Investigating the Impact of the Cisco 21st Century Schools Initiative on Harrison County School District

Summative Report

EDC

Cisco Global Education

Transforming school systems for the 21st century

Cisco Global Education is engaged in shaping 21st century teaching and learning through thought leadership, practical engagements, and communication. Education systems urgently need to prepare students for the fast-moving demands of this century—this is not in question. Our work focuses on developing, scaling, and replicating successful working models to promote global system transformation. Through practical engagements, we test and refine these models in real-world situations, driving hands-on change in schools in Louisiana, Mississippi, New York, Jordan, and China.

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Executive Summary

There are 21 schools in the Harrison County School District (HCSD), located in southern Mississippi, in the Gulfport/Biloxi metropolitan area. Of those, only Harrison Central 9th Grade (HC9) and Harrison County High School (HCHS) participated in the Cisco 21S Initiative—therefore, this summary will focus on only administrators, teachers, technology personnel, students, and parents at those two schools. Unless otherwise specified, statements (e.g., "teachers report…") and findings (e.g., "70 percent of students") apply to the combined populations of both schools.

Throughout the four years of the Initiative, the total number of school-level administrators remained constant at seven, two of whom were at HC9 and five at HCHS. Technology personnel also held steady over the Initiative, with two at HC9 and three at HCHS. Teachers at the two schools increased slightly, from a combined total of 146 in 2005–2006 to 157 in 2008–2009. Over the past four years, the number of teachers at HCHS has increased by 10 (94 to 104), while the teaching staff at HC grew by 1 (52 to 53).

Enrollment data for both schools was not available during the first year of the Initiative. Since the 2006–2007 school year, the number of students has grown at HCHS from 1,577 to 1,872 this last school year, while the number has declined at HC9 from 749 to 724. The overall Harrison County school population in 2009 was 26 percent African American, 68 percent White, and 2.6 percent Hispanic. Fifty-six percent (56 percent) were eligible for free or reduced lunch.

It is important to note that the level of participation at HCHS has changed over time. At the beginning of the Initiative, the entire HC9 population participated, but only a portion of administrators, teachers, and students were involved at HCHS. In the second year, both schools participated fully, a level that has continued to the present. The smaller numbers of participants in year 1 at HCHS should be kept in mind when looking at year-to-year results.

Vision and Leadership

As envisioned by Harrison County administrators, the 21S Initiative would enable the two participating schools to be transformed into places where students could access "cutting edge technology" and "meaningful" instructional materials in order to prepare for their roles as productive members of society.

A clearly defined change management process is essential to effective school reform. While all administrators and the vast majority of teachers surveyed agreed that technology is an integral part of transforming their school, a consistent change process does not appear to be in place. On the plus side, all four administrators surveyed at the two schools said they had created a leadership team in which teachers had a role in shaping the implementation of the 21S Initiative, and three agreed that educators are continually learning and that teachers have input. However, only two said that goals were regularly discussed or that professional development activities were followed up with ongoing support.

In some cases over the past two years, small gains were shown in teachers' understanding of administrators—particularly in terms of administrators' goals for student computer use and expectations of students' use of higher order thinking in their work.

At HC9 and HCHS, as elsewhere, the 21S Initiative was built around three structural components:

- *Connected District/School:* The Connected District/School component established a secure and manageable baseline technology platform (data, voice, video, etc.), which encompasses all the equipment and human resources necessary to support all administrative and instructional processes in the school.

- Connected Learning: The Connected Learning component promoted 21st century teaching and learning through new technologies, instructional approaches, and professional development.
- Connected Community: The Connected Community component focused on fostering positive relationships between the school and a broad set of stakeholders, including parents, businesses, agencies, and non-profit organizations.

Connected District/School

The 21S Initiative envisions technology as one of the levers of change for transforming low-performing schools into high quality learning environments.

Infrastructure and Tools: As noted earlier, Harrison County chose to concentrate its 21S resources on two schools in which hardware such as interactive whiteboards, LCD projectors, student response systems, laptop computers, and Internet Protocol (IP) phones were installed. Also installed was a wireless network and a new computer lab, and the career center lab was upgraded.

School Access: Most school administrators and technical personnel rated overall technological implementation at or above expectations. Almost all (99 percent) teachers and students said they had access to computers. Teacher access to Personal Digital Assistants (PDAs) and video cameras increased over the past year by 12 percentage points and 11 percentage points, respectively. Over 80 percent of students report access to interactive whiteboards, with even greater numbers saying they have access to TV, Internet and computers.

Technical Support: Technology staff report spending the vast majority of their week troubleshooting and maintaining equipment (30 hours), with most of the additional hours devoted to overseeing infrastructure maintenance and selecting/purchasing technology products. Both teachers and administrators overwhelmingly report that technical support meets their expectations and is generally available.

Connected Learning: Educator Outcomes

Professional development intended to improve leadership, streamline administrative practices, increase technology access and integration, and promote student-centered teaching and learning through technology is of central importance to the 21S vision.

Professional Development: Teachers, leaders, and technology staff at the two schools participated in a number of general technology trainings during the summer and throughout the school year, including product-specific trainings, the National Education Computing Conference, Schlechty Center for Leadership in School Reform workshops, and math and literacy sessions.

Almost all teachers at the schools received some form of computer training in 2009, with at least half receiving instruction in the use of presentation tools or interactive whiteboards. Digital Opportunity Trust (DOT) interns, other classroom teachers, or school-based technology staff provided training. Most teachers (70 percent) and all administrators were satisfied with the support from DOT interns, who provided much of the onsite training offered at HC9 and HCHS. They were most satisfied with the training provided by other teachers. All in all, 96 percent of teachers reported that access to instructional technology support was on target or above expectations.

Technology Integration Support: In addition to technological training, teachers said that instructional support was frequently or always available to them.

Use of Data: At HC9 and HCHS, three of four administrators surveyed said that operational efficiency had improved over the life of 21S. All four reported more frequent use of data to make decisions. A large majority of teachers (87 percent) also said data was used to inform their instruction.

Technology Proficiency: Most teachers said they were at an expert level of proficiency in using technology. A large majority of teachers (84 percent) at HC9 and HCHS said they use technology in their classes, with little difference between 2008 and 2007. However in 2009, more teachers report daily use of the following: computers (87 percent), the Internet (77 percent), and interactive whiteboards (54 percent). Other types of technology, however, showed flat or even small declines in use by teachers. The teachers say they use less frequently the following technologies: organizational software, IP phones, and presentation software.

Communication and Collaboration: Teachers generally agree that formal mentoring occurred at their two schools and that they were connected with networks throughout the globe, but felt they did not often meet to exchange ideas or share student work.

Connected Learning: Student Outcomes

To further enhance teaching, the Connected Learning component also aims at improvements in instructional practice, as indicated by student achievement measures (such as test scores, graduation rates, and college preparatory activities) and student engagement measures (such as behavior indicators and absenteeism).

In the 2008–2009 school year, far more HC9 and HCHS students completed a 21S survey than students did the prior year (17 percent, up from 0.3 percent). The difference in completion rates complicates any year-to-year comparisons of survey data, while the low return rates every year (even in 2009) make it inappropriate to generalize the findings to the whole student population.

Student Use of Technology: Administrators feel that students are more Information and Communication Technology (ICT) literate as a result of the Initiative, and large numbers of students (80+ percent) report more frequent use of computers for instructional, research, and presentation purposes.

Student-Centered Instruction: One of the aims of the 21S program is to advance a student-centered approach to instruction through professional development and administrative support. To evaluate the progress of HC9 and HCHS teachers, Center for Children and Technology at the Education Development Center, Inc. (EDC) used a 5-point scale (where 1 is traditional and 5 is student-centered) in which teachers self-assessed their pedagogical philosophy. In 2009, HC9 and HCHS teachers endorsed more student-centered approaches than in the prior year, scoring an average of 3.58, up from 2.26.

Teachers say they used various student-centered learning strategies more often in their teaching, most notably: allowing students to choose their own topics (up 50 percentage points over the prior year); having students conduct research in class (up 15 percentage points), and having students revise their own work products and work in collaborative groups (both up 10 percentage points).

Students report high levels of student agency in the classroom—another important dimension of student-centered learning. They also indicate that they felt supported by at least one adult in their school.

Student Engagement: Significant percentages (75 percent or more) of teachers, administrators, and students feel that students were more engaged as a result of the 21S program. Teachers say student participation in their classes had increased since the 21S Initiative began. And an overwhelming majority (91 percent) of teachers report that 70 percent of their students come to class prepared.

Student Behavior Incidents: A motivated student is less likely to act up in school, so another important measure of student engagement is the number of student behavior incidents. Here the news is quite positive, with overall incidents at nearly a third what they were in the prior year—from 5,214 incidents in 2007–2008 to 1,856 in 2008–2009.

Student Achievement: Test scores are not the only, or even best, measure of 21st century learning, but they do indicate how well students have acquired content knowledge. Over the past two years, there have been small fluctuations in the state test results for both HCHS and HC9 students. For HCHS students, slightly fewer students received passing scores on the English (5 percentage points decrease), biology (4 percentage points decrease), and U.S. history (2 percentage points decrease) exams. HC9 students experienced a negligible gain in biology (1 percentage point increase).

The percentage of HCHS and HC9 students receiving passing scores on the algebra test dropped dramatically in 2007–2008, most likely as a result of changes in the test format that affected students' scores statewide. In 2008–2009, HC9 students reversed the downward trend in algebra, where the percentage of passing students increased from 69 percent to 88 percent (19 percentage points increase).

Graduation and College Preparation: The graduation rate at Harrison County High School held steady at 80 percent in 2007 and 2008. The number of graduates in those two years was respectively 435 and 405. Although the school did not provide a graduation rate percentage figure for 2009, the number of graduates ballooned to 547. In more qualitative terms, all administrators and roughly 80 percent of teachers say their students were more likely better prepared for college and future employment.

Course Offerings: Offering more diverse courses was also an important component of the Connected Learning inputs. Students were offered more choice in terms of dual enrollment classes, vocational education courses, and college prep work. Dual enrollment and evening classes were offered through the University of Southern Mississippi (USM) and Mississippi Gulf Coast Community College (MGCCC), and National Automotive Technicians Education Foundation (NATEF) certification was available through the Auto Mechanics department. American College Testing (ACT) workshops and advanced placement (AP) classes supported students taking college entrance exams.

One of the more dramatic findings is that *ten times as many* students took AP courses at the end of the Initiative (60 percent) than at the beginning (6 percent).

Connected Community

The Connected Community component of 21S centers on promoting positive school relationships with parents and the larger community.

Over 17 businesses, institutions of higher education, community groups, and faith-based organizations are working with the two Harrison County schools to realize their vision. Both schools have been working to strengthen partnerships and improve the general ICT literacy of the community. An important contributor to their outreach efforts was the SchoolMessenger system, as parents who answered the survey said that providing online access to grades and assignments was the most successful form of school outreach.

Teachers reported other means of connecting with parents. In a typical two-week period of instruction, 93 percent said they call parents on the phone at least once, 91 percent said they e-mail parents, while 71 percent meet with parents face to face. A nice sign of progress is that 80 percent of the admittedly few parents who completed the survey said they used the website as their most common means of communicating with their child's school.

Remaining Challenges

Teachers are not fully aware of what leaders expect of them. On a number of measures, administrators and teachers are out of synch on expectations for teachers to carry out 21S Initiative instructional tasks. In particular, administrators need to more clearly convey what is expected in the areas of using the Internet to post lesson plans, using the Internet to communicate with parents, conducting performance-based assessments, and seeking student engagement.

Barriers to innovation appear to exist in the Harrison County culture. Administrators acknowledged that at both schools there are hindrances to implementing new ideas and that the district did not encourage experimentation.

Teachers reported declines in access in several areas, although the difference was a few percentage points in most of these: interactive whiteboards, Internet, and Internet Protocol (IP) phones. A more significant decrease of 45 percentage points was seen in multimedia presentation tools.

The successful efforts in teacher professional development at HC9 and HCHS do not seem to extend to administrator professional development, as only 50 percent of HCHS and HC9 administrators reported seeing significant change.

Less-than-optimal levels of peer collaboration take place at the participating schools. This may partially account for the fact that all administrators surveyed feel teaching practices are difficult to change.

Providing sufficient technical professional development was a challenge in the district, a fact which seems supported by results from technology staff surveys that showed they had spent no time training or supporting teachers in their use of technology. And although pairing technology staff with Digital Opportunity Trust (DOT) interns has been effective elsewhere, none of the technology staff reported working with them at the two Harrison County schools.

Administrators mentioned that they would like to increase the involvement of local businesses and local institutes of higher learning.

Finally, administrators said they are planning to establish a dedicated technology budget, and seek grants to sustain the Initiative.

Introduction

Education systems in the early 21st century are in transition and have the potential to evolve into very different institutions. Embodying the values of diversity and collaboration, encouraging innovation, and integrating technology into every aspect of the learning environment, these new systems enable students to be active participants in defining, pursuing, and assessing their own learning so that they can develop the skills and habits of independent thinkers and lifelong learners. Education leaders, policy makers, community leaders, businesses, government agencies, and research organizations have come to realize that the approaches that worked just 50 years ago will no longer serve to prepare students for the challenges in today's world. They are calling for the transformation of current education systems.
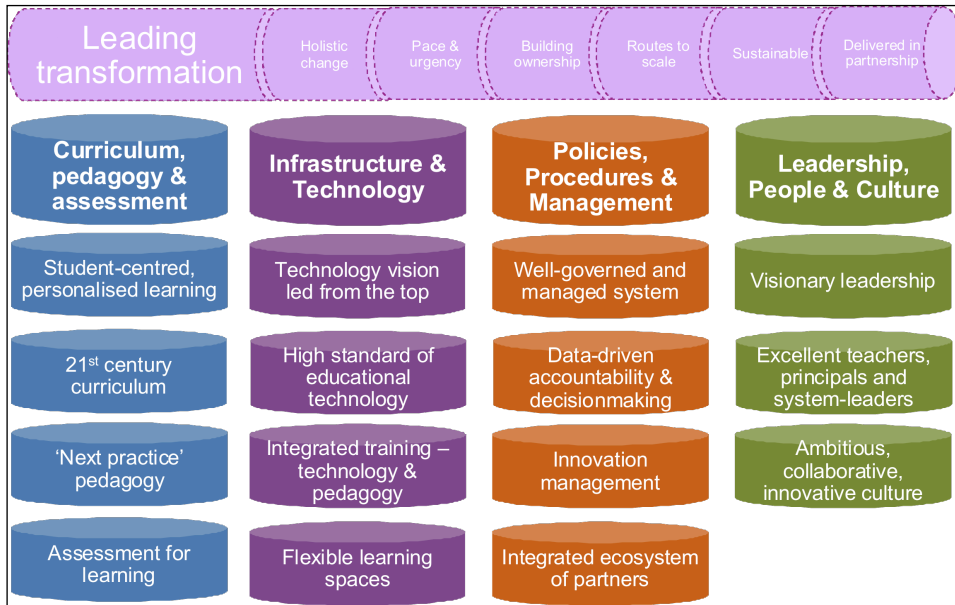
As this education transformation agenda was under review at the national and international levels, Cisco Systems, Inc. (Cisco) was in the process of responding to Hurricane Katrina's destructive impact on Mississippi and Louisiana. After several visits to the region and consultation with the education leadership in Mississippi and Louisiana, Cisco leadership chose to focus on education and offered to develop a complex and large-scale education technology project, which is called the Cisco 21st Century Schools Initiative but is best known as the Cisco 21S Initiative. The Initiative represents an intensive, four-year $80 million investment in technology, training programs, and Cisco employee resources. Its goals are to help not only rebuild the Jefferson Parish Public School System in Greater New Orleans and seven districts in Mississippi post-Katrina[1] but also to transform these districts to meet 21st century educational demands. The Initiative is organized around the following three interrelated structural components:

- *Connected District/School:* The Connected District/School component established a secure and manageable baseline technology platform (data, voice, video, etc.), which encompasses all the equipment and human resources necessary to support all administrative and instructional processes in the school.

- Connected Learning: The Connected Learning component promoted 21st century teaching and learning through new technologies, instructional approaches, and professional development.

- Connected Community: The Connected Community component focused on fostering positive relationships between the school and a broad set of stakeholders, including parents, businesses, agencies, and non-profit organizations.

Helping districts and schools make connections across all three components of the program is central to the 21S Initiative. Through the implementation of these program components in the Gulf Coast region, Cisco has learned how to effect rapid 21st century education transformation in real education systems. As a result, Cisco's education and technology leadership have articulated a concrete vision and framework for a 21st century education system (Cisco Systems, 2008). In conjunction, they have developed tools to manage better the process of education transformation. The principles of 21st century education fall into four key categories, which are shown in Figure 1 and described below.

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[1] The selected districts in Mississippi include Petal School District, Hattiesburg Public School District, Moss Point School District, Harrison County School District, Forrest County Agricultural High School, Forrest County School District, and Lamar County School District.

Figure 1: Cisco's global education roadmap

Leading transformation	Holistic change	Pace & urgency	Building ownership	Routes to scale	Sustainable	Delivered in partnership

Curriculum, pedagogy & assessment	Infrastructure & Technology	Policies, Procedures & Management	Leadership, People & Culture
Student-centred, personalised learning	Technology vision led from the top	Well-governed and managed system	Visionary leadership
21st century curriculum	High standard of educational technology	Data-driven accountability & decisionmaking	Excellent teachers, principals and system-leaders
'Next practice' pedagogy	Integrated training – technology & pedagogy	Innovation management	Ambitious, collaborative, innovative culture
Assessment for learning	Flexible learning spaces	Integrated ecosystem of partners	

Source: Cisco, 2008

1. *21st century curriculum, pedagogy, and assessment:* The adoption of 21st century curriculum, pedagogy, and assessment allows all stakeholders to have a role in promoting student-centered and personalized learning and addressing the full range of knowledge and competencies that students need in order to prosper in a global world economy. A system-wide pedagogy agenda emphasizes adopting and improving best practices from around the world and constantly seeks emerging practices. Finally, formative and summative assessment techniques are consistently employed to improve learning and to gain a full insight into the abilities of each and every student.

2. *High-quality infrastructure and technology:* In a 21st century education system, the educational technology vision is led from the top but shared, owned, and effectively managed throughout the system. A high standard of technology is deployed effectively to support 21st century teaching and learning. Initial training and ongoing support integrate technology with pedagogical development. The physical environment is designed to optimize 21st century teaching and learning.

3. *Policies, procedures, and management:* A 21st century education system is governed and managed with the ultimate goal of maximizing learning outcomes for all students. There are transparent processes in place to communicate and implement decisions, develop and monitor curriculum, sustain the budget, and procure resources. Additionally, policies and procedures are implemented to enable these education institutions to use data to drive school standards and accountability while stimulating and managing innovation. Finally, school learning is recognized as being embedded within and dependent on an ecosystem of partners that support learning and/or provide other essential children's services (e.g., health, social services).

