

Profiles of 21st Century School Districts and Comparison with Upper Arlington

Prepared for Upper Arlington City School District

In this report, The Hanover Research Council profiles successful 21st Century Skills learning initiatives in seventeen public school districts and two independent high schools, located in Ohio and across the nation. We then review the current 21st Century Skills initiatives and programs underway at Upper Arlington and suggest new directions for 21st Century Skills integration. Relevant academic performance measures and demographic data are also provided for all districts discussed in this report.

Introduction

Most educators recognize the value of 21st Century Skills learning and are eager to embrace 21st Century teaching methods, focus, and technological initiatives. Although discussions of 21st Century learning are ubiquitous, many policymakers, school administrators, and faculty members have difficulty in pinpointing exactly what 21st Century Skills mean and how they can be implemented in a classroom.

The advocacy group, Partnership for 21st Century Skills, defines the following student outcomes as representative of a 21st Century learning environment:¹

- ❖ *Knowledge of Core Subjects and 21st Century Themes*
 - Global Awareness
 - Financial, Economic, Business, and Entrepreneurial Literacy
 - Civic Literacy
 - Health Literacy

- ❖ *Learning and Innovation Skills*
 - Creativity and Innovation
 - Critical Thinking and Problem Solving
 - Communication and Collaboration

- ❖ *Information, Media, and Technology Skills*
 - Information Literacy
 - Media Literacy
 - Information, Communications, and Technology Literacy

- ❖ *Life and Career Skills*
 - Flexibility and Adaptability
 - Initiative and Self-Direction
 - Social and Cross-Cultural Skills
 - Productivity and Accountability
 - Leadership and Responsibility

The Partnership for 21st Century Skills also recognizes the following assessment and student support elements of 21st Century Learning:

- ❖ 21st Century Standards
- ❖ Assessments of 21st Century Skills
- ❖ 21st Century Curriculum and Instruction
- ❖ 21st Century Professional Development
- ❖ 21st Century Learning Environments

¹ "Framework for 21st Century Learning." Partnership for 21st Century Skills.
http://www.21stcenturyskills.org/documents/framework_flyer_updated_april_2009.pdf

In this report, The Hanover Research Council profiles seventeen public school districts and two independent high schools that have successfully implemented all or some of the above criteria for 21st Century Learning. Most of the districts discussed in this report are signatories of the National Agenda for 21st Century Skills formulated by the Partnership.² The report is divided into four sections, as follows:

Section One describes the methodology and research methods the Hanover team used to identify the districts that are profiled herein. We also provide a brief overview of some of our most salient conclusions regarding 21st Century Skills initiatives at profiled districts.

Sections Two and Three present the 21st Century profiles of schools and districts that have been identified as leaders in this initiative. Among the best 21st Century Skills Ohio districts and/or charter schools we profile are:

- ❖ Metro Early College High School, Columbus
- ❖ Cleveland Heights-University Heights City School District, University Heights
- ❖ Dalton Local Schools, Dalton
- ❖ Oak Hills Local School District, Cincinnati
- ❖ Orange City School District, Pepper Pike

Included in our overview of best 21st Century districts and/or charter schools across the nation, are:

- ❖ Amphitheater Public Schools, Arizona
- ❖ Catalina Foothills School District, Arizona
- ❖ Cobb County Public Schools, Georgia
- ❖ Herricks Union Free School District, New York
- ❖ High Tech High, California³
- ❖ Jefferson Parish Public School System, Louisiana
- ❖ Hutchinson Public Schools USD 308, Kansas
- ❖ Kearney Public Schools, Nebraska
- ❖ Kettle Moraine School District, Wisconsin
- ❖ New Tech High School, California
- ❖ Niles Township High School District 219, Illinois
- ❖ Putnam County Schools, West Virginia
- ❖ Swain County School District, North Carolina
- ❖ Trussville City School District, Alabama

² “National Action Agenda on 21st Century Skills.” P21.

http://www.21stcenturyskills.org/index.php?option=com_content&task=view&id=769&Itemid=63

³ Note: For the purposes of this report, High Tech High is classified as a district, given the expansion of the program in recent years.

Section Four outlines current 21st Century Skills initiatives at Upper Arlington City School District. The section also highlights the strengths of the 21st Century Skills implementation strategy in the district and provides suggestions for possible new directions, which have been successfully employed by the best 21st Century Skills districts presented in this report.

Section Five contains academic performance, demographic, and enrollment data of the best 21st Century Skills districts discussed in this report.

Section One: Methodology and Key Findings

The district profiles presented in the following pages were selected after an extensive search of secondary literature and other educational resources on 21st Century initiatives. During the initial stages of our research, Hanover contacted all public school districts and charter schools listed as signatories on the Partnership for 21st Century Skills' website, as well as Department of Education officials at state signatories, for help in identifying the most successful 21st Century Skills programs.⁴ After receiving initial feedback and completing secondary source research, Hanover focused on seventeen school districts and two independent high schools with 21st Century Skills programs that are considered to be advanced.

