Codifying a Next-Generation Education System

Jefferson Parish Public School System

Submitted to CISCO Global Education Group
Prepared by Education Development Center, Inc.

October 2009

Acknowledgements

Numerous individuals from many organizations made invaluable contributions to the completion of this research. First and foremost, we thank Cisco Global Education Group for funding us to conduct a series of studies about codifying next-generation education systems, assisting us in obtaining access to key stakeholders and documents, and providing valuable feedback. Thanks go also to the leaders and staff of the Jefferson Parish Public School System.

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"While the Jefferson Parish Public School System is faced with goals and objectives for academic achievement, the "bigger picture" or vision cannot be forgotten. In both developed and developing nations, young people have become increasingly reliant on social networking technologies to connect, collaborate, learn and create, and employers have begun to seek out new skills to increase their competitiveness in a global marketplace. Education, meanwhile, has changed much less. With few exceptions, schools have yet to revise their pedagogy to reflect current trends and technologies. The complexity of this challenge calls for a bold and timely response—enabling schools to incorporate 21st century skills into demanding curricula."

DR. DIANE ROUSSEL,
SUPERINTENDENT OF JEFFERSON PARISH PUBLIC SCHOOLS
2008

Introduction

The world outside schools is changing rapidly with the advances of technology and economic requirements for a 21st Century global citizenry. Today, technology has moved into our everyday lives and is becoming a pervasive part of how we work, learn, and play (Carpenter, 2003; National Telecommunications and Information Administration, 2004; Parsad & Jones, 2005; Rainie, 2005; Rainie & Horrigan, 2005). Access to simulations, online social networking, interactive games, and mobile phones has drastically increased in the last decade. Further, the World Wide Web has become a powerful medium for commerce, communication, and information searching and sharing. According to a survey by the Pew Internet & American Life Project[1] covering the period 2005–2006, 93 percent of teens (12 to 17 years old) used the Internet, and most of them had access to at least one high-speed service that permits a wide range of technology activities. Approximately 65 percent of teens are creating online content and sharing artifacts (e.g., artwork, photos, videos), building Web pages, writing online journals, maintaining a personal Web page, and designing their own online material by remixing content from online sources. In addition, they access the Internet using mobile hand-held devices (e.g., cellular phones, smart phones). Nearly 85 percent of teens own at least one of these social media tools and about one-third send text messages to friends regularly basis (Lenhart, Madden, Macgill, & Smith, 2007).

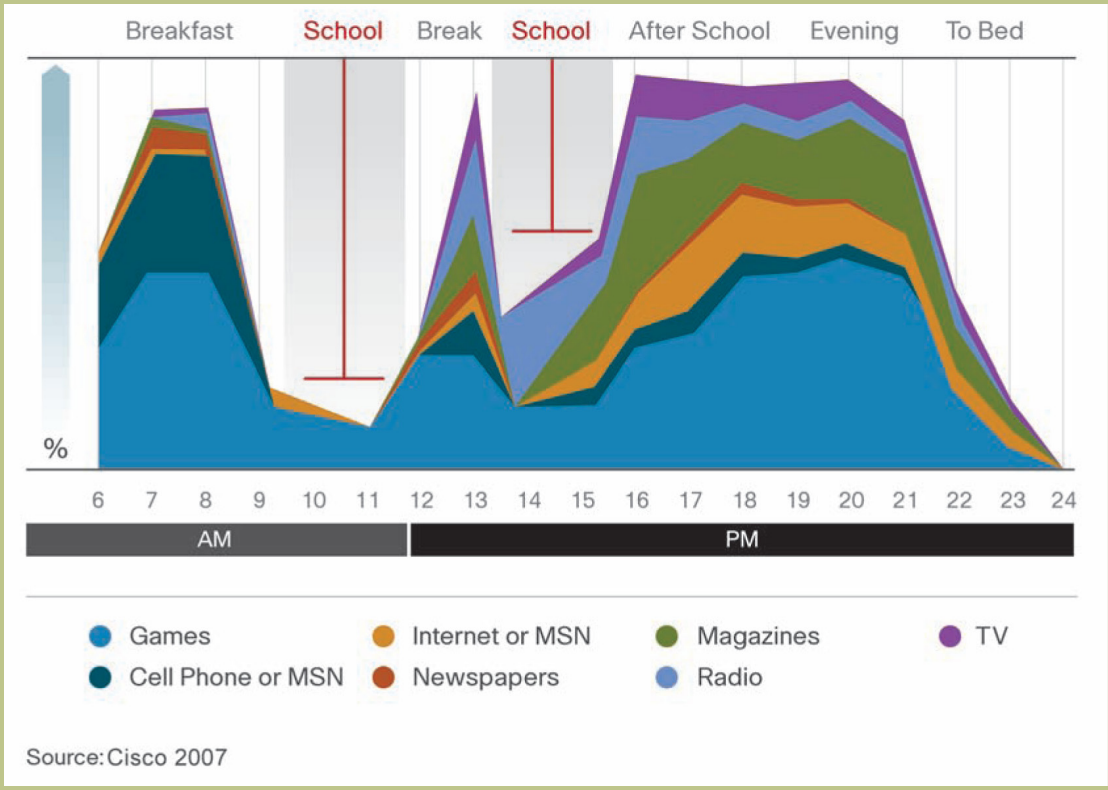
Similarly, networked communications and computer technology have transformed the modern workplace dramatically, touching nearly every career and job category, from entry level to seasoned professional—making skills once confined to a small group of technology enthusiasts into basic requirements for the mainstream and bringing the global community closer to our doorstep. In the last two decades, the United States invested heavily in the application of new information technologies in virtually every sector of the economy (National Center on Education and the Economy [NCEE], 2007). Today's workplaces are requiring that their employees possess a suite of 21st Century skills, including critical thinking and problem solving, collaboration across networks and leading by influence, agility and adaptability, initiative and entrepreneurialism, effective oral and written communication, the ability to access and analyze information, global awareness, civic literacy, economics education, and curiosity and imagination (Partnership for 21st Century Skills, 2003; Wagner, 2008). The demands for these skills, particularly as enabled by technology, have grown steadily over recent years (NCEE, 2007). A growing body of international and United States-based studies demonstrates that upward mobility in employment is increasingly

1 The Pew Internet & American Life Project housed at the Pew Research Center, a nonprofit organization (see www.pewinternet.org), investigates the impact of the Internet on education, health, families, communities, and political life.

dependent on the mastery of a set of high-level cognitive and communicative skills (Autor, Levy, & Murnane, 2002, 2003; Educational Testing Service [ETS], 2005; Honey, Fasca, Gersick, Mandinach, & Sinha, 2005; Levy & Murnane, 2004; Organization for Economic Co-operation and Development [OECD], 2004; OECD & United Nations Educational Scientific and Cultural Organization [UNESCO], 2003). Such skills include the ability to diagnose and respond to complex situations, and synthesize and communicate multifaceted information to multiple audiences. Moreover, initial studies not only have found that skilled technology users earned wages that were 10 percent to 15 percent higher than those of otherwise similar nonusers (Handel, 2003), recent studies about globalization and technology—which are creating a leveled playing field in terms of time and distance—raise concerns that America is losing its international competitive edge (Friedman, 2005).

Despite steady progress in the availability and integration of technology innovations in workplaces and homes around the world, similar advancements in the use of technology to support teaching and learning in formal settings have been limited. As Figure 1 shows, media use is lowest in the morning and afternoon—the periods in which students are in the classroom.

Figure 1. Daily Media Consumption by Percentage in the Netherlands



Most current education systems face daunting challenges in their efforts to prepare students for the 21st Century. "Workers entering the labor force in the United States are less educated than young people in many other countries. The proportion of U.S. students who graduate from high school today—about 70 percent—is smaller than that of their counterparts in most other developed countries, and fewer than half of this group graduate with the skills needed for college and jobs that pay more than minimum wage . . . " (Wagner, 2008, p. 12). This concern is all the more troubling for disadvantaged young people.[2] Research shows persistent inequities in the opportunities students have to acquire and exercise high-level literacy skills in information and communication technologies. Higher-income students use computers more often for intellectually complex applications, whereas lower-income students use computers more often for repetitive practice (Partnership for 21st Century Skills, 2003). Further, the full set of 21st Century skills outlined above is not taught consistently in U.S. classrooms (Schwarz & Kay, 2006). As a result, there is a serious gap between the requirements of the fastest growing jobs in the United States and the skills of high school graduates (Peter D. Hart Research Associates/Public Opinion Strategies, 2005). Technology access and use alone—the standards commonly used by school systems—are no longer sufficient measures of what school systems need to offer their students. Instead, educators must embrace a vision of technology that targets the teaching and learning of 21st Century skills and closing the achievement gap.

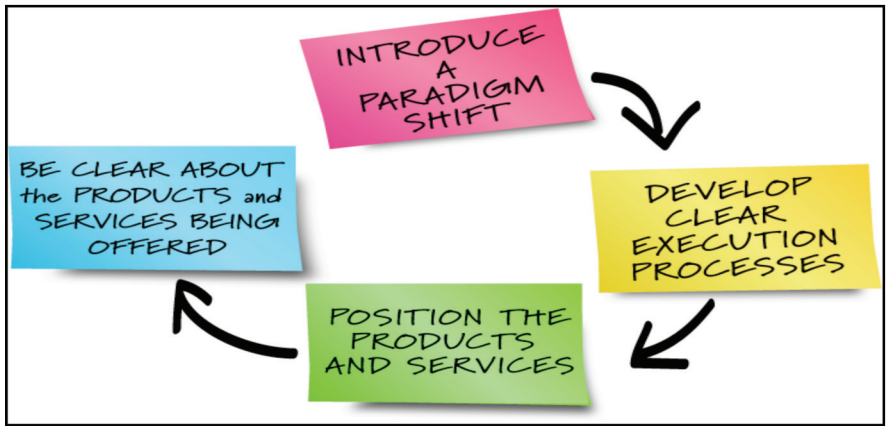
In response to these challenges, a range of business, government, and research organizations—including the U.S. Department of Education, the National Science Foundation, the CEO Forum, the North Central Regional Education Laboratory, the Partnership for 21st Century Skills, the International Society for Technology and Education, the Technology Literacy Assessment Working Group for the State Educational Technology Directors Association, and the NCEE—are calling for the transformation of current education systems. Their ultimate goal is to help create school systems that can ensure a U.S. competitive edge in the global economy (Finn, 2008; Moe & Chubb, 2009; NCEE, 2007). Public-private partnerships can play a critical role in achieving this goal, and "…business leaders seem determined to find something, anything, to shake things up—whatever it takes to get better results" (Wagner, 2008, p. xiii). At the core of their approach is the concept of innovation or, more precisely, "disruptive innovation."

Disruptive Innovation Theory

In the business world of entrepreneurs and corporations, innovation is commonly studied and celebrated as one of the best, carefully organized processes to improve products or services. A standard innovation process affects change through four key steps: (1) introduce a paradigm shift by changing predominant views of the business model of how customers are served and companies execute their business, (2) develop clear execution processes, (3) position the products and services by identifying the customers and how they are communicated with, and (4) be clear about the products and services being offered (Barnes and Conti Associates & Francis, 2007; Sutton, 2002) (see Figure 2).

2 We use the term "disadvantaged" to refer to youth whose opportunities to advance their own chances are hampered by being from low-income families or by residing in a low-income neighborhood. Our use of the term does not imply cognitive or cultural deficits of any kind.

Figure 2: Innovation Process



Disruptive innovation, on the other hand, "almost always trips up well-managed, improving companies. Disruption is difficult because the definitions and trajectories of improvement change. What were valuable improvements before the disruption now are less relevant. And dimensions of the product that had been unimportant become highly valued" (Christensen, Horn, & Johnson, 2008, p. 44). Disruptive innovation challenges customers to shift their expectations. Christensen and colleagues (2008) posit that public schools in the United States have been able to improve and maneuver the rigid accountability disruptions imposed by such policies as the No Child Left Behind Act, but they have not been able to transform themselves into 21st Century learning environments. This latter challenge has pushed some local government leaders (e.g., city mayors) in large cities across the country (e.g., Boston, Chicago, New York City) to enter into public-private partnerships in order to experiment with the concept of disruptive innovation and increased local government's control (Wong, Shen, Anagnostopoulos, & Rutledge, 2007). In Jefferson Parish, the district leadership in cooperation with Cisco promoted early on the broad and passionate implementation of 21st Century education and introduced a small-scale innovative technology infrastructure and tools, and administrative and instructional policies and practices, which have disrupted the system and are now being scaled up throughout the system.