4. *Leadership, people, and culture:* The entire system is a learning organization with a supportive culture that promotes ambitious and innovative approaches to teaching and learning. Leaders throughout the system champion and model the 21st century educational vision and work with well-trained and -supported teachers. Emphasis is placed on the recruitment and retention of

both principals and teachers through carefully designed outreach efforts and training programs. A 21st century system explicitly promotes a culture of high expectations, respect, collaboration, and shared accountability.

Cisco has supported all participating districts to strive for the above principles and encouraged them to develop their own system transformation ways grounded in their prior specific cultural context, resource capabilities, and specific educational goals. As of September 2008, the goals of HCSD are to: (1) improve early childhood literacy proficiency by 3rd grade, (2) continue implementing physical education technology initiative at the secondary level, (3) reduce drop-out rates, (4) create professional learning communities, (5) increase standardized test scores, and (6) increase community involvement.

Evaluation Approach and Activities

The Center for Children and Technology at EDC conducted the 21S Initiative's summative evaluation, which is designed to measure system change at the district, school, and community levels. EDC researchers used a multi-method approach to gain a broad view of the implementation status of the 21S Initiative in two Harrison County schools (HCHS and HC9) (e.g., through surveys) and an in-depth understanding of the Initiative at the district, school, classroom, and community levels (e.g., through classroom observations, interviews), and measure its impact on the entire system, especially on participants (e.g., through survey, interviews, outcome data). The following questions guided the summative evaluation in Harrison County:

- What are the key programmatic components being implemented and how are they being implemented?

- What is the impact of the Initiative at the district, school, classroom, and community levels?

- What are the lessons learned from the implementation of the Initiative?

- What are the program recommendations for future Cisco education engagements?

- How can/will the Initiative be sustained when Cisco is gone?

To answer these questions, the EDC research team engaged in the evaluation activities listed below.

Collecting and Reviewing Documents: Cisco and the district shared relevant documents with EDC researchers. Most of the documents contained data on the demographic characteristics of administrators, teachers, students, and parents, as well as information about 21S implementation, community outreach, and dissemination. The research team reviewed the collected documents to better understand the 21S implementation process in Harrison County.

Compiling 21S Participation Data: The research team developed a series of implementation data collection charts that district staff used to gather data about 21S participation across the district. District leaders compiled the numbers of administrators, technology personnel, teachers, students, and families who have participated in the 21S Initiative over the last three years. The EDC researchers used the data to better understand the strategies used to roll out various components of the Initiative and to involve different stakeholders over time.

Tracking Yearly Implementation Progress: The EDC researchers tracked district progress related to the three principal components of the 21S Initiative: Connected Schools, Connected Learning, and Connected Community. They asked district administrators to list activities and projects that they planned on implementing over the course of the school year. At the end of the year, district staff marked each input as completed, in-progress, or not completed according to its status at that time. The categories of inputs along with the percentage completion rates are presented as pie charts in this report (see pages 20, 24, and 42).

Compiling Outcome Data: The Outcome Data Tables are a series of four unique tables that aided in the collection of yearly data related to administrator, teacher, student, and parent outcomes. District administrators collected student test scores, teacher retention rates, administrator professional development participation, and outreach to parents. They populated the table with as much information as they had available.

Collecting Survey Data: EDC researchers designed five online surveys, one for each key stakeholder group, to gather a wide range of information related to technology use in classrooms, schools, and homes across both Harrison Central 9th grade and Harrison Central High School. Questions also focused on the impact of the Initiative on participants. The most recent surveys were made available to participants between April and May of 2009. It took around 30 minutes to complete a survey. Most of the survey responses increased across participant groups from 2006 to 2009 (see Table 1).

Table 1: Survey participants and response rates

Participants	2006–2007	2007–2008	2008–2009
Administrators	2 (29%)	3 (43%)	4 (57%)
Technology Personnel	1 (20%)	2 (40%)	2 (40%)
Teachers	53 (36%)	76 (51%)	86 (55%)
Students	N/A	8 (0.3%)	451 (17%)
Parents (approximate)	7 (0.7%)	3 (0.3%)	83 (8%)

Note: The values in this table represent response rates for participants at Harrison Central High School (HCHS) and Harrison Central 9th Grade (HC9), not the entire district.

Data Analysis: EDC researchers employed both quantitative and qualitative methods of analysis. For quantitative data, they used SPSS, a statistical software package, to conduct frequency, cross-tabulation, and correlation analyses (e.g., surveys, outcome data) (Dillman, 2000; Shadish, Cook, & Campbell, 2002). For qualitative data, they used a grounded theory approach (Strauss & Corbin, 1990). They read and coded the interview transcripts for the purpose of identifying common themes such as 21st century education vision, leadership, and environment. Actual transcribed text is provided to document the salience and substance of the themes and subthemes that surfaced.

Organization of Report

This report is a case study of HCSD and is organized into two main sections: District-level change and school-level change. The first section depicts a broad view of the system changes taking place at the district level, while the second section includes lessons learned from the 21S Initiative and provides programmatic and strategic recommendations for future Cisco education engagements.

District System-Level Change

21st century districts are complex organizations working toward the common goal of moving away from a bureaucratic system and adopting a knowledge-based, next-generation education system. Districts engaged in this change often have difficulties managing the process, which occurs on numerous levels at the same time over a long period of time, and addressing local, state, and federal education requirements. Most of the 21S districts have been able to manage well the demand for 21st century change and have seized it as an opportunity to improve their education vision, leadership practices, technology vision and resources, professional development strategies, and organizational culture.

This section presents the findings drawn from the vision and experiences of those involved in the education reform efforts in HCSD. To measure these efforts at the district system level, EDC researchers looked at:

- Community environment
- Number of schools, staff, and student demographics
- Level of participation of the district in the 21S Initiative
- District's 21st century education vision and leadership
- District's learning environment
- Relations between the 21S inputs and expected outcomes

District Locale and Background

In 1898, Gulfport city was incorporated. The city is co-county seat of Harrison County along with Biloxi and is the second largest city in Mississippi behind Jackson. Gulfport and Biloxi are the two principal cities of the Gulfport-Biloxi, Mississippi Metropolitan Statistical Area (MSA), which encompasses Hancock, Harrison, and Stone counties. A 2008 estimate placed the MSA population at 234,625 as a result of a 5 percent loss following Hurricane Katrina in August 2005. Gulfport itself experienced a loss in population of approximately 4.5 percent compared to Hattiesburg, Mississippi, the closest similar-sized urban area, which gained in population by 7.3 percent. While the southeastern United States continues its recovery efforts, Gulfport city as well as greater Harrison County have lost population and also continue with their recovery.

According to US Census Estimates, 2008, the population of Gulfport is 70,055 and American Community Survey (ACS) 2005-2007 Estimates report a 56 percent White and 36 percent African American population. Hispanics make up approximately 4 percent, while Native Americans and Asians make up the remaining percentage. Out of an estimated population of 178,460 Harrison County is 69 percent White and 22 percent African American. Hispanics make up approximately 4 percent while Native Americans and Asians make up the remaining percentage. As of 2007, according to ACS Estimates, 2005-2007, the median income in both Gulfport ($37,963) and Harrison County ($43,654), as a whole, was higher than the median income of the State of Mississippi ($35,632) but significantly lower than that of the United States ($50,007). The poverty rate in Gulfport is 18.5 percent and is lower than that of both Hattiesburg (31.7 percent) and the State of Mississippi (21.1 percent) but is significantly higher than that of the United States (13.3 percent). The same is true of the poverty rate in Harrison County (15 percent). In May of 2009, the unemployment rate in Gulfport (7.9 percent) and greater Harrison County (7.9 percent) was lower than that of both the state and the United States (9.4 percent) as a whole. Finally, as of 2007, the violent crime index in Gulfport (4.44 per 1,000 people) is higher than that of the United States as a whole, but on par with that of Hattiesburg (4.84). The index in Harrison County (0.19) is significantly smaller in comparison with other geographies. This coastal urban

city is the seat of the Harrison County School District (HCSD), the subject of this report. Schools in the HCSD are found in D' Iberville, Saucier, Biloxi, Pass Christian, and Gulfport, Mississippi.

Harrison County School District

The number of schools in HCSD has increased by one over the past four years. As of 2008–2009, there are 21 schools (see Table 2) included in the HCSD: 12 elementary schools, 3 middle schools, 4 high schools, and 2 specialized schools (Harrison County Child Development Center, addressing special needs students and Harrison County Alternative School, addressing the needs of students with disciplinary issues).

Table 2: Schools in HCSD

School	Grades	School	Grades
Bel-Aire Elementary	K–6	North Gulfport 8th Grade	8
D'Iberville Elementary	K–4	North Woolmarket Elementary & Middle	K–8
D'Iberville High	9–12	Orange Grove Elementary	4–6
D'Iberville Middle	5–8	Pineville Elementary	K–6
HC9	9	Saucier Elementary	K–6
Harrison Central Elementary	K–3	Three Rivers Elementary	K–6
HCHS	9–12	West Wortham Elementary & Middle	K–8
Harrison Central Vo-Tech	9–12	Woolmarket Elementary	K–6
Lizana Elementary	K–6	Harrison County Child Development Center	SPED PK–12
Lyman Elementary	K–6	Harrison County Alternative School	7–12
North Gulfport 7th Grade	7		

Though Harrison County has 21 schools, when it came time to distribute the funds and resources provided by the 21S Initiative, the district administrators chose to focus the resources in two of their schools: HCHS and HC9. The number of administrators and technology personnel in each school remained steady over the course of the Initiative while the number of teachers grew. While there was a big influx of students at the high school, the number of students in the ninth grade program dropped slightly. Currently, 7 administrators, 5 technology personnel, and 157 teachers serve the two schools (see Table 3). The teacher to student ratio at the high school is 1:18 and 1:14 at the ninth grade level.

Table 3: HCHS and HC9 makeup

School	School Year	Administrators Number	Technology Staff Number	Teachers Number	Students Number
HCHS	2005–2006	5	3	94	***
	2006–2007	5	3	94	1,577
	2007–2008	5	3	98	1,672
	2008–2009	5	3	104	1,872
HC9	2005–2006	2	2	52	***
	2006–2007	2	2	52	749
	2007–2008	2	2	52	728
	2008–2009	2	2	53	724
Total	2005–2006	7	5	146	***
	2006–2007	7	5	146	2,326
	2007–2008	7	5	150	2,400
	2008–2009	7	5	157	2,596

***District has not provided data.

Teacher and Administrator Qualifications

HC9 and HCHS teachers and administrators have impressive qualifications. This past school year HC9 teachers reported an average of about 15 years of teaching experience, while HCHS teachers had an average of about 13 years in the field. In addition, 73 percent of HC9 teachers and 49 percent of HCHS teachers have a Bachelor's degree. Twenty-eight percent (28 percent) of HC9 teachers and 46 percent of HCHS teachers have a Master's degree. Every teacher at both schools has a teaching certificate. Table 4 provides more information about teacher and administrator qualifications.

Table 4: Administrator and teacher qualifications at HCHS and HC9 in 2009

	Average years of teaching experience	Average years of administrative experience	Percent with Bachelor's Degree	Percent with Master's Degree	Percent with teaching certificates
HCHS	12.5	17	49	46	100
HC9	14.7	10	73	28	100

Cisco 21S Participation

The percentage of HC9 and HCHS teachers and students who are involved with the Initiative has increased dramatically since the program's inception. While HC9 has had full involvement from its administrators since the beginning of the Initiative, administrator involvement has steadily grown at HCHS. All of the technology staff have been involved with the Initiative since the beginning. Table 5 provides more information on employment and 21S involvement.

Table 5: HCHS and HC9 21S Initiative involvement over time

School	School Year	% Involved			
		Administrators	Technology Staff	Teachers	Students
HCHS	2005–2006	20	100	9	***
	2006–2007	80	100	16	100
	2007–2008	100	100	100	100
	2008–2009	100	100	100	100
HC9	2005–2006	100	100	12	***
	2006–2007	100	100	100	100
	2007–2008	100	100	100	100
	2008–2009	100	100	100	100

***District has not provided data.

In addition to HCHS and HC9 staff and students, 17 community organizations have also been involved in the 21S Initiative. The majority of these (40 percent) are businesses. Community involvement in the 21S Initiative has also come from charitable/service organizations, health service providers, higher education institutions, and religious organizations. The distribution of types of organizations involved in the 21S Initiative is depicted in Figure 2.

Figure 2: Types of organization involved in the 21S Initiative
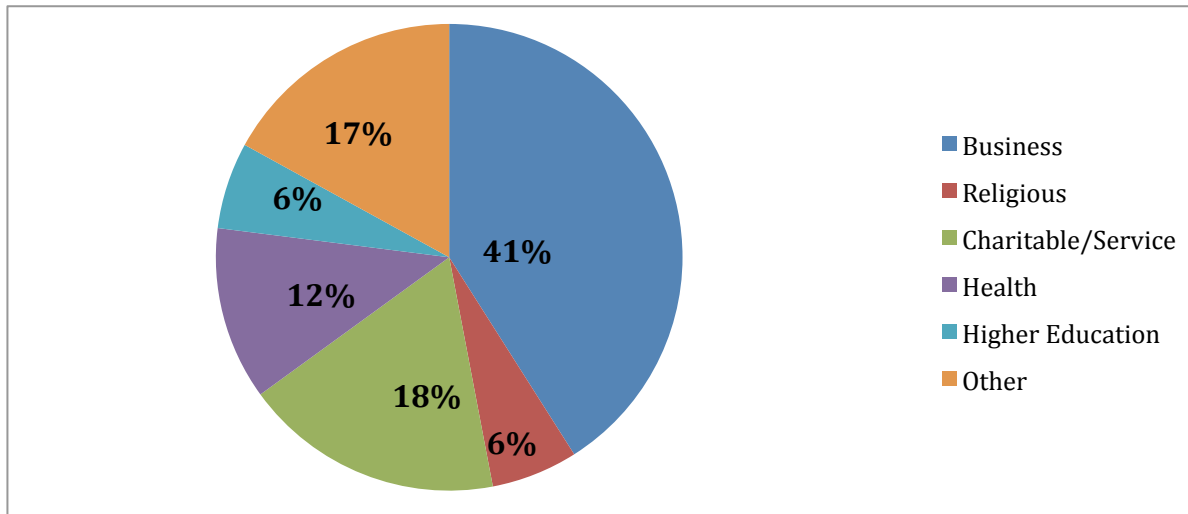
21st Century Education Vision and Change Leadership

Administrators at both HCHS and HC9 expressed similar visions for their schools and the students within them. Administrators at both locations hoped their schools would enable students to become "productive members of society" while simultaneously providing access to "cutting-edge" technology and "meaningful" curricular materials.

In addition to what school leaders said about their vision, administrators at both schools agreed that discussion of school goals and how to achieve them is a regular part of their faculty meetings. This administrative open-mindedness to talking about the big picture implies that teachers play a role in determining the direction their school takes moving forward. It also implies that teachers have more buy-in as a result of being part of the decision-making process. Therefore it is not surprising that all administrative respondents (100 percent) also agreed that their colleagues shared their beliefs about what the central goals of their schools should be.

All administrators (100 percent) said that there is a Cisco 21S Team involved in the school or district, and three-quarters (75 percent) said that there is a general reforms initiative team involved. On average, there are six (6) persons per team. All teams had teachers on them (100 percent). Of those who responded, half (50 percent) of administrators reported having developed a change management and innovation monitoring system and adhering to it.

Half (50 percent) of administrators agreed that there is regular discussion of goals and how to achieve them and that professional development activities are followed by ongoing support. All of them (100 percent) agreed that their colleagues share their beliefs and that research practices are shared or discussed and that new ideas are presented at professional development sessions.

Three-quarters (75 percent) of administrators agreed that educators are continually learning and that teachers have input regarding innovations, projects, and changing practices. More than half of the teachers (54 percent) believed there is active reflection about improvement in their school.

Most administrators (100 percent) and teachers (96 percent) strongly agreed that technology is an integral part of the overall education program in their school. When looking at administrator expectations over time, it seems that technology and student-centered teaching is becoming increasingly important, while standardized test taking is taking on slightly less of a focus. Many

teachers reported that they are always expected to have students do higher order thinking and problem solving, as well as work in process. Figure 3 shows more information about teachers' perceptions of administrators' expectations over time.

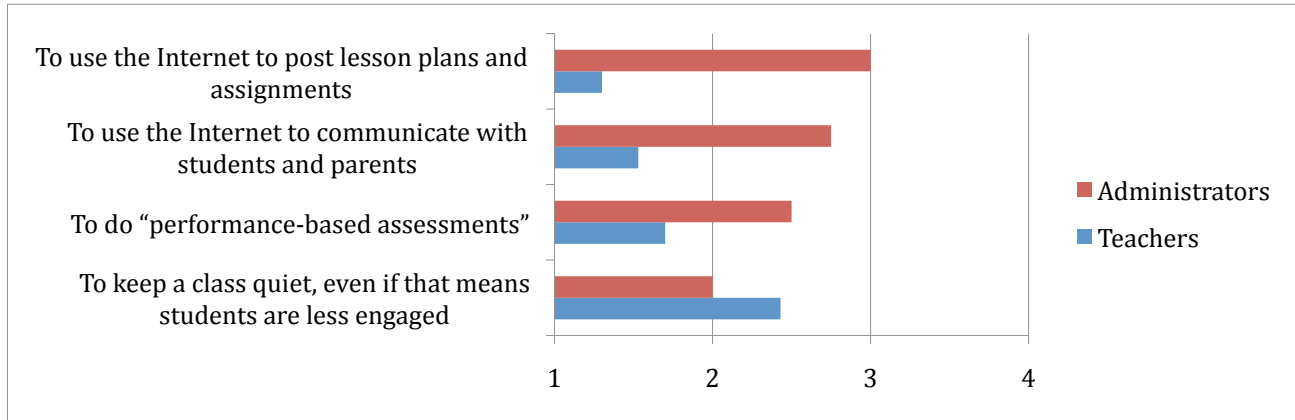**Figure 3: Teachers' perceptions of administrators' expectations over time**
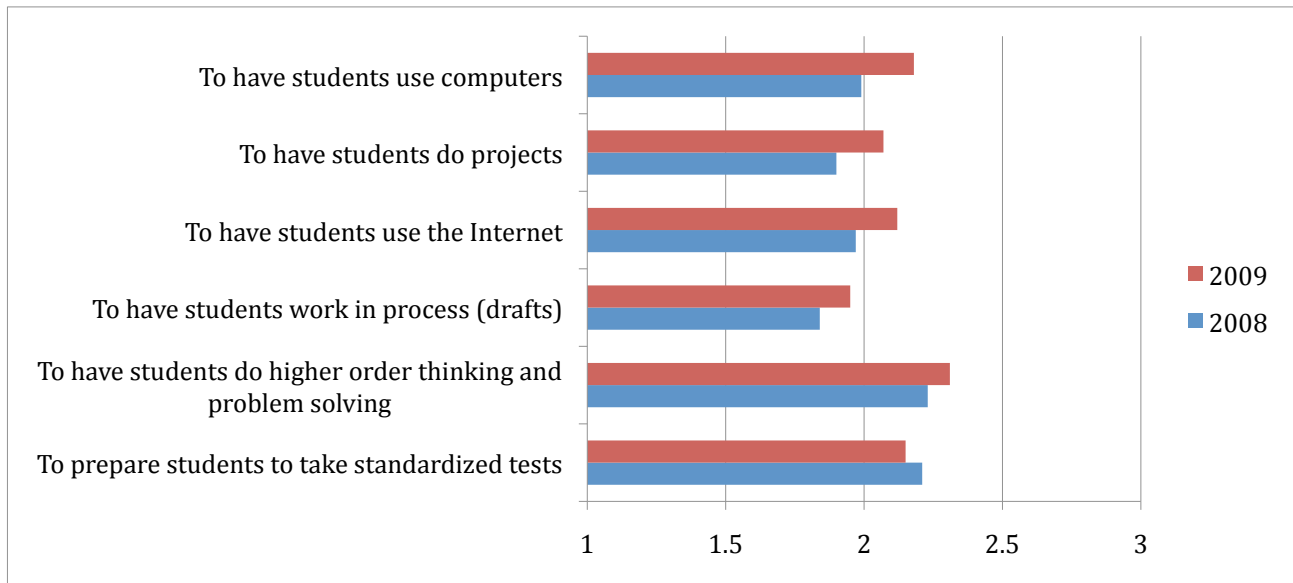
Note: Teachers rated each statement on a scale from 1 (never) to 3 (always) with higher scores indicating that teachers are expected to (or believe they are expected to) engage in the task more frequently.