Most of the districts discussed in the report have traditionally high graduation rates, assessment scores, and attendance rates. Among the Ohio districts profiled, all but one have been awarded the "Excellent with Distinction" designation by the Ohio Department of Education. However, some of the districts discussed, especially those of Jefferson Parish (Louisiana) and Swain County (North Carolina), appear to have used technology and new 21st Century instruction methods to turn around failing systems and produce strong student outcomes. The profile of Cleveland Heights-University Height City School District (Ohio) also shows how an improving school system can use 21st Century Skills to boost its performance.

All school districts described in this report appear to share several common characteristics with regard to 21st Century Skills initiatives:

- ❖ Sophisticated technology programs;
- ❖ Clear strategic goals for 21st Century Skills implementation;
- ❖ Innovative curriculum initiatives; and
- ❖ Explicit incorporation of 21st Century goals and commitment to preparing students for the 21st century workplace and environment.

Certain schools, such as the High Tech High, New Tech High, and Metro Early College High School, were founded specifically to reflect 21st Century educational principles and have developed new models of project-based learning and performance assessment. The majority of schools, however, have simply remodeled their instructional and curricular systems to reflect the 21st Century Skills agenda.

⁴ "National Action Agenda on 21st Century Skills: Signatories." Partnership for 21st Century Skills.
http://www.21stcenturyskills.org/index.php?option=com_content&task=view&id=769&Itemid=63

Section Two: 21st Century Skills Initiatives in Ohio

Most Ohio public school districts have only just begun their conversion to 21st Century Skills. Although some school districts have kept up with technology trends and college/career preparation programs through the “High Schools That Work” initiative (now extended to middle schools), most school districts have not yet implemented the core principles of 21st Century Skills learning within their classrooms. As an official at the Office of Policy and Assessment of the Ohio Department of Education, Erin Joyce, put it, “we are at the nascent beginning.”⁵

Because of the very incipient stages of the implementation processes, there are few resources available on current 21st Century Skills initiatives at Ohio public schools. **However, one program has been used as the “flagship” by the Department of Education, according to Joyce – the Metro Early College High School.** The Metro School has received media attention and praise from public officials as an innovator in the field of 21st Century Learning. The school is profiled below. Other Ohio profiles that follow illustrate how various Ohio school districts have approached the implementation of 21st Century Skills and what programs are currently underway. Aside from the Metro Early College High School, all four districts described have taken a strategic approach to the incorporation of 21st Century Skills and are leaders in the area, including:

- ❖ Cleveland Heights-University Heights City School District, University Heights
- ❖ Dalton Local Schools, Dalton
- ❖ Oak Hills Local School District, Cincinnati
- ❖ Orange City School District, Pepper Pike

Metro Early College High School, Columbus

The Metro Early College High School is a science, technology, engineering, and mathematics (STEM)-focused high school operated by the Education Council, a confederation of sixteen school districts in Franklin County, which includes Upper Arlington. While attending Metro Early College High School, students continue to be enrolled in their home district, but receive the benefits of a hands-on performance-assessment education in small classroom setting. Launched in 2006 with only the ninth grade, today the school has reached its maximum capacity at 400 students in 9th to 12th grades.⁶

The Metro Early College High School model emphasizes the need for small classrooms and a holistic approach to learning. The school has created an integrated curriculum, which brings together math and science components in order to

⁵ Joyce, E. Telephone Interview. December 2, 2009.

⁶ “Who We Are.” Metro Early College High School. <http://www.themetroschool.org/who-we-are/>

demonstrate the interrelation between the fields. The “learning experience” at the high school is divided into two phases:⁷

- ❖ *CorePrep* – 9th and 10th grade students work to improve their performance at Metro High. To complete this phase, students must demonstrate competency in core subjects, pass the Ohio Graduation Tests, and adequately complete individual and in-group projects to showcase their abilities in applying solutions to real-world problems;
- ❖ *College Access* – 11th and 12th grade students focus on learning outside of the Metro classroom, choosing a curriculum which incorporates an internship/work-based component and college courses.

The Metro Early College High School uses the following principles to inform its education model:⁸

- ❖ The school’s central intellectual purpose is helping students to use their minds well;
- ❖ An essential body of knowledge, skills and dispositions will be identified for student mastery;
- ❖ The school’s goals apply to all students;
- ❖ The school must be highly personalized;
- ❖ A governing practical metaphor will be “student-as-worker, teacher-as-coach”;
- ❖ Teaching and learning will be documented by student performance on real tasks;
- ❖ The tone of the school will be one of trust and decency;
- ❖ The principal and teachers will act as generalists first and specialists second;
- ❖ Resources will be modest and therefore positioned toward teaching and learning;
- ❖ The school will emphasize democratic, fair and equitable practices.

Each student is expected to be an independent learner, who is able to think critically and make connections between different disciplines and real-world and classroom experiences, take on multiple roles within the learning process, and build a comprehensive portfolio of his or her work.⁹

So far, the program has been highly successful, with students performing well on Ohio Graduation Tests.¹⁰ It has also received public attention; the Metro Early

⁷ “The Learning Experience.” Metro Early College High School. <http://www.themetroschool.org/experience.php>

⁸ “Philosophy.” Metro Early College High School. <http://www.themetroschool.org/philosophy.php>

⁹ Ibid.

¹⁰ “Fledgling School Fares Well on State Graduation Exams.” *The Columbus Dispatch*. July 27, 2008.

http://www.dispatch.com/live/content/local_news/stories/2008/07/27/metroscores.