Cisco 21st Century Schools (21S) Initiative and Approach

Using some of the strategies listed above in collaboration with national and international education partners and school districts in Mississippi and Louisiana, Cisco Systems, Inc. (Cisco), has experimented with these 21st Century education system reform ideas and strategies for the last four years. The Cisco 21S Initiative seeks to transform current approaches to school leadership and administration, teaching and learning practices, and community involvement by creating a next-generation education model that focuses on teaching 21st Century skills and establishing full-community participation—district staff, school staff, parents, and local businesses—in the education process. The 21S Initiative has three interrelated components:

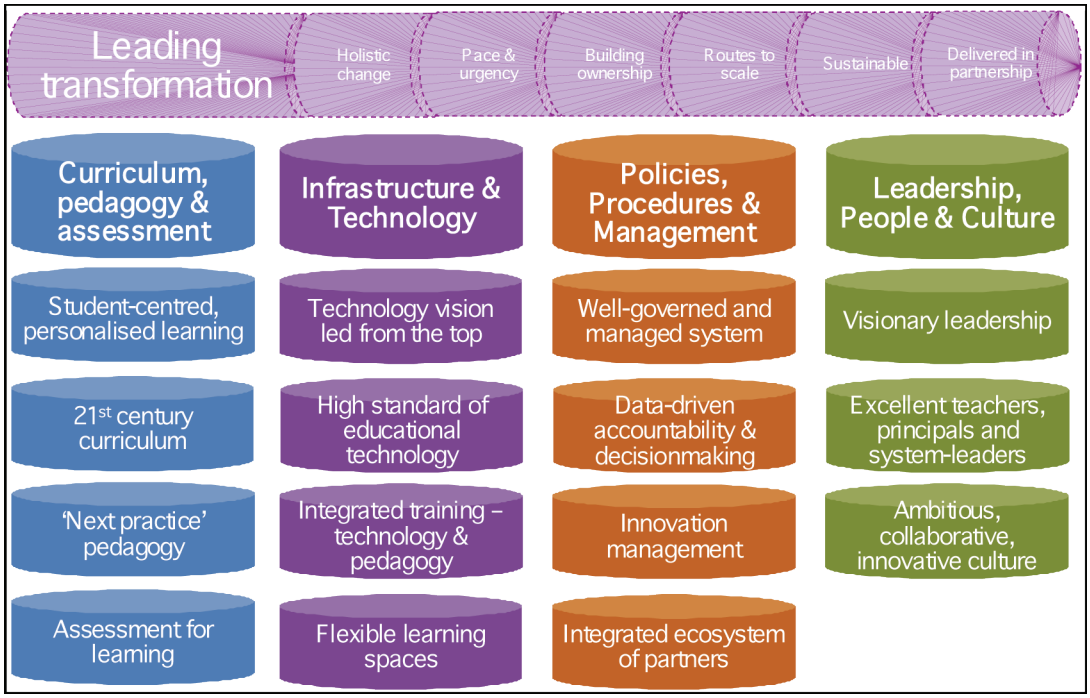
> *CONNECTED SCHOOLS—establishing a secure and manageable baseline technology platform (including data, voice, video, etc.), which encompasses all the equipment and human resources necessary to support all administrative and instructional processes in the school.*

CONNECTED LEARNING—supporting administrators, teachers, and technology personnel to create 21st Century learning environments through access to expertise and international best practices.

CONNECTED COMMUNITY—helping schools develop plans for interacting effectively with parents, local businesses, and community members and turn each participating school into a hub of the community.

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 3 and described below.

Figure 3: Cisco's Global Education Roadmap



Source: Cisco 2009

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 to prosper in a global world economy. A systemwide pedagogical 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 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. Transparent processes are 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 embedded within and dependent on an ecosystem of partners who support learning and/or provide other essential student 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 well-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.

Key Factors for Change in Jefferson Parish

Four key factors helped jump-start the reorganization of the system and the implementation of an innovative education reform agenda:

1. Hurricane Katrina: When Katrina struck southeast Louisiana on August 29, 2005, Jefferson Parish, a suburb, survived but suffered major wind damage and severe flooding. Some of the Jefferson Parish Public School System (JPPSS) central offices and schools were damaged or destroyed, and the district had to rebuild them in the hurricane's aftermath. Jefferson Parish received a considerable infusion of public and philanthropic support in several crucial sectors: housing, business development, employment, and education.
2. Cisco 21S Initiative: The 21S Initiative represents an intensive, four-year $80 million investment in technology, training programs, and Cisco Fellows program in Louisiana and Mississippi. In Louisiana, Cisco's investment is to help not only rebuild the school system in Jefferson Parish post-Katrina, but also to transform the district to meet 21st Century educational demands. Cisco launched a large-scale education technology initiative in October 2005—a $28 million investment to help not only rebuild the JPPSS but also prepare it to meet the demands of today's global economy and citizenry. Cisco's education transformation principles are aligned with JPPSS's reform vision and goals. JPPSS's system transformation goals are to establish (1) a shared 21st Century

education vision and leadership, (2) a secure and manageable technology infrastructure, (3) strategies for ongoing technology support, (4) professional development resources and programs, and (5) strategies to increase parental and community involvement. Making connections across all these components of the program is central to transforming JPPSS into a 21st Century education system.

3. Large number of students in private or parochial schools: Another key factor driving transformation in JPPSS is the high percentage (40 percent) of the student population attending private or parochial schools in Jefferson Parish. As a result, the parents of these children are not involved in the public school system, and JPPSS leadership feels that there is a great need to attract these parents into the public system.
4. The Dandridge Consent Order: On March 8, 2007, the U.S. District Court of the Eastern District of Louisiana issued an order directing JPPSS and community members to identify places in the school system where inequality among students no longer exists and that are complying with the U.S. Constitution, and also to identify conditions or operations in the school system where further action may be required to bring the system into compliance. The court also ordered JPPSS to develop and present a plan to the court that demonstrated the efforts of the Parish to bring the entire school system into compliance with the U.S. Constitution.

   As a result of the Consent Order, JPPSS implemented a plan that modified school zone boundaries and changed school enrollments by moving students, teachers, and administrators from one school to another. Consequently, some schools have seen new administrators, new teachers, and a large percentage of their population replaced by new students.

With these factors, education transformation became a palpable goal in JPPSS. For JPPSS, the rebuilding process needed to reflect the critical importance of preparing students to excel in a technology-rich, globally connected environment.

The Current Study

Cisco asked researchers at Education Development Center, Inc. (EDC), a not-for-profit education organization (www.edc.org), to identify the lessons learned from the JPPSS education reform efforts in the last three years and to translate these lessons into actionable thematic areas for education leaders and decision-makers involved in implementing and scaling up education reform strategies. Drawing from JPPSS successes and challenges, the research team aims to inform the development of a replicable model for transforming schools into 21st Century education systems.

Study Design

EDC researchers employed rapid ethnography to facilitate the process of data collection, presentation, and analysis (Holtzblatt & Jones, 1993; Hughes, King, Rodden, & Andersen, 1995; Millen, 2000). This methodological approach included four primary components:

Participants

The first component of the research involved individual interviews with key participants involved in the planning and implementation of education reform strategies in JPPSS in recent years. In total, nine interviews were conducted. Participants included the following:

- The chief technology officer (CTO)
- The manager of the technology integration specialists
- A consultant from the Schlechty Center for Leadership in School Reform (Schlechty)
- A member of the Jefferson Parish school board
- The chair-elect of the Jefferson Chamber of Commerce and former chair of the Education Committee
- Cisco staff members

EDC also reviewed seven interview transcripts conducted before the study. Participants included the following:

- The superintendent
- The deputy superintendent of instruction
- The CTO

- A teacher at JPPSS
- Additional Cisco staff members

Interview Protocol and Analysis

EDC researchers developed an interview protocol to identify the successes, challenges, and lessons learned (see Appendix). Specific questions asked participants to reflect on the innovative aspects of JPPSS, education problems that stakeholders sought to address, changes to the initiative, financing, partnerships, and the impacts of innovation on teaching and learning. Additionally, questions tapped participants' perceptions of the sustainability of educational transformation. Interviews lasted two hours and were audio recorded for transcription and analysis.

Using a grounded theory approach (Strauss & Corbin, 1990), EDC researchers coded interview transcripts to identify central themes and lessons learned about the planning and implementation of key innovative education processes and programs.

Document Review and Analysis

The study involved a review and analysis of relevant documentation on broader efforts within JPPSS to transform its schools into innovative systems. Interview participants provided documents to the EDC research team. Additionally, EDC researchers conducted a search of Web-based and print media to find information and press coverage about JPPSS.

Researchers analyzed documents to better situate the innovation within the context of broader transformation efforts. Moreover, the documentation review was intended to further explain findings emerging from interviews with research participants.

Study Site

Figure 4:
Jefferson Parish, Louisiana; Source Wikipedia 2009

Jefferson Parish is located in the heart of the greater New Orleans metropolitan area in Louisiana (see Figure 4). Jefferson Parish is a predominantly White middle-class suburb, made up of a population that is 58 percent White and 27 percent African American. Hispanics comprise approximately 10 percent, and Native Americans and Asians make up the remaining percentage. The median income in Jefferson Parish in 2000, according to the U.S. Census, was $38,000, which is significantly higher than the Louisiana state median income, $32,566, but lower than the median income of the United States, $41,994.

JPPSS is a large suburban district of 88 schools, of which 48 are located in the West Bank and 40 in the East Bank of the Mississippi River. As of October 2008, the total enrollment of students in the Parish was 49 percent African American, 32 percent White, 13 percent Hispanic, 5 percent Asian, and 1 percent Native American; 48 percent were female. Seventy-four percent of the population qualified for free and reduced lunch.

The number of schools, administrators, and teachers in JPPSS has increased over the last four years (see Table 1). Currently, JPPSS has 381 administrators and 3,210 teachers. The average teacher-to-student ratio in JPPSS is 15:1. Most of the teachers in the district are State Board-certified. JPPSS has the largest percentage and highest number of State Board-certified teachers in the state.

Table 1: JPPSS Makeup

School Year	Schools	Administrators*	Teachers	Students
	#	#	#	#
2005–2006	86	335	2,950	41,671
2006–2007	86	333	2.993	43,617
2007–2008	87	354	3.165	44,058
2008–2009	88	381	3,210	44,018

* Includes administrators in schools and central office

The 88 schools in Jefferson Parish represent the full array of grade configurations. Although there are 54 elementary schools, 17 middle schools, 10 high schools, 6 combined junior and senior high schools, and 1 K–12 school, within those groups there is more variation (see Table 2). The district is creating new types of schools designed specifically to address the educational and health needs of regular and special education students. These new schools include advanced-study academies, accelerated academies, one-to-one laptop schools, science and technology academies, and alternative schools.

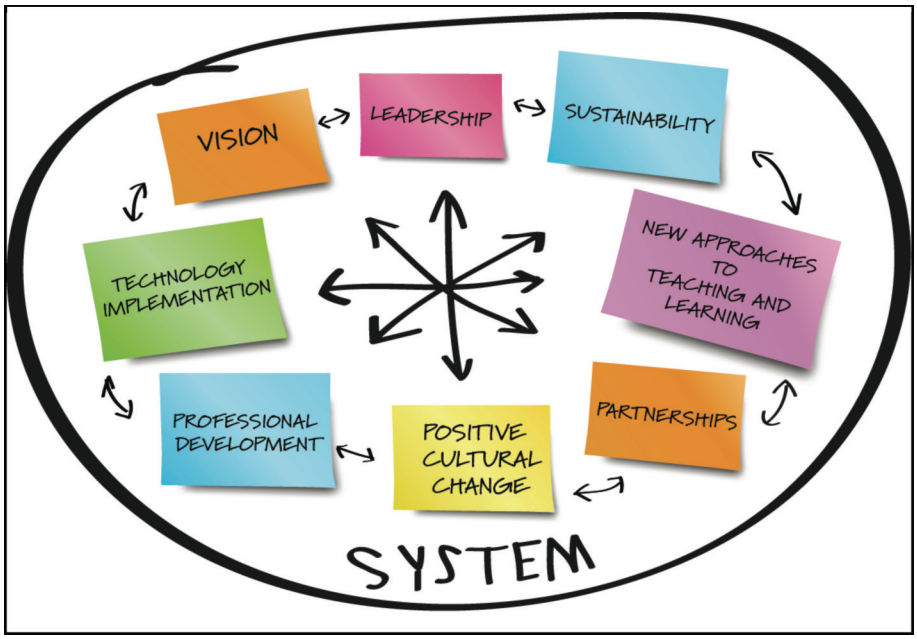
Table 2: Number of School Organizations

Grade Configuration	Total
PK–K	1
PK–5	48
PK–6	1
PK–12	1
K–5	1
K–6	2
1–5	1
5–8	1
6–8	15
6–10	1
6–11	1
7–10	1
7–12	3
7–8	1
9–12	10
Grand Total	**88**

JPPSS: A Next-Generation Education System

This section presents findings drawn from the experiences of those involved in the education reform efforts in JPPSS. EDC researchers have identified eight key factors in the successful transformation of JPPSS from a bureaucratic organization to a knowledge-based, next-generation system. These critical elements include (1) vision, (2) leadership, (3) new approaches to teaching and learning, (4) technology implementation, (5) professional development, (6) positive cultural change, (7) partnerships, and (8) sustainability (see Figure 5).

Figure 5: Key Factors in System Change



Before delving into how each of these factors contributed to the successful system transformation, however, it may be useful to review some of the challenges confronting JPPSS stakeholders, for these informed the varied aspects of this initiative:

- Students' literacy levels were well-below grade level, likely contributing to their poor performance on standardized assessments as well as low retention and high dropout rates.
- Stakeholders throughout the district tended to rely on traditional ways to address challenges and promote teaching and learning. As one participant said of JPPSS, "We were on the brink of becoming so antiquated and stuck, and in terms of instructional

practices and approaches to problems, we were going to deteriorate as a district . . . . We were on the precipice of letting the educational world pass us by."

- School and district leaders often worked in "silos" rather than working collaboratively across departments.
- Efforts to involve parents and the community were minimal.
- Participants noted a tendency for the school board to micro-manage the schools. The bureaucratic nature of the system left little opportunity for teachers and school leaders to try new approaches to address inadequacies they had identified in their work, leading to feelings of disempowerment among school staff.
- The JPPSS Wide Area Network was poorly designed and installed, and it became quickly outdated as the district's organizational and educational needs expanded. Updates and new features were added over the years, but the network could not provide reliable Internet access to support efficient administrative management services (e.g., accounting, child nutrition, transportation). Field technicians had difficulties fixing the network because the wiring documentation was incomplete.
- Data were not available to inform changes to instruction, professional development, or other school operations.

Vision

Eager to confront these challenges, the JPPSS superintendent developed a vision for her transformed school system that encompassed a holistic culture change. She envisioned new approaches to teaching and learning that deemphasize standardized testing and focus instead on the critical skills that prepare students for the demands of college and the world of work, including problem solving, collaborative learning, and critical thinking. She believed a 21st Century technology infrastructure would be a key enabler of this transformation, allowing teachers to attend to the individual needs of students (reaching children who have particular learning needs or preferences) and connecting students, teachers, and administrators in the district and around the world. The leader imagined open channels of communication through which individuals throughout the system could negotiate responsibilities and work collaboratively to achieve common goals and advance the district's shared vision. Finally, stakeholders inside and outside of the classroom would have the power and training to confront challenges using innovative approaches and resources. The realization of this vision, the leader suspected, would lead to a motivated, engaged, and high-performing learning community.

In short, the JPPSS vision represented significant systemic change to:

- A learning organization
- 21st Century technology infrastructure and tools
- A fully developed five-year plan and a technology operating policies and procedures manual
- A vision of technology as an enabler of education system transformation
- High literacy rates
- High grade completion rates
- Low dropout rates
- A broad focus on 21st Century skills as well as core content
- Evidenced-based decisions and strategies for improvement
- A shared vocabulary grounded in research and district data about what really matters and works
- A district determined to collaborate and partner with institutions all over the world and demonstrate what they have accomplished in a short time frame

Leadership

Strong leadership is essential to achieving a system transformation of this kind. As one participant put it, "If you don't have capable leadership, you'll spin your wheels. You'll not change." Stakeholders we spoke with at JPPSS attributed the successful transformation to the characteristics of its leader. The fact that the superintendent had been a student and teacher in JPPSS meant that she had firsthand knowledge of the district's shortcomings and strengths, as well as a history of working with people inside or affiliated with the system. Participants also described her as innovative and forward thinking when it comes to education—characteristics that have enabled her to align educational practices with those appropriate for the next generation of students. Finally, they noted her organizational skills and businesslike approach, which they feel are critical for implementing changes of this magnitude. Most importantly, the leader was clear and committed to her vision from the outset of the education reform initiative, which set the stage for three factors that participants said were important to the transformation: (1) clear articulation of vision, (2) continuity of vision, and (3) establishment of a shared vision.

Clear Articulation of Vision

The vision for system change must not reside exclusively in the mind of the district leader. He or she must clearly articulate the challenges that the transformation efforts are designed to address, the vision for how schools will operate, and the steps that each stakeholder must take to get there. As one participant said, "If they are not clear about where they're going and about what the school is going to look like . . . there's no danger of the school being transformed into anything." Communication may begin inside the district office, but it must extend well beyond that to the school board, principals, teachers, students, parents, and community.

Continuity of Vision

District stakeholders must have confidence in the leader's commitment to his or her vision in order to take education reform efforts seriously. Teachers and school leaders in JPPSS had seen many initiatives come and go and therefore initially doubted the sustainability of transformation efforts that began during the 2005–2006 school year. Over time, however, the leader demonstrated her commitment and crystallized it into a detailed, multi-year implementation plan. As teachers and school leaders began to see the effects of her efforts, particularly through her ongoing work with Cisco and Schlechty, their cynicism gave way to a more enthusiastic and participatory attitude.

Establishment of a Shared Vision

The district leader must be convincing enough in her articulation of the vision to inspire other stakeholders to embrace and make sustained efforts to realize it. Participants told us that a shared vision in a district as large as JPPSS must originate at the top level of the district. This unified leadership then must work directly with individuals at the school level to promote its adoption. The retirement of staff members also gave the leader opportunities to hire likeminded people who supported her mission. Regardless of how a shared vision is achieved, ultimately, as one participant attested, "everybody's got to be singing from the same songbook."

Achieving Buy-In

Achieving buy-in throughout a district may require more than a clear articulation of the goals. As the JPPSS leader put it, "You don't just go and say, 'Change.' You have to sort of convince people."

It is important to achieve buy-in from parents because, as one participant expressed, "If you don't bring the parents on board, they're going to be obstructers." In JPPSS, about 40 percent of students attend private or parochial school and, as a result, a large percentage of parents in the region are disengaged from the public school system. To attract these parents and gain the support of existing JPPSS parents, the superintendent administered a survey to identify changes they felt were necessary. Parents expressed a desire for academic magnet schools, so the superintendent developed plans to implement them strategically throughout the district. These academic magnets currently have a waiting list of 3,000 students, and many of these students will come from private or parochial schools. As part of the superintendent's effort to gain the buy-in of the broader community, the district initiated a public relations campaign to help businesses and district residents understand the goals of the education reform efforts.

Participants told us that the buy-in of principals is essential because their attitude makes a tremendous difference in the adoption rate and the culture of the school. If the principal does not reinforce the vision that the leader articulates, then teachers will be unlikely to embrace it or feel any sense of urgency. According to one participant, "The teacher's attitude is the principal's attitude."

The commitment of teachers is also critical. As mentioned previously, many teachers in JPPSS did not take the reform initiative seriously because they had been victim to the ever-changing plans of other school leaders. Because teachers have the most direct effect on daily classroom practices, it was essential for the superintendent to convince them that she was proposing a lasting system reform. If they resist the new instructional approaches promoted by Schlechty or shy away from using the new technology resources implemented by Cisco, their students will not reap the benefits of the reform efforts.

Three factors appear to have helped the superintendent gain the support of principals and teachers in JPPSS. For one, she worked to change the culture of bureaucracy in a district that was plagued with what participants described as a systemwide apathy. Before the initia-

tive, the rigidity of roles and the reporting structure made principals and teachers feel powerless to address problems they encountered. Participants told us that the superintendent's efforts to put bureaucracy aside as much as possible allowed school staff to take ownership of their work. Principals, they said, no longer wait for district leaders to show them how to solve problems and, instead, have built capacity to lead the work on their own. Teachers also feel they have more freedom to address issues that arise in their classrooms. As a result of these changes, most principals and teachers buy into and have become active participants in the reform efforts.

Promoting a consistent message is a second factor that seemingly helped the JPPSS leadership achieve school-level support. In a district in which programs historically changed from year to year, teachers and principals needed to be assured of the leadership's commitment before buying into the change efforts. For three years, the consistent message has been that school staff must get on board with this initiative. As one participant put it, "This is the direction we're going, and the ship is leaving the port."

Finally, the leadership gained support from school leaders and teachers by fostering their desire for change. The superintendent stressed the need to "create discontent with the status quo" in order to enact substantial and lasting system reform. Exposure to new technology during training—which underscored the shortcomings and inefficiencies of traditional classroom practices while also providing the tools to improve their work—was the catalyst in creating this discontent in teachers. Among many principals, the desire for change emerged when they saw the media exposure that the initial 21S schools received, which created a desire to be the next recipients of the reform efforts. The leadership initially chose principals who were the most willing to embrace the initiative, and their enthusiasm clearly was contagious. According to a school board member, principals "lusted after being that school getting the media attention" and, once their school was selected, this desire translated to general enthusiasm for the initiative.

Despite a leader's best efforts to generate enthusiasm among all principals and teachers, some resisters are sure to remain. Though one stakeholder told us, "We have some that are not going to get on the boat," she estimates that 80 percent of teachers understand and have adopted the leader's message and vision for reform. The remaining "weak links" do not see the value of alternative teaching approaches involving collaborative work or active learning, nor are they willing to accept that their role must transform from lecturer to group facilitator. Although training efforts embracing the Schlechty philosophy have turned some resisters around, others have chosen to retire or transfer to a new district.

Developing the Right Team

A leader cannot transform a district on his or her own; among the superintendent's most important responsibilities is to establish effective and diversified support systems. Participants told us that JPPSS did not have sufficient functional teams in place at the beginning of the initiative, so developing a support system to enable implementation at the district and school levels was among the superintendent's priorities.

The superintendent redefined her cabinet by replacing members, involving a larger group, and deviating from the traditional hierarchical structure. Often, cabinet members are the only individuals who report directly to the superintendent, but in JPPSS the leader was more concerned with including the people she considers key influencers of success: the deputy superintendent of instruction, the CTO, and the Schlechty project manager—all of whom send a signal to the rest of the district that improving instruction through the use of technology and professional development is the central goal of the reform efforts. Cabinet members also include the chief information officer, assistant superintendents, and representatives from Title I and special education.

The district's work with Schlechty led the leader to establish design teams at the district and school levels. The main purpose of the district design team is to help the school district become a learning organization that enables schools to focus on designing engaging work for students and ensure that this focus is maintained and sustained over time. The team is led by the superintendent and composed of school-based and central office administrators, a school board member, and a community member. Nine principals and assistant principals are members of the district design team. Each school's design team is led by the principal and composed of selected teachers, the school's professional development resource teacher, and the technology coordinator(s). The school design teams pursue their own learning and development as learning communities, as well as share coordination, planning, and decision-making to pursue change at the school level.

The district-level support system also involves two groups that interacted infrequently before the initiative. The Department of Instruction was a group of about 20 staff members who, according to one participant, did not fully understand the concept of 21st Century skills. She explained that their background and strengths were in "decoding, reading, analyzing," and they failed to appreciate that literacy in today's world involves the ability to use technology tools. The team dedicated exclusively to technology integration initially included only two members. To achieve the desired transformation from a non-technological approach to an infused integration approach, it was clear to the leader that these two groups had to be balanced and work collaboratively. In the years since, the Technology Department has grown to about 65 members and now works in partnership with the instructional staff to advance common goals.

The leadership recognized that, in a district as large as JPPSS, communication across all teams is critical so that stakeholders at all levels understand what other groups are doing. To foster communication and transparency, the leader instituted interdepartmental meetings in which various teams congregate to get ideas from one another and to clarify goals, responsibilities, and plans. Additionally, the superintendent told us these meetings help ensure that "everybody understands the language, the vocabulary, the purpose—and that wasn't happening before." According to one participant, the days are gone in which teams operate as "isolated groups of people."

Creating an effective support system did not happen overnight because, as a school board member told us, "Just because you create the organizational structure doesn't mean you're going to instantly find the right people to fill those positions." Only over time and by care-

fully selecting team members did the leader achieve what a participant described as "a responsive, stable organization to support a 21st Century dynamic school system that wants to have access to tools and be able to professionally train people to use them."

Training School Leaders

The JPPSS leader embraced the Schlechty idea that the better a school principal is, the better a school is. For this reason, every principal receives training in the Schlechty framework and approximately 75 percent have attended Schlechty Principals Academies and Leadership Academies. These training events are designed to provide principals with a deep understanding of the concept of engagement. Principals develop a leadership plan and strategies for promoting and sustaining change so that their schools can better serve their customers, the students. The leader expects that the outcomes of leadership training will trickle down to the teachers and school administrators through the principals' daily communications with them. To assess the effectiveness of these trainings and the quality of the principals in general, the principals helped create an online principal evaluation form, involving a rigorous rubric with which they score themselves and district-level staff identify strengths, weaknesses, and areas for improvement. Each new principal undergoes this evaluation for his or her first three years and every three years thereafter.

Teaching and Learning

Improving teaching and learning was the central purpose of the reform efforts in JPPSS. Before the initiative, JPPSS employed a teacher-centered educational model. The emphasis was on delivering instruction to students, rather than engaging students in learning. As the consultant for Schlechty noted, "Schools historically have worked on transmitting knowledge from one head to a bunch of little heads." This one-to-many distributive approach, in which a teacher lectures before rows of silent students, may represent the iconic view of schooling for many adults today, but its effectiveness as an instructional method is questionable. In past decades, the many students who failed to thrive in this system left school early or were quietly passed along until graduation. Back then, though, a poor education did not always limit one's ability to compete in the workforce because many unsuccessful students could expect to attain middle-class wages and economic stability on the assembly line or at a local shop.

Those times have changed. Large-scale socioeconomic forces, such as globalization and new technology advances, have wiped out many of those once-attractive jobs. Some postsecondary education, at a minimum, is becoming a precondition for workplace viability. In addition to economic disruptions, public demands for accountability and transparency have made it harder for schools to sweep shortcomings under the rug. Student performance data are now widely available and publicly reported. Schools that fail to help their students succeed are now subject to closing or other sanctions.

Modern life requires a new approach to education. All players in a school system need to view themselves as accountable for every student's success. And success should mean preparing students with the skills and knowledge they will need to thrive as global 21st Century citizens. To achieve this vision of success, JPPSS realized it had to transform its methods of teaching and learning.

New Perceptions of Students

Teachers in the Jefferson Parish school district tend to be veterans. According to the CTO, "A huge number of our teachers have 25 to 40 years of service." With this kind of stability in the workforce, JPPSS leaders knew they had to make a compelling case for instructional change.

In considering how to best prepare its students for the 21st Century, Jefferson Parish first considered the changes its youth had already undergone. JPPSS leaders have observed, as have other educators, that students today are multimodal learners and that technology, in

particular, has changed the way they seek out information. The superintendent commented, "We actually realized that kids of today can work on several things at one time. We [earlier generations of students] were linear, we sat in rows, and we waited—and fell asleep probably—for information, and they don't have to do that, so that's been a very different kind of reality."

Changing educators' perceptions about their students was key to the JPPSS transformation, according to the superintendent. When the initiative began, she said, "I started using the vocabulary about . . . students as customers, because they're our customers. They do volunteer their attention." JPPSS teachers moved from an antiquated image of students as passive recipients of content to a more client-oriented view. The Schlechty consultant described how this perceptual shift, "the biggest shift that folks have to make," took place. "One of the big things," he noted, "that we like to get people to think about as they transform their schools and their school district is to look at the students as volunteers . . . . [T]hey have to volunteer their attention, and their commitment to do the work that we provide for them." Now, when a student fails to learn, he said, instead of asking what is wrong with the child, teachers are encouraged to "look at the design of the work that we've provided to them . . . And [we ask] how can we change the work so that they will volunteer their attention and their commitment, and therefore learn what we want them to learn?"

As educators shifted their perceptions about students, they also began to shift their views of how to best instruct those students. The Schlechty consultant described how the language used by school leaders signaled a change in mindset from old to new ways of teaching: "In 2007, a lot of [JPPSS principals] were talking about how they produce great products, and looking at their students as products that they try to turn out, like a factory." By the next year, he noted, "The conversation had shifted to looking at students as customers. How can we meet their needs, as opposed to how can we turn them out like on a production line?"

To serve students as customers and address their multimodal learning needs, JPPSS educators realized they needed new methods of teaching. As one Cisco Fellow put it, "What we're aiming for is, at the end of the day, we want to have improved student outcomes, and I think that the only way that's going to happen is to have teachers changing what's happening in the classroom." To bring about those changes in the classroom, JPPSS adapted the following key strategies:

- Fostering greater engagement through technology
- Offering innovative curricula and instruction
- Developing new forms of assessment
- Setting new roles and higher expectations for teachers

Engagement Through Technology

Student engagement—the factor that enables students to invest the time it takes to learn something—is key to effective learning. When students are engaged, they are active participants in their development and demonstrate a deep interest in the topic and a strong

motivation to learn. As the Schlechty consultant pointed out, "The way we look at engagement, it's more than just time on task. It's more than just completing the work that's been assigned. It's making the connection to the work where the work pulls you in, as opposed to having to be subjected to the curriculum through somebody pushing it at you."

In JPPSS, educators have found that technology—robust, well-integrated, and thoughtfully designed technology—can have a powerful impact on student engagement. The deputy superintendent of instruction has observed that "my goal, and the superintendent's goal, and the district's goal is to get a larger and larger percentage of our students engaged every day in the lesson. And one of the key ways of getting that accomplished is through technology."

The next section of this report documents the specific uses of technology, but its instructional impact is worth noting here as well. Its benefits are immediate and tangible. Students appreciate the control technology gives them over the learning process and get more involved in the subject as a result. In JPPSS parlance, when students make use of technology, they "volunteer." As one teacher noted, "It's so easy for them. They know how to use it. They'll get up there. They've made their own flipcharts for our lessons . . . . [T]hey will come up with questions and type them in on the assessment tool."

Technology helps effect the change from teacher-centered to student-centered classrooms as well. Jefferson Parish students, as "digital natives," have found that technology helped them reverse roles and assist their "digital immigrant" teachers. Said one Cisco Fellow, students "definitely are the experts in the technology, and so you see the teachers relying on the students [to help] them get through things."

But technology is most valuable in helping students connect with their own learning. As the deputy superintendent of instruction said about the interactive whiteboard: "I do visit classrooms, and I noticed the instant difference in a classroom when a teacher is using technology and when they're not. It's like turning a light on and off. The class with the technology use, the light is on. If the light's on in kids' eyes, they're focused, they're engaged. And when it's not being used, there's a disintegration of interest. You can see the interest in the kids' eyes wandering, their body language; they're not buying it, they're not buying what's being sold at the front of the classroom."

The superintendent said that technology was having an effect even on students' favorite time of the day: "I see kids that don't want to go to recess. They don't want to go to P.E. They just want to stay and do this."

Although student engagement is still of prime importance, JPPSS leaders discovered that teachers, too, are more engaged since advanced technology came to the district. "Many teachers say they can never go back to teaching without technology—especially the . . . [interactive white]board," observed one Cisco Fellow. Teacher morale has improved, too, said another Fellow: "I've seen individual cases where teachers . . . were at the end of their career; they may be slowing down, thinking about retiring, but now this has really reenergized them and I think that that's a big benefit, too." Given JPPSS's mature teacher population,

one might think they would be highly resistant to embracing technology, but as the superintendent noted, "While you might have thought technology would have driven them out, it's kept them in.

Innovative Curricula and Instruction

The Professional Development section of this report addresses how teachers learned to use the technology so effectively. Here, though, it is worth noting the district's effort to implement innovative curricular offerings and new instructional strategies that aligned with the leader's vision.

Technology-Enabled Literacy Program

Jefferson Parish elementary schools use a software program to enhance literacy instruction. Students, working in small groups, cycle through various stations, either interacting with the computer on a reading lesson, working directly with the teacher, or engaging with other students in a reading activity. According to the deputy superintendent of instruction, in classes that are using the program "you could see how the kids were engaged and almost fixated on the lessons." He went on to note that "if we teach reading the traditional way, we're going to stay stuck, and the kids aren't going to be committed and hooked and engaged in the lesson."

The higher levels of engagement may help explain the program's positive effect on student achievement. The deputy superintendent of instruction compared classes that used the literacy program with those that did not. He pointed out that "at the beginning of the school year, in the first couple of intervals, the [student reading] scores were comparable, they were kind of close. But as the year progressed, the class that had the . . . software . . . outgrew . . . the scores of students who did not use the program."

Programs like this harness technology's power to help children learn basic literacy skills, but as a Cisco Fellow observed, technology is also changing our definition of what it is to be literate. "As it is traditionally understood," the Fellow commented, "the definition of literacy was based a lot on reading and interpreting the written word . . . but I think literacy is a much broader concept, especially in the 21st Century. We need to be literate in digital media. We need to be literate in . . . analyzing the authenticity of knowledge we gain. Just because it's on the Internet, is that right? How do I make a judgment?"

Collaborative Learning

As noted earlier, instructional approaches in the district also changed with the advent of technology. In particular, students were now able to work on group projects and activities more effectively and efficiently. Teachers have designed new lessons and activities to take advantage of the new collaborative capacity.

In JPPSS, group learning has helped students develop competencies that higher education and the workplace highly value. A school board member remarked, "It's interesting for me to watch the dynamics in a classroom, particularly if I've watched the same class before, to see kids not take the same role on each time that there's an activity. And I think that's the most

valuable [aspect] . . . . The leader is not always the leader. When I was in school, the leader was the leader was the leader. If you divided them in groups, the leader was still the leader. And the same person held that role. And today watching the students, different leaders emerge because of different expertise. That's a life lesson, you know, that one must allow the person with the greatest amount of expertise to express that expertise in a given setting." She continued, "What else is amazing is the self-checking of the behaviors. The kids understand that they are expected to produce a product by the end of so many class periods and they check the group to stay on task. That's a maturational behavior that you usually don't see in adolescent groups."

New Assessment Strategies

Too often, educators implement new ways of learning without sufficient thought to how to measure that learning. In JPPSS, educators have given careful thought to the assessment of 21st Century knowledge and skills. At the same time, there is general recognition that state tests are still vitally important to the future of the district and its students. As one Cisco Fellow explained, "Certainly we have to look at the test scores because they are a reality in whether the schools survive or not . . . . And I think in some cases, we're seeing a trend in the right way, the right direction across the district, and in our schools particularly . . . . I don't think it's necessarily the best way to know if the kids are getting 21st Century . . . skills but right now, it's one of the few hard pieces of data that we have."

In the meantime, technology has provided the district with the capability to assess students in ways that would have been far too cumbersome to implement in the past. As one Cisco Fellow explained, classroom-based reading assessments used to be scored by hand, which introduced the possibility of errors. She noted, however, that "by using PDAs that we gave the elementary school classrooms, [teachers are] able to do it with software where you can just click and listen. They're much more accurate, and all of the scoring has been automatically uploaded to a Web database, and you can get graphs of your kids [and] automatically [know] who's doing better than you thought, who's doing not as well as you had hoped, and helping you pinpoint the interventions that are going to help them."

The deputy superintendent of instruction also discussed a formative assessment program used to evaluate language arts and math learning. By administering interval assessments every four to six weeks, "the teachers get instant results." He elaborated, "It's a very brief test, maybe about 12 to 15 questions, to determine whether or not the students are learning the grade-level expectations." As a result of this program, he continued, "[Teachers] know what questions their students missed, the percentage that they got correct, where the students' strengths and weaknesses lie, so that the teachers have an abundance of information . . . they know where their kids stand."

New assessment tools helped the district make a valuable discovery about student reading levels. According to the deputy superintendent of Instruction, "Since reading is the foundation of everything else, we learned some alarming statistics this particular year; our kids aren't where we want them to be in terms of reading proficiency." Knowing this, JPPSS implemented an intervention strategy: "Right before school begins, we have a three-week summer institute for struggling readers in grades K through 2 . . . . [T]hey're going to get four hours of reading instruction a day for 15 consecutive days leading up to the beginning of school so they don't fall victim to the regression during the summer. So that they kind of start the school year close to where their peers are . . . we're probably going to expand it to third grade . . . for next summer. So we're thinking that we're going to impact about 2,500 students districtwide."

Some of the most powerful evidence of student learning is hard to capture in a quantitative test result. Students often have the opportunity, as part of JPPSS's innovative collaborative learning curriculum, to demonstrate their 21st Century skills. A school board member recalled being impressed by students: "I went to a meeting recently of a high school in my district and to see the children, the young people, using all of the electronic implements, making a presentation to a community group was so revealing. They took things from understanding to presentation and they were able to not only present, but they understood what was going on and they could answer questions intelligently."

In another situation, a Cisco Fellow described a partnership between Jefferson Parish middle schools and the Louisiana State Museum to create an audio tour podcast for the museum. Although proponents of more traditional instructional approaches may fear that such programs distract students and teachers from learning core academic content, the standardized assessment results suggest that school can provide these engaging opportunities and continue to foster high achievement in critical domains. According to the Fellow, "Test scores in social studies went up 10 points, which was really remarkable. They were the highest scores aside from the magnet schools in the district."

New Teacher Roles and Expectations

In the new student-centered Jefferson Parish school system, the primary task of the district now centers on, as the CTO put it, "having students actively participate in their learning." This reorientation means that the teachers' core responsibility was no longer, in the words of one school board member, to get students to "memorize [information] and regurgitate it on the test." Instead of being the sole source of knowledge in the classroom, teachers had to become more skilled at combining materials and strategies in innovative new ways, at addressing the unique learning needs of a diverse student body, and at bringing out the best in every learner. Combining the language of this board member and the CTO, a composite portrait of the new JPPSS teacher emerged: a "resource person," a "guider," a "facilitator" who encourages students less through "repetition and worksheets" and more through "exploration." And, as the board member also noted, when students explore more, research shows their "ability to retain goes up exponentially."

The quality of instruction highly influences the learning outcomes. JPPSS already had the state's highest percentage and number of teachers certified by the National Board of

Professional Teaching Standards. As the superintendent remarked, though, certifications and degrees do not tell the whole story of teacher quality. "I want a person," she said, "first who understands curriculum and instruction. I'll teach them the rest. They've got to care about these kids and understand it, and the rest, if they don't quite have it all, they can learn."

The leadership in the district also understood that, even with a talented staff, just putting technology in the classroom would not bring about the necessary changes in instruction. Shifting focus to the student as customer meant that almost every educational process needed revision. That meant "changing the way they do business to focus on what's best for kids as opposed to what's convenient for the adults," said the Schlechty consultant. Thus, JPPSS leaders found that along with a complete revamping of the curriculum and a redesign of the professional development process, a new attitude about teacher evaluation was required.

As in many school systems, the old JPPSS teacher evaluation system was for the most part a futile exercise in which all teachers were rated above-average. The CTO noted that in the past, "Everybody got a positive evaluation. Everybody."

As part of its commitment to accountability, though, the district realized its evaluation system needed to reflect the same sort of data-based decision-making and technology-rich approaches that it was applying to student learning. Principals now evaluate teachers on how effectively they integrate technology into their teaching and how well their students perform. As a result, the district has begun to incorporate student data into its evaluations of teacher performance. As the deputy superintendent of instruction remarked, "If 90 percent of my students are passing, or 95 percent, that's a reflection on my teaching effectiveness, and so [is it] if 50 percent of them are passing." In any large system, he noted, "people tend to think that they can hide behind anonymity, and the data that we have now kind of unveils the anonymity."

Technology Implementation

Integrating technology throughout the district was a central aspect of the reform efforts in JPPSS. The leadership believed that, by using technology in daily classroom practices, teachers would be able to engage students, reach students with special needs, and instill in all learners the technology skills that they need and that traditional instructional environments fail to provide. Furthermore, new technologies would allow teachers, administrators, and district stakeholders to gather and analyze data on instructional quality, learning outcomes, and professional development, thereby informing the design of interventions and new programs.

To create a 21st Century learning environment capable of supporting administrative efficiencies and a constructive approach to teaching and learning, the district adopted a comprehensive technology implementation plan in 2007. The plan provides four clear and ambitious education technology goals. Under each goal, the plan details benchmarks, implementation strategies, evaluation strategies, and a timeline. The goals are strengthening leadership, improving teacher training, supporting e-learning and virtual schools, and encouraging improved access and technology usage. The plan asks, in addition to replacing all hardware and wiring infrastructure, that the following core technology components be implemented throughout the system:

- Videoconferencing equipment
- Voice over IP telephony system
- Security and surveillance systems
- Campuswide wireless network
- TV studio to provide instructional content
- Emergency communication system
- Interactive whiteboards and student response systems in classrooms
- Web-based professional development tools
- Digital media kits consisting of an mp3 player, video camera and tripod, digital camera with an SD card, Webcam, USB flash drive, and hand-held GPS
- One-to-one laptop initiative in middle and high schools
- Laptops for teachers
- Content management system

- Online courseware delivery system
- School and teacher websites
- Library management tools
- Web 2.0 technologies including wikis, blogs, podcasts/vodcasts, Web-based applications, and Internet audio conferencing
- Student information system including access for parents

In the last two years, the district has made tremendous strides in installing and testing network hardware (e.g., network ports and switches), electrical wiring, wireless Internet, IP telephony, computers, interactive whiteboards with accessories, networked printers, scanners, projectors, and wall-mounted screens for all the targeted schools in the plan. The district intends to complete its technology implementation in October 2009.

Table 3 shows the most common hardware and software available at the classroom level. Close to 1,200 classrooms are outfitted with baseline technologies (baseline classrooms), and 916 classrooms have access to the baseline technologies, plus interactive whiteboards instead of pull-down screens, and hand-held devices (enhanced classrooms).

Table 3: Classroom Hardware and Software

Baseline Classroom	Enhanced Classroom	Additional Tools	Software
• Teacher laptop • Projector • Pull-down screen • Audio speakers • IP telephone	• Teacher laptop • Projector • Interactive whiteboard and student response system • Audio speakers • IP telephone • Hand-held devices	• Networked printers and scanner • Audio system • Digital cameras and video camcorders • Webcams • Hand-held GPS	• Reading • Math • Assessment • Visual • Presentation • Film editing • Audio recording

In addition, the district has put in place a one-to-one laptop initiative in four middle and three high schools, with plans to expand this initiative in the coming years.

The district is making an effort to provide effective and responsive technical support throughout the system. According to the CTO, "A huge part of the strategy was not only to provide the infrastructure and access, provide the 21st Century classrooms, . . . [but it] was to also provide what I call 99.9 percent uptime or reliability of service. Meaning 99.9 percent of the time, I'm going to come in and the network is going to be available."

The infusion of technology has changed the physical arrangement and dynamic of classrooms. One participant told us that during the early days of the initiative, students typically sat in rows and passively observed teachers using the new tools. The superintendent said that students now more often gather around computers or the interactive whiteboard as they engage in group work or collaborative problem solving. Other participants recall observing active student participation through their use of a student response system, involving hand-held devices through which entire classes can respond to questions and thereby allow the teacher to gauge students' understanding or interest during a lesson. Another participant said he often observed students using online programs such as the technology-enabled literacy program discussed previously. These observations are supported by student surveys conducted by the 21S evaluation team, which showed that their use of technology during lessons increased 15 to 20 percentage points over three years.

District leaders may inspire technology use by modeling the behaviors they want to see throughout the system. As one participant expressed, "If the administration at the top level is not doing it, you can't really expect the people, you know, on the ground to think that you're serious about it." In JPPSS, the superintendent used the tools she sought to promote: "She was the first one to do a podcast," the participant continued, "the first one to do a vodcast . . . . [A]t her January superintendent meeting, she was up there and gave her speech using the . . . [interactive white]board." By "using all the tools, talking the talk, and walking the walk," she made the tools less intimidating to school leaders and inspired them to model that same behavior at the school level. Whereas many principals successfully encouraged technology use through this modeling method, others needed to appeal to the interests of teachers in order to promote widespread adoption. In a school where many staff members were interested in cooking, for example, the principal began e-mailing recipes and encouraging teachers to do the same. Participants told us that in many cases, teacher modeling is the most successful method to promote technology use among school staff. Training the most willing teachers as soon as possible creates an opportunity for them to demonstrate the benefits of new tools to their colleagues and inspire their use. According to one participant, "[Teachers] will listen to another teacher long before they'll listen to a central office person [or] their principal."

Several participants suggested that teachers are more motivated to use new technology if they are required to make some effort to acquire it. "You can't just give equipment," one participant told us. When JPPSS acquired interactive whiteboards, district-level stakeholders required teachers to apply for a grant in order to receive training and the new equipment. Nearly every teacher who submitted a grant received a board, but participants said that the act of working for it fostered their desire to put the resource to good use. Perhaps more importantly, seeing grant recipients' new technology stimulated the interest of teachers who did not apply initially. According to one participant, these teachers asked, "How come I don't have a board?" and many committed to writing a grant the next time there was the opportunity. Participants doubted that teachers would have expressed the same level of interest if resources such as the interactive whiteboards were installed in every classroom without this selection process.

Drawing attention to teachers who use technology in innovative ways has also promoted more widespread use of the tools. To highlight creative uses of technology among teachers and students, the Technology Division disseminates a monthly newsletter and gives a monthly award for technology innovations. Additionally, participants said that the increased pace of technology adoption has inspired more teachers to begin using new tools because it generates concern that they will fall behind. According to one participant, "I think [what] is occurring is that we had developed the majority of the teachers who are involved in embracing the technology so that the people who weren't [embracing the technology] felt [they were] in a minority, and felt like . . . 'I'd better start learning too.' So we're getting to a tipping point where more and more people don't want to be left behind."

Technology as a Tool for Transformation

Participants we spoke with believe that technology has transformed how students learn in JPPSS. In line with the goals for a 21st Century system, technology-enabled classrooms inspire active learning. A teacher explained that with an interactive whiteboard, "The kids can get up. They can manipulate [the whiteboard] . . . in a way they're all understanding and can get involved, and they can see where they don't understand it and they can manipulate it until they do understand . . . . It's not always the teacher doing it."

Technology also allows teachers to provide just-in-time instruction. A former teacher recalled that, before technology integration, she had to address a student's question the following day if she did not know the answer, but as she explained, "the ideal teaching moment is when the child is interested in knowing the answer." With access to the Internet, teachers now can work with students to find the answer immediately, so "a teaching moment is not lost."

With large classes of students and little time to prepare a lesson, teachers are challenged to identify—let alone tailor instruction to—the particular needs of individuals. Participants told us that data collection technologies used for interim testing, as well as interactive tools such as the student response system, enable teachers to easily identify students' knowledge gaps. With instant access to students' performance scores and the ability to track progress, teachers are no longer in the dark about academic challenges. Once they diagnose learning problems, teachers may also use their technology resources to address knowledge gaps by presenting information in alternative ways.

Although many students today are frequent users of technology outside of school, they typically are asked to abandon their devices upon entering their school building. In JPPSS, stakeholders have made efforts to bridge the gap between students' personal technology practices and those endorsed in the classroom. One participant reasoned that because students are "living in a technical world . . . if they don't have it in the classroom, [teachers are depriving them] part of how they communicate with their world." A school board member told us that some teachers have made efforts to integrate tools such as mp3 players and telephones into instruction. By "seizing on the child's technology, something he's already a native with," teachers can make the instruction more engaging, and students may be more likely to appreciate the educational potential of these tools.

Technology Division

Participants told us that the development of a Technology Division has been critical to ensuring successful implementation of technology throughout the district. At the beginning of the initiative, the entire Technology Division was composed of a small group of staff members, some of whom were teachers and therefore not dedicated solely to pursuing integration efforts. Given the important role the leader expected technology to play in the system transformation, a larger support network was called for. As one participant put it, "You can't put a whole bunch of technology in schools and not support it with techies."

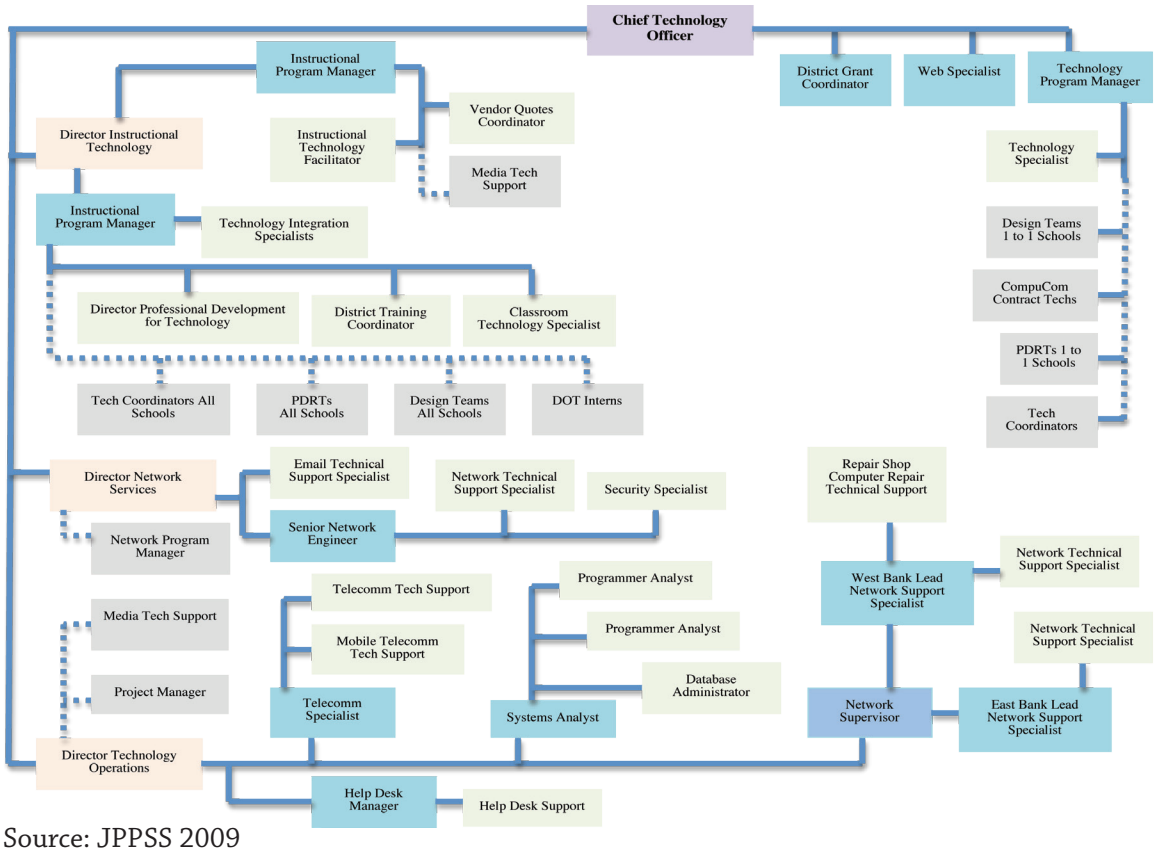
The Technology Division today consists of about 65 people and is spearheaded by a CTO—a role that did not exist before the initiative. The leader hired the CTO to help refine and articulate her technology vision, acquire technologies aligned with that vision, and develop technology support teams. The CTO told us she viewed her most important role as that of "strategist" in working with the Department of Instruction to integrate technology into curricula and instruction. Participants said that having someone lead the technology effort has been critical because, according to one participant, "if you don't have somebody at the head who's coordinating all of this, it becomes like a spaghetti bowl, all tangled up and without a single leader." A director of instructional technology, a director of technology and operations, and a director of network services support the CTO.

Technology integration specialists work directly with teachers to provide classroom-embedded coaching and development focused on integrating technology into lessons. At the organizational level, these specialists also work with the CTO to help bridge the gap between the technology and instructional personnel. Whereas only 6 technology integration specialists existed before the initiative, the team has grown to 11 specialists who are led by a technology integration specialists manager.

The technology integration specialists train the 88 professional development resource teachers (PDRTs) who work in every school. In additional to teaching one or two hours each day, PDRTs serve as teacher coaches—working with teachers to develop lesson plans and model the technology-enabled instructional approaches aligned with the leader's vision. During the 2008–2009 school year, PDRTs began receiving monthly technology training to help teachers integrate technology into lessons.

Technology coordinators are teachers who work in every school and help coordinate technology use in schools. Figure 6 shows the current organization of the Technology Division in JPPSS.

Figure 6: Organization of the Technology Division



Source: JPPSS 2009

Finally, the Digital Opportunity Trust (DOT) interns are college or graduate students who are assigned to schools and work 20 hours per week to train teachers and provide them with further assistance integrating technology into instruction (see Figure XX). DOT interns can work with teachers onsite during lunch or throughout the day and thus provide professional learning opportunities that are ongoing and embedded in the fabric of the school. A teacher we spoke with also appreciated the emergency technical help and peace of mind that DOT interns provide. She told us, "If something goes wrong, you can get her in here and say, 'Hey, help.' That is wonderful because . . . something's going to go wrong. When you have somebody there to kind of stand beside you and assist you, that makes you feel really good."

The Technology Division, and the CTO in particular, has saved the district a great deal of money by establishing standards for technology purchases. The CTO told us that when she entered the district two years ago, schools had relative autonomy to buy whatever type of equipment they wanted. As a result, the tools purchased, the price paid, the technical support needed, and the vendors used varied greatly across schools. The CTO stated, "Many of the vendors were going directly to the schools and convincing them that they needed the Cadillac when they could have used a Ford." The CTO addressed these problems by requiring her approval for all technology purchases. Additionally, she selected standard models for equipment purchases, at times by inviting vendors to compete for their business. To reduce costs, she began buying equipment in bulk.

Professional Development

"Professional development was such a big part of this program. Cisco didn't just come in and give them equipment and leave." —a Cisco Fellow

Transforming Professional Development

In order to transform the learning experience of its students, JPPSS realized it had to transform the learning experiences of its educators. Ironically, few schools are truly next-generation learning organizations. In too many districts, professional learning takes the form of a talking head presentation in a darkened cafeteria a few times a year. This sort of professional development—isolated from the context in which teachers work and often disconnected from the immediate problems they confront—often has little lasting impact on schools, teachers, or students (OECD, 2009).

But professional development does not have to be this way. The National Staff Development Council has published a set of standards based on years of experience and research that frame the most effective means of educating educational professionals. Among the key elements the National Staff Development Council recommends are that professional development be ongoing and embedded in the daily rhythm of the school, aligned with the school's vision and culture, and that it make extensive use of authentic evidence of learning, such as assessment data and examples of student work.

Professional development in JPPSS has not always embraced these key elements. As a business leader with close ties to the school said, "Professional development used to be . . . just like with anything else, you tell somebody, 'This is [it]—and here's the book. Read it and get it done.'" He continued, "[Now] you've got a lot more support and a lot more professional development opportunity . . . . [A] part of our culture is professional development. It's understanding that you're not going to be on an island and be left alone to fend for yourself. But we're going to give you the resources and support you need to be truly good at it."

Building professional capacity and transforming professional behaviors obviously take time. As the manager of the technology integration specialists recalled, at the beginning of the initiative two years ago, a good part of JPPSS's professional development consisted of the technology integration specialists rotating in and out of the district every two weeks to support teachers in technology integration. Thus, she said, "it took a long time for [the teachers] to see who we were, feel comfortable with us, that we were not, 'You're coming from central office and checking on what I'm doing?' 'No.' And it took them a long time to feel confident to come forward to say, 'I don't know how to do it,' because they don't want to admit that."

In the older model, the manager continued, the focus was on "integrating the technologies of that time, which would have been software-driven technologies, like the non-Web 2.0 kinds of technologies." Teachers were asked to sign up for a five-day, all-day training. She recalled that the impact of this program was limited. "It was very hard," she said. "Our numbers were very low with who we could train because we could only do it in the summer, and you could only do it [with] 20 people in a room. It took a whole week . . . . You just couldn't get the numbers . . . . [W]e didn't have facilities staff to offer it to enough teachers . . . . So if I'm doing 500 [teachers] a summer, I'm not making a dent."

Providing Multifaceted Options

For true system transformation, the professional development offerings in JPPSS needed to be multifaceted, just as the learning needs were multidimensional. Teachers and leaders had to become technically proficient with the new communications and computing infrastructure. But more fundamentally, they needed to change long-established practices and beliefs—even to the point of changing their notions of what it means to be a teacher.

JPPSS provided a combination of district- and vendor-developed technical training and technology integration programming to address the former, while Schlechty's "Working on the Work" (known as WOW) curriculum was tailored to help teachers adopt new pedagogical strategies and learn to work collaboratively. Cisco was the main source of funding for the WOW program, but as the Schlechty consultant noted, multiple sources were responsible for funding JPPSS's professional development: "Each campus has professional development funds that are allocated through various Title programs, Title I, Title II, federal programs. The state has provided professional development funds as a result of their Katrina Fund."

Providing Dedicated Staff and Resources

To support the implementation effort, the district created several specialized professional development roles. The Schlechty consultant noted that JPPSS has done something that few other districts they have worked with have done. "They have designated a person [as] the Schlechty frameworks coordinator for the district," he said. "Her major responsibility is that of coordination of all of these professional development opportunities that focus on the Schlechty framework."

The district has increased its capacity to offer multiple forms of professional learning "as the team has evolved and become more organized over time," noted a Cisco Fellow. She noted that, in addition to the formal training at schools and off-site, JPPSS also put "a big emphasis . . . on providing in-classroom support that's not necessarily a training class but is coaching through either the DOT interns or the technology integration specialists, where there's one-on-one time with the teacher, solving real problems that they have with their technology or their planning, or some idea that they have about what they'd like to do."

Technology is not just the subject of much professional learning in JPPSS—it is also a tool to support the professional learning effort. As the CTO pointed out, "This year we decided on creating a professional development calendar and having that calendar available [as] an online tool that everybody had access to." The district has also implemented an online registration system to facilitate the process of signing up for professional development offerings.

Next-Generation Professional Development

The CTO noted that, soon after her arrival in the district, "I said, 'Let's open it up and let's redesign the curriculum of what we're teaching [the teachers] such that they're going to get excited enough to go back and take it back into the classroom in the fall.' Instead of 200 teachers [as in past summer technology training programs] . . . we trained 1,100."

As the transformation initiative has evolved, the JPPSS professional development strategy has matured as well. Instead of a five-day, summer crash course on software, the district has now streamlined this technology training to a two-day conference model, called the Instructional Technology Integration Institute, which is hands-on and focused on the development of 21st Century skills, as well as Web 2.0 applications such as podcasts, blogs, wikis, online applications, and interactive whiteboards.

The response to the new professional development offerings has been overwhelming. In summer 2009 all teachers in the district, including the paraprofessionals and the central office staff, participated in the Instructional Technology Integration Institute—a total of more than 5,300 attendees. The commitment to train all the educators in the school system came from the top. As a Cisco Fellow recalled, "I think [the superintendent] was the one who said, 'We are going to do this today, professional development for all teachers to get them on par at the same place.' The traditional paradigm around professional development is, you know, an hour here, an hour there, maybe a day here, a day there. But I think that this was a very bold ambitious rethinking."

The Instructional Technology Integration Institute also follows exemplary professional development practices in letting educators choose from among a range of options. The emphasis in the Instructional Technology Integration Institute was providing offerings that featured practical, tangible, teacher-led practices. As a Cisco Fellow remarked, the leadership team "made sure that there were teachers—Jefferson Parish teachers—who are doing it, had done it, not just somebody from technology . . . . I think that helps them see the whole picture and it's not just something out there."

In addition to off-site offerings, such as the Instructional Technology Integration Institute, the manager of the technology integration specialists noted that Jefferson Parish teachers also can take advantage of "on-demand, tailored professional development, which, all the research shows, is the kind that makes some kind of change." She described how she worked with teachers in the district: "On every other Monday, I would go to the school; every other Tuesday, I would go to [a different] school. So the teachers knew when to plan . . . . Say, if I

started the lesson Monday with you, you would know in two weeks I was coming back, so we could reinforce it, I could debrief with you . . . . So I think that did work out better."

Professional Development Evaluation

As with any effective change initiative, the evolution of professional development in JPPSS continues. To inform its efforts, the district has been conducting online evaluation surveys for all professional development workshops and events whenever possible; the resulting data determine what worked and what did not so that future offerings can be made better.

Looking ahead, the deputy superintendent of instruction believed that "the district needs to arm our teachers with more skills in their repertoire. We can do a heck of a lot better job than what we're doing in terms of reading instruction. Next year we're going to begin a more systematic way of professional development for our teachers, especially in literacy. And formerly we would leave it up to the teachers to come to professional development, either after school or on Saturdays. Next year we're going to break away from that and do it during the school day." Although he expects some criticism for taking teachers out of the classroom, he believes the additional training ultimately will make class time more valuable.

One perennial professional development challenge, as noted by a Cisco Fellow, is the "need to really properly align the time and organization of when the professional development is provided to the teachers. I think that possibly not enough focus was paid there in Jefferson Parish. It could have gone more smoothly. I think it will always be complicated when you're looking, you know, at implementation schedules that change and teachers' schedules that are difficult, but when people get technology installed in their classroom, but they don't have training available to them for multiple months, that's not great. And I think that has happened, probably a lot." As she said, the ultimate goal of professional development centers on "how to get the right people the right training at the right time."

Culture Change

"I think the greatest impact is a change in culture, and when I say change in culture, I would say a change in attitude, a change in approach, an appreciation for technology as a tool for enhancement." —JPPSS's Chief Technology Officer

Among the many changes the education reform initiative has brought to JPPSS, perhaps the most subtle, but perhaps the most powerful and enduring, has been in the district's culture. In earlier years, Jefferson Parish, like many school districts around the country, operated as a slow-moving, tradition-bound bureaucracy. Teachers largely worked in isolation, and change was seen as something to wait out. The shift to a next-generation education system did not happen overnight, but once it took hold, new perspectives and possibilities emerged.

Changed Perspectives

Many of the JPPSS leaders who spoke to EDC researchers described the district's initial response to the initiative as one of passive resistance. The deputy superintendent of instruction observed that at first, "I believe it was maybe viewed with some skepticism . . . as some type of program instead of a lifestyle, in a way, or a work style. But as more and more teachers and more and more administrators receive training . . . that hooks the teachers even more into believing in the vision, and working the vision."

The prospect of mastering new tools and techniques daunted some educators even if they were not skeptical initially. Other educators were unclear about the long-term goals and believed the reform efforts were just about putting fancy equipment in the classroom. Such misunderstandings are rare among Jefferson Parish teachers these days. Now that the technology is in place and professional development has taken root, more and more teachers are sensing the power of this new way of teaching and learning—and they are actively working to bring it to complete realization.

Changing people's ability to believe in their own process of change took time. "It's happened over two years, three years, and it's continuing to happen at different rates," said the district's CTO. "They're really changing the way they do business," the Schlechty consultant observed. "I see signs of the transformation in the kinds of conversations they're having in their professional development . . . . I see the leadership in the district taking the long view, taking a look at how they can change the culture and the structure of the way they operate as a district."

Increased Empowerment

Decisions in the JPPSS of the past—as in many bureaucratic organizations—were generally someone else's responsibility, and individuals worked in silos with little sense of cooperation among them. Educators lacked a sense of empowerment and initiative; they were "bound by restrictions," as the deputy superintendent of instruction put it. "We think more in terms of possibilities now," he continued. "We think less of 'why can't we?' Now we think, 'well, why not?' . . . I do feel like the whole technology movement in our district has reinvigorated a lot of people in all levels. It's enlivened classrooms tremendously, and it's given teachers new life."

A local business leader who is active in the school system echoed this feeling, "I think we now have a culture of can-do. And what was innovative about that is, when you're dealing in a system that's classified as suburban but is truly urban, the challenges have people believing that you can't get it done." He felt that leaders had done an excellent job of supporting teachers through the process so that they were not left to navigate change all on their own. "So," he continued, "the culture now believes it can be done, sees that it can be done, and has the tools to get it done."

Exposure to Business Models

Another important cultural change has been the adoption of business process. As a Cisco Fellow explained, "School districts typically lack knowledge and practice of standard 'business' skills required to implement such a large program, such as program management, project planning, running efficient meetings, and communication." Many JPPSS staff were long-time employees of the system who had spent their entire careers in education and were simply not aware of other ways to get things done.

The transformation efforts brought the schools into closer contact with partners, in particular, Cisco, who brought new thinking about operational excellence and new approaches to change management. One Fellow gave EDC researchers a telling example of what JPPSS can learn from the culture of modern business. It was summer, and school was starting soon. A large delivery of interactive whiteboards was expected, but the Fellow had just learned that delivery was delayed. The Fellow found this unacceptable. She recalled, "You find a way. And so we, in the dead of August, rented the trucks and all of the Fellows showed up with their families. We loaded two U-Hauls, humongous trucks full of [interactive white]boards and all the equipment and dropped them off at the first-stage schools. And what that intended to do was say, 'Missing deadlines is not an option here.'"

Another Fellow recalled that initially the sheer scope of the implementation process overwhelmed the district's capacity. "They just did not have . . . the program management skill set to be able to manage an implementation of that size," she noted. "[V]endors would take advantage of them, and they wouldn't be able to manage it properly. Schedules would slip; budgets were all out-of-whack. I think that one of the things that we provided, by having Fellows there on the ground to work with them on a day-to-day basis, was coaching just to help them build that skill set."

Connections with Families

Research has shown that parental involvement can be a critical component in student achievement. Before the initiative, though, many parents in Jefferson Parish had trouble connecting with the schools. Some had two jobs, making it hard to schedule time for school visits. Others may have felt uncomfortable reaching out to a school authority, particularly if their own experiences as students were not positive.

JPPSS leaders felt strongly that parents had to be partners in the process of transforming the school district, and so launched many efforts to elicit their active participation. From the very inception of the transformation efforts, parents were invited to attend planning and outreach sessions. As momentum built, the CTO noted that parents frequently requested presentations on technology and the overall initiative. She reported, too, that they frequently offered their assistance. "I've seen a lot of volunteerism," she continued, " . . . from parents that want to come into the schools and help with professional development, help with training. They've offered a lot."

The technology itself has been a powerful means of building bridges to families. A parent portal was created to allow parents to view grades and attendance records and communicate with their children's teachers. Teachers have begun to employ Web 2.0 applications to make students' work more visible to their parents. One teacher described her wiki, "We've put pictures—posted pictures of the kids on that and the different activities that they have participated in."

Remaining Challenges

Some cultural challenges remain. As is often true in large systems like JPPSS, communication could be improved. But the district is aware of the issue, and taking steps to improve. The professional development offerings are helping teachers end the isolation that characterized their work in the past and establish more productive, collaborative relationships with their colleagues. Interdepartmental meetings now take place. And technology itself is facilitating communication among the busy professionals who often spend most of their day behind a classroom door.

Although the old bureaucratic ways are gone, district stakeholders do not intend to replace them with another static culture. Participants expect that new ways of doing things, of working on the work, will continue to emerge and evolve. As the superintendent observed, "I would say that the next generation [of the initiative] won't look exactly like this, because it's going to change. The work will never be done. It's the nature of the work."

Along with the profound changes that could be observed in the JPPSS culture, quieter and more personal transformations also took place. The deputy superintendent of instruction perhaps said it best. "Every day," he noted, "we're either getting better or the world is passing us by. This entire position and this involvement with technology stretches me as a human being, as a person, more globally. I wouldn't have thought this globally, I think, without this initiative. I wouldn't have thought of my role on earth, as a citizen of the world, without this initiative."

Partnerships

"My understanding is that there was a very clear vision from the beginning that this shouldn't just be an initiative where we provide product and hope for the best and walk away, that we would look at what are the things that these school systems need to create really transformational change . . . and that we would also provide really hands-on close relationships with these systems on a long-standing basis." —a Cisco Fellow

Partnership has been at the heart of reform efforts since the beginning of the initiative and is a critical factor in the successful transformation of the JPPSS.

Although many partners were brought in as part of the initiative, JPPSS developed few key relationships on its own. The key initiative partners can be categorized into three main groups:

- Technology partners providing equipment, training, and installation services
  - » Cisco (lead partner)
  - » Other key vendors: Promethean, Dell, and Wireless Generation
  - » Network infrastructure and classroom installation vendors
- Professional development companies providing training to improve curriculum, instruction, and school leadership
  - » Schlechty: WOW program, focused on increasing student engagement and building a learning organization
  - » Others: November Learning, Metiri Group, Pearson, ePals, Discovery Learning, The Smithsonian, The Slone Group, and Digital Opportunity Trust
- Cultural and historical organizations providing authentic learning sites and programs for students
  - » The Ogden Museum of Southern Art
  - » Louisiana State Museum
  - » National Park Service
  - » The National WWII Museum

Effective Leadership, Effective Partnership

Partnerships are much touted in the business literature, but in reality, they often are easier talked about than enacted. As the Schlechty consultant cautioned, "We see examples all the

time of districts accepting grant money, and ending up doing things that really are not very productive or not really helpful for children. Some folks are really well-[intentioned], and they have a bright idea, got a lot of money, but that idea doesn't quite work to help kids. And that's the danger of just buying into grants and foundations. And that's what you have to be careful about as a school district."

It is essential, therefore, that any partner share a common vision for reform and, as the Schlechty consultant put it, "be congruent with the direction in which [the district] is headed." A school board member elaborated, "I think you make sure that you have the same goal in mind and the same ethical base. The benefactor may or may not have its own reasons for investment. But as long as the goal, improved education, is the goal of both, then I think it's mutually beneficial." The superintendent and the Cisco team worked hard to ensure that the district and corporate visions for reform were aligned. "We talked in the same language about kids," the superintendent said, "and I never felt like I was being sold something. I always felt like we were creating something together."

Another factor in a successful partnership is being clear and purposeful about who is bringing what to the table. Schools and other mission-driven organizations attract volunteers—but even well-intentioned services can go awry if they are not focused effectively to address actual needs of the school. According to a Cisco Fellow, the superintendent of JPPSS had mastered this aspect of leadership. "She really worked with the local employers," said the Fellow, describing how she let employers know that if they wanted a certain type of workforce, they had to invest in the school system—for example, by installing a welding lab at one of her schools to support the local shipping industry. "I think that she talked the business language," the Fellow continued, "and helped them understand how important [it is] and what it is they could do to help out . . . . [A] ton of people will come and say, 'What can I do?' And she was able to say, 'Well, specifically, these are things I need help with.'"

Cisco's Leadership

The transformation initiative involved many partners, but Cisco's role was unique. Its technology leadership was, of course, central to the entire mission. "Cisco basically took care of the infrastructure, the classroom technology, the professional development for the first 16 of the 88 schools [in the district]," the CTO noted.

Cisco brought more than money to the table, however. It also brought support and capacity-building resources. As a Cisco Fellow explained, "We also provided . . . grants that would allow [the district] to hire more people into their Technology Division and more people with the right skill set to manage these programs." A local business leader recalled Cisco saying to the district, "We're going to bring in Digital Opportunity Trust [DOT] interns, to come in and be locally on the ground with you. We're going to put people there with you to help support you. And if you've got questions, you call us up."

Cisco's role went far beyond that of lead technical adviser. The company served as main benefactor, professional development coordinator, business coach, and overall project architect and manager. The CTO elaborated, "It's been beyond, I guess, a standard vendor/partner

relationship. I think they brought a lot to Jefferson Parish, and that they understood the educational environment and the educational initiatives that we were trying to accomplish."

Cisco's business planning skills were critical to a successful launch of the initiative. They brought a highly focused analytical process to JPPSS to help identify district needs and appropriate solutions. This strategic assistance was invaluable, because the requisite technical expertise was not in place in the district initially. A Cisco Fellow explained, "I think she [the JPPSS superintendent] had an idea that technology was part of what would help her move the district forward, but before Cisco came along I don't think that she had a clear path for how to do that."

On the project management side, Cisco brought business discipline and resource management skills to what had previously been an inefficient resource allocation process. As a Cisco Fellow said, "We were very, very hands-on in implementation of the grants . . . . We were tracking it monetarily so that we had a very clear budget and we knew where our money was going. There were regular meetings with the central office people, the superintendent, as well as the [CTO] and the professional development people. We really had a very visible and constant influence and oversight in Jefferson Parish."

Cisco's generosity had a multiplier effect on others. As a JPPSS board member explained, "Cisco primarily came in and was quite a generous benefactor to us. And they helped us get things off the ground . . . . [They] funded so many schools that the board said, 'Well, we need to take care of the other schools.'"

Learning from One Another

Other partners brought other skills and resources to the table. One of the most valuable partners was Schlechty, which provided a wealth of instructional and school leadership expertise. In addition to its formal professional development programs and services, the Schlechty team forged a highly effective working relationship with leaders throughout the district. The Schlechty consultant explained the team's approach: "We can look at and bring a different perspective to the table, where we have a good working relationship with the leadership . . . . [W]e can be honest with them and just give them our objective analysis of things that are going on."

As noted in the Professional Development section of this report, partnerships brought much-needed process improvement and business focus to Jefferson Parish schools. A Cisco Fellow elaborated, "I think one of the things that have sort of come about as a result of Cisco's involvement here is that they have moved from less of a bureaucracy to more running like a business in some cases." She attributed some of this benefit to Cisco's involvement and some to Schlechty's work with leaders. She explained that Cisco's partnership had helped "the district to efficiently provide the kind of background services that are needed to run this thing . . . [t]hrough the help of some Cisco coaching and some Cisco grants to help build up the team to work on the processes and having the right resources in place to make that stuff 'just work' so that the teachers don't have to worry about it . . . [that] I think, has been big innovation."

Another Fellow talked about the benefit to the district of increased efficiency and creating a shared expectation "that you can call this number and trust that someone's going to handle it, and that they have a process and they have the right staff and resources in place to do it."

The cross-pollination of ideas and strategies that came from the mix of outside technology organizations had an energizing effect on the school system. "Rather than just rely on their own personnel to do training," said one Fellow " . . . they're getting a lot of ideas from all these different partners and groups that they've worked with [on] keeping up to date on the latest technology and educational technologies."

The school system is not the only beneficiary of these relationships. New innovations are being sparked, a next-generation organization is emerging, and powerful teaching and learning are occurring for children and adults within the system. "We get the benefit," noted the Schlechty consultant, "of learning from them, learning ways that other districts can do things, just as we bring examples from districts across the country that work [and that] might give them an idea of how they can solve an issue."

Partnership Challenges

Not surprisingly, the management of so many partner relationships did not always run smoothly. One Fellow spoke of some technology partners who did not deliver what was expected in the early stages of the initiative. But the "use of clear statement of work agreements has helped," she said. Another Fellow recalled that when she first came to JPPSS, installation challenges were rife: "Originally, they had contracted with [a vendor] . . . to do the installation and it was really kind of a nightmare. It took a year to straighten out the situation, but the new vendor has been doing a good job." On the corporate side, the intensity and scope of the initiative brought scrutiny, and the project's sheer duration made midcourse adjustments essential to ensure that goals were still aligned.

All in all, the partnership experience has been overwhelmingly positive and productive for those involved. The chair-elect of the Jefferson Chamber of Commerce and former chair of the Education Committee explained how the Cisco partnership differed from other corporate relationships he had experienced: "[One major U.S. technology corporation] gave a whole bunch of money to a whole bunch of schools several years back with just nothing more than writing a check. They had nothing to show what that money did . . . . The data wasn't tracked very well. There was no support mechanism. Cisco did it the right way. Cisco came to the table with their time, because they put Fellows on the ground; with their talent, because they put experts and subject matter experts on the ground; and with their treasure, which is that money. That's the only way a partnership truly, truly works."

Sustainability

All too often, organizations push exciting and innovative initiatives for a while and ultimately regress to old attitudes and patterns of behavior. When asked about the staying power of the system transformation in JPPSS, participants discussed two dimensions of sustainability:

- Financial: How will the school system attract the resources needed to sustain the initiative?
- Leadership: What will happen to the initiative when there is a change in leadership?

Financial Sustainability

System transformation is resource-intensive. Technology continues to advance, requiring frequent upgrades and ongoing maintenance. New teachers need training, and all teachers and school leaders need ongoing professional development opportunities. Unfortunately, the resources required to address these needs are scarce in the current financial climate. An ongoing concern is how JPPSS will be able to continue the current level of offerings once outside funding has ceased. As a school board member mentioned, the financial climate at the time of the initiative's inception was far different from the current one. After Hurricane Katrina, she said, "Because everybody had to buy things new, the sales tax revenue was incredibly large. So, we had an influx of extra dollars that we could do stuff with. But, now, we're in a recession like everyone else and the dollars are fewer and fewer, so [we've got] financial challenges."

An over-reliance on one-time funding can cripple a change initiative when that funding dries up. The first step in financial sustainability is to make sure one's financial house is in order. At JPPSS, according to the deputy superintendent of instruction, this has been accomplished. "In terms of sustainability," he said, "our chief financial officer and our superintendent have done a tremendous job of managing our revenues. So our fund balance is very healthy. We're in fairly good financial shape to sustain a lot of this."

The Schlechty consultant said that the district has reduced wasteful spending and implemented more efficient ways to use resources. One of the cost-cutting strategies was pooling resources. "We've done back-to-school design workshops for multiple campuses," he said, "where three or four or five campuses will get together and pool their resources and send their teachers to a central location where we'll . . . help them train teachers that can go back and train other teachers."

And school leaders are building their budgets with line items for key initiative-related expenditures. "When I came into this department," said the CTO, "there was no budget, and so I'm kind of creating that as I go along for this project to remain within budget, and then to create a strategy for support over time." She went on to say that although she sometimes had worries about money, "I think once instruction[al staff] begins to understand, use, and rely on technology, the money is going to be there, because they're not going to be without, not going to want to be without."

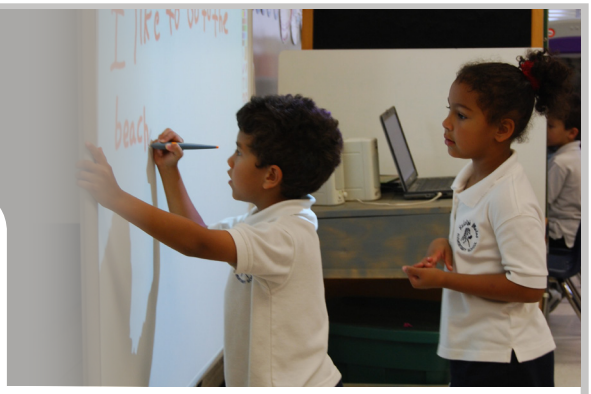
Preparation for Leadership Change

As in many organizational change efforts, leadership from the top is essential to success. That dependence on top-level support is a double-edged sword, however; when leadership changes, associated programs and initiatives are often abandoned. The CTO's comments reflected this concern: "I have defined the technology area of what it would take to build [the infrastructure] and what it would take to sustain and support it. Now the key question is, will the [new] superintendent that comes in value that?" She expressed worry that if the new leaders do not value what has been created in Jefferson Parish, then "we're just sitting on a Cadillac with respect to network and infrastructure, and our students are still not being addressed with respect to 21st Century schools."

One key to preparing for leadership change is to document institutional knowledge so that future leaders and school staff can use critical information and adopt successful processes. The superintendent explained with regret that the various elements of the system transformation have unfolded so fast and those involved were so busy that some internal documentation steps may have been skipped in the process. She said, "We have a lot of institutional knowledge, but it's not written down anyplace, and we need to share, because when you go or I go, somebody has to be behind us who can take this on and move it forward."

The Schlechty consultant recommended that the district seek "continuity of leadership, continuity of direction . . . [If] the leader goes, and they don't have the foundation in place . . . a [new] leader can take the district or the school in a totally different direction. So, folks who are responsible for recruiting and inducting leaders at the school level or the district level have to be clear about direction."

But with the powerful momentum that has been created, and with the tangible benefits that are beginning to accrue for teachers, leaders, families, and students, at least one observer is not worried about leadership change. "The data is going to drive the sustainability," said the chair-elect of the Jefferson Chamber of Commerce. "If the data says that this is working and that we are making these strides, then these programs have to remain. And now that we're data-focused and data-driven, I think sustainability is kind of second-nature right now. I think it's here. If you asked me that question a couple of years ago when we first started, I would have probably said it was questionable . . . . I think what makes it be there now is the total buy-in . . . . And so everybody sees the benefit of how where you used to reach 10 kids in your class, now you can reach 20. And now you can get them access to information and they can see the relevance in that information. Now, we're cooking. We're really cooking."



Summary of Key Factors

Below is a summary of lessons learned from JPPSS's education reform efforts. These are categorized according to the major factors that appear to contribute to the district's successful transformation from a bureaucratic organization to a knowledge-based, next-generation system.

Leadership

- Strong leadership is essential to achieving a system transformation of this kind. Helpful characteristics include firsthand knowledge of the district and its stakeholders, innovative thinking about education, keen organizational skills and a businesslike approach, and a clear vision for reform.
- A leader's priority should be to achieve buy-in from district stakeholders by demonstrating his or her commitment to reform efforts and clearly articulating the vision in a way that promotes its adoption throughout the district, particularly by principals, teachers, and parents.
- Giving principals and teachers more freedom and empowering them to address challenges they confront in their work may go a long way to help them embrace the transformation efforts. Leaders who help them understand inadequacies in the current system also may stimulate their desire for change.
- Among a district leader's most important responsibilities is to establish an effective and diversified support system made up of teams dedicated to instruction, technology, and professional development. The leader must foster collaboration and transparency for these teams to work as a cohesive and effective support system through interdepartmental meetings and open channels of communication.
- Ongoing leadership training for principals, in which they refine their beliefs about how their school should operate and how they can better serve their students, sets the stage for better teaching and administration processes within schools.

Teaching and Learning

- A new approach to education may demand a shift from seeing students as passive recipients of content to seeing them as customers for whom educators must work so that they volunteer their attention.

- Teachers who integrate robust, thoughtfully designed technology into instruction may be more likely to engage students. Most students appreciate the control technology gives them over the learning process, which helps them connect with the content. Technology also may increase teacher engagement.
- Harnessing technology's power, teachers may also engage students by developing new curricula and implementing new instructional strategies aligned with the goals of the reform effort. Technology tools such as interactive whiteboards provide collaborative learning opportunities to promote skills that higher education and the workplace highly value.
- School systems that seek to promote 21st Century skills likely demand new forms of assessment, but state tests are still vitally important to the future of the district and its students. New technologies help teachers, school leaders, and other district stakeholders conduct traditional and alternative assessments by gathering fast, accurate data on student performance.
- A 21st Century teacher is better seen as a "guide" or "facilitator" than the sole source of knowledge in the classroom. Training may help teachers prepare for this role in a student-centered classroom, where they address the unique learning needs of students and encourage exploration.
- Principals may evaluate teachers based on their ability to adopt new instructional practices, integrate technology into instruction, and achieve high levels of student learning.

Technology Implementation

- A comprehensive technology implementation plan—with clear education technology goals, detailed benchmarks, implementation strategies, evaluation strategies, and a timeline—likely will help a district to realize the leader's technology vision.
- To make technology tools seem less intimidating to principals, district leaders may inspire technology use by modeling the behaviors they want to see throughout the system. This same modeling strategy, when employed by principals, may inspire teachers and school administrators to adopt new technology practices.
- Targeting the most willing teachers as the first recipients of technology training may inspire widespread technology adoption because teachers tend to have the most influence on the behaviors and practices of their colleagues.
- Requiring teachers to work for new equipment, such as by writing grants, may stimulate their interest in acquiring and using new technology resources.
- Students often find instruction more engaging—and therefore more conducive to learning—when teachers make efforts to bridge the gap between students' personal technology practices and those endorsed in the classroom. Efforts to leverage the instructional potential of mp3 players and mobile phones have been particularly successful.

- A technology team leader and support team may be critical to ensuring the successful implementation of technology throughout the district. The team leader serves as "strategist" and liaison between the instructional and technology teams in order to achieve effective curriculum integration.
- Although having district-level technology personnel is critical in developing goals and integration strategies, it is also critical that teachers receive ongoing technology training and on-the-ground technical support to address challenges that arise during instruction.
- The district may save money by establishing standards for technology purchases, inviting vendors to compete for business, and buying equipment in bulk.

Professional Development

- To increase the reach of professional development, the district may benefit from offering shorter technology training events, which usually result in higher enrollment numbers.
- Professional development appears to be most effective when it addresses the particular needs and interests of teachers, such as by allowing educators to choose sessions that are most interesting or relevant to them.
- A successful professional development program requires designated staff members, including a leader who coordinates the team and the development of professional development opportunities. Supporting staff members must work regularly with teachers, solving real problems they encounter in the classroom.
- In a 21st Century system, technology likely is the subject of professional development as well as a tool to support it. An online calendar, registration system, and evaluation tools enable a professional development program to run efficiently and improve over time.
- Professional development is most effective when it is aligned with the technology resources available to teachers. Providing teachers with tools without the training, or providing training without the tools, wastes resources and results in lost learning opportunities.

Culture Change

- It likely will take time to change the culture of a district because initial resistance due to skepticism or feelings of intimidation is difficult to combat. For this reason, district leaders will benefit from seeing cultural change as a long-term effort.
- A district may learn and benefit from the business processes employed by vendors and corporate partners. Business skills involving program management, project planning, and communication are required to achieve a large-scale transformation.
- Because parental involvement is a critical component to student achievement, districts may benefit from organizing planning and outreach sessions, inviting volunteerism, encouraging school visits, and providing opportunities for families to help with professional development. Technology can also be a powerful means of connecting with parents.

- Cultural change is best when it is ongoing; district stakeholders should strive for continual improvement as new ways of doing things emerge and evolve.

Partnerships

- Partnerships are often at the heart of 21st Century transformation efforts. Typically, partnerships are most successful when there is a shared vision for school reform and mutual commitment to achieving articulated goals.
- Financial contributions are important, but partners who also offer support and capacity-building resources are even more valuable. Corporate partners may serve in a range of functions, including benefactor, professional development coordinator, business coach, and project manager. Introducing business discipline and resource management skills to address system inefficiencies may be among their most important roles.
- Educational organizations, such as nonprofit organizations or museums, also may serve as valuable partners, providing a wealth of instructional and school leadership expertise. The cross-pollination of ideas and strategies that come from the mix of partners may have an energizing effect on the school system.
- To help ensure that partners deliver what is expected, leaders may benefit from developing written work agreements. The details of these agreements may need to be revisited and adjusted if partnerships are long-term.

Sustainability

- The first step in financial sustainability is to manage revenues and ensure that the health of the district does not depend on one-time funding. Districts also can reduce wasteful spending by using resources more efficiently, such as by sharing equipment or pooling resources.
- A detailed budget with line items for key initiative-related expenditures helps district leaders develop a strategy to sustain the transformation efforts and outcomes.
- A great deal is learned throughout the transformation process, and this knowledge may benefit other district stakeholders and future leaders. Posting documents and lessons learned in a document management system makes it easier to transfer knowledge.
- Change in leadership can be devastating to a district's transformation efforts. To prepare for a transition when the superintendent leaves, individuals responsible for recruiting and inducting new leadership must be clear about the vision and desired direction of reform.
- Effective use of data to identify the successes of reform efforts may help ensure the sustainability of the transformation. Stakeholders inside and outside of the system likely will help sustain the aspects of the initiative that clearly are working.

References

Autor, D., Levy, F, & Murnane, R. J. (2002). Upstairs, downstairs: Computers and skills on two floors of a large bank. *Industrial and Labor Relations Review, 55*(3), 432–447.

Autor, D., Levy, F., & Murnane, R. J. (2003). The skill content of recent technological change: An empirical exploration. *Quarterly Journal of Economics, 118*(4), 1279–1333.

Barnes and Conti Associates, & Francis, D. (2007). *Managing innovation: Optimizing the power of new ideas.* Retrieved July 29, 2009, from www.barnesconti.com.

Carpenter, M. (2003). Older, wiser, wired: Working to bridge the digital divide. *AARP: Learning and Technology.* Retrieved September 11, 2005, from http://www.aarp.org/olderwiserwired/Articles/a2003-11-19-ia-perspectives.html.

Christensen, C. M., Horn, M. B., & Johnson, C. W. (2008). *Disrupting class: How disruptive innovation will change the way the world learns.* NY: The McGraw-Hill Companies.

Cisco Systems, Inc. (2008). *Equipping every learner for the 21st century.* San Jose, CA: Author.

Education Testing Service [ETS]. (2005). *National assessment of adult literacy: Computer literacy study.* Princeton, NJ: Author.

Finn, C. E., Jr. (2008). *Troublemaker: A personal history of school reform since Sputnik.* Princeton, NJ: Princeton University Press.

Friedman, T. L. (2005). *The world is flat: A brief history of the twenty-first century.* New York: Farrar, Straus and Giroux.

Handel, M. (2003). *Implications of information technology for employment, skills, and wages: A review of recent research.* Menlo Park, CA: SRI International.

Holtzblatt, K., & Jones, S. (1993). Contextual inquiry: A participatory technique for system design. In Schuler, D., & Namioka, A. (Eds.). *Participatory design: Principles and practices,* 177–210. Hillsdale, NJ: Lawrence Erlbaum Associates.

Honey, M., Fasca, C., Gersick, A., Mandinach, E., & Sinha, S. (2005). *Assessment of 21st century skills: The current landscape.* Pre-publication draft. Retrieved September 14, 2005, from http://www.21stcenturyskills.org.

Hughes, J., King, V., Rodden, T., & Andersen, H. (1995). The role of ethnography in interactive systems design. *interactions, 2*(2), 56–65.

Jefferson Parish Public School System. (2008). Educating Every Learner for the 21st Century: Jefferson Parish School System 2008 Annual Report. LE: Author.

Lenhart, A., Madden, M., Macgill, A. R., & Smith, A. (2007). *Teens and social media: The use of social media gains a greater foothold in teen life as they embrace the conversational nature of interactive online media.* Retrieved June 24, 2009, at http://www.pewinternet.org/Reports/2007/Teens-and-Social-Media.aspx.

Levy, F., & Murnane, R. J. (2004). *The new division of labor: How computers are creating the next job market.* Princeton, NJ: Princeton University Press.

Millen, D. R. (2000). Rapid ethnography: Time deepening strategies for HCI field research. *Proceedings of DIS 2000,* USA, 280–286.

Moe, T. M., & Chubb, J. E. (2009). *Liberating learning: Technology, politics, and the future of American education.* San Francisco: Jossey-Bass.

National Center on Education and the Economy [NCEE]. (2007). *Tough choices or tough times: The report of the **new** Commission on the Skills of the American Workforce.* San Francisco: Jossey-Bass.

National Telecommunications and Information Administration. (2004). *A nation online: Entering the broadband age.* Washington, DC: U.S. Department of Commerce.

Organization for Economic Co-operation and Development (OECD). (2004). *OECD information technology outlook.* Paris: Author.

OECD. (2009). *Creative effective teaching and learning environments: First results from Talis*. Paris: Author.

OECD, & United Nations Educational Scientific and Cultural Organization. (2003). *Literacy skills for the world of tomorrow.* Paris: Authors.

Parsad, B., & Jones, J. (2005). *Internet access in U.S. public schools and classrooms: 1994–2003 (NCES 2005-015).* Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Partnership for 21st Century Skills. (2003). *Learning for the 21st century.* Retrieved September 14, 2005, from http://www.21stcenturyskills.org/downloads/P21_Report.pdf.

Peter D. Hart Research Associates/Public Opinion Strategies. (2005). *Rising to the challenge: Are high school graduates prepared for college and work?* Prepared for Achieve, Inc.

Rainie, L. (2005). *Who uses the Internet, what they do, and what it means.* Presentation at the Freedom to Connect Conference, Washington, DC.

Rainie, L., & Horrigan, J. (2005). *A decade of adoption: How the Internet has woven itself into American life.* Washington, DC: Pew Internet & American Life Project. Retrieved September 11, 2005, from http://www.perinternet.org/PPF/r/148/report_display.asp.

Schwarz, E., & Kay, K. (2006). *New directions for youth development: The case for twenty-first century learning.* New York: Jossey-Bass.

Strauss, A. L., & Corbin, J. (1990). *Basics of qualitative research: Techniques and procedures for developing grounded theory.* Thousand Oaks, CA: Sage Publications.

Sutton, R. I. (2002). *Weird ideas that work: 11 1/2 practices for promoting, managing, and sustaining innovation.* New York: The Free Press.

Wagner, T. (2008). *The global achievement gap: Why even our best schools don't teach the new survival skills our children need—and what we can do about it*. New York: Basic Books.

Wong, K. K., Shen, F. X., Anagnostopoulos, D., & Rutledge, S. (2007). *The education mayor: Improving America's schools*. Washington, DC: Georgetown University Press.

Appendix

Interview Protocol

1. What is innovative about JPPSS?
2. What are the main educational problems in other districts that people thought would be addressed in JPPSS?
3. How did the education reform effort get started (e.g., whose idea was it, who was involved)?
4. How were the innovative aspects of JPPSS implemented and promoted?
5. What system changes have taken place in JPPSS since the education reform initiative began (e.g., changes due to successes, challenges, anticipated problems)?
6. What impacts have you seen with regard to learning, instruction, and leadership as a result of the system transformation?
7. How has the reform initiative been financed?
8. What will financing look like in the future?
9. What role did partnerships play in the implementation of the reform initiative (what is to be learned from these partnerships and what issues need to be considered)?
10. How sustainable are the innovative initiatives that have been implemented throughout the system (e.g., long-term maintenance, future concerns)?
11. If you were going to give advice to people about transforming a school district into a 21st Century school system, what critical factors need to be in place or must be considered?
12. Do you have anything to add in terms of lessons learned from your system transformation efforts (please keep in mind that the goal here is to create a replicable model for system transformation)?