A clear vision and change management plan are necessary but not sufficient to lead the district to a fully sustained 21st century education system. Access to resources is critical to the long-term sustainability of the innovation. Administrators at both HCHS and HC9 indicated that moving forward they would establish a dedicated technology budget to help sustain funding into future years. Additionally, they agreed to seek and respond to grants as a means to garner more funding.

Challenges with Vision

As is to be expected, there is not always a perfect synchrony between administrator and teacher expectations; in most cases, administrators seemed to have higher expectations of what teachers ought to be doing in the classroom than what the teachers thought they were expected to do. The sole exception is with keeping a class quiet even if it means students are less engaged; in this case, the teachers believe they should be maintaining quiet more frequently that administrators do. See Figure 4 for more details.

Figure 4: Alignment of administrator and teacher expectations

Note: Administrators and teachers rated each statement on a scale from 1 (never) to 4 (always) with higher scores indicating that teachers are expected to (or believe they are expected to) engage in the task more frequently.

Additionally, administrators at both schools mentioned that there are hindrances to implementing new ideas at the school and half of the respondents implied that the district did not encourage experimentation.

21st Century Learning Environment

Connected District/Schools

To create a 21st century learning environment capable of supporting administrative efficiencies and a constructivist approach to teaching and learning, the district revamped its entire technology infrastructure and acquired new technology tools.

Over the course of the 21S Initiative, 73 percent of Harrison's Connected Learning inputs came in the form of technology tools and software. More specifically, the district used its resources to buy hardware such as interactive whiteboards, LCD projectors, student response systems, laptop computers, and IP phones. In addition, 20 percent of inputs were used to build a wireless network, create a computer lab, and upgrade the career center lab. Harrison also hired extra technology support to aid with the new portable computer lab. Figure 5 below shows the distribution of Connected Learning inputs over the course of the Initiative.

Figure 5: Connected schools input distribution pie, 2007–2009
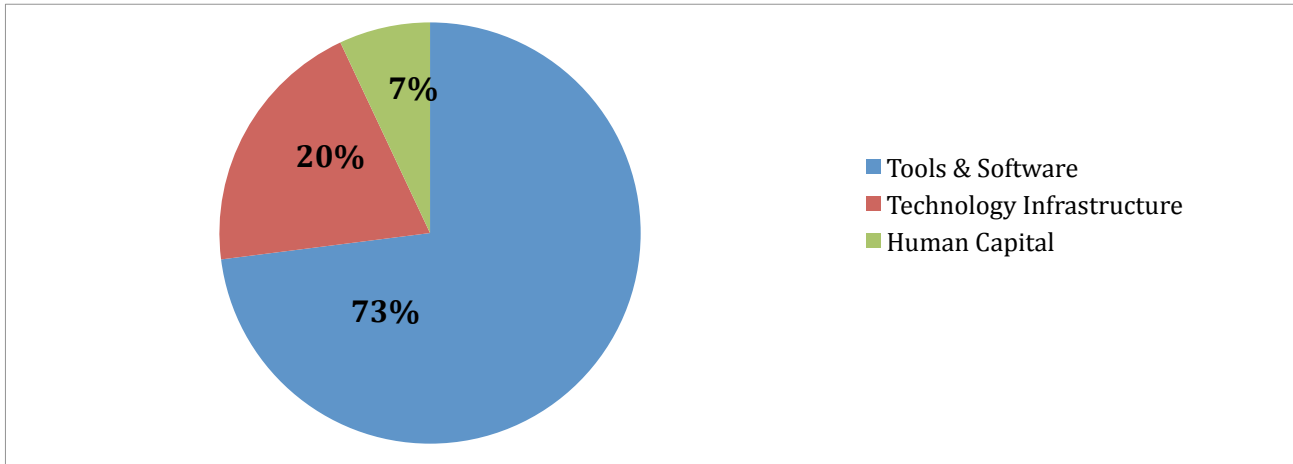
Access at the School and Classroom Level: The one technology specialist who responded to the survey rated technological access at the school and classroom levels quite favorably; areas such as installation of technology in the classroom and wireless Internet in the school were all characterized as being on target (see Figure 6).

Figure 6: Percentage on target or above (n=1)
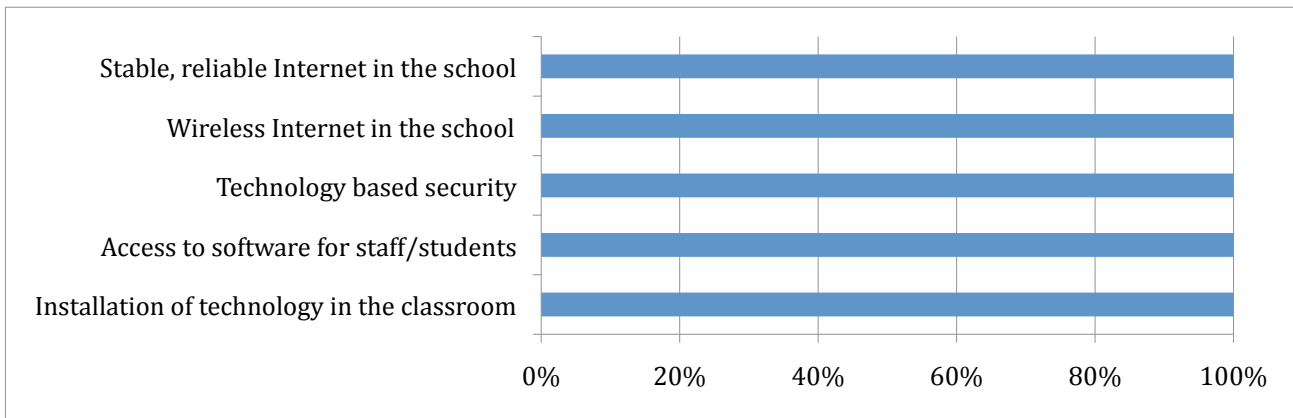
Administrators were as positive as the technology specialist in their appraisal of the state of implementation in the two Harrison schools involved with the Initiative; two-thirds (67 percent) rated technology-based security in the schools as on target or above expectations, and every person rated providing wireless and stable, reliable Internet in the school as on target or above expectations. While ratings for technology-based security were the same in 2008, the latter two saw increases from 67 percent.

Teachers were similarly positive; they rated access to wireless Internet (98 percent) hardware (88 percent), and software (81 percent) as having been on target or above expectations. In addition, HCHS and HC9 teachers had access to a wide array of technological tools and software. A majority of teachers had access to computers (99 percent) and Internet and telecommunications (93 percent). The biggest changes were in access to Personal Digital Assistants (PDAs) (12 percentage points change over time), and video cameras (an 11 percentage point change over time). Figure 7 shows change in teacher technology access over time.

Figure 7: Teacher access to tools and software
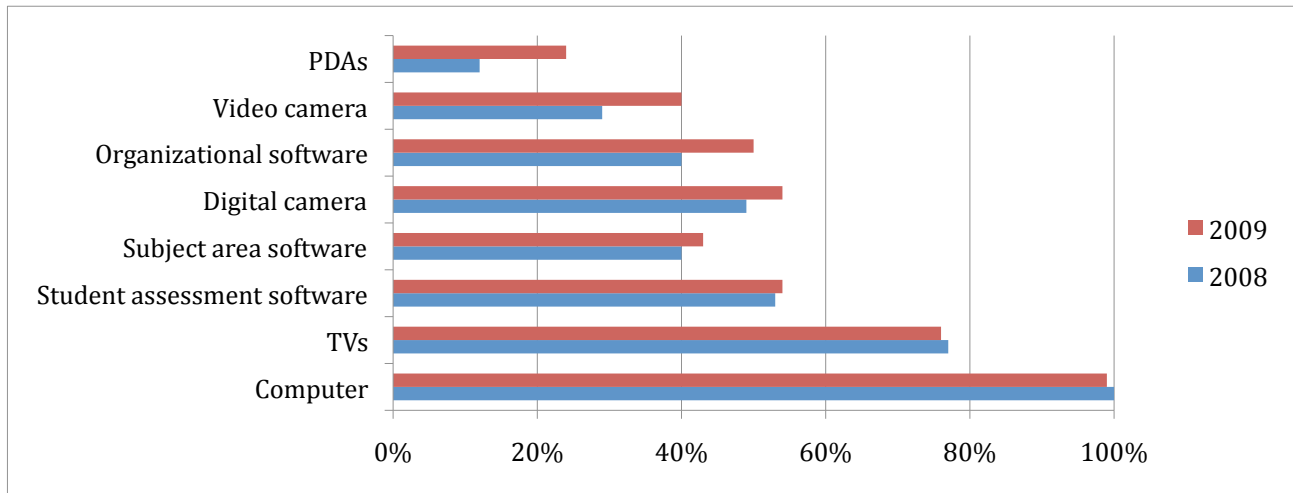
Students in HC9 and HCHS also reported having access to a wide range of technology tools in their classrooms; those that are most prominent include computers (97 percent of students reported having access to these), Internet (91 percent), TVs (91 percent), and interactive whiteboards (82 percent). Figure 8 shows students' current access to various technology tools.

Figure 8: Student access to technology, 2009
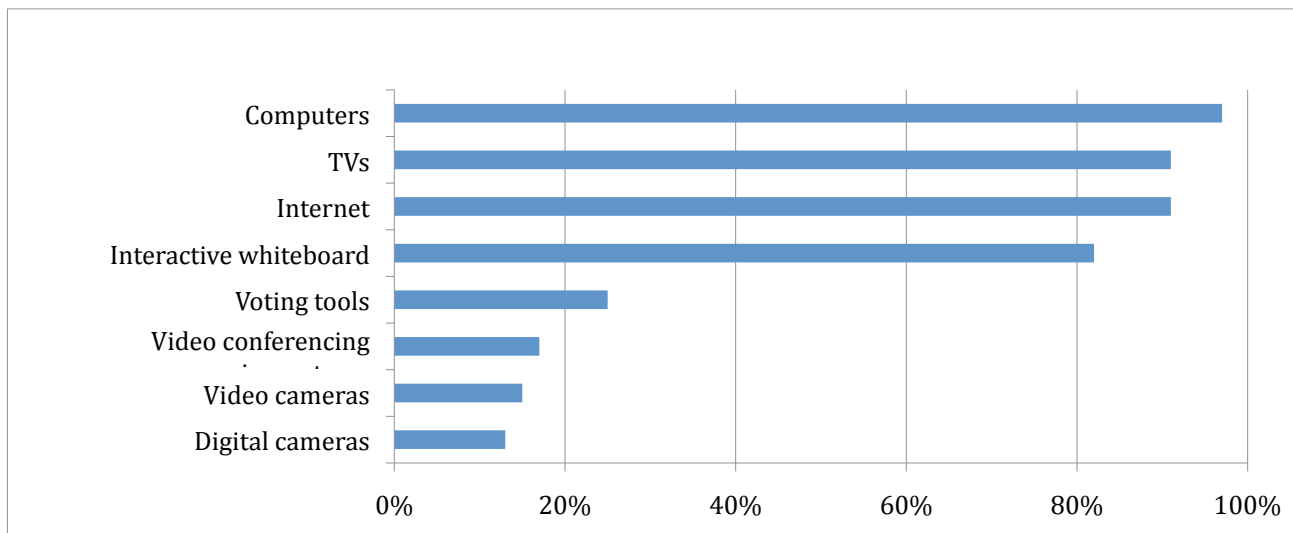
Technical Support

On average, technology staff reported spending the most time per week installing, troubleshooting, and maintaining equipment, networks, operating systems, and software (30 hours) along with overseeing infrastructure maintenance in their school or district (10 hours). Neither technology specialist who responded reported spending any time supporting individual teachers in their use of technology. See Figure 9 below for more details.

**Figure 9: Average time spent per week on technical support (in hours)**
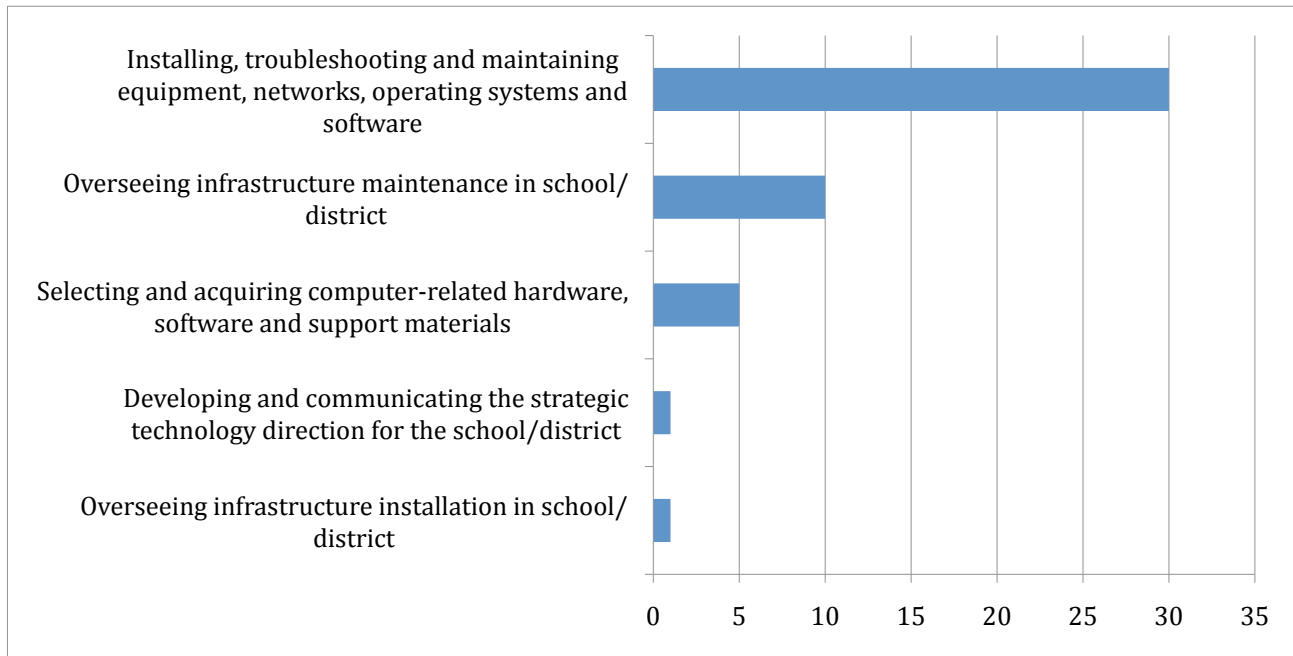
Teachers appraised access to technological support quite favorably; most of them (91 percent) rated access to technological support in general as on target or above their expectations.

Administrators were equally as positive in regards to impact on technological support; all of them (100 percent) reported it as on target or above their expectations, representing an increase of 33 percent from 2008. Additionally, 100 percent of administrators rated the quality of assistance from technology staff as very helpful; an increase of 33 percent from 2008, as well.

Teachers reported on the availability of technical support over time. Since 2007, a higher portion of teachers have reported that technical support is either frequently or always available to them. Figure 10 shows the change in percentages over time.

Figure 10: Availability of technical support over time
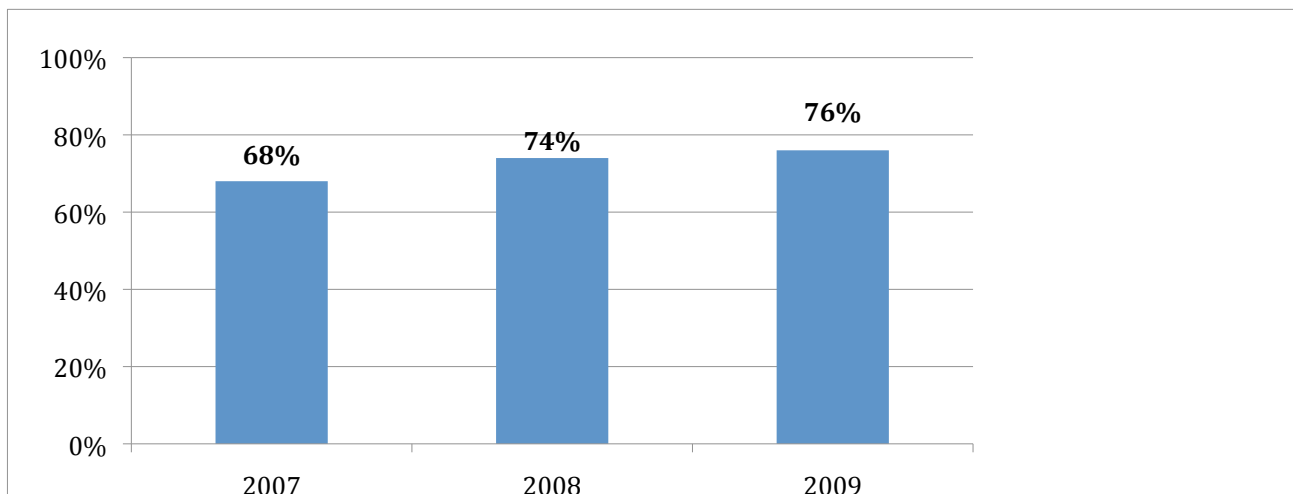
Connected District/School Challenges

From a teacher's standpoint, there were a number of challenges including reliable access to the Internet in the school (88 percent), access to other technological resources in the classroom (75 percent), and sufficient access to computers for their students (70 percent). In terms of access to technology tools, many teachers reported that they did not have access to video conferencing equipment (73 percent) or Web 2.0 tools (68 percent). In fact, access to certain tools appears to have dropped since 2008. Most notably, far fewer teachers have access to multimedia presentation tools in 2009 than they did previously (45 percent point drop). Figure 11 shows the drop in access for a number of tools.

Figure 11: Decline in teacher technology access over time
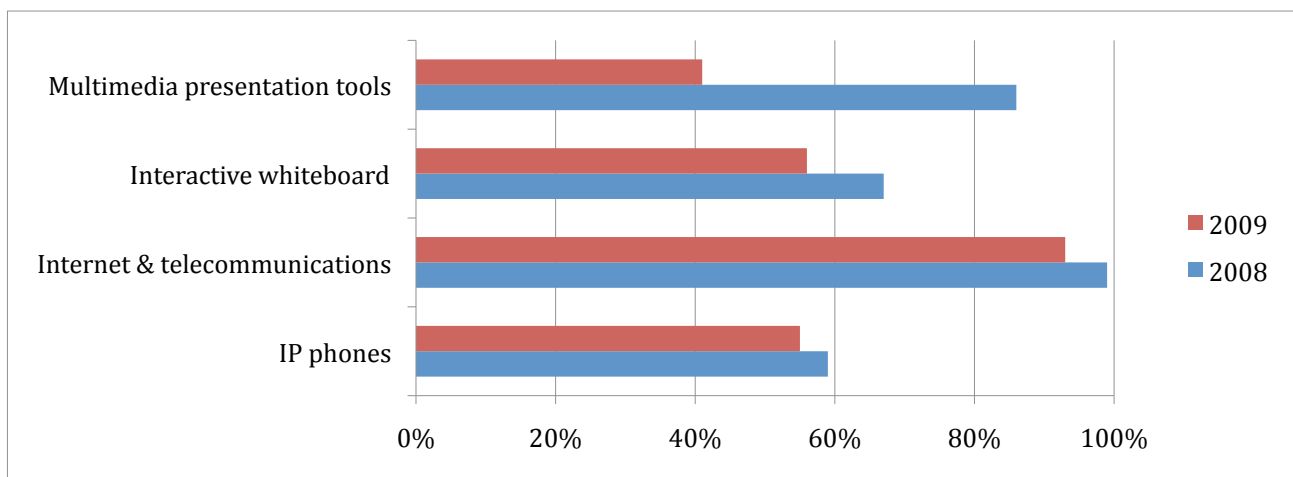

Connected Learning

The Connected Learning component of the 21S Initiative is focused on high quality, professional development resources and programs, which are intended to improve leadership, streamline administrative practices, increase technology access and integration, and promote student-centered teaching and learning through technology. In addition to its focus on professional development, this component also aims to affect the general learning environment present in a district. This includes, but is not limited to, the quality and quantity of professional development, the type of pedagogical practices used in the classroom, and the level of student engagement as measured through classroom participation and everyday reading practices.

In order to better understand how this component had been impacted by the 21S Initiative, stakeholders were asked directly about their perceptions of the learning environment. The data below highlights areas such as teacher communication and collaboration, and administrative and school support. High technology use and integration into the curriculum and external resources (e.g., experts, museums) are crucial for this component.

Cumulatively over the course of the Initiative, 56 percent of the district's Connected Learning inputs were related directly to providing professional development for its teachers and administrators. Professional development in Harrison County focused on general technology training before and during the school year. More specifically, teachers and administrators attended the National Education Computing Conference, Schlechty Center for Leadership in School Reform workshops, and math and literacy trainings.

Offering more diverse courses was also an important component of the Connected Learning inputs (32 percent). Students were offered more choice in terms of dual enrollment classes, vocational education courses, and college prep work. Dual enrollment and evening classes were offered through USM and MGCCC. Students were offered potential NATEF certification through the auto mechanics department. Finally, there were ACT workshops and AP classes offered to help prepare students for college entrance exams. Figure 12 below shows how Connected Learning inputs were distributed over the course of the Initiative.

Figure 12: Connected learning input pie 2007–2009
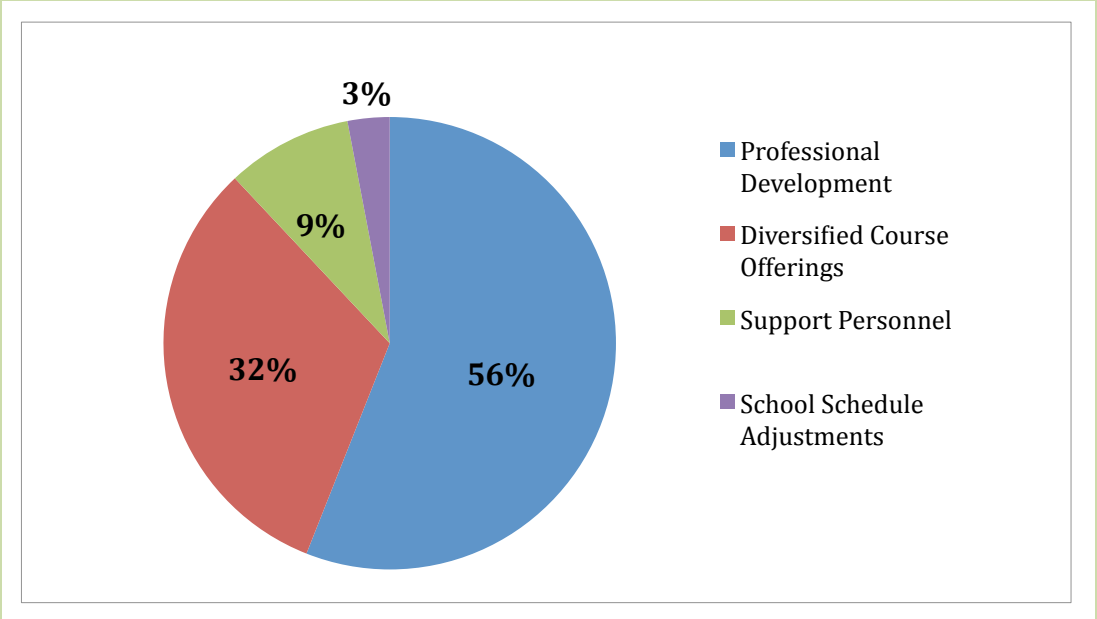
### Administrator and Technology Personnel Training

With regard to administrator training and professional development, 50 percent of HCHS and HC9 administrators reported seeing significant change, whereas the one technology staff person who responded to this question reported seeing only minor change in this area.

One of the two technology staff respondents reported receiving trainings in the following areas: unity training, IP phone, security administration training, network management, and wireless training. Most of this training was gained from conferences that the respondent rated somewhat helpful and on target. In addition, the technology person felt that there was adequate time for training and adequate follow-up support.

Teacher Training and Ongoing Support

Teaching training and support is at the heart of the Connected Learning component of the 21S Initiative. Teachers received trainings for a variety of technology tools: Preeminent among the lot were computers (91 percent), multimedia presentation tools (62 percent), and interactive whiteboard (58 percent). Figure 13 shows the percentage of teachers who received training in 2009.

Figure 13: Teacher technology trainings received (2009)
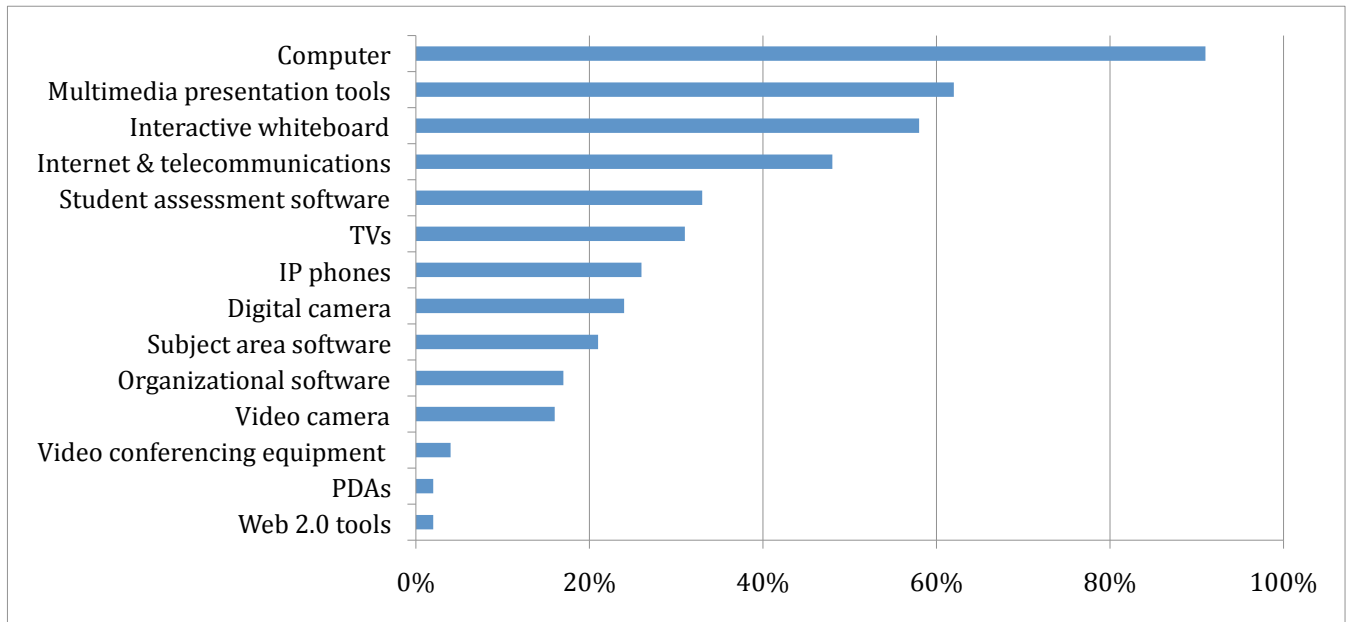
Training comes from a variety of sources including district and school level staff, as well as DOT interns and external partners. On a daily basis, HCHS and HC9 teachers are most likely to utilize the support of DOT interns, and 82 percent of teachers noted having worked with the interns over the course of the year. Most of this assistance from the interns was for troubleshooting hardware/software problems (77 percent). Teachers were quite satisfied with the support they received from DOT interns (70 percent of teachers said they were very helpful) and all administrators (100 percent) agreed. This was an increase from 2008 when only two-thirds (67 percent) of administrators found the DOT interns to be helpful.

Teachers reported varying satisfaction with the trainings they received from other sources, but they were most satisfied with trainings from other classroom teachers (63 percent) and district and school level technology coordinators (59 percent). In fact, almost all (96 percent) teachers reported that access to instructional technology support was on target or above expectations. Between 2007 and 2009, a higher percentage of teachers said that instructional support was either frequently or always available to them. Figure 14 shows the change over time.

Figure 14: Instructional support availability
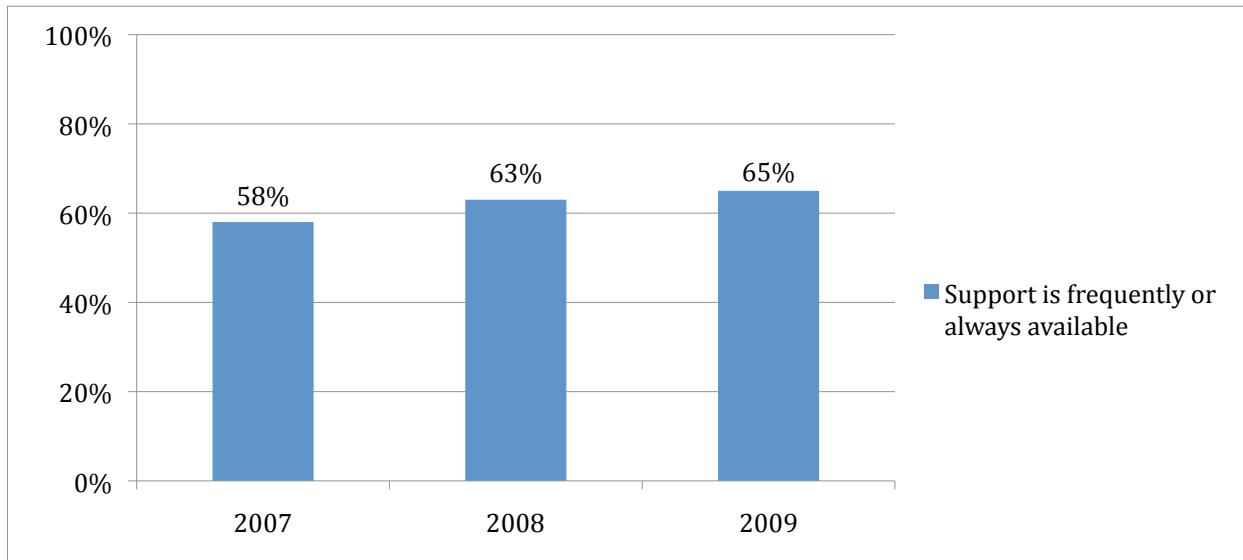

Impact of Professional Development

To assess the impact of the professional development resources and programs offered to administrators, teachers, and students, EDC researchers looked at administrative support, management and data use, teacher technology use, student technology use, pedagogical practices, technology integration, and communication and collaboration.

Administrative Support

HCHS and HC9 teachers report that administrative support has increased since 2008. More specifically teachers felt it was more common to discuss goals and best practices than it was in the past. They also noted that it was more likely that administrators would pressure teachers to improve if they were not performing (see Figure 15).

Figure 15: Administrative support over time
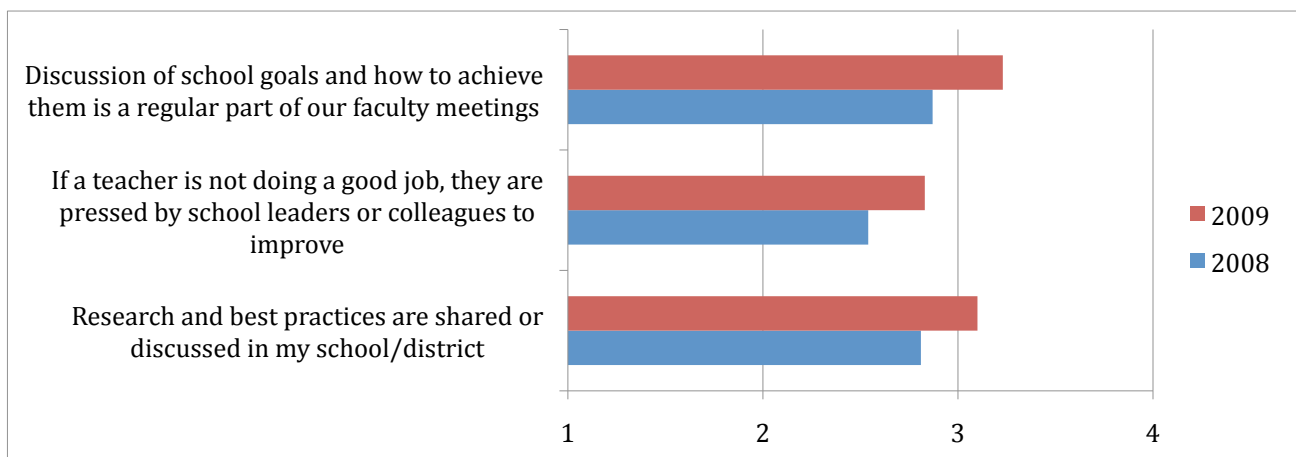
Note: Participants indicated how much they agreed or disagreed with statements on a scale from 1 (strongly disagree) to 4 (strongly agree). Higher scores indicate greater agreement.

Management and Data Use

Most HCHS and HC9 administrators reported seeing significant change in general administrative efficiency (75 percent) since the inception of the 21S Initiative program. More specifically, they have seen positive change in the collection, analysis, and dissemination of data (100 percent). They also note that it is more common for data to be used for management, accountability, and instructional and equity decisions (100 percent). In all of these categories, the sole technology personnel who responded reported witnessing only minor changes or no changes at all.

Teacher Technology Use

A majority of teachers (84 percent) in the two targeted schools reported using technology in their classes, reflecting about the same level as for 2008 and 2007. Teachers used a variety of technology tools in their classrooms. Although they are used with varied frequency, some tools are more likely to be used on a daily basis. The highest percentage of teachers used the following tools every day: computers (87 percent), Internet and telecommunications (77 percent), and interactive whiteboards (54 percent). The districts saw the largest increases (from 2007 to 2009) in usage with interactive whiteboards (50 percentage point increase) and IP phones (an increase from 0 percent to 41 percent). Figure 16 shows the change in use for other technology tools and software.

Figure 16: Percentage of teachers who use the tools on a daily basis*
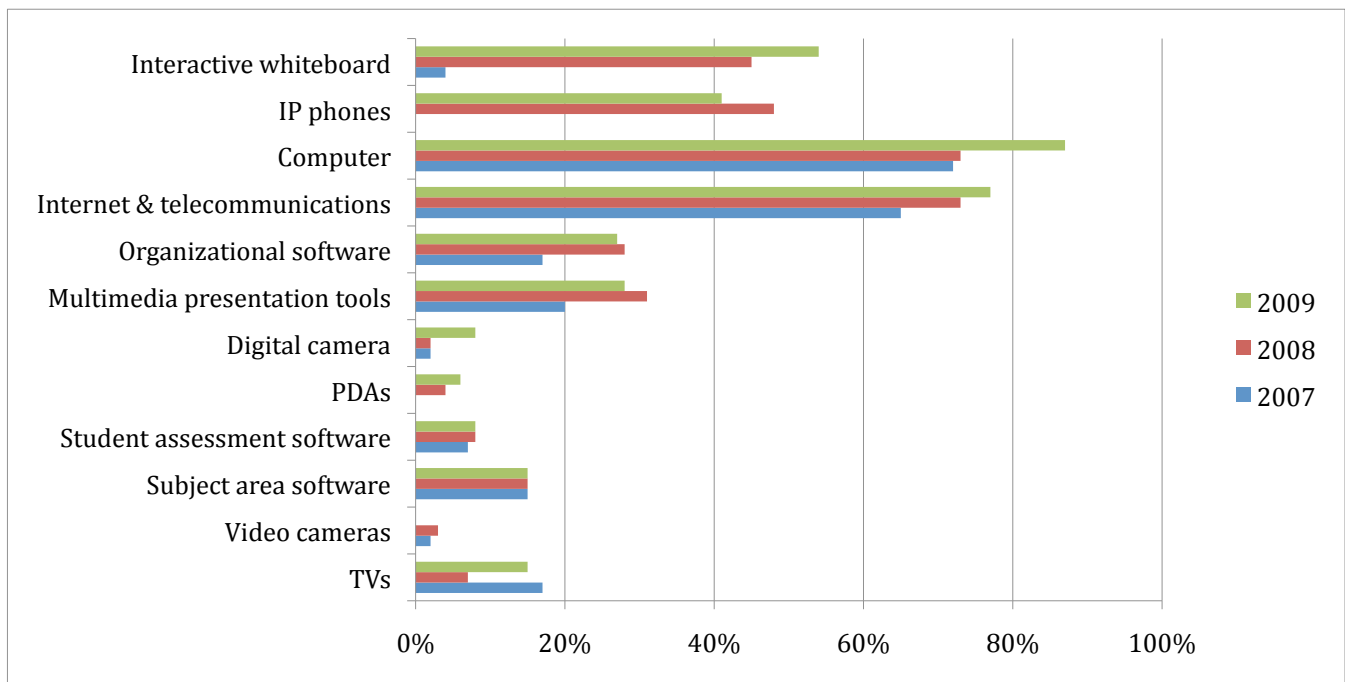
* Missing bars represent a value of 0 percent, not missing data.

Teachers were also asked to report on their level of expertise with the aforementioned technological tools. They expressed the most expertise with TVs, computers, Internet, video cameras, and multimedia presentation tools. The level of teacher expertise with certain technological tools was compared across time. Of note is the 13 percentage point increase among teachers who describe themselves as organizational software experts, and the 10 percentage point increase of experts in the use of IP phones. Most other areas remained fairly consistent. Figure 17 shows increase in technology experts over time.

Figure 17: Change in percentage of experts over time
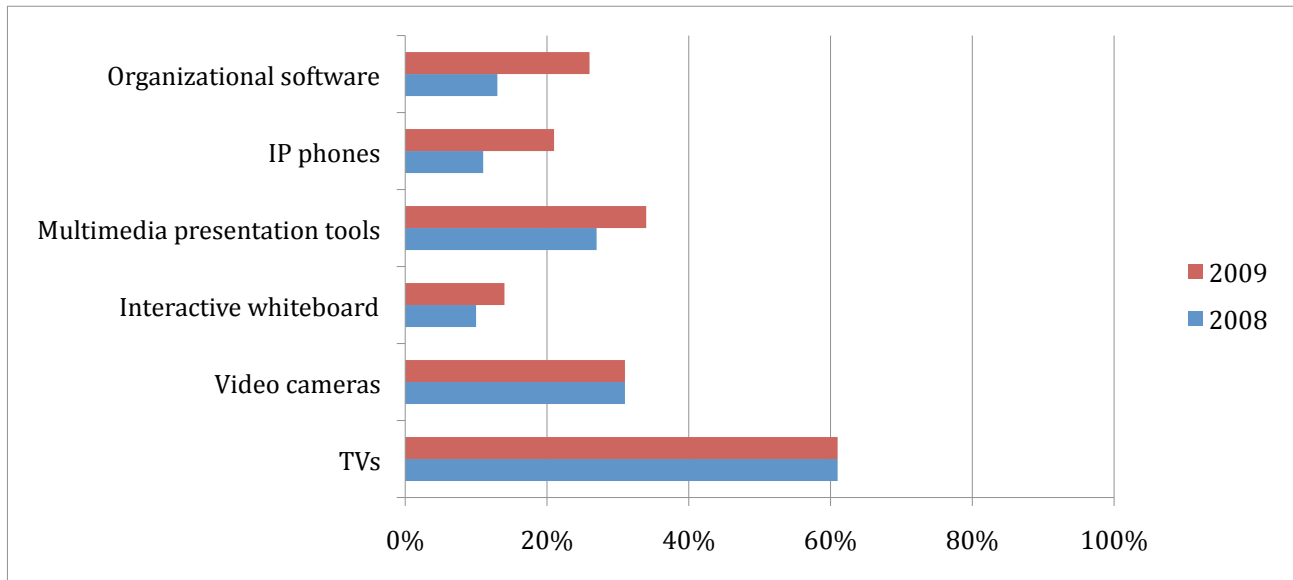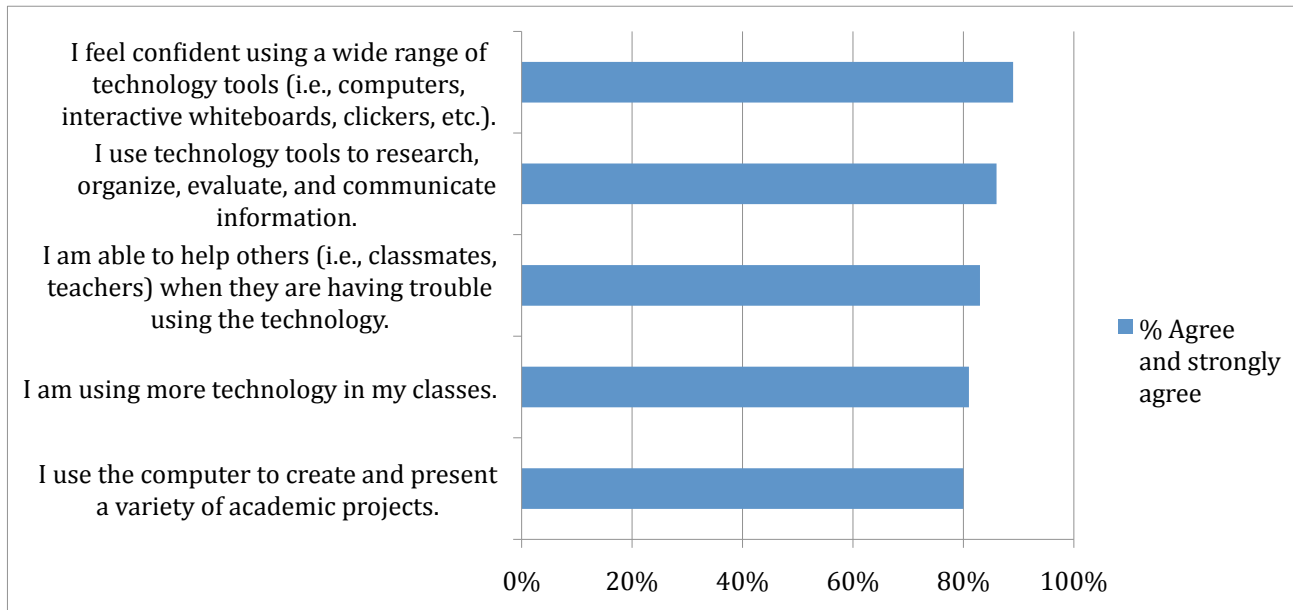

Student Technology Use

Like teachers, students use a variety of technology tools in their classes. The ones that many students used on a daily basis include interactive whiteboard (56 percent), computers (47 percent), and the Internet (47 percent). While students reported using technology in a wide array of subjects, they cited math (58 percent), science (47 percent), English/language arts (45 percent), and history/social studies (43 percent) as classes where technology was used on a regular basis.

All administrators (100 percent) and technology personnel (100 percent, n=1) believed that students' ICT literacy has improved as a result of participating in the Cisco 21S Initiative. In addition to what the staff say, students report feeling very confident and satisfied with the technological access in their classrooms: 89 percent agreed that they feel confident using a wide range of technology tools; 86 percent agreed that they use technology tools to research, organize, evaluate, and communicate information; 81 percent agreed that they are using more technology in their classes; and 80 percent agreed that they use computers to create and present a variety of academic projects. Figure 18 compares students' answers about their own ICT literacy.

Figure 18: Student ICT literacy

I feel confident using a wide range of technology tools (i.e., computers, interactive whiteboards, clickers, etc.).

I use technology tools to research, organize, evaluate, and communicate information.

I am able to help others (i.e., classmates, teachers) when they are having trouble using the technology.

I am using more technology in my classes.

I use the computer to create and present a variety of academic projects.

% Agree and strongly agree

0% 20% 40% 60% 80% 100%

Pedagogical Practices

The Connected Learning program component of the Cisco 21S Initiative also aimed to influence teacher pedagogy and teaching styles. The goal was to shift teachers towards a constructivist teaching approach. Constructivism is an approach to teaching and learning based on Jean Piaget's belief that students learn by fitting new information together with what they already know. Constructivist teaching puts the students at the center of the classroom where the teacher acts as a facilitator of student exploration, synthesis, and social interaction. Subsequently learners develop their own understanding through carefully designed, supported learning experiences.

Since 2008, there has been a slight shift in pedagogy and many administrators (75 percent) have seen a significant change in the overall quality of teaching since the implementation of the Cisco 21S Initiative. On average, teachers scored a 3.58 on the pedagogy scale (0= traditional vs. 5=constructivist) in 2009, indicating a more constructivist than traditional pedagogy. That is a large increase from 2008 when the average score was 2.26. One percent (1 percent) of teachers in 2009 received a 0 on the pedagogy scale, indicating that they endorsed all five traditional pedagogy statements, compared to 6 percent in 2008. Eight percent (8 percent) of teachers received a 5 on the pedagogy scale indicating that they endorsed all five constructivist pedagogy statements compared to only 6 percent in 2008. These changes suggest that teachers at HCHS and HC9 are shifting their pedagogical practices to create a more student-centered learning environment.

HCHS and HC9 teachers utilized a variety of instructional techniques in their daily and weekly teaching practices. The most frequently used in a two-week period include having students use higher order thinking skills (95 percent) and having students work in collaborative groups (93 percent). Students also frequently choose their own topics for research projects (91 percent) and engage in lessons that are structured around open-ended questions (90 percent). In many of these areas, the data indicate increases from 2008; most notably, students choose their own topics (an increase of 50 percentage points); students conduct research during class time (increase of 15 percentage points), and students revise their own work products and work in collaborative groups (both witnessed increases of 10 percentage points each). In addition, a majority of teachers (87 percent) believed that teachers in their

school used data to inform their instructional practices. Figure 19 shows biweekly teaching practices in 2009.

Figure 19: Teaching practices, 2009
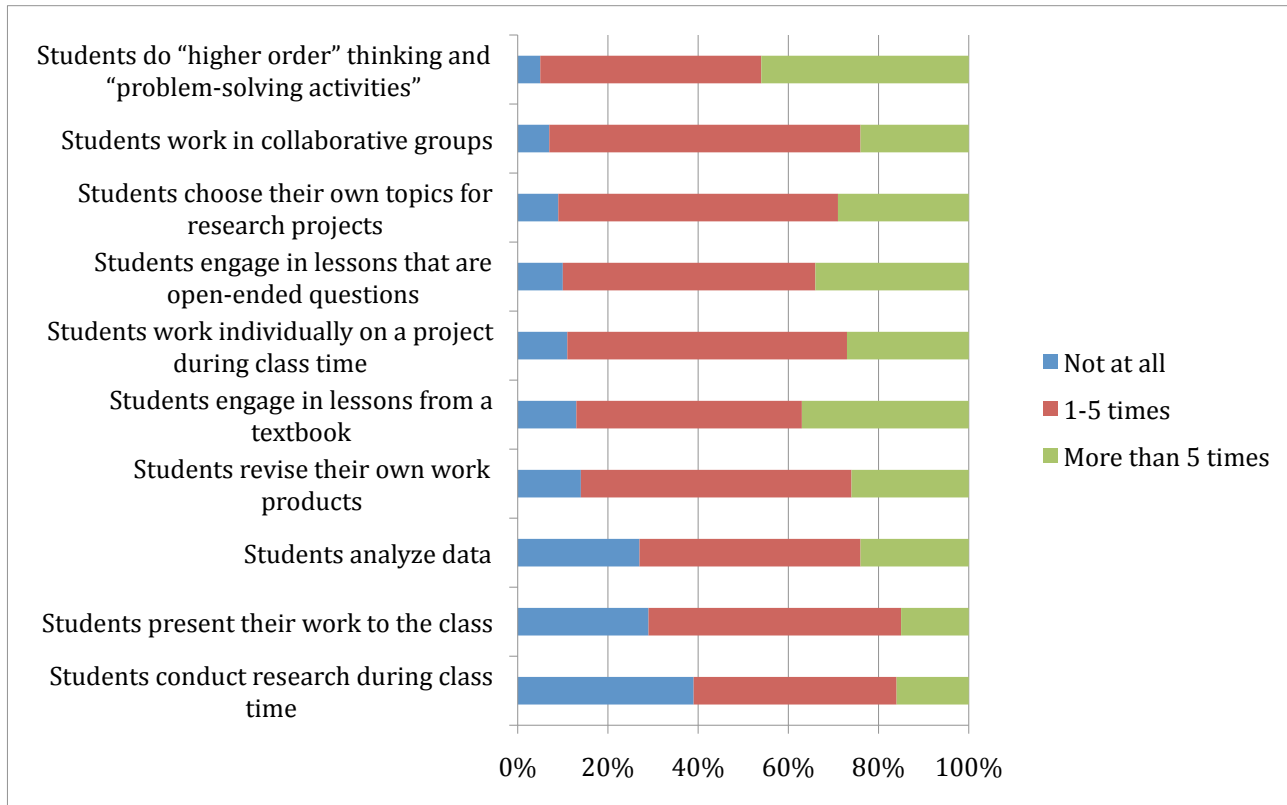
The assessment techniques that are most commonly used at least once in a two-week period include performance-based assessments (95 percent), teacher-made tests and quizzes (94 percent), and teacher-made rubrics (81 percent). Since 2008, there have been increases in the frequency of usage of some assessment practices; most notably, rubrics created by teachers and students (an increase of 17 percentage points); student portfolios (increase of 12 percentage points); and teacher-made rubrics (10 percentage points). See Figure 20 for more details.

Figure 20: Teacher assessment practices, 2009
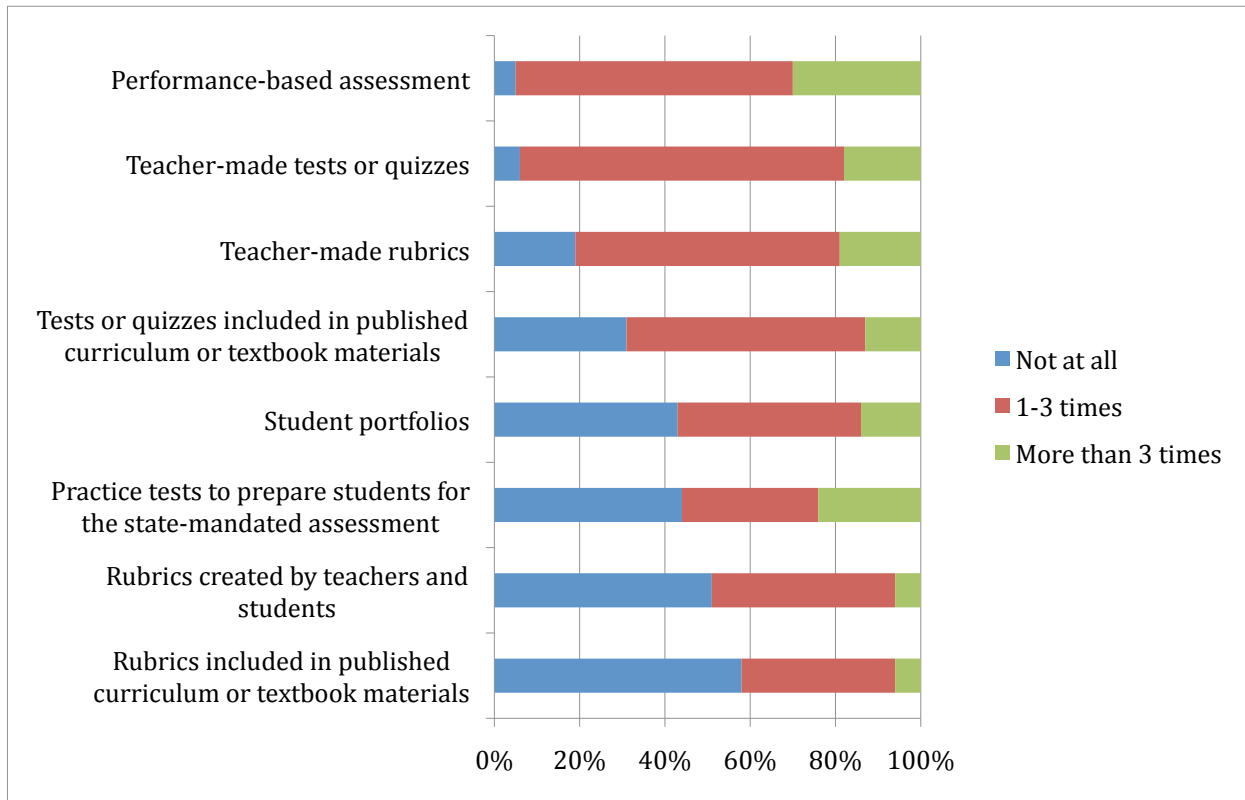
The role that students play in the classroom is also an indicator of a teacher's pedagogical practices. Harrison County students were asked several questions about the role they play in their classrooms. Students generally stated that they have many opportunities to ask teachers questions about their school work and to be creative in their school assignments. Figure 21 compares student responses.

Figure 21: Student agency in the classroom (means)
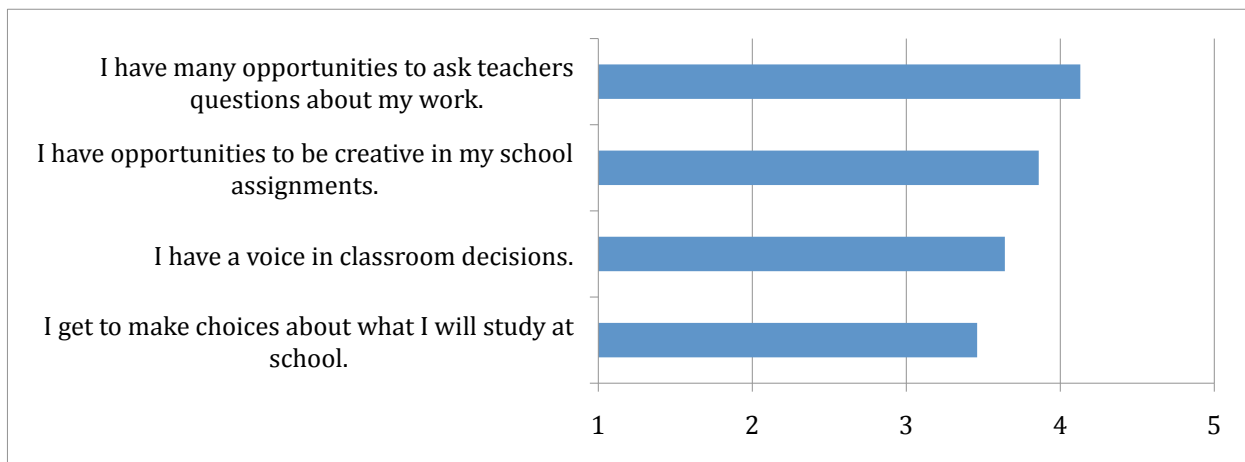
Note: Participants indicated how much they agreed or disagreed with statements on a scale from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate greater agreement.

Technology Integration

The ability of teachers to integrate technology into their daily lesson plans is a vital component of the 21S Initiative. One of the impacts of professional development in the district is that 94 percent of teachers said they were highly proficient, somewhat proficient, or approaching high proficiency in their ability to integrate technology into their teaching practices.

The sole technology personnel respondent reported that technological integration into curriculum had been on target overall. The technology specialist and all administrators (100 percent) noted significant change in technological integration into curriculum. Teachers responded saying that they agreed that they have sufficient administrative support to effectively integrate technology into their lessons (73 percent). Eighty-six (86 percent) agreed that they are provided sufficient support to integrate new practices. Additionally, 69 percent of teachers agreed that they have role models in their school for integrating technology into their teaching, representing a 40 percent point increase since 2007.

Communication and Collaboration

Professional development can have a positive affect on the frequency of teacher communication and collaboration. Teachers at HCHS and HC9 reported a moderate level of agreement on two out of four measures of collaboration. The most prevalent activities include formal teacher mentoring and connecting with networks in the larger global community. Figure 22 shows where teachers fall on the four-point scale.

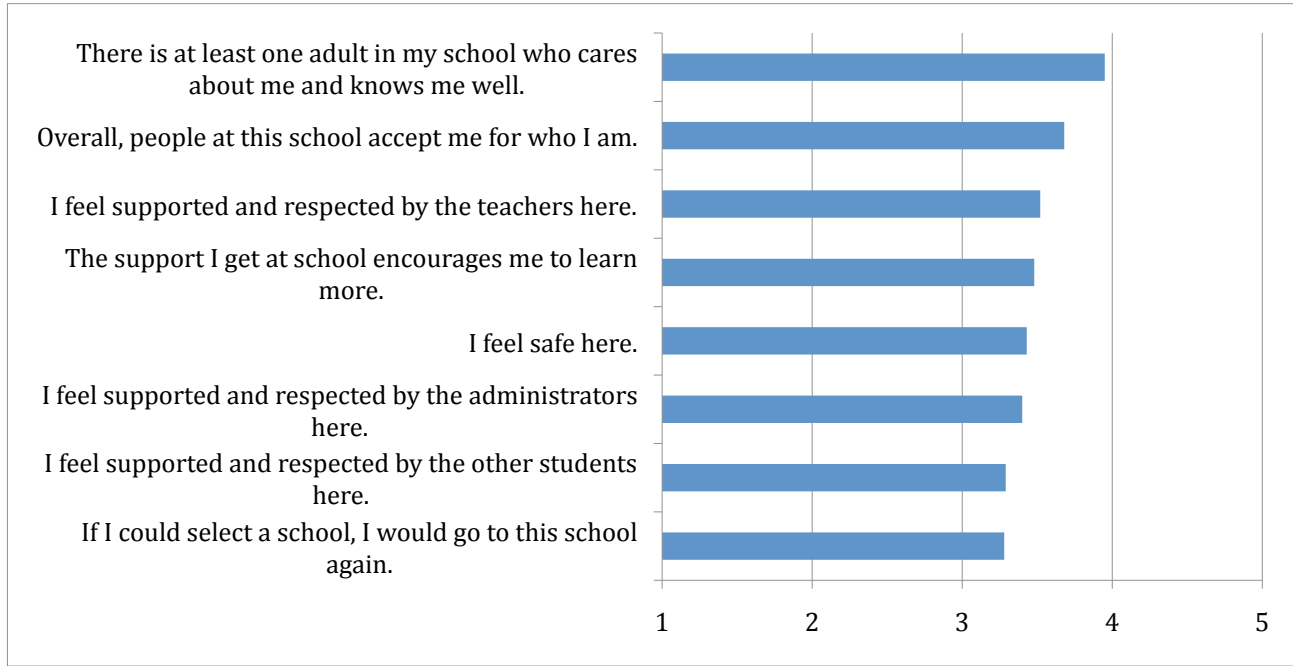**Figure 22: Teacher communication and collaboration (means)**
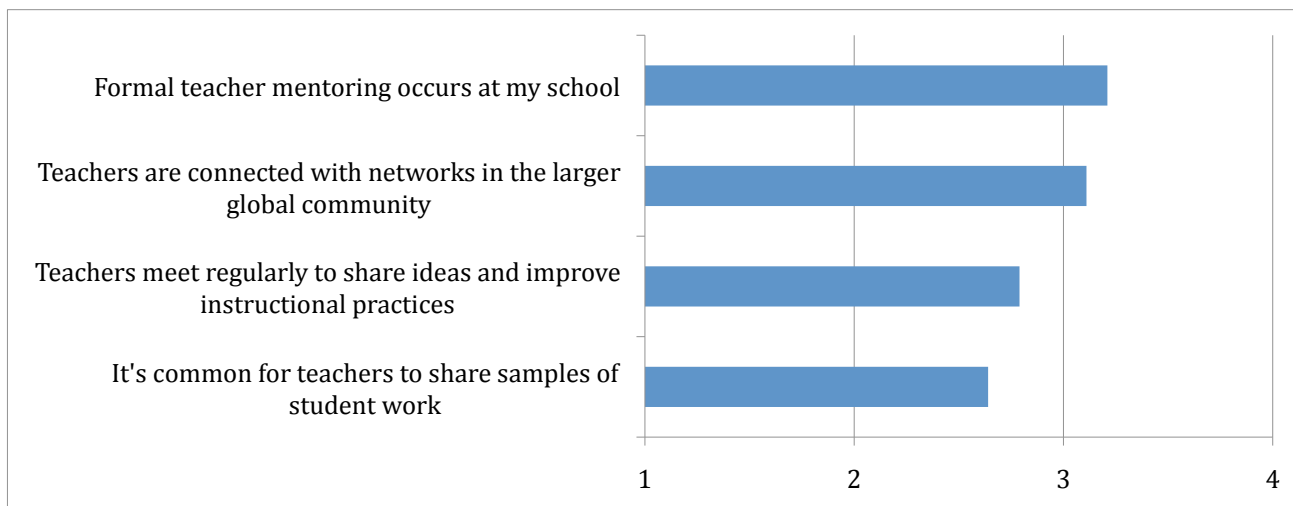
Note: Participants indicated how much they agreed or disagreed with statements on a scale from 1 (strongly disagree) to 4 (strongly agree). Higher scores indicate greater agreement.

Teachers were asked to report how often during a typical two-week period of instruction they communicate with students. The most common methods used to communicate with students included using the Internet to post lesson plans (86 percent) and student assignments (64 percent). Thirty-five percent (35 percent) of teachers said they e-mail with their students.

The amount of communication and collaboration present in the learning environment can impact students' perceptions of support. Students at the two schools were asked to respond to eight statements about the amount of support available to them in their schools. Students were in the strongest agreement about having at least one adult who supports them, and being accepted for who

they are. Figure 23 outlines more specific measures of student perceptions of school support and compares how students answered.

Figure 23: Students' perceptions of school support

Note: Participants indicated how much they agreed or disagreed with statements on a scale from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate greater agreement.

Impact on Students

To assess the impact of the 21S Initiative on students, EDC researchers looked at student engagement and motivation, student test scores, grade promotion and graduation, and college and workforce readiness.

Student Engagement and Motivation

The majority of teachers (85 percent), administrators (75 percent) and students (79 percent) agreed that students have become more engaged in their classes. Students were also asked a series of statements assessing their engagement in classroom activities. The overwhelming majority (88 percent) of students agreed that they are learning more on their own. The majority of students agreed that they complete almost all schoolwork on time, actively participate in classroom activities, and complete school assignments even when they are difficult. Figure 24 compares students' responses.
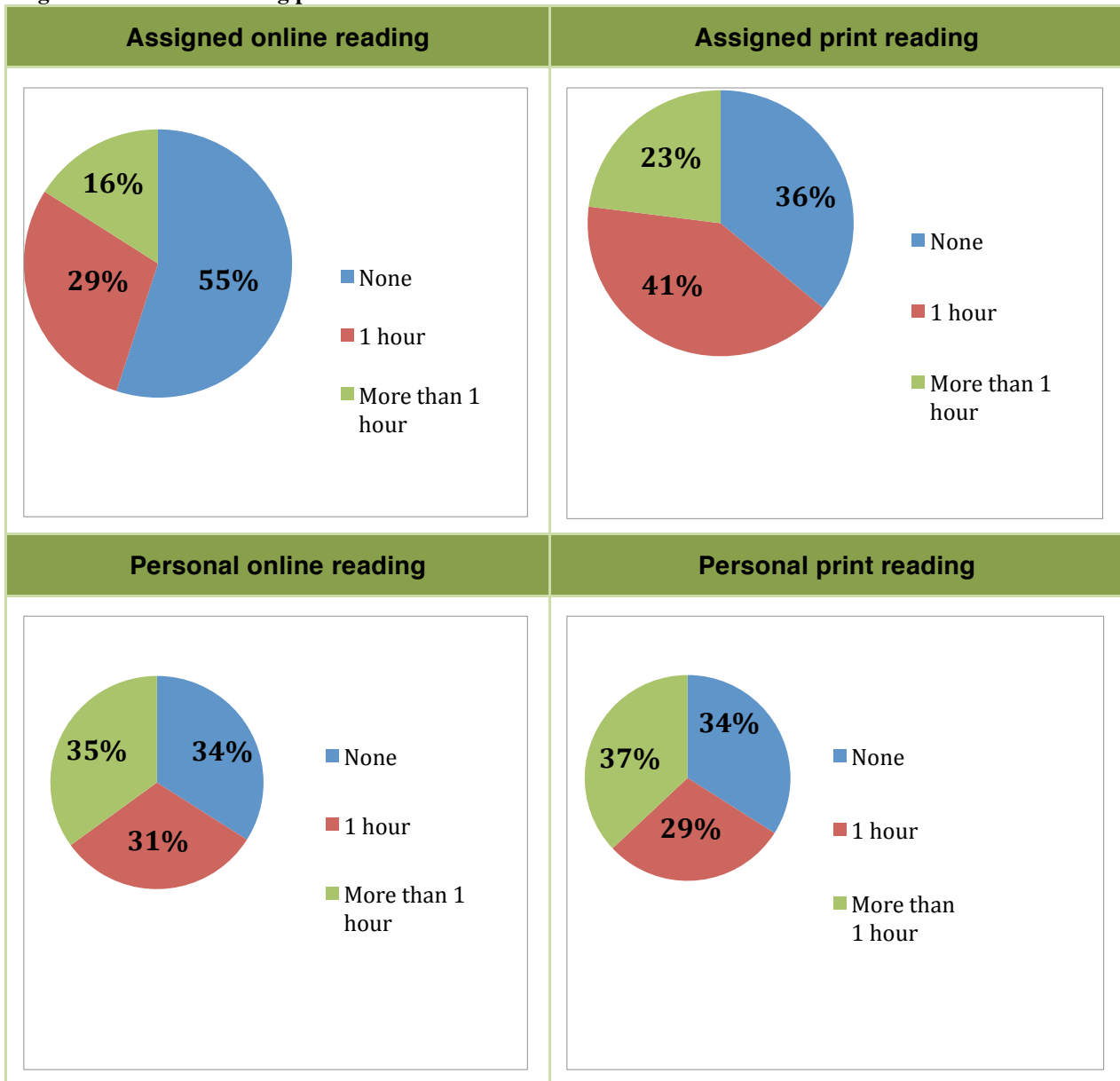
Figure 24: Student engagement
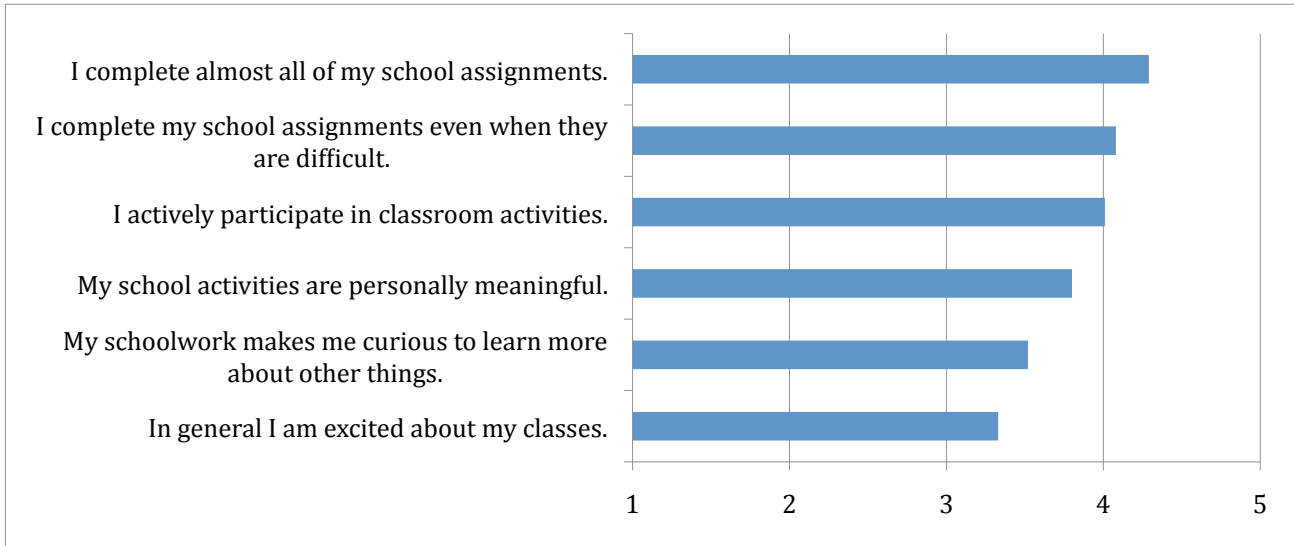
Note: Participants indicated how much they agreed or disagreed with statements on a scale from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate greater agreement.

Interest in Reading

Another impact indicator beyond classroom participation is increased reading levels. Sixty-one percent (61 percent) of students report doing an hour or more of reading a week. Students also report doing more personal reading, both online and in print, than they do assigned reading. Figure 25 compares students' reading patterns.

Figure 25: Student reading practices

Assigned online reading	Assigned print reading

Assigned online reading
- None: 55%
- 1 hour: 29%
- More than 1 hour: 16%

Assigned print reading
- None: 36%
- 1 hour: 41%
- More than 1 hour: 23%

Personal online reading	Personal print reading

Personal online reading
- None: 34%
- 1 hour: 31%
- More than 1 hour: 35%

Personal print reading
- None: 34%
- 1 hour: 29%
- More than 1 hour: 37%

Class Participation

Teachers were also asked to report on student participation in their classes. Almost two-thirds (59 percent) of teachers reported that at least 70 percent of students ask questions in class about the lesson. Moreover, the overwhelming majority (91 percent) of teachers reported that 70 percent and above of students come to class prepared for the lesson. The majority of students also reported a fairly high level of class participation, especially for activities such as attending class with assignments completed, asking questions in class, and completing tasks that require a lot of thinking and mental effort. Figure 26 compares student responses about their participation in the 2009 school year.

Figure 26: Class participation
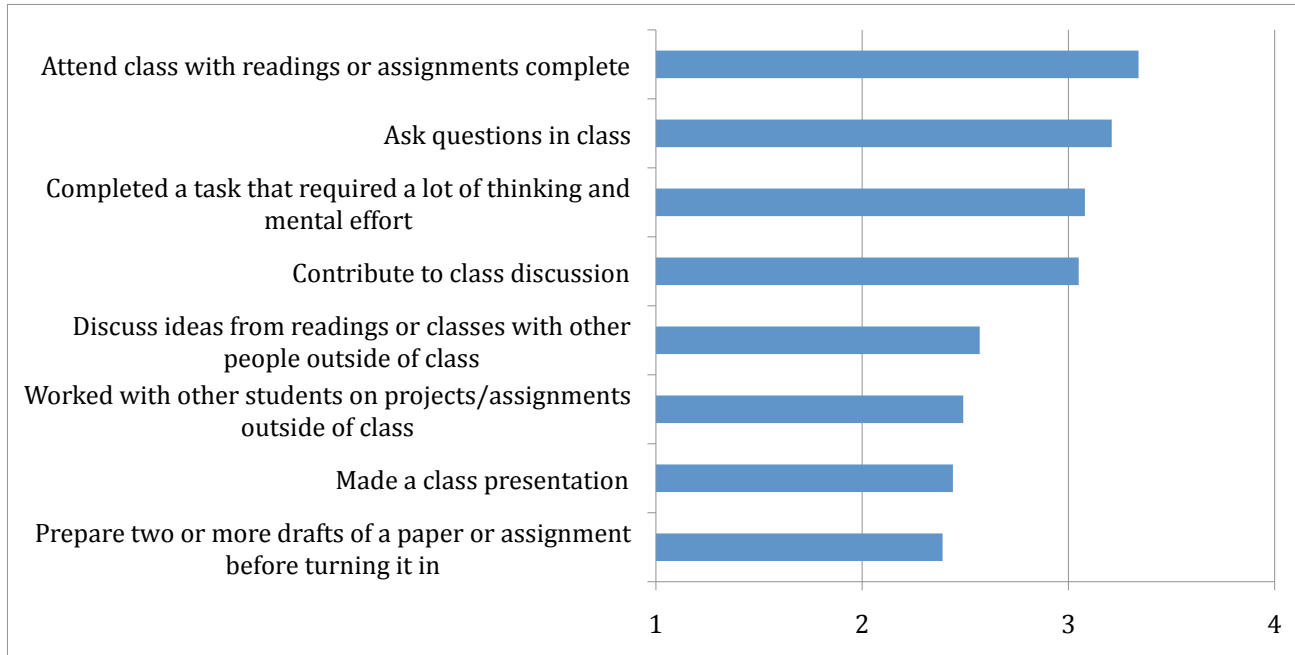
Note: Participants indicated how often they have done a particular activity on a scale from 1 (never) to 4 (very often). Higher scores indicate greater agreement.

Behavior Incidents

While the percentage of classroom behavior incidents and suspensions has dropped, the percentage of late arrivals and detentions has remained constant over the last two years. Table 6 provides more information about behavior incidents.

Table 6: Student Behavior Incidents at HCHS

	2007–2008	2008–2009
Number of classroom behavior incidents	5214	1856
Number of late arrivals	956	986
Number of detentions	1050	986
Number of suspensions	589	356

Test Scores/Academic Performance

In order to understand how students' scores on standardized tests may have been affected by the 21S Initiative, EDC researchers collected and analyzed test scores from HCHS, HC9, HCSD, and the state. Scores from the Subject Area Testing Program (SATP) were examined (see definition of SATP in Box 1).

Box 1: What is the SATP?

High school students participate in the SATP, which tests proficiency in the areas of English, Algebra I, Biology I and U.S. history. The test measures how well students are meeting the state's grade level expectations. Students must pass the SATP to graduate from high school.

SATP results are scored between 0 and 500, with 300 and above considered to be a passing score.

EDC researchers examined SATP scores between 2005–2006 and 2008–2009. The SATP was updated in 2007–2008. These changes make it difficult to compare scores across 2006–2007 and 2007–2008. Therefore, in our analysis we focus on patterns of change between 2007–2008 and 2008–2009. To compare the position of HCHS and HC9 test scores relative to district and state scores, all are included in the graphs.

SATP

Between 2007–2008 and 2008–2009, there have been small fluctuations in SATP scores for both HCHS and HC9 students. For HCHS students, there have been small decreases in the percentage of students receiving passing scores on the English (5 percent decrease), biology (4 percentage points decrease), and U.S. history (2 percentage points decrease) tests. HC9 students experienced a slight gain on the biology subject test (1 percentage point increase) (see Figure 27).

The percentage of HCHS and HC9 students receiving passing scores on the algebra test dropped dramatically in 2007–2008. This change is most likely attributable to the changes in test format that occurred. Therefore, it is encouraging that students' scores began to climb again in 2008–2009, suggesting a positive future trend. This gain was particularly impressive for HC9 students where the percentage of passing students increased from 69 percent to 88 percent (a 19 percentage point increase). On both the algebra and biology subject tests, HC9 students have consistently outperformed HCHS students over the past four years (Figure 27).

Figure 27: HCHS and HC9 SATP (percent passing)
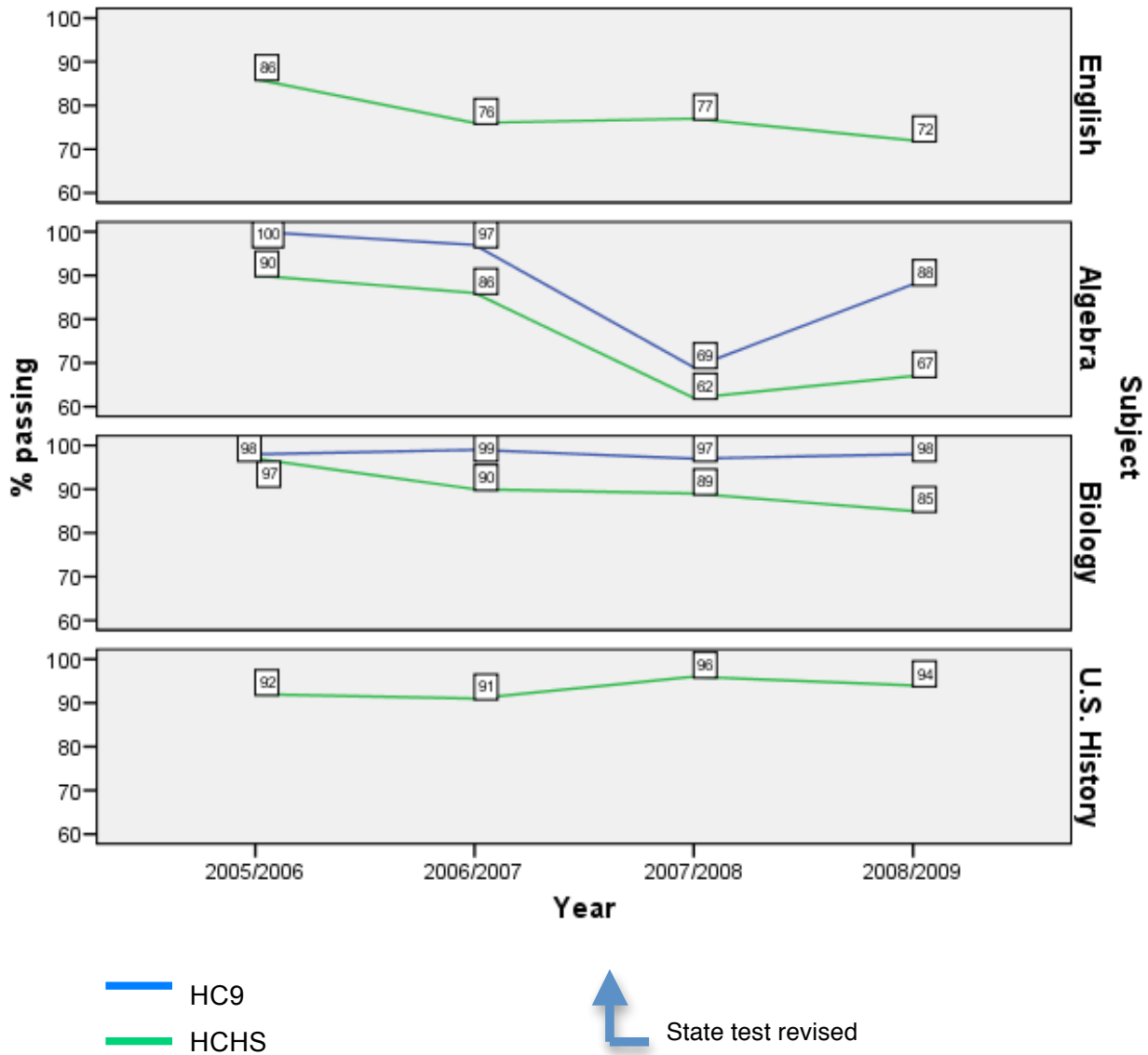
Note: The English and U.S. history SATP tests are not administered to ninth grade students

Comparing HCHS and HC9 to district level SATP scores, a clear pattern emerges. The HC9 scores on the algebra and biology subject tests are consistently higher than HCHS and district scores across all four testing years. In addition, students across the district tend to have slightly higher passing rates than HCHS students. This gap is slightly larger for the algebra and biology tests than for the English and U.S. history tests (Figure 28).

Figure 28: HCHS, HC9, and HCSD SATP (percent passing)
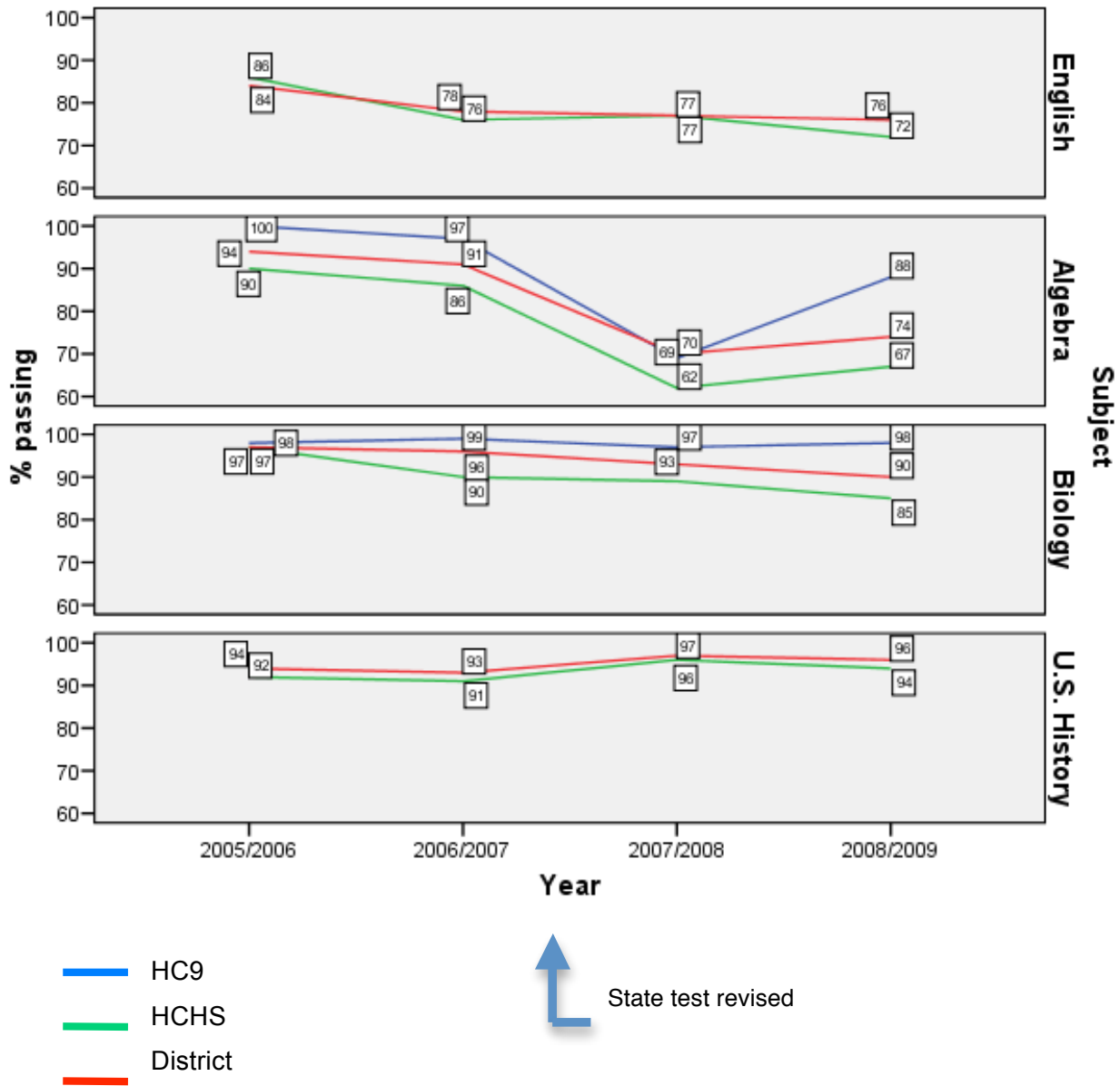
Note: The English and U.S. history SATP tests are not administered to ninth grade students

In addition to test scores, HCHS and HC9 students scored high on a number of other indicators of academic achievement. Notably, 80 percent of teachers believed that their students' abilities are comparable to those of other students across the nation, and most students (79 percent) believe that they are writing more effectively and thinking more deeply and critically.

Students reported considerable interest in their educational aspirations. When asked what grade they would complete, only 1 percent of student respondents said that they would not finish high school, while 86 percent mentioned a college degree or higher.

Grade Promotion and Graduation

There was an increase in the number of HCHS students graduating between 2006–2007 and 2008–2009. This number increased by 35 percent between 2007-2008 and 2008-2009 of the Initiative. The percentage of students graduating remained stable across 2005–2006, 2006–2007, and 2007–2008. In addition, the number of students who dropped out decreased by 64 percent between 2006–2007 and 2008–2009. Table 7 provides more information on graduation rates for HCHS.

Table 7: Graduation rates for HCHS

|	2006–2007	2007–2008	2008–2009
Number of students receiving diplomas	435	405	547
Number of students receiving General Educational Development (GED) diplomas	12	31	22
Percentage of high school graduates**	80%	80%	***
Number of students who dropped out	113	101	41

**Drop out rate calculated using numbers from STI program.
***District has not provided data.

College and Workforce Readiness

Administrators, teachers, and students all agree that students are better prepared both to attend college and to enter the workforce. See Figure 29 for comparison across constituent groups.

Figure 29: College and workforce readiness
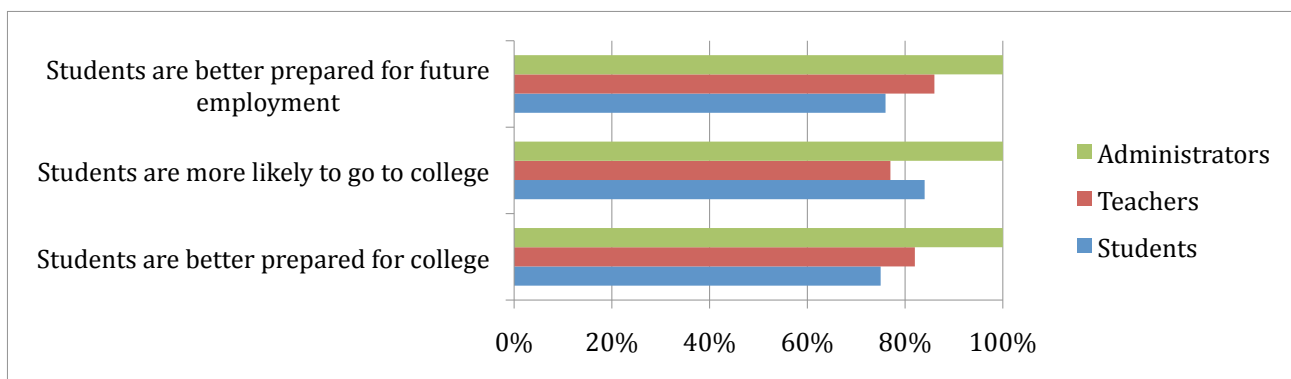
Note: Participants indicated how much they agreed or disagreed with statements. If a bar is missing, it is because that question was not asked of that group.

Stakeholders' optimism is based in the reality that many more students are preparing for college by taking entrance exams like the ACT. In fact, the percentage of students taking the AP exam increased dramatically from 6 percent in 2005–2006 to 60 percent in 2008–2009. Table 8 shows the change in AP participation rate over time.

Table 8: College entrance exams for HCHS

	2005–2006	2006–2007	2007–2008	2008–2009
Percentage of AP participation	6	18	15	60

In addition to what the district reports, students indicated that they had participated in some college preparatory activities this year; most prominent among these were gaining work experience (63 percent) and participating in community service or volunteer work (43 percent) (see Figure 30).

Figure 30: College prep
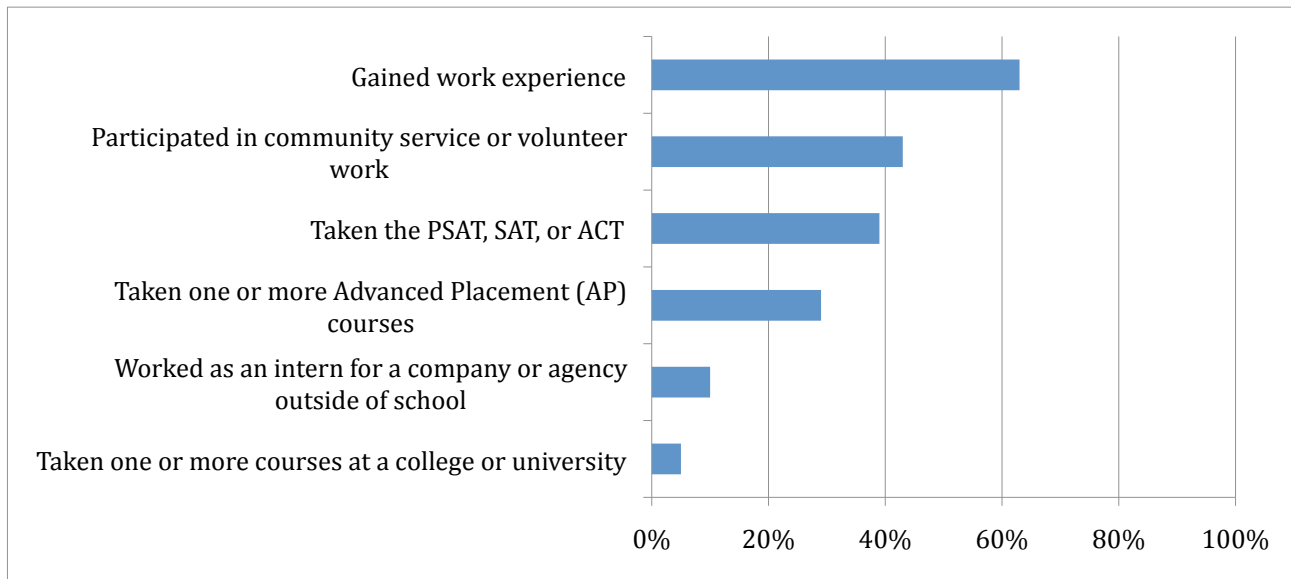
Connected Learning Challenges

Technical Professional Development

Three-quarters (75 percent) of administrators felt that providing sufficient technical professional development was a challenge in the district. Similarly, there were certain areas in which technology personnel did not expend any time on technology support for teachers. For example, no time was spent training teachers in using technology tools, incorporating technology into their lesson plans or supporting individual teachers in their use of technology tools. Perhaps because technology personnel are using their time to address other issues, providing technical professional development is not a priority.

Changing Teaching Practices

All administrators agreed that getting teachers to integrate technology into their lesson plans is a challenge. Similarly they noted that changing antiquated teaching philosophies was a challenge in HCSD.

<u>Working with DOT Interns</u>

None of the technology personnel that participated in the survey indicated working with the DOT interns. This partnership has proved to be quite fruitful in other districts, and it would be worthwhile for the Harrison technology staff to consider making stronger connections with that group.

Connected Community

An integral piece of the Connected Community program component is the positive promotion of the relationship between the school/district, parents, and the community. Harrison County's approach to the Connected Community component of the 21S Initiative is multifaceted and includes reaching out to businesses and faith-based groups, as well as parents and other community members.

<u>Outreach to Community</u>

The schools use outreach efforts to strengthen partnerships and improve the general ICT literacy of the community. Half (50 percent) of administrators agreed that community members are included in the decision-making process when appropriate. There are a variety of partnerships involved with the schools in Harrison County including mentoring organizations, tutoring programs, faith-based groups, businesses, community health services, and boys and girls clubs.

The majority of Connected Community inputs in Harrison County are related to community outreach, including collaboration with local and national industries and business and offering workshops and college fairs for parents and other community members. The introduction of the SchoolMessenger system has helped to keep parents informed and involved at the schools. Figure 31 shows how Connected Community inputs were distributed from 2007 to 2009.

Figure 31: Connected community inputs
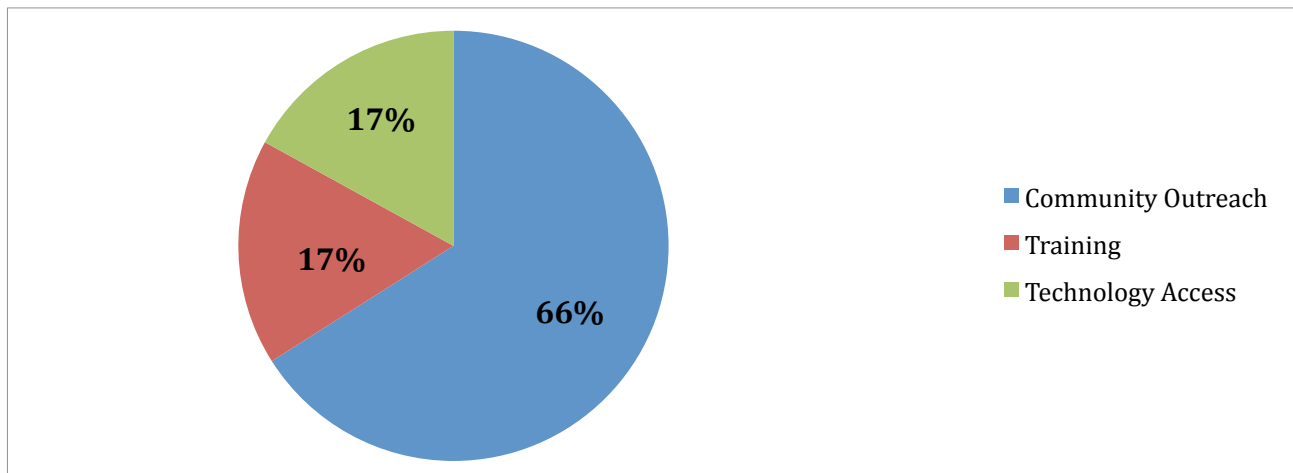
<u>Outreach to Parents</u>

Parents are an important part of the school community and HCHS and HC9 teachers and administrators have made a concerted effort to ensure their involvement at multiple levels. Half (50 percent) of administrators and most teachers (77 percent) said that parents' ideas/opinions are actively sought out to inform decisions when appropriate. In a typical two-week period of instruction, a large portion of teachers reported calling parents on the phone (93 percent said they did this at least once), e-mailing parents (91 percent) and meeting with parents face to face (71 percent).

The two targeted schools utilize several methods of parental communication. Eighty percent (80 percent) of parents listed the school website as the most common method, and over two-thirds listed phone calls from school (69 percent). About a third listed letters from the school (34 percent), word of mouth (34 percent), and phone calls from teachers (31 percent) as common communication methods. Figure 32 shows the percentage of parents who received this type of communication from their child's school.

Figure 32: Communication methods used by school
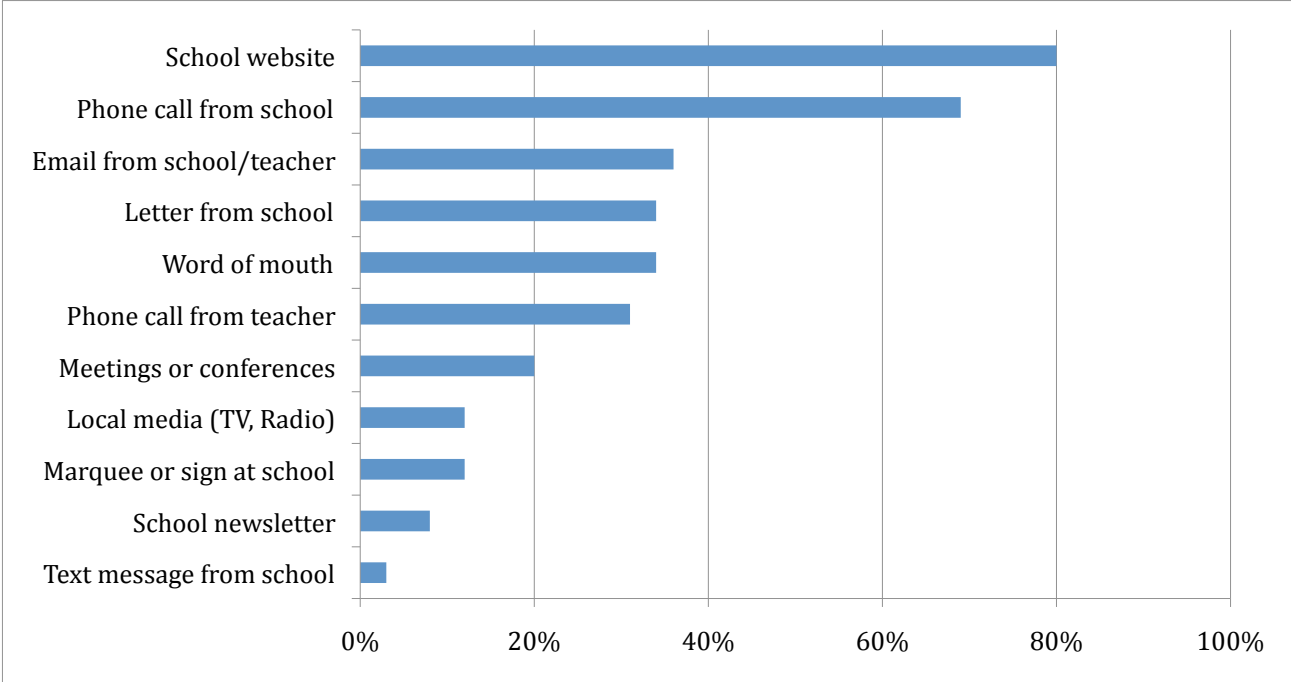
Impact of School Outreach to Community and Parents

According to parents, the most successful types of outreach done by their child's school included providing online access to grades and assignments. To a lesser degree the school's efforts in providing them technology access outside of school hours and informing them about the technology available at their child's school were also successful (see Figure 33).

Figure 33: Success of school outreach
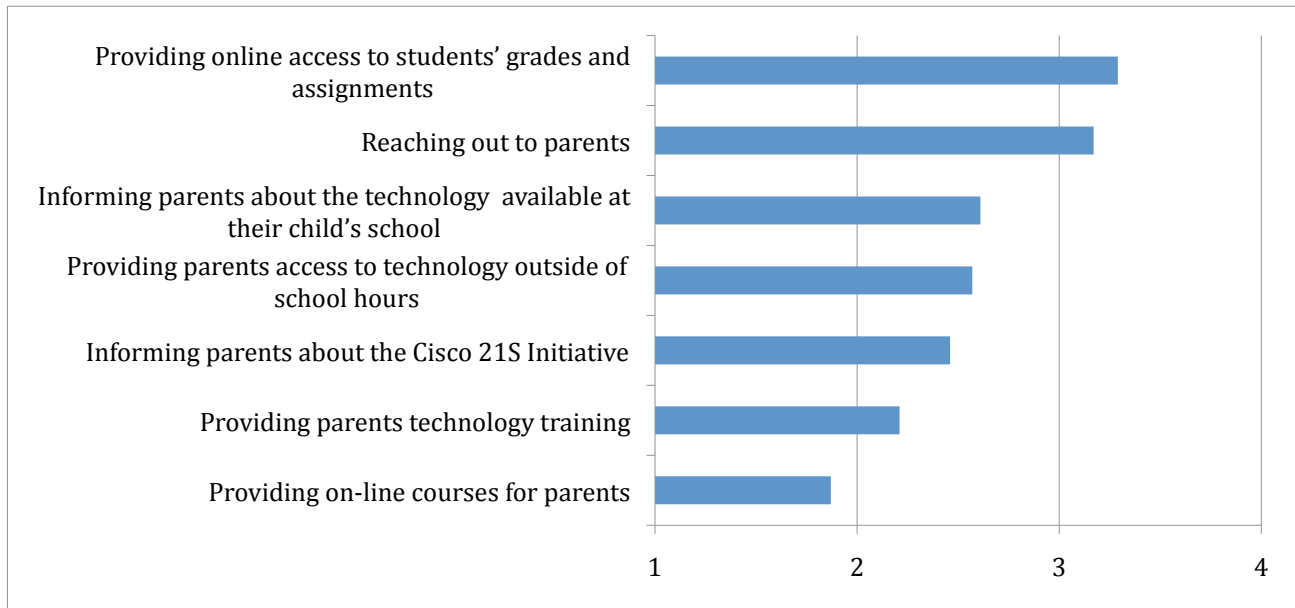
Note: Participants indicated how much they agreed or disagreed with statements on a scale from 1 (strongly disagree) to 4 (strongly agree). Higher scores indicate greater agreement.

Comparison of parental involvement was not available for 2008 because of low survey response rate. Regardless, half of administrators (50 percent) and over half of teachers (61 percent) believed that parents have become more interested in their children's work. Seventy five percent (75 percent) of the administrators reported seeing significant change in school/home communication. In 2009, HCHS and HC9 parents were involved at their child's schools by checking their child's grades online, visiting the school website, and attending parent-teacher conferences. Figure 34 shows other ways parents remained involved in both HCHS and HC9.

Figure 34: Parent involvement
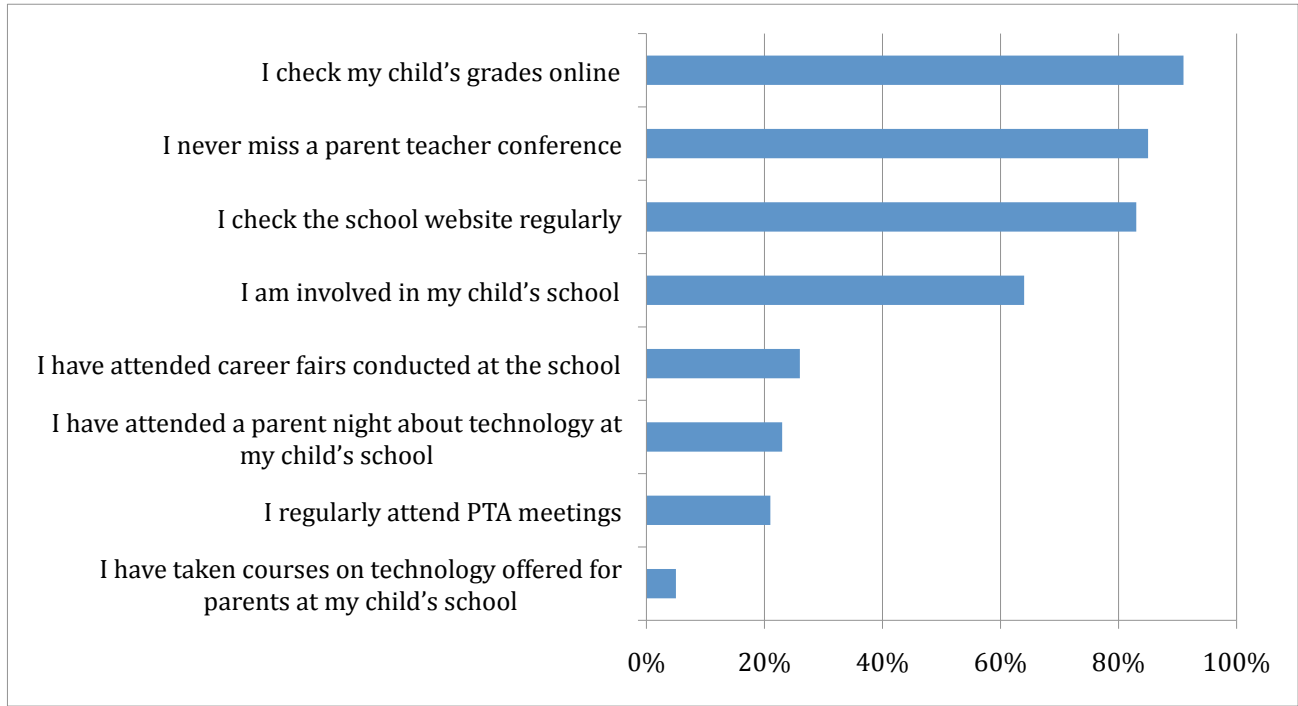
Note: Percentage of parents who agreed or strongly agreed with the statement.

Connected Community Challenges

There were few challenges mentioned across the participant groups, though administrators would like to increase the involvement of local businesses and local institutes of higher learning.

Lessons Learned

As the full implementation of the 21S Initiative draws to a close, it is appropriate to look back at the experience to identify the lessons learned about leadership, the development and promotion of the district's educational vision, culture change, and the implementation of the structural components of the Initiative and its impact on all participants.

Vision and Leadership

Harrison County leadership's vision of the 21S Initiative is that it will enable the two participating schools to be transformed into 21st century learning environments. Technology as an enabler of education transformation and professional development intended to improve leadership, streamline administrative practices, increase technology access and integration, and promote student-centered teaching and learning through technology are key to leaders' vision. Technology has become an integral part of transforming the two participating schools. Harrison administrators had created a leadership team in which teachers had a role in shaping the implementation of the 21S Initiative.

Over the past two years, in some cases, small gains were shown in teachers' understanding regarding administrators' 21S expectations—particularly in terms of having students use computers and expecting students to use higher order thinking in their work. However, other behavioral expectations may not be fully articulated yet.

To manage the innovation, the 21S Initiative goals are regularly discussed. Teachers are continually learning and have input in the transformation process, and professional development activities are followed up with ongoing support.

21S Initiative Learning Environment

Through the four year 21S Initiative, HCSD transformed two of its schools into 21st century learning environments capable of supporting greater administrative efficiencies and a student-centered approach to teaching and learning. The HCSD leaders engaged in multiple reform activities, including the implementation of a high quality technology infrastructure and training programs.

The two schools had access to interactive whiteboards, LCD projectors, student response systems, laptop computers, IP phones, wireless network connections, and a new computer lab. The career center lab was upgraded. As a result, most school administrators and technical personnel rated overall technological implementation at or above expectations. Almost all (99 percent) of teachers and students said they had access to computers. Teacher access to PDAs and video cameras increased over the past year by 12 percentage points and 11 percentage points, respectively. Over 80 percent of students report access to interactive whiteboards, with even greater numbers saying they have access to TV, Internet, and computers.

Technology staff report spending the vast majority of their week troubleshooting and maintaining equipment (30 hours), with most of the additional hours devoted to overseeing infrastructure maintenance and selecting/purchasing technology products. As a result, both teachers and administrators overwhelmingly report that technical support meets their expectations and is generally available.

Professional development focused on leadership and technology use and integration in the curriculum, and data use is of central importance to Harrison's 21S Initiative vision.

Teachers, leaders, and technical staff at the two schools participated in a number of general technology trainings during the summer and throughout the school year, including product-specific trainings, the

NECC conference, Schlechty Center for Leadership in School Reform workshops, and math and literacy sessions. In addition, almost all teachers at the schools received some form of computer training in 2009, with at least half receiving instruction in the use of presentation tools or interactive whiteboards. DOT interns, other classroom teachers, or school-based technology staff provided training.

All in all, 96 percent of teachers reported that access to instructional technology support was on target or above expectations. Teachers said that instructional support was frequently or always available to them. Most teachers (70 percent) and all administrators were satisfied with the support from DOT interns, who provided much of the onsite training offered at HC9 and HCHS. They were most satisfied with the training provided by other teachers.

As a result of the quality of the provided training and support, technology expertise and use of technology, communication and collaboration, and data use all improved over the four years of the Initiative. In 2009, HC9 and HCHS teachers endorsed more student-centered approaches than in the prior year, scoring an average of 3.58, up from 2.26. Most teachers say they are at an expert level of proficiency in technologies. A large majority of teachers (84 percent) at HC9 and HCHS said they use technology in their classes, with little difference between 2008 and 2007. However in 2009, more teachers report daily use of the following: computers (87 percent), the Internet (77 percent), and interactive whiteboards (54 percent). Other types of technology, however, showed flat or even small declines in use by teachers. The teachers say they use less frequently the following technologies: organizational software, IP phones, and presentation software.

Teachers generally agree that formal mentoring occurred at their two schools and that they were connected with networks throughout the globe, but felt they did not often meet to exchange ideas or share student work.

Administrators said that operational efficiency had improved. They reported more frequent use of data to make decisions. A large majority of teachers (87 percent) also said data was used to inform their instruction.

The leaders in the two schools have employed a variety of strategies to increase parental and community involvement. Over 17 businesses, institutions of higher education, community groups, and faith-based organizations are working with the two schools to realize their vision. An important contributor to their outreach efforts was the SchoolMessenger system, as parents who answered the survey said that providing online access to grades and assignments was the most successful form of school outreach. They said that they use the schools' websites as their most common means of communicating with their child's school. Reporting on a typical two-week period of instruction, 93 percent of teachers also said they call parents on the phone at least once, 91 percent said they e-mail parents, while 71 percent meet with parents face to face.

Impact on Students

As a result of the implementation of the above inputs in the two schools, the following student learning gains as indicated by student technology use, higher order thinking skills, student engagement measures, test scores, graduation rates, and college preparatory activities are being achieved:

1. Students are more ICT literate, and large numbers of students (80 percent) report more frequent use of computers for instructional, research, and presentation purposes.

2. Students are choosing their own topics (up 50 percentage points over the prior year); conducting research in class (up 15 percentage points), and revising their own work products and working in collaborative groups (both up 10 percentage points).

3. Students have high levels of agency in the classroom and feel supported by at least one adult in their school.

4. Significant percentages (75 percent or more) of teachers, administrators, and students feel that students were more engaged as a result of the 21S Initiative program. Teachers say student participation in their classes had increased since the 21S Initiative. And an overwhelming majority (91 percent) of teachers report that 70 percent of their students come to class prepared.

5. The number of student behavior incidents decreased from 5214 in 2007–2008 to 1856 in 2008–2009.

6. Over the past two years, there have been small fluctuations in the statewide subject tests for both HCHS and HC9 students. For HCHS students, slightly fewer students received passing scores on the English (5 percentage points decrease), biology (4 percentage points decrease), and U.S. history (2 percentage points decrease) exams. HC9 students experienced a negligible gain in biology (1 percentage point increase).

7. The percentage of HCHS and HC9 students receiving passing scores on the algebra test dropped dramatically in 2007–2008, most likely as a result of changes in the test format that affected students' scores statewide. In 2008–2009, HC9 students reversed the downward trend in algebra, where the percentage of passing students increased from 69 percent to 88 percent (19 percentage points increase).

8. The graduation rate at Harrison County High School held steady at 80 percent in 2007 and 2008. The number of graduates in those two years was respectively 435 and 405. Although the school did not provide a graduation rate percentage figure for 2009, the number of graduates ballooned to 547. In more qualitative terms, all administrators and roughly 80 percent of teachers said their students were better prepared for college and future employment.

9. Students were offered more choice in terms of dual enrollment classes, vocational education courses, and college prep work. Dual enrollment and evening classes were offered through the USM and MGCCC, and NATEF certification was available through the auto mechanics department. ACT workshops and AP classes supported students taking college entrance exams.

10. One of the more dramatic findings is that *ten times as many* students took AP courses at the end of the initiative (60 percent) than at the beginning (6 percent).

Remaining Challenges

Teachers are not fully aware of what leaders expect of them. On a number of measures, administrators and teachers are out of synch on expectations for teachers to carry out 21S instructional tasks. In particular, administrators need to more clearly convey what is expected in the areas of using the Internet to post lesson plans, using the Internet to communicate with parents, conducting performance-based assessments, and seeking student engagement.

Barriers to innovation appear to exist in the Harrison County culture. Administrators acknowledged that at both schools there are hindrances to implementing new ideas and that the district did not encourage experimentation.

Teachers reported declines in access in several areas. While the difference was a few percentage points in most of these—interactive whiteboards, Internet, and IP phones—a more significant decrease of 45 percentage points was seen in multimedia presentation tools.

The successful efforts in teacher professional development at HC9 and HCHS do not seem to extend to administrator professional development, as only 50 percent of HCHS and HC9 administrators reported seeing significant change.

Less than optimal levels of peer collaboration take place at the participating schools. This may partially account for the fact that all administrators surveyed feel teaching practices are difficult to change.

Providing sufficient technology professional development was a challenge in the district, a fact that seems supported by results from technology staff surveys, which showed they had spent no time training or supporting teachers in their use of technology. And although pairing technology staff with DOT interns has been effective elsewhere, none of the technology staff reported working with them at the two Harrison County schools.

Administrators mentioned that they would like to increase the involvement of local businesses and local institutes of higher learning.

Finally, administrators said they are planning to establish a dedicated technology budget and seek grants to sustain the initiative.

Recommendations

Building on the gains in leading, teaching, and learning that Harrison County School District has accomplished, we suggest that the recommendations below be taken into account in future district improvement plans:

- For collaboration within the district to be effective, it needs the support of leaders to allocate resources and develop appropriate support structures and protocols. Without these resources, ideas and best practices will not be shared, innovation will go flat, and transformation will stall.

- Professional development and training must continue—indeed, expand—to reach all key stakeholder groups within the district. Administrators in particular need to experience the changes they are asking their teachers to make in integrating technology into classrooms.

- Technology staff must be more fully vested in the process of change and in working with teachers and others, such as DOT interns, to support the integration of technology into the classroom.

- Relationships with parents and other community partners must continue to be cultivated in order to build support and secure resources.

- Careful and timely planning must take place to sustain momentum and ensure a continued flow of resources generated by the initiative. Without the implementation of the district's sustainability plan, future advances and the gains already made are at risk. The district should seek out grants, organize fundraising events, and develop support networks as a means to securing long-term funding.

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Appendix

Note: EDC researchers will deliver the rest of the Appendix section to Cisco in a separate document.