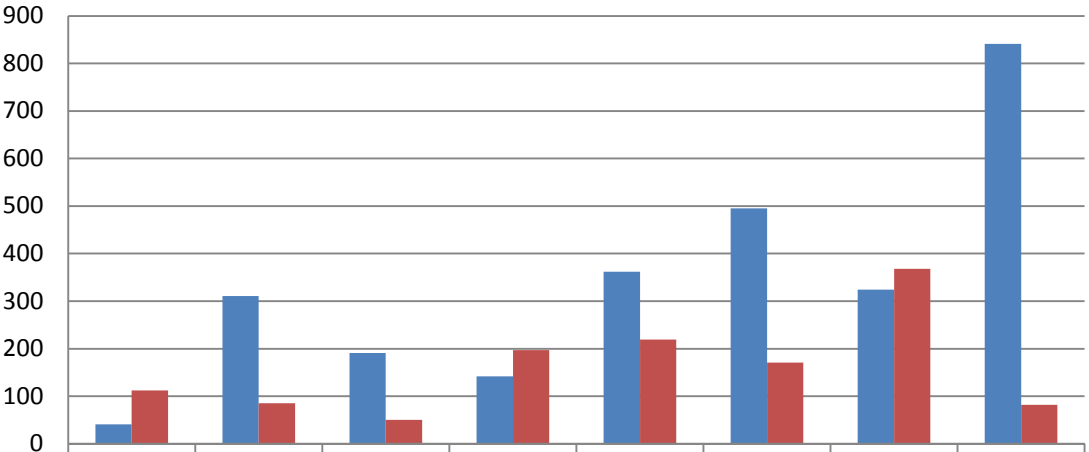


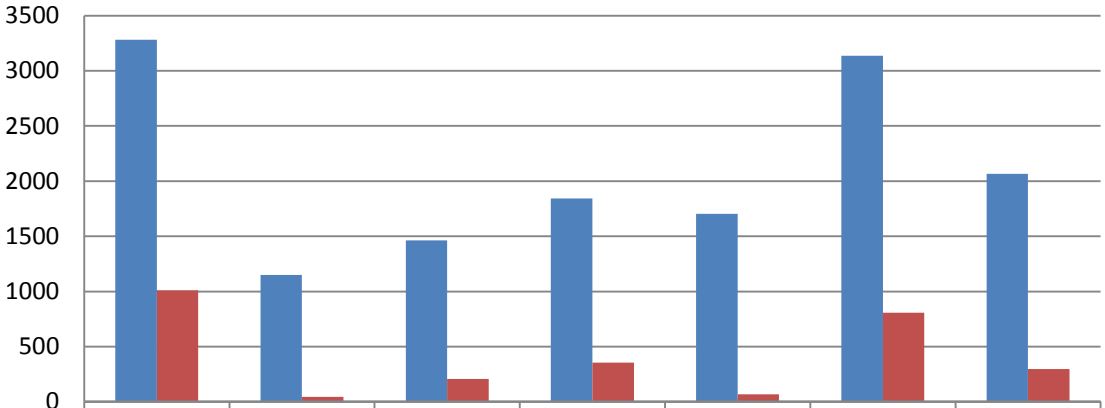
Figure 24: Age of Computers Connected to Internet by Connection Type

Figures 25 - 27 display the number of computers and mobile devices in each district.



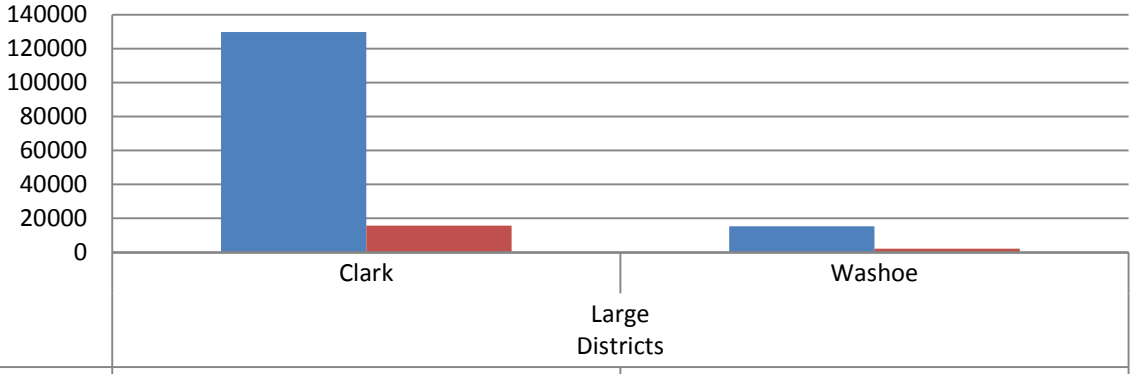
	Esmeralda	Eureka	Lander	Lincoln	Mineral	Pershing	Storey	White Pine
	Small Districts							
Total Computers	41	311	191	142	362	495	324	841
Total Mobile Devices	112	85	50	197	219	171	368	82

Figure 25: Total Computers and Mobile Devices in Small Districts



	Carson City	Churchill	Douglas	Elko	Humboldt	Lyon	Nye
	Medium Districts						
Total Computers	3280	1149	1462	1843	1702	3137	2065
Total Mobile Devices	1009	45	207	354	67	808	296

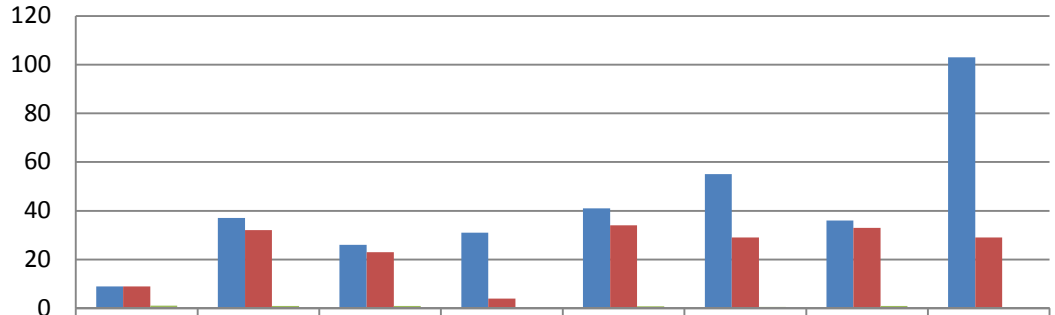
Figure 26: Total Computers and Mobile Devices in Medium Districts



	Clark	Washoe
	Large Districts	
Total Computers	129740	15425
Total Mobile Devices	15674	2238

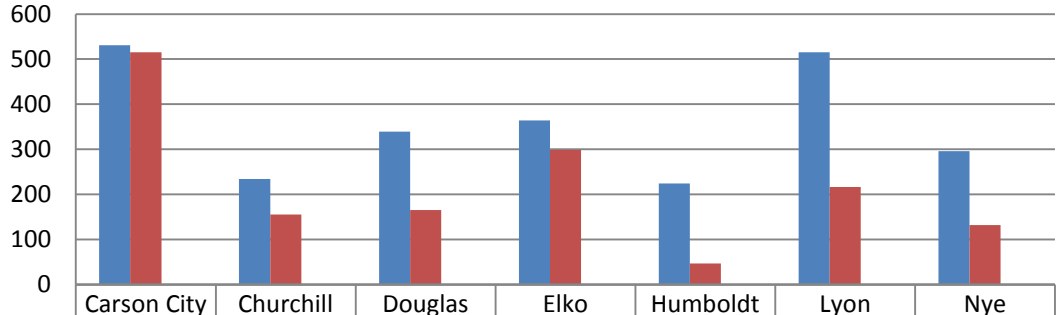
Figure 27: Total Computers and Mobile Devices in Large Districts

Figures 28 - 30 display the NETS results regarding the number of classrooms with Interactive Whiteboards, by district size.



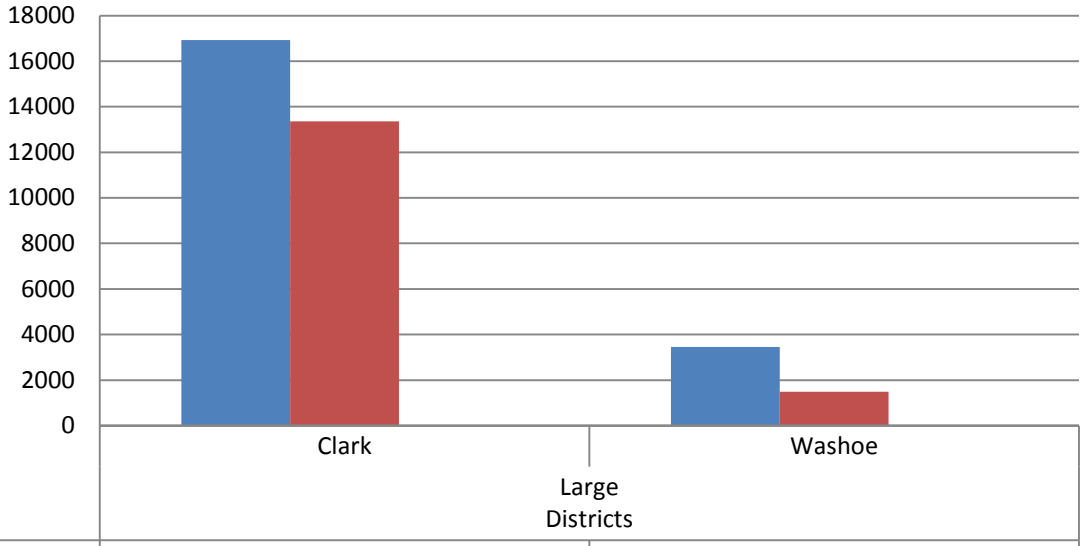
	Esmeralda	Eureka	Lander	Lincoln	Mineral	Pershing	Storey	White Pine
	Small Districts							
Number of Classrooms	9	37	26	31	41	55	36	103
Interactive Whiteboards	9	32	23	4	34	29	33	29
Percentage of Classroomswith Interactive Whiteboards	100%	86%	88%	13%	83%	53%	92%	28%

Figure 28: Classrooms in Small Districts with Interactive Whiteboards



	Carson City	Churchill	Douglas	Elko	Humboldt	Lyon	Nye
	Medium Districts						
Number of Classrooms	531	234	339	364	224	515	296
Interactive Whiteboards	515	155	165	299	47	216	132
Percentage of Classroomswith Interactive Whiteboards	97%	66%	49%	82%	21%	42%	45%

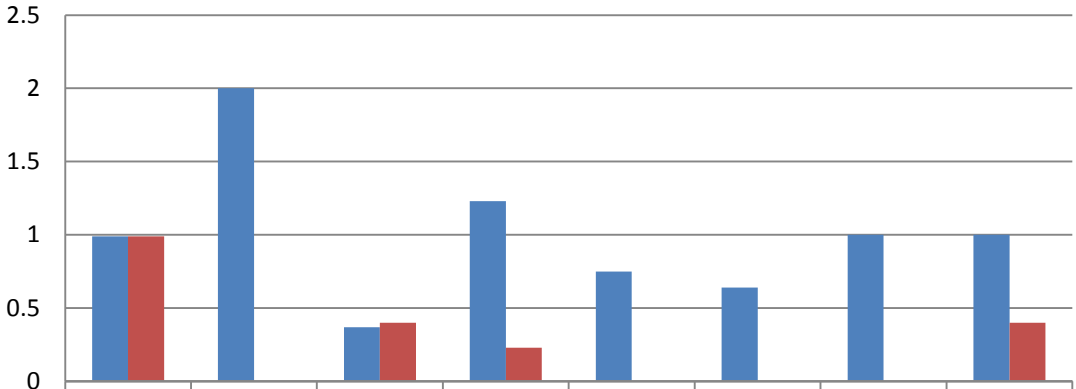
Figure 29: Classrooms in Medium Districts with Interactive Whiteboards



	Clark	Washoe
Number of Classrooms	16924	3455
Interactive Whiteboards	13359	1490
Percentage of Classroomswith Interactive Whiteboards	79%	43%

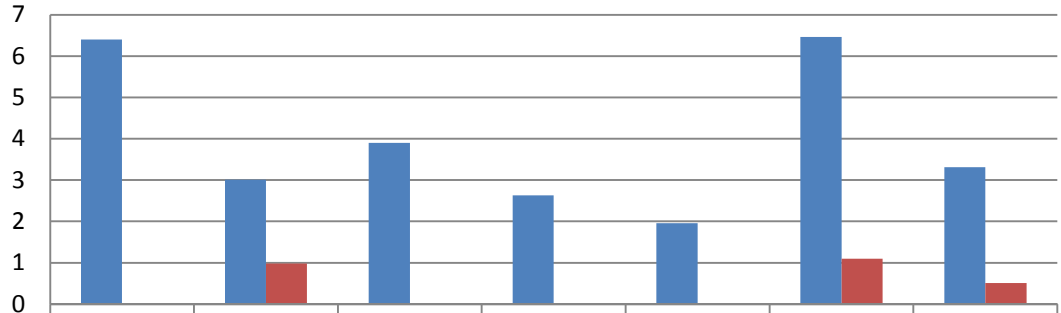
Figure 30: Classrooms in Large Districts with Interactive Whiteboards

The 2012 NETS also asked districts to report the number of technology personnel available in each district, reported in full-time equivalency (FTE). Figures 31 – 33 display the results from each district, by size of district.



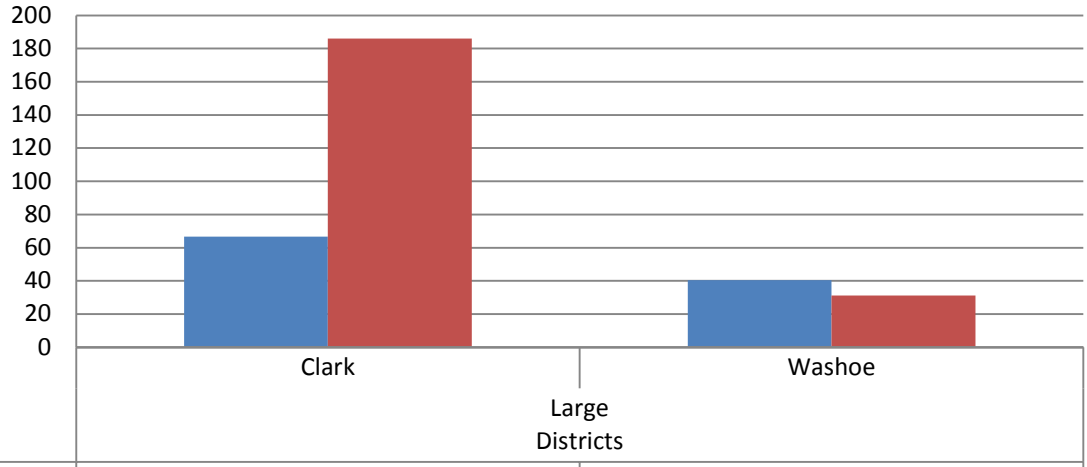
	Esmeralda	Eureka	Lander	Lincoln	Mineral	Pershing	Storey	White Pine
	Small Districts							
IT Personnel (FTE)	0.99	2	0.37	1.23	0.75	0.64	1	1
Technology Integration Coaches (FTE)	0.99	0	0.4	0.23	0	0	0	0.4

Figure 31: Technology Personnel Available in Small Districts



	Carson City	Churchill	Douglas	Elko	Humboldt	Lyon	Nye
	Medium Districts						
IT Personnel (FTE)	6.4	3.01	3.9	2.63	1.96	6.46	3.31
Technology Integration Coaches (FTE)	0	0.98	0	0	0	1.1	0.51

Figure 32: Technology Personnel Available in Medium Districts



	Clark	Washoe
	Large Districts	
IT Personnel (FTE)	66.65	40.46
Technology Integration Coaches (FTE)	186	31.18

Figure 33: Technology Personnel Available in Large Districts

The results from the 2012 NETS indicate that Nevada school districts need to increase the number of technology related personnel, both instructional technology (IT) support and technology integration staff. The IT personnel are essential to keep IT systems running, while the integration personnel are

necessary for professional development and training. Additionally, the overall number of technology devices in Nevada school districts must increase to not only meet the demands of a 21st century classroom and education, but also equip schools with the necessary technology to enable the successful implementation of computer-based testing.

Frequency of Technology use

Of the 2,019 Teacher Survey respondents, 46% stated that in the most recent 60 minutes of class time, their students had used computers for instructional purposes and 54% stated they did not, which represents an increase of 10% since STNA 2010 in which only 36% reported that students had used computers for instructional purposes (Figure 34).

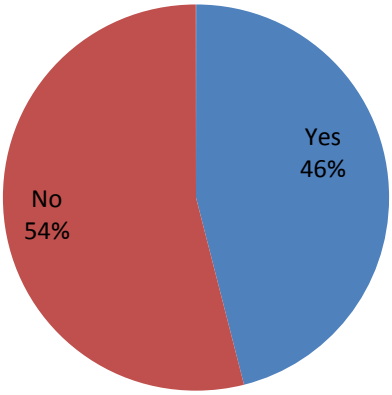


Figure 34: Responses to "In the most recent 60 minutes of Class Time, Did Students use Computers for Instructional Purposes?"

If the teachers answered yes, the next question addressed how many of their students used computers. However, an error in question format design required all respondents to answer the follow up question. Figure 36 displays the results of the respondents to this follow-up question; 15% stated that between one and five students used a computer, while 59% stated that no students used computers in that timeframe (41% not applicable (no computers) combined with 18% "zero students") and 5% reported that the whole class used computers. The remaining 21% of respondents reported a range from six students to more than 30 as using computers during the last 60 minutes of instructional time. An interesting inconsistency is that while 46% of teachers reported that students used computers during the last hour of instructional time, only 41% reported that one or more students used the computers in

response to the follow up question. Redesigning this question in future STNA projects will allow for a clearer depiction of student instructional use of computers.

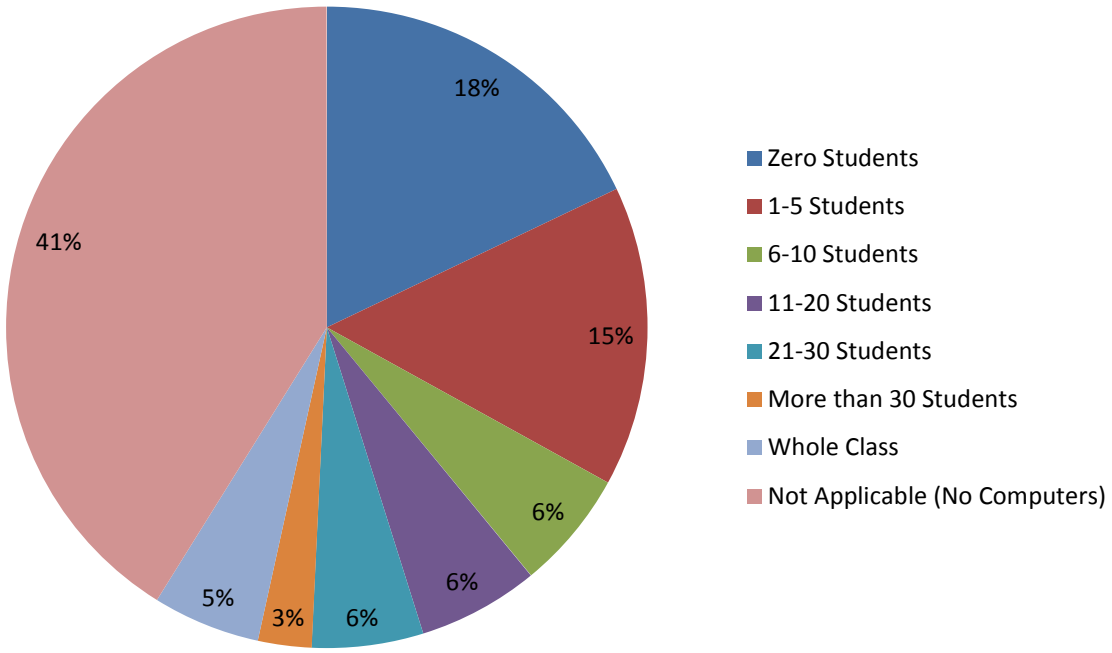


Figure 35: Responses to "During the most recent 60 minutes of classroom time, the number of Students that used computers."

As with STNA 2010, the results presented in Figures 35 and 36 suggest that student computer use during the last hour of class time is infrequent, but when asked about technology use in the classroom, a large majority of the teachers surveyed provided explanations as to why computer use among their students is lower than expected. For example, many of the teachers surveyed responded that access to computers for each student in their classroom is difficult to obtain. A large majority of teachers in Clark County stated that access to the school computer lab or laptop cart needs to be reserved weeks or months ahead of time, which hinders their ability to encourage student computer use during class time. Many teachers stated that while they would like to increase technology use in their classrooms, a lack of current technology, access to technology, and knowledge of how to utilize the technology provided to them causes many teachers to refrain from using technology in their classrooms. However, not all districts share the same obstacles.

For example, consider that as in STNA 2010, STNA 2012 asked respondents how many times computers were used in the classroom this academic year. Figure 36 displays a comparison between the results of STNA 2010 and STNA 2012. From the figure, in STNA 2012, 28% stated zero days, an increase from the 21% reported in 2010. Additionally, 20% stated 1-10 days in 2012, down from 31% stated 2010. However, more respondents reported using computers more than 80 days in 2012 (28%) than reponded more than 80 days in 2010 (21%). In fact, a survey of small and medium districts shows that an average of 40% of those district classroom students used computers more than 80 days. Many teachers from these districts stated that their students use computers everyday. For example 11% of Elko teachers reported that students in their classrooms used computers everyday. Figure 37 displays the percentage of teachers in the small and medium districts where teachers responded that students use technology either daily or more than 80 days in the school year.

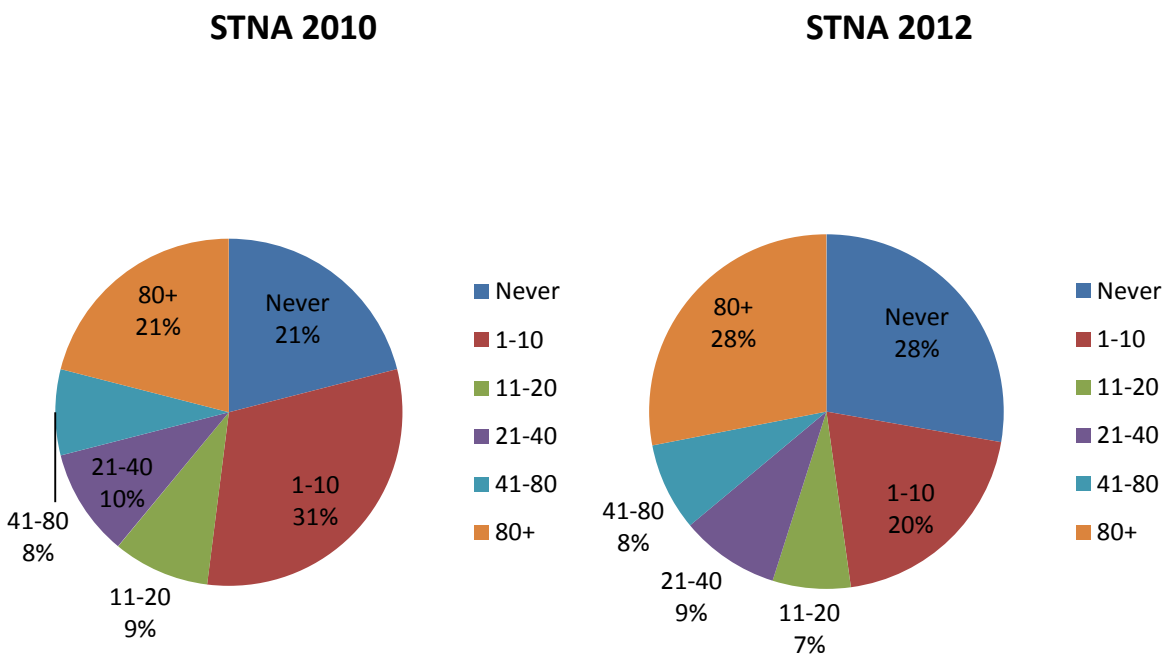


Figure 36: Responses to "How many days since the beginning of school has a typical student used a computer for instructional purposes?" (Statewide)

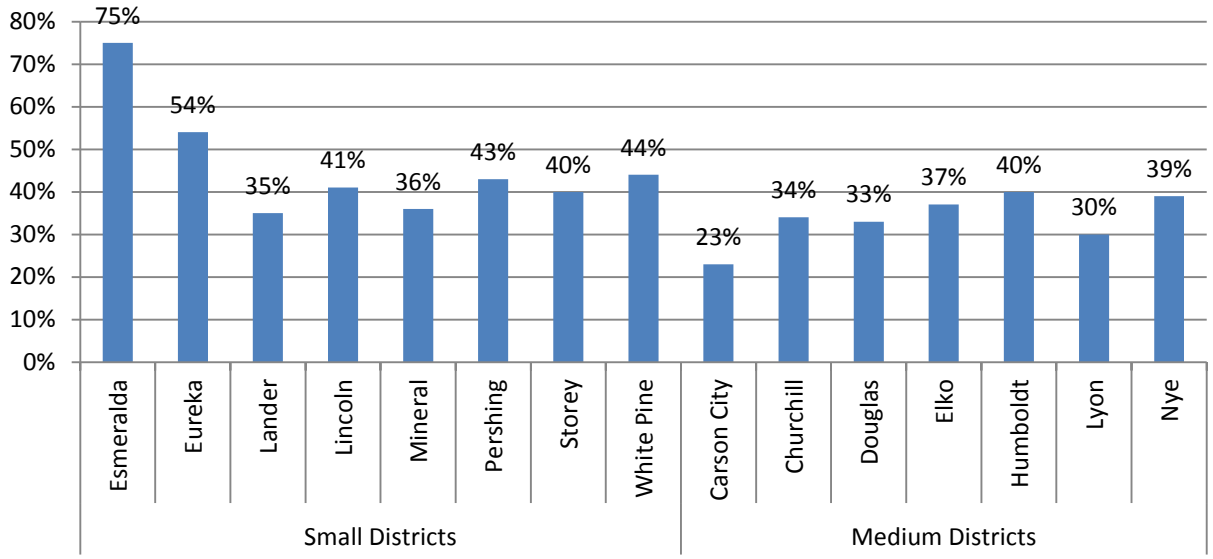


Figure 37: Responses to "How many days since the beginning of school has a typical student used a computer for instructional purposes?" (Small and Medium Districts)

When asked to provide the five most recent computer applications or websites used by their students during class time, the applications or websites most frequently identified by Nevada educators were Microsoft Office (which includes Microsoft Word, Excel, PowerPoint, Publisher, and Access), Google, Accelerated Reading and Math, Renaissance Place, Study Island, and United Streaming. Other frequently reported computer applications used by Nevada students included math and reading-specific programs such as Reading Eggs, Lexia, and Ticket to Read; Cool Math Games, FASTT Math, and Compass Math. Additional applications included Edmodo, Brain Pop, Ticket to Read, and interactive whiteboard software. In addition to computer applications, other frequently reported Websites used by Nevada students included textbook-related websites, Starfall, Cool Math for Kids, Wikipedia, and YouTube.

The survey asked teachers to provide the five most recent computer applications or websites that they frequently use in the classroom, and responded similarly to the responses above. The applications and websites most frequently identified by educators for their own use included Microsoft Office, United Streaming, Discovery Learning, Accelerated Reading and Math, Renaissance Place, Google, interactive whiteboard applications, and district-distributed software provided for student attendance and grade reporting. Examples of this software include Infinite Campus and Power School. In addition to the computer applications listed above, teachers also reported the frequent use of Groupwise. Other frequently reported websites included Study Island, Promethean Planet, and the Northwest Evaluation

Association Website. Teachers also indicated significant use of textbook-related Websites including those provided by Pearson, Glencoe, and McDougall Littell.

In response to a question regarding teacher instructional use of computers within the last 60 minutes of class time, 77% of respondents stated that they had used a computer for instructional uses (Figure 38).

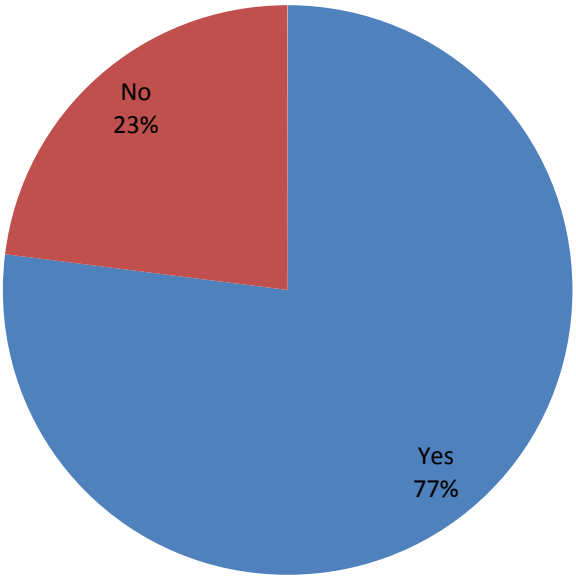


Figure 38: "Teacher Instructional use of Computers during the last 60 minutes of instructional time."

Preparation and Professional Development

Technology Coordinator Responses

STNA 2012 asked Technology Coordinators to provide feedback regarding the professional development opportunities provided for teachers in their districts. A large majority of coordinators stated that the availability of technology-focused professional development is very limited. Sources for technology professional development mentioned by coordinators included website tutorials, Regional Professional Development Programs (RPDP) training, e-learning conferences, free training offered by vendors, grant

funded professional development, and classes taught at local colleges or universities. Rural Technology Coordinators indicated that the location of their districts hampered professional development opportunities. Many coordinators stated that teachers indicate a need for professional development related to technology. Some Technology Coordinators indicated that the dedication and time required on behalf of teachers for professional development was not present. Most Technology Coordinators stated that the lack of financial and human resources limited the technology related professional development opportunities. Overall, the Technology Coordinators surveyed reported that professional development opportunities addressing technology use in the classroom are minimal. However, the additional data collected from the NETS (see pgs. 63-71 of this report) shows an increasing emphasis on the use of instructional integration coaches in several of the districts.

Similar to the results from STNA 2010, when asked to describe the key components of effective professional development, many Technology Coordinators indicated again in STNA 2012 that effective training should be timely, continuous, and relevant to current uses of technology in the classroom. This is consistent with research-based best practices for professional development (Ewing-Taylor, 2012). For example, many coordinators stressed that due to teaching and testing demands, educators have very little time to devote to technology training, especially outside of the teachers' contracts.

Preparation

As in STNA 2008 and 2010, STNA 2012 asked teachers about their perceived preparedness regarding the availability of classroom technology, data retrieval, and access to district, classroom, and instructional materials via computer. Although improvement was apparent between 2008 and 2010, the STNA 2012 results indicate that teachers feel less prepared in every area when compared to the STNA 2010 report (Table 6).

Table 6: Teacher Preparation in Comparison Among STNA 2012, STNA 2010, and STNA 2008

Task	Percentage responding either *Prepared* or *Very well prepared*		
	STNA 2012	STNA 2010	STNA 2008
Teach in a classroom where every student had their own laptop	56%	76%	42%
Access and use state assessment data to support instructional decisions	70%	73%	*Not Reported*
Access and use district assessment data to support instructional decisions	65%	71%	*Not Reported*
Teach in a classroom where all of the instructional materials are delivered via the computer	49%	54%	39%
Find effective instructional materials on the Internet	87%	88%	74%
Integrate educational technology into your classroom	74%	77%	62%
Incorporate library databases into student research projects	49%	58%	41%

Professional Development

The 2012 survey asked teachers about their professional development training, and responses show that most is provided by colleagues (informally) and during in-service trainings. The 2012 STNA results indicate a slight decrease in the availability of all types of technology-related training since STNA 2010 (Table 7). Most notably, STNA 2012 results indicate a 12% decrease in the prevalence of one-on-one training from technology specialists and a 6% decrease in in-service training related to technology.

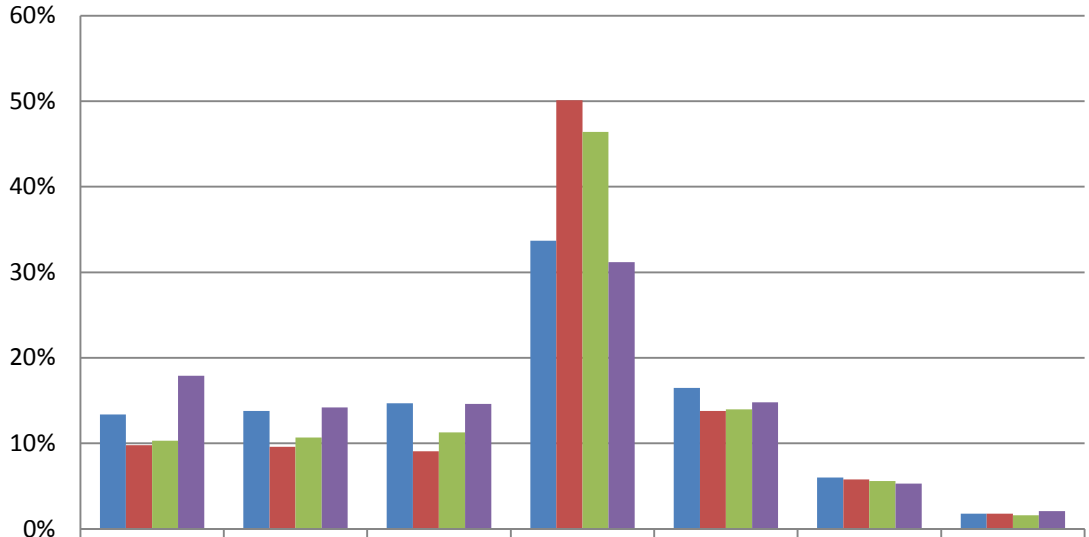
Table 7: Professional Development Opportunities Comparisons Among STNA 2012, STNA 2010, and STNA 2008

Professional Development Opportunities available to you during the current school year	STNA 2012	STNA 2010	STNA 2008
One-on-one training from a technology specialist	16%	28%	26%
Informal training from colleagues	65%	67%	52%
In-service training related to technology	54%	60%	56%
Online professional development courses	36%	36%	33%

The following series of figures displays the respondents' perceptions of their technology-related professional development from other entities such as district, higher education institutions, regional professional development programs (RPDP), and school.

The STNA 2012 survey asked teachers to rate the quality of professional development opportunities, by entity providing the services, on a 7-point Likert scale from “Very Low” to “Very High”. The figures present the results both aggregated for all of the districts in the state and disaggregated by category. Statewide, 42% of respondents felt that the quality of technology related professional development within their districts ranged from “moderately low” to “very low”. This represents an increase in the percentage of respondents from STNA 2010 that felt the same way (29% felt that their district offered very low or moderately low quality opportunities). In STNA 2010, 40% of respondents indicated that the quality of their districts’ professional development opportunities were very high or moderately high; however, in 2012, only 25% rated their district technology professional development from “moderately high” to “very high”. Ratings on the low side of the scale outnumbered both neutral ratings and high ratings (Figure 39). Approximately the same percentage of teachers felt that the local higher education institutions provided professional development on the low side of the scale (28% in 2010, 29% in 2012). Additionally, approximately the same percentage (21% in 2010 and 22% in 2012) indicated that the opportunities were on the high end of the scale (Figure 39).

When asked about the RPDP, 32% rated the opportunities on the low end of the scale, compared to 26% in 2010. Furthermore, only 22% of respondents rated the RPDP technology professional development on the high side of the scale, down from 29% in 2010 (Figure 39). Finally, when asked about their school sites, 47% rated the quality of professional development on the low side of the scale compared to 31% in 2010, and 22% rated it on the high end of the scale, down from 37% in 2010 (Figure 39). In general, the ratings from the teachers regarding technology related professional development quality were mostly neutral for local higher education and RPDP programs; however, most of the ratings for district and school programs ranged from “moderately low” to “very low”. This finding opposes that from STNA 2010 in which most teachers rated technology related professional development either neutral or “moderately high” to “very high”. Figure 40 displays the statewide findings from STNA 2010 for comparison purposes. Although Figure 39 displays the percentage of respondents in each rating category from STNA 2012 and Figure 40 displays the actual number of respondents from STNA 2010, the trend towards lower ratings of professional development opportunities in 2012 is apparent.



	Very Low	Low	Moderately Low	Neutral	Moderately High	High	Very High
District	13%	14%	15%	34%	17%	6%	2%
Local Higher Education	10%	10%	9%	50%	14%	6%	2%
Regional Professional Development	10%	11%	11%	46%	14%	6%	2%
School	18%	14%	15%	31%	15%	5%	2%

Figure 39: Statewide responses from STNA 2012 to "How would you rate the quality of the technology related professional development opportunities offered by the following entities?"

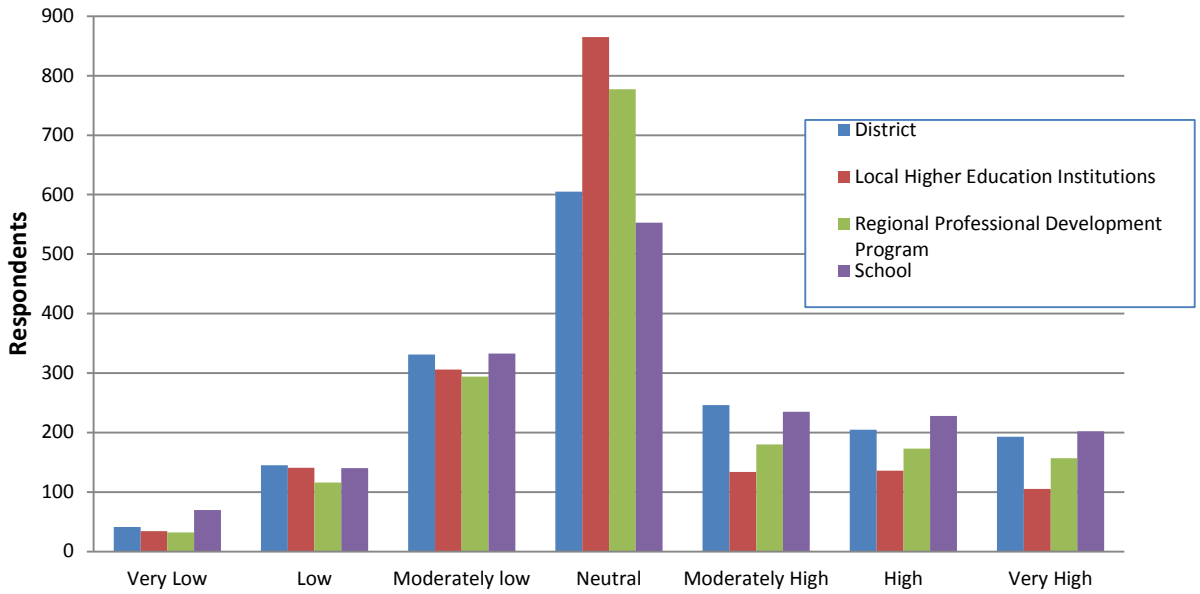


Figure 40: Statewide responses from STNA 2010 to "How would you rate the quality of the technology related professional development opportunities offered by the following entities?"

Figure 41 displays the teachers' opinions of their professional development opportunities in different sized districts: small, medium, and large. Most of the responses fall in the neutral category in all district size categories. In small districts, low ratings exceed neutral and high ratings for all entities. In medium districts, low ratings exceed neutral or high ratings for district and school provided professional development, while neutral ratings exceed both low and high ratings for local higher educational institutions and RPDP. In large districts, neutral ratings are the most prevalent for district, local higher education, and RPDP professional development opportuinities; however, for school provided professional development, most teachers rated them "moderately low" to "very low" (41%). Overall, teachers are increasingly dissatisfied with the professional development they receive, except in the large districts. Teachers from large districts are more satisfied with PD offerings from local higher education programs and RPDPs.

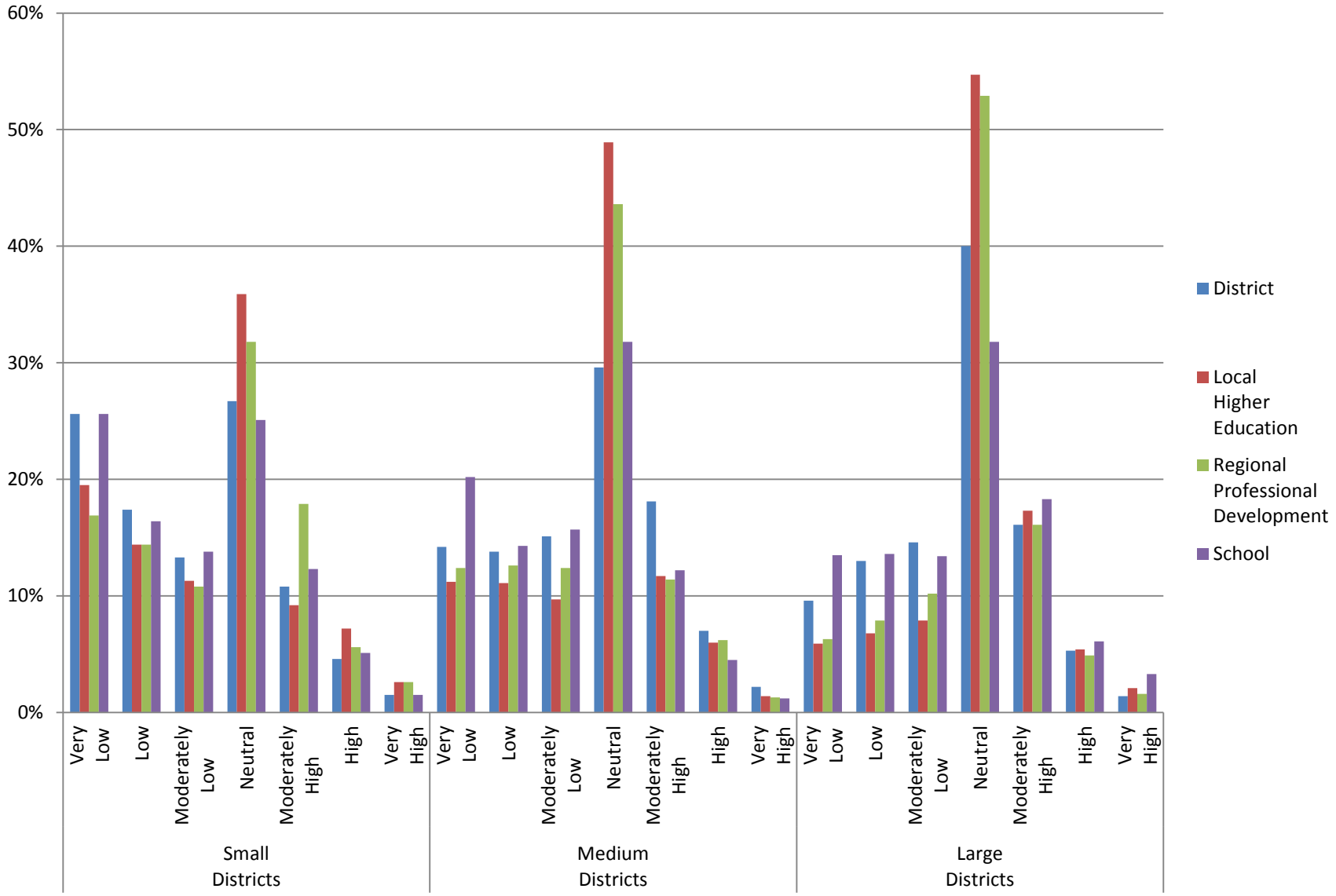


Figure 41: Responses from STNA 2012 to "How would you rate the quality of the technology related professional development opportunities offered by the following entities?"

Following the questions regarding technology-related professional development, STNA 2012 asked teachers to rate the degree to which they agreed with statements about the professional development they received. The questions were about the content and grade level appropriateness, strategies, opportunities to apply skills, longevity, alignment, and need fulfillment of the professional development activities available to them. Again, the figures present statewide aggregated perceptions and district category disaggregated results. The scale used to measure responses related to these areas was: “Not Applicable”, “Strongly Disagree”, “Disagree”, “Neither Agree nor Disagree”, “Agree”, and “Strongly Agree”. Figure 42 presents the statewide aggregated responses.

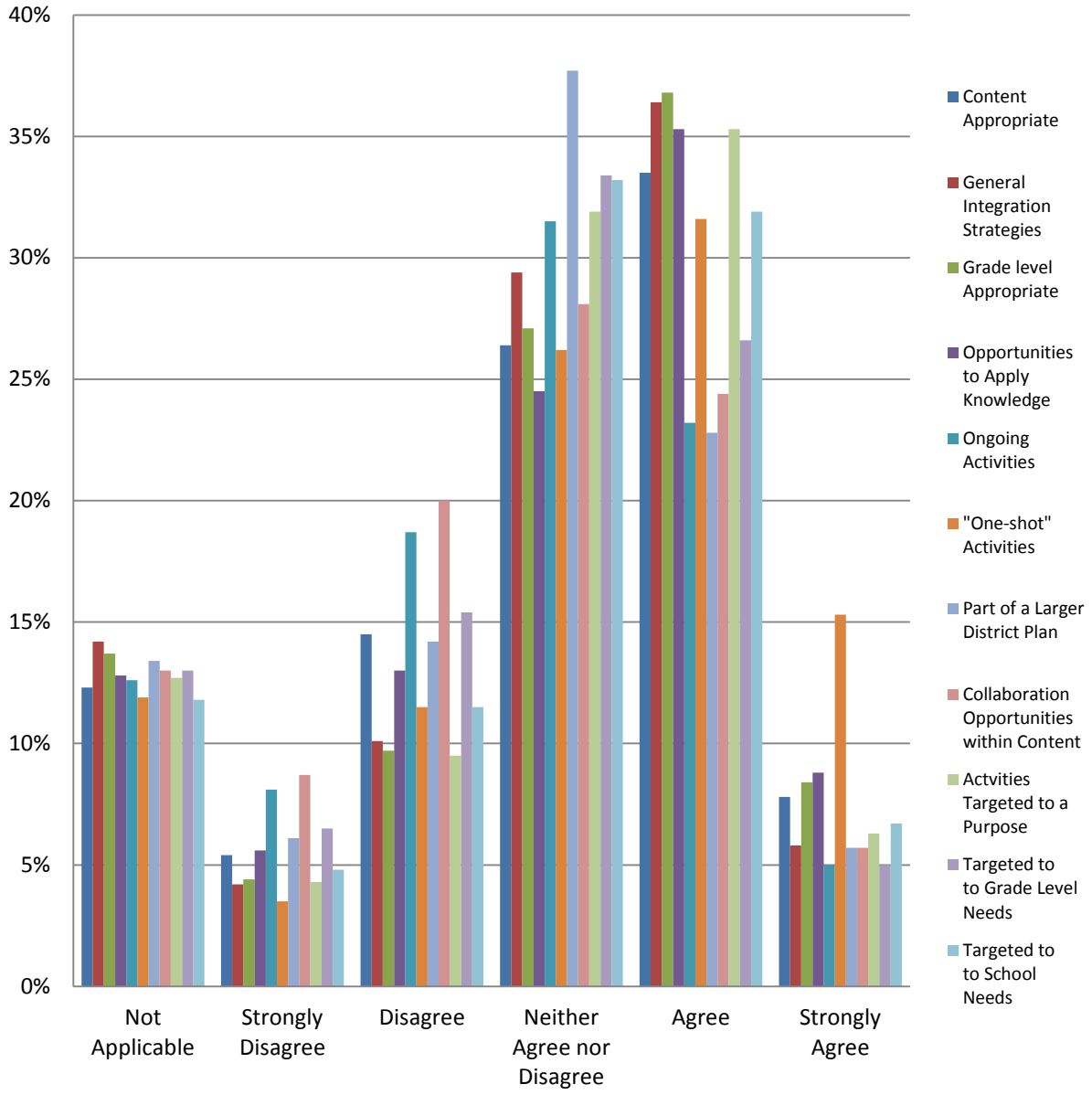


Figure 42: Statewide Perceptions of Professional Development

Figure 43 presents the district size category disaggregated responses regarding professional development perceptions.

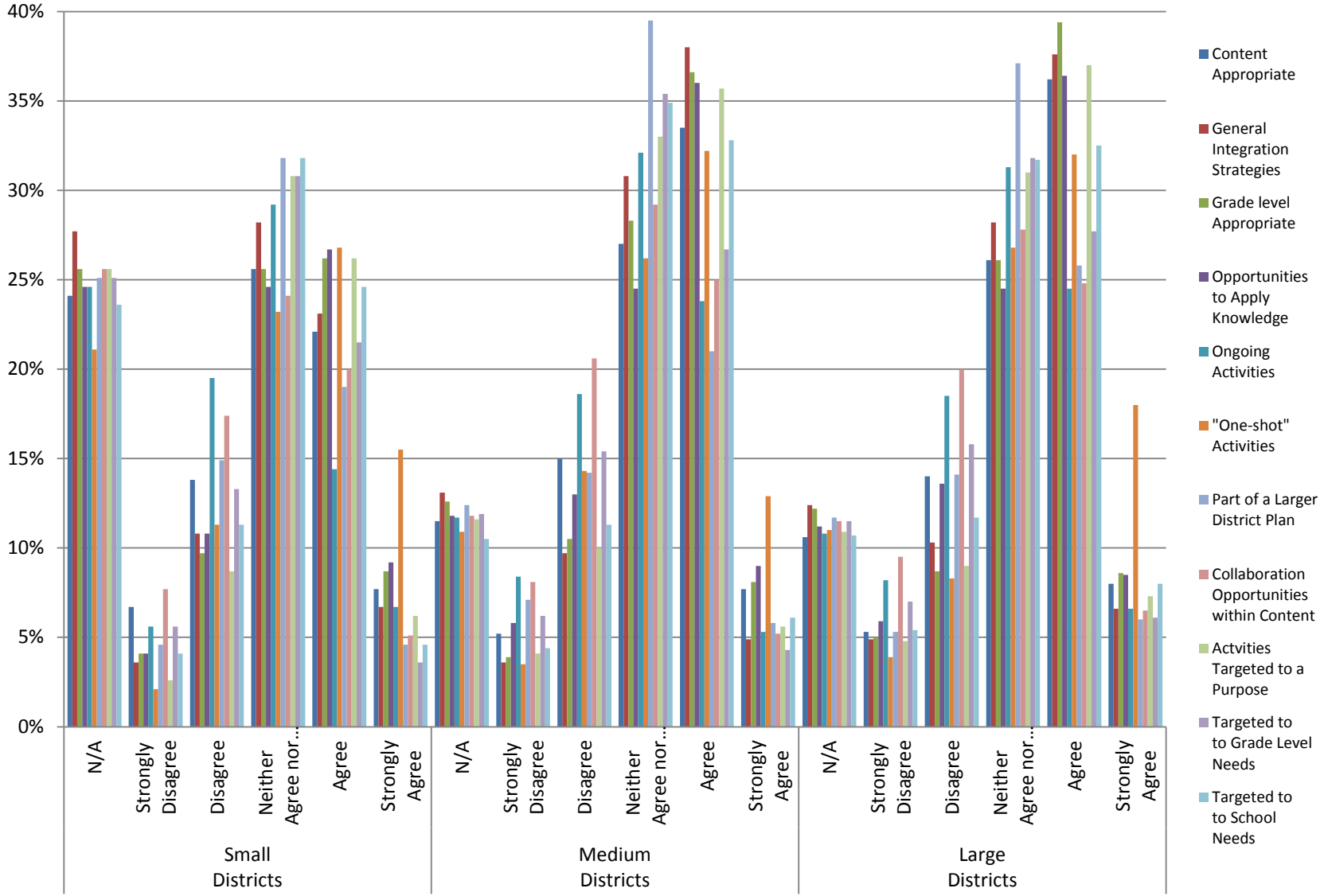


Figure 43: Statewide-Disaggregated Perceptions of Professional Development

For the most part, respondents neither agreed nor disagreed with the stated purposes of professional development opprtunities. This finding indicates that a need exists for targeted technology-related professional development throughout the state.

Parent Surveys

The STNA 2012 included a parent survey, which allowed parents in each district in Nevada to provide feedback on technology use in schools and student technology use outside the classroom setting. All 17 counties had parents respond to this survey. The total number of respondents was 2,626 compared to 915 in STNA 2010. Furthermore, STNA 2010 had 11 counties participate in the parent survey, while six counties had no parent responses. Figures 44-45 display student grade level distributions of parent responses.

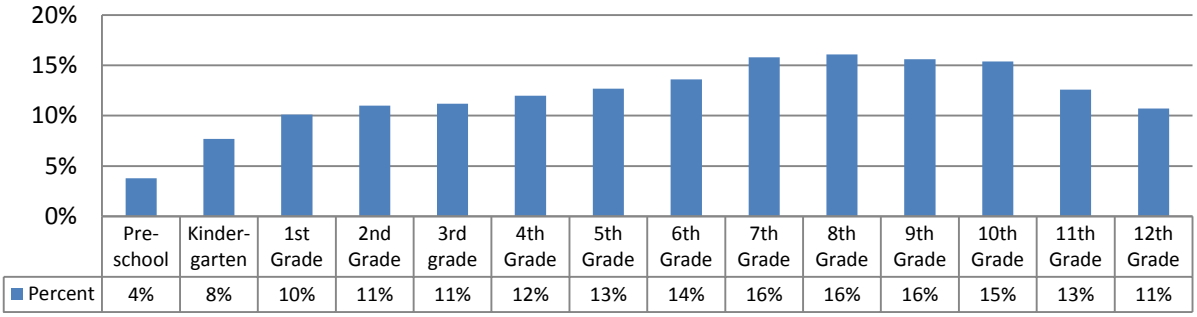


Figure 44: Student Grade Level Distribution from Parent Survey

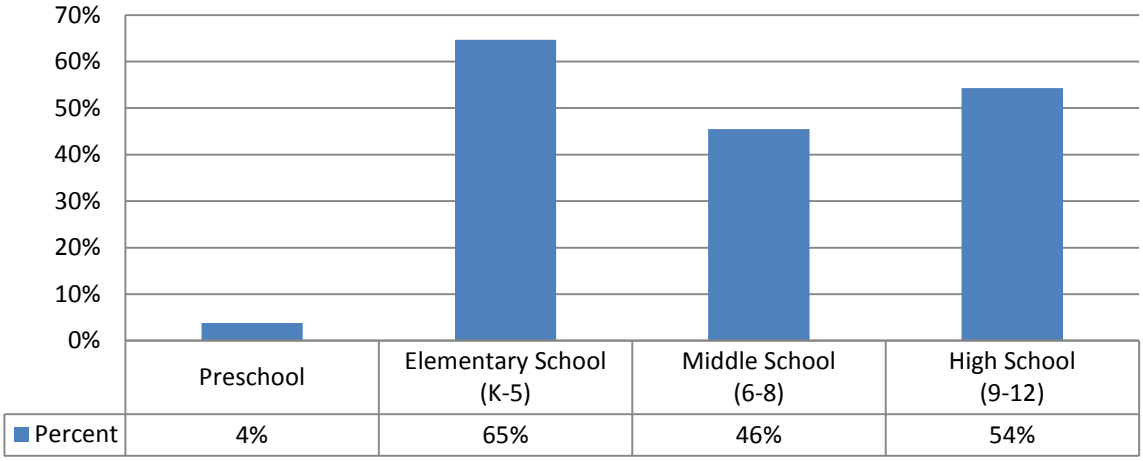


Figure 45: Grade Band Distribution of Parent Responses STNA 2012.

When asked about student technology use for homework purposes, 74% of parents stated that their student engages in technology use for homework (Figure 46).

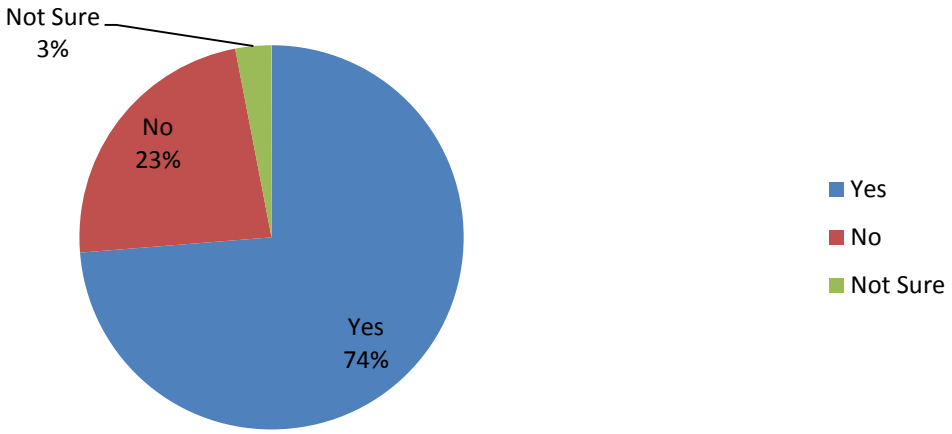


Figure 46: Responses to "Does your child regularly use technology to complete HOMEWORK?"

Parents widely reported student use of the Internet as a research tool for various homework assignments. Parents identified various types of software used by students at home that included Microsoft Office (Word, Excel, and PowerPoint). Many parents also reported that their students rely on the Internet for homework assignments, such as online educational games and assignments that require research. Overall, a majority of parents stated that their student uses technology on a regular basis in order to complete homework assignments.

In addition, STNA 2012 asked parents to report on their student's use of technology in the classroom. A majority (74%) of the parents surveyed stated that their student uses technology in school (Figure 47).

Figure 47: Responses to "Does your child regularly use technology in SCHOOL?"

Again, parents identified technology by specific use, including Microsoft Excel use in mathematics courses, word processing software, and the Internet for research and document writing purposes in science and language arts courses, as well as typing skills programs in computer classes.

When asked whether their schools were meeting their expectations of technology use in school, parents responded, "Yes" 46% of the time, "No" 32% of the time, and "I'm not sure" 22% of the time (Figure 48).

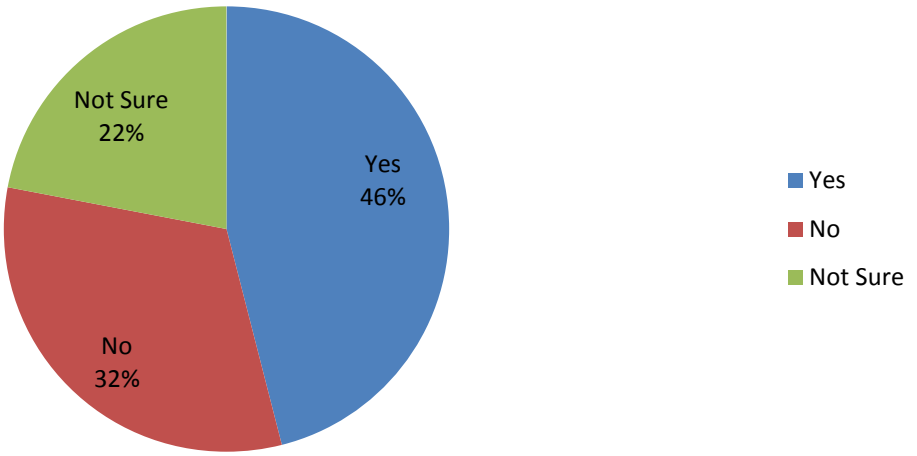


Figure 48: Responses to "Are your technology uses in school being met?"

The comments provided by parents ranged from overuse of technology to underuse of technology in schools. Some parents commented that their children were unable to write in cursive, while others commented that they believed their children were not receiving the exposure and training necessary to prepare them for the world at large. Similar to the result from STNA 2010, parents shared concerns about the misuse of technology, such as, using the iPod touches to play games and the use of technology to bully students—many parents referenced "cyber bullying" by name in their comments. Parents also commented about the lack of emphasis on Web 2.0 technologies. Additionally, parents shared concerns about Internet filters at school and student exposure to inappropriate material. Finally, several parents indicated that the technology in schools is inadequate by specifically referencing the age, unreliability, and lack of availability of technology equipment. Several parents indicated that not all students have the same access to technology and this inequity would result in some students not being as prepared as others throughout the state.

When compared to STNA 2010 results, the results from STNA 2012 indicate that more than half (54.3%) of parents are either "not sure" or do not agree that their schools are meeting their technology-related expectations. In 2010, an overwhelming majority felt that the school were meeting those needs. Based on this comparison, schools seem to have not kept pace with the changing technology and have declined in their ability to meet the technology related expections of parents.

Summary of STNA 2012 Findings

As a member of the Smarter Balanced Assessment Consortium (SBAC), Nevada has taken the step forward in becoming highly dependent upon educational technology. Having gathered data from several sources- district educational technology plans, Nevada teachers, Technology Coordinators, and parents, the following is a summary of findings from the STNA 2012.

- Nevada schools are currently inadequately equipped for full-, large-scale implementation of electronic assessments, which the SBAC requires starting in 2013-2014
- Current technology levels are insufficient in terms of the number of devices per pupil
- Technology Coordinators cite that insufficient bandwidth is present in the vast majority of schools
- Some educational technology, namely Interactive whiteboards, are more prevalent now than in STNA 2008 and 2010
- Nevada classrooms have newer computers than in STNA 2010
- The number of computers per student has decreased since STNA 2010
- Teachers regularly use the technology available to them for instructional purposes
- More Nevada classrooms are using technology on a daily basis or more than 80 days of the year; however, there is also a higher percentage of teachers reporting not using computers at all in STNA 2012, up 7% from STNA 2010
- Teachers feel that the time required to receive technical assistance is too long
- Teachers feel less prepared to use technology in 2012 than they did in 2010- this could be due to an increased emphasis on and awareness of the need for implementing technological pedagogical content knowledge (TPACK) when using technology for instructional purposes
- Teachers view professional development opportunities offered at the school and district levels, both in quantity and quality, unfavorably
- The vast majority of parents state that their children use technology regularly when completing homework and while in school
- Parents are uncertain as to whether their children's schools are meeting their technology expectations

Recommendations from STNA 2012 Findings

The State Technology Needs Assessment highlights both the enclaves of excellence and the need for a more unified strategy for educational technology in Nevada. The following are some recommendations for statewide initiatives made by the RRC research team based on the findings from the needs assessment:

- The implementation of a common statewide technology plan that equalizes the following:
    - Technology funding levels
    - Technology device levels
    - Statewide standardization of technology in schools
        - Technology plans
        - Technology funding
- Provide statewide research-based professional development, according to best practice, designed to increase teachers' capabilities to integrate technology into their classrooms using appropriate 21st century pedagogical methods, such as the TPACK Model.
- Explore the possibility of digital textbooks.
- Explore one-to-one initiatives as a possible solution to the problem of student access.
- Increase the number of IT personnel and integration specialists in districts.
- Look at other states in the SBAC (this report includes Idaho, Wyoming, and South Dakota) as models for future educational technology planning.

Recommendations for Future State Technology Needs Assessments

During the execution of STNA 2012, the RRC research team compiled a list of recommendations to improve future iterations of the STNA. The following is a list of those recommendations with explanations as necessary.

- Expand the timeline. Both STNA 2010 and STNA 2012 were subject to a condensed timeframe, which limited the data collected, and thus the analysis possible.
- Fully fund the scope of the STNA project. Both STNA 2010 and STNA 2012 received minimal funding levels and thus limiting the scope of both projects. Additional funding would enable a richer and more useful report.
- A complete rewrite and reconceptualization of the STNA surveys is necessary. The current surveys, developed in 2008, are insufficient to encompass the changes in the State of Nevada's educational technology, in specific, and technology itself, in general. Existing questions require rewording and some new questions are necessary to account for these changes. Additionally, current response formats are not conducive to detailed analysis without coding and categorizing responses, both of which are time-consuming. Moreover, some questions produce useless data that do not even allow for coding or categorizing. Changing response formats could save time, while providing useful data for analyses.
    - New survey questions could include questions regarding;
        - The type of device used to complete the survey
        - The operating systems of the computers in the classroom
        - How the respondents heard about the survey
        - The use of Web 2.0 technologies, such as, Edmodo, MyMathLab, etc.
        - The use of technology for web-based assessments (i.e. MAP)
    - Reformat the question-response format of each question;
        - "Radio button" choices
        - The option to add comments
- Include an administrator (both site-based administrators and superintendents) survey—STNA 2008, 2010, and 2012 only included surveys of teachers, technology coordinators, and parents. A recent *Education Week* article indicated that administrators adopt and use technology at a

faster rate than teachers and their perspectives and perceptions might provide some beneficial data to understand the current technology landscape in Nevada schools.

- Fund a Spanish language Parent Survey—many districts, most notably Clark County, commented that the lack of a Spanish language survey excluded a large percentage of the parents in their district. Funding would have to be available for translation services, both for the survey and for the results.
- Include charter schools in future STNA iterations.
- Funding to allow an expansion of the level of analysis:
    - Inclusion of qualitative analysis
    - Increased complexity of quantitative analysis
        - Trends over time
        - Investigate the relationships between and among demographic variables and responses from
            - Technology coordinators
            - Teachers
            - Parents
            - Administrators
        - Statistical significance of findings
            - Determine whether differences are significant or “noise”

This is the third iteration of the State Technology Needs Assessment with no significant changes. As the technology and population in Nevada change, the STNA should change in scope to encompass these changes in an effort to present data that are the most representative and accurate as possible.

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Appendices

Appendix A- Letters to Superintendents, Technology Coordinators, Principals, Teachers, and Parents

KEITH W RHEAULT
Superintendent of Public Instruction

GLORIA P. DOPF
Deputy Superintendent
Instructional, Research and Evaluative Services

JAMES R. WELLS
Deputy Superintendent
Administrative and Fiscal Services

STATE OF NEVADA

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ADDRESSES/MAPS
http://www.doe.nv.gov

March 29, 2012

MEMORANDUM

TO: Nevada School District Superintendents

FROM: Keith Rheault, Superintendent of Public Instruction
Nevada Department of Education

SUBJECT: Notice of Required School District Participation in Annual Educational Technology Needs Assessment

This is to inform you of a statewide study that is currently underway. In accordance with NRS 388.795, an educational technology needs assessment must occur every spring of even numbered years. On March 13, 2012, the Nevada Commission on Educational Technology selected Ms. Jacque Ewing-Taylor of the William Raggio Research Center for STEM Education at UNR to conduct this assessment. The results of this assessment will influence state educational technology initiatives for the next two years. The timeline on this study is extremely tight with the first draft due to the Commission on May 29, 2012 and I strongly encourage cooperation from your district.

Kimberly Vidoni from NDE is helping Ms. Ewing-Taylor contact educational technology directors in your district and your support in this effort is greatly appreciated. Please feel free to forward this to whomever you believe should have this information. If you have further questions, please contact Jacque Ewing-Taylor at (775)784-7784 or at jacque@unr.edu.

Raggio Research Center
For Science, Technology, Engineering and Mathematics Education

Raggio Research Center
College of Education
University of Nevada, Reno
Mailstop 432
Reno, NV 89557-0432

Dear Superintendent,

Thank you for your district's participation in the biennial State Technology Needs Assessment Survey (STNA) for 2012. As you are aware from the recent letter from Kim Vidoni of the NDE, we are conducting a statewide survey of educational technology needs. In order to get as much participation as possible, we are asking for your help. The link below is to the teacher survey and we need to get this link to every teacher! We are therefore asking that you distribute this letter with the link.

Please forward this letter to all of the teachers in your district. The following survey link is specific to your district:

https://www.surveymonkey.com/s/specificlink

Teachers, please complete the teacher survey by clicking on the above link. Your responses are confidential and extremely important, as the information you provide will be included in the report to the Nevada State Legislature, which has a *direct effect* on how technology needs are funded in your district and throughout the state.

Your responses will provide necessary and important information to those who decide how and what to fund to meet the technology needs of Nevada's public education system.

If you have any questions, do not hesitate to contact the Raggio Research Center Research Team.

Thank you for your participation on this important project!

David A. Brackett
Graduate Assistant
College of Education, UNR
dbrackett@unr.edu
775-682-9090

Jacque Ewing-Taylor
Director
Raggio Research Center for STEM Education, UNR
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775-784-7784

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Raggio Research Center
For Science, Technology, Engineering and Mathematics Education

Raggio Research Center
College of Education
University of Nevada, Reno
Mailstop 432
Reno, NV 89557-0432

Dear Technology Coordinator,

Thank you for your district's participation in the biennial State Technology Needs Assessment Survey (STNA) for 2012. As you are aware from the recent letter from Kim Vidoni of the NDE and a previous email containing a teacher survey link, we are conducting a statewide survey of educational technology needs. In order to get as much participation as possible, we are asking for your help. The link below is to the technology coordinator survey and we need every district technology coordinator to respond! We are therefore asking that you click on the following link and complete the survey.

https://www.surveymonkey.com/s/DistrictSpecificLink

Your responses are extremely important, as the information you provide will be included in the report to the Nevada State Legislature, which has a *direct effect* on how technology needs are funded in your district and throughout the state.

Your responses will provide necessary and important information to those who decide how and what to fund to meet the technology needs of Nevada's public education system.

Please answer all of the questions. If you find some questions do not apply to your district, please respond with "not applicable" or "N/A", or a similar response.

If you have any questions, do not hesitate to contact the Raggio Research Center Research Team.

Thank you for your participation on this important project!

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Dear Superintendent,

Thank you for your district's participation in the biennial State Technology Needs Assessment Survey (STNA) for 2012. As you are aware from the recent letters from Kim Vidoni of the NDE and from the Raggio Research Team regarding the teacher survey, we are conducting a statewide survey of educational technology needs. In order to get as much participation as possible, we are asking for your help. **The parent survey portion of STNA 2012 will go live on Monday 5/14/2012**. In order to collect the greatest number of responses, we are asking you to help us disseminate the survey link to the parents in your district.

The second section of this email is addressed to parents with a county-specific parent technology survey link. Please forward the email to the principals in your district, so they can then send it on to parents directly or send a hard copy home with their students, whichever method will most effectively reach parents.

In the email that we are asking you to forward, we describe the ways in which the survey is accessible. That is, we inform parents that the survey is accessible from computers, tablets, and most mobile devices. However, with your permission, we also inform them that if those options are not available to them, they will be able to access the survey at their child's school.

With this in mind, **please forward this email to your district site-based administrators so they are aware that some parents may choose to complete the survey at their sites and that they may be asked to forward the email to their students' parents**. We know school sites are busy this time of year, but we hope that this advance notice will allow site-based administrators to schedule times for parents to access the survey, if necessary. The current plan is for the parent survey to be **open until Friday June 1, 2012**, which should help in scheduling these times.

Parent responses are extremely important, as the information they provide will be included in the report to the Nevada State Legislature, which has a *direct effect* on how technology needs are funded in your district and throughout the state.

Thank you for your participation on this important project!

Directions to forward:

- **Click forward**
- **Delete from here up (but please leave the letterhead intact)**

Phone: (775) 784-8288 | FAX: (775) 327-2016 | Website: http://www.unr.edu/raggiocenter

Raggio Research Center
For Science, Technology, Engineering and Mathematics Education

Raggio Research Center
College of Education
University of Nevada, Reno
Mailstop 432
Reno, NV 89557-0432

Dear School District Parent,

We are asking for your participation in the biennial State Technology Needs Assessment for 2012 (STNA 2012). The Nevada Legislature requires a technology assessment every two years, which *directly influences* state educational technology initiatives.

The thoughts and perceptions of parents are extremely important in determining the educational technology needs of school districts across the state.

Please click on the following link to complete the brief (7-question) survey:

https://www.surveymonkey.com/s/DistrictSpecificLink

Parents, please complete the parent survey by clicking on the above link, or typing it in to a web browser exactly how it appears. Your responses are confidential and extremely important, as the information you provide will be included in the report to the Nevada State Legislature, which has a *direct effect* on how technology needs are funded in your district and throughout the state.

Your responses will provide necessary and important information to those who decide how and what to fund to meet the technology needs of Nevada's public education system.

The survey is accessible from computers, tablets, and most mobile devices. If these options are not available, please contact your school and set up a time when you can use their technology to complete the survey. Public libraries also have computers with Internet connections that you can use to complete this survey.

If you have any questions, do not hesitate to contact the Raggio Research Center Research Team.

Thank you for your participation on this important project!

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If you have any questions, do not hesitate to contact the Raggio Research Center Research Team.

Thank you for your participation on this important project!

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From: office@nevadapta.org
To: AmyNVPTA@aol.com
Sent: 5/21/2012 10:54:18 A.M. Pacific Daylight Time
Subj: [Test] What Technology Would You Like to See in Schools?

Dear Nevada PTA Members,

We have been asked for your participation in the biennial State Technology Needs Assessment for 2012 (STNA 2012). The Nevada Legislature requires a technology assessment every two years, which *directly influences* state educational technology initiatives.

The thoughts and perceptions of parents are extremely important in determining the educational technology needs of school districts across the state.

Please click on the appropriate link for your county to complete the brief (7-question) survey:

Carson City	Churchill County	Clark County
Douglas County	Elko County	Esmeralda County
Eureka County	Humboldt County	Lander County
Lincoln County	Lyon County	Mineral County
Nye County	Pershing County	Storey County
Washoe County	White Pine County	

Your responses are confidential and extremely important, as the information you provide will be included in the report to the Nevada State Legislature, which has a *direct effect* on how technology needs are funded in your district and throughout the state.

In addition, your responses will provide necessary and important information to those who decide how and what to fund to meet the technology needs of Nevada's public education system.

The survey is accessible from computers, tablets, and most mobile devices. If these options are not available, please contact your school and set up a time when you can use their technology to complete the survey. Public libraries also have computers with Internet connections that you can use to complete this survey.

If you have any questions please feel free to contact the Nevada PTA office.

forward to a friend

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Appendix B– Teacher Survey

Welcome!

Dear Teachers

The Raggio Research Center, University of Nevada, Reno will be conducting the legislatively mandated State Technology Needs Assessment Survey (STNA). This electronic survey will be sent to teachers and parents along with the designated IT Coordinators in each school district.

We ask that you complete the following teacher survey. Your responses are extremely important as the information you provide will be included in the report to the Nevada State Legislature.

We greatly appreciate your time to complete this survey.

Please click on "next", at the bottom of this page, to complete the survey. Please answer each question thoroughly.

Thank you for your support.

Respectfully,

Jacque Ewing-Taylor
Projects Director

David Brackett
Graduate Assistant

Shawn Pennell
Administrative Faculty

Demographic Information

This information is for classification purposes only; we have no way of tracking this information back to the participant.

***1. In which year did you begin teaching?**

***2. How long have you been teaching?**

- This is my first year
- More than 1 year, but less than 3 years
- More than 3 years, but less than 5 years
- More than 5 years, but less than 10 years
- More than 10 years

***3. How long have you been teaching at your current school?**

- This is my first year
- More than 1 year, but less than 3 years
- More than 3 years, but less than 5 years
- More than 5 years, but less than 10 years
- More than 10 years

***4. What type of school accurately describes your current assignment/placement?**

- Elementary School (K-5 or K-6)
- Middle School (6-8, 6-9, 7-8, or 7-9)
- High School (9-12 or 10-12)
- Elementary/Middle School (K-8)
- Other (please specify)

***5. If you teach at the middle school or high school level, which subject(s) do you teach?**

- ☐ I teach elementary school
- ☐ Math
- ☐ Science
- ☐ English/Language Arts/Reading
- ☐ Social Studies/History/Government
- ☐ Physical Education/Health
- ☐ Technology
- ☐ Other (please specify)

***6. Are you:**

- ○ Male
- ○ Female

State Technology Needs Assessment

***1. In my classroom, I have a computer that I can use for administrative tasks (e.g. attendance, lesson planning).**

- ◯ Yes
- ◯ No

***2. In general, I find this computer easy to use.**

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree

***3. How old is this computer?**

***4. In my classroom, I have at least one computer that students can use for instructional purposes (NOT including my administrative computer).**

- ◯ Yes
- ◯ No

***5. What is the average age of the computer(s) the students use in the classroom?**

***6. What is the ratio of students to computers during a typical class?**

***7. How many computers do you have in your classroom (do not include the computer you use for administrative tasks)?**

***8. In general, these computers are easy to use.**

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ Does not apply

***9. The computer(s) in my classroom have Internet access.**

- ◯ Yes
- ◯ No

***10. The connection speed for classroom computers is such that typical online videos will begin playing:**

- ◯ Very quickly
- ◯ Quickly
- ◯ Neither quickly nor slowly
- ◯ Slowly
- ◯ Very slowly

***11. The LCD projector is easy to setup.**

- ◯ Strongly agree
- ◯ Agree
- ◯ Neither agree nor disagree
- ◯ Disagree
- ◯ Strongly disagree
- ◯ I do not have an LCD projector

***12. What comments do you have regarding the technology capacity in your classroom?**

***13. Please indicate how well prepared you feel you are to accomplish the following:**

	Very well prepared	Well prepared	Not prepared	Not at all prepared	N/A
Teach in a classroom where every student has their own laptop computer.	○	○	○	○	○
Access and use state assessment data (e.g., CRT scores) to support instructional decisions.	○	○	○	○	○
Access and use district assessment data (e.g., for Clark, IDMS) to support instructional decisions.	○	○	○	○	○
Teach in a classroom where all of the instructional materials are delivered via the computer.	○	○	○	○	○
Find effective instructional materials on the Internet.	○	○	○	○	○
Integrate educational technology into your classroom.	○	○	○	○	○
Incorporate library databases into student research projects.	○	○	○	○	○

14. Which of the following professional development opportunities have been available to you during the current school year?

- ☐ One-on-one training from a technology specialist
- ☐ Informal training from colleagues
- ☐ Inservice training related to technology
- ☐ Online professional development courses

For the next group of questions, please estimate the number of hours you have participated in available technology professional development activities during the current school year.

***15. Informal training from colleagues**

***16. In-service training related to technology**

***17. Online professional development courses**

***18. One on one training from a technology specialist**

***19. How would you rate the quality of the technology-related professional development opportunities offered by the following entities?**

	Very low	Low	Moderately low	Neutral	Moderately high	High	Very high
District	○	○	○	○	○	○	○
Local higher education institutions	○	○	○	○	○	○	○
Regional Professional Development Program	○	○	○	○	○	○	○
School	○	○	○	○	○	○	○

***20. What comments do you have regarding your preparation and professional development opportunities?**

***21. Please rate your agreement with the following statements as they relate to your technology professional development opportunities.**

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	N/A
They are appropriate for content I am expected to teach.	○	○	○	○	○	○
The activities focus on general integration strategies.	○	○	○	○	○	○
They are appropriate for the grade level of my students.	○	○	○	○	○	○
They generally provide me with the opportunities to try what I have learned.	○	○	○	○	○	○
The activities are ongoing.	○	○	○	○	○	○
They are best described as 'one-shot' presentations.	○	○	○	○	○	○
The different activities are a part of a larger related plan.	○	○	○	○	○	○
They provide opportunities to work with other teachers in my content area.	○	○	○	○	○	○
Activities are frequently targeted to specific strategy or method.	○	○	○	○	○	○
The activities are directed towards the needs of my grade level.	○	○	○	○	○	○
The activities are directed towards the needs of my school.	○	○	○	○	○	○

***22. Indicate whether or not the following are true as they relate to your most recent 60 minutes of classroom time:**

	Yes	No
I used a computer for instructional purposes.	○	○
I used the Internet for instructional purposes.	○	○

***23. List the five most recent computer applications or web sites that YOUR STUDENTS have used in your class:**

1.
2.
3.
4.
5.

***24. List the five most recent computer applications or web sites that YOU used in your class:**

1.
2.
3.
4.
5.

***25. On how many days since the beginning of the school year has a typical student in this particular class (the one you last taught) used a computer for instructional purposes?**

***26. Typically, how many students operate any one computer at one time during this class?**

***27. What comments do you have regarding your use of technology?**

***28. During your most recent 60 minutes of classroom time, students used a computer for instructional purposes:**

○ Yes

○ No

29. If yes, how many students used computers?

30. Which of the following technologies do you have in your classroom all the time:

Please do not include items you can check out or get from other places.

- ☐ Digital camera
- ☐ Digital video camera
- ☐ An LCD projector
- ☐ A device that allows me to project my computer screen on a TV
- ☐ An interactive whiteboard (e.g., SmartBoard or Promethean)
- ☐ A document camera
- ☐ A handheld or mobile device

***31. Please rate your level of agreement with the following statements:**

	Strongly Disagree	Disagree	Slightly Disagree	Neutral	Slightly agree	Agree	Strongly Agree
The system in place for technical support is adequate.	○	○	○	○	○	○	○
The time required to get technical assistance is minimal.	○	○	○	○	○	○	○
The computers in my classroom are in good working condition.	○	○	○	○	○	○	○
I can manage the majority of the technical issues that arise with my classroom computers.	○	○	○	○	○	○	○
The Internet connection in my classroom is dependable.	○	○	○	○	○	○	○
I can access the web site I need for instruction.	○	○	○	○	○	○	○

***32. Through a sign up or check out procedure, I can arrange to have the following technologies available for a finite time in my classroom:**

	Yes	No
A video camera	○	○
A digital camera	○	○
An interactive whiteboard (e.g., SmartBoard or Promethean)	○	○
An LCD projector	○	○
A classroom set of laptop computers	○	○
A set of laptop computers that permits group work (i.e., one computer per group of 3-5 students)	○	○

***33. I believe the Internet filter used at my school is:**

- ◯ Too restrictive
- ◯ About right
- ◯ Not restrictive enough

***34. Rate the ease of accomplishing the following tasks from your classroom computer:**

	Very Easy	Easy	Somewhat Easy	Not at all Easy
Checking my school email account via the Web browser.	◯	◯	◯	◯
Printing documents.	◯	◯	◯	◯
Copying documents.	◯	◯	◯	◯
Accessing storage space on the school network.	◯	◯	◯	◯
Students accessing storage space on the school network.	◯	◯	◯	◯
Printing documents.	◯	◯	◯	◯
Reviewing standardized assessment results for my students.	◯	◯	◯	◯
Updating grades with our gradebook software.	◯	◯	◯	◯
Using technology to collaborate with other teachers on the development of instructional materials.	◯	◯	◯	◯

***35. Do you regularly plan lessons with other teachers who teach the same level or content area?**

- ◯ Yes
- ◯ No

***36. In what ways do you coordinate this work?**

- ☐ Using web-based tools that permit document sharing (e.g., Google Docs)
- ☐ Using shared space on the school network
- ☐ Emailing files
- ☐ Printing and copying documents

***37. Do you have access via the Internet to the following materials?**

	Yes	No
District content objectives	○	○
Lessons developed by other district teachers	○	○
District curriculum materials	○	○
Videos related to the curriculum	○	○

***38. What comments do you have regarding the technology capacity in your school?**

Appendix C- Technology Coordinator Survey

1.

Dear Technology Coordinators,

The Raggio Research Center, University of Nevada, Reno will be conducting the legislatively mandated State Technology Needs Assessment Survey (STNA). This electronic survey will be sent to teachers and parents along with the designated Technology Coordinators in each school district.

We ask that you complete the following Technology Coordinator survey. Your responses are extremely important as the information you provide will be included in the report to the Nevada State Legislature.

We greatly appreciate your time to complete this survey.

Please click on "next", at the bottom of this page, to complete the survey. Please answer each question thoroughly.

Thank you for your support.

Respectfully,

Jacque Ewing-Taylor
Projects Director

David Brackett
Graduate Assistant

Shawn Pennell
Administrative Faculty

2. Section One

*1. Describe the role of the current STATE educational technology plan in the design, delivery and planning of the educational technology in your district.

*2. Describe the role of the current DISTRICT educational technology plan in the design, delivery and planning of educational technology in your district.

*3. Do the schools in your district typically engage in significant technology planning? If so, how does this occur? Do they have school technology plans? Do they have technology committees?

*4. Describe the status of PLANNING for technology in your district. What are the major challenges?

*5. Describe in general terms the FUNDING for technology in your district. What are the major sources of funding? Is the funding consistent and predictable?

*6. What other comments do you have regarding technology planning in your district?

*7. What do you think the opportunities and challenges associated with increasing the use of computer-based assessments are in your district?

*8. What do you think are the opportunities and challenges associated with the expanded use of laptops to supplement and in some instances replace textbooks?

***9. Would the expanded distribution of laptop computers have a positive impact on student outcomes? Why or why not?**

***10. What are some of the more advanced ways teachers in your district are utilizing the Internet to improve student outcomes?**

***11. What are some of the greatest challenges associated with the increased use of the Internet for teachers in your district?**

***12. Are teachers in your district using the Internet to collaborate with other teachers in your district? If yes, how?**

***13. What are some of the most important ways teachers can utilize the web to support teaching?**

***14. What other comments do you have regarding the role of technologies in your district classrooms?**

In the following three text boxes, describe three relatively common classrooms that a visitor might see in your district. The three classrooms should represent your view of the low, middle and high-end in terms of technology availability in your district. In your description include the approximate number, age and condition of the computers in the room, the presence or absence of a projector, the Internet connection capacity and any other technologies that might be available.

***15. Common low-end classroom**

***16. Common middle classroom**

***17. Common high-end classroom**

***18. Next to each of the designations below, provide a number that represents the approximate percentage of classrooms that closely fit the description:**

Low-end classroom

Middle classroom

High-end classroom

***19. What role does open source software such as OpenOffice, Apache or Firefox have in your district's technology plan?**

***20. What support is available to teachers when they need technical assistance in their classrooms?**

***21. What other comments do you have regarding the technology capacity in your district's classrooms?**

***22. What type of professional development is available to teachers in your district?**

***23. Describe what you believe are the key components to effective professional development.**

***24. How do these key components compare to the professional development opportunities you are able to provide to teachers?**

***25. Is there anything else you would like to share before completing this survey?**

Appendix D- Parent Survey

1.

Dear Parents,

The Raggio Research Center, University of Nevada, Reno will be conducting the legislatively mandated State Technology Needs Assessment Survey (STNA). This electronic survey will be sent to teachers and parents along with the designated IT Coordinators in each school district.

We ask that you complete the following parent survey. Your responses are extremely important as the information you provide will be included in the report to the Nevada State Legislature.

We greatly appreciate your time to complete this survey.

Please click on "next", at the bottom of this page, to complete the survey. Please answer each question.

Thank you for your support.

Respectfully,

Jacque Ewing-Taylor
Projects Director

David Brackett
Graduate Assistant

Shawn Pennell
Administrative Faculty

2. Default Section

***1. What school district is your student currently enrolled in?**

- [ ] Carson City
- [ ] Churchill County
- [ ] Clark County
- [ ] Douglas County
- [ ] Elko County
- [ ] Esmeralda County
- [ ] Eureka County
- [ ] Humboldt County
- [ ] Lander County
- [ ] Lincoln County
- [ ] Lyon County
- [ ] Mineral County
- [ ] Nye County
- [ ] Pershing County
- [ ] Storey County
- [ ] Washoe County
- [ ] White Pine County
- [ ] Other (please specify)

***2. What grade is your child currently enrolled in? If you have multiple children in school, please select all applicable levels.**

- [ ] Preschool
- [ ] Kindergarten
- [ ] 1st Grade
- [ ] 2nd Grade
- [ ] 3rd Grade
- [ ] 4th Grade
- [ ] 5th Grade
- [ ] 6th Grade
- [ ] 7th Grade
- [ ] 8th Grade
- [ ] 9th grade
- [ ] 10th Grade
- [ ] 11th Grade
- [ ] 12th Grade
- [ ] Other (please specify)

***3. Does your student regularly use technology to complete HOMEWORK? If so, what types of activities do they complete?**

- ( ) Yes. Please explain below which types of activities:
- ( ) No. Please explain below why not:
- ( ) I'm not sure. Please explain below:

Please explain here:

***4. Does your student use technology regularly IN SCHOOL? If so, what types of activities do they complete?**

- ◯ Yes. Please explain below which types of activities:
- ◯ No. Please explain below why not:
- ◯ I'm not sure. Please explain below:

Please explain here:

***5. Are your expectations regarding technology use in schools being met? What are your expectations regarding technology use in schools?**

- ◯ Yes. Please explain below:
- ◯ No. Please explain below:
- ◯ I'm not sure. Please explain below:

Please explain here:

***6. Do you have other comments regarding the use of technology in your student's school?**

- ◯ Yes. Please provide comments below:
- ◯ No.

Please explain here:

***7. Do you have any concerns regarding your student's use of technology in school?**

- ◯ Yes. Please provide your concerns below:
- ◯ No.

Please explain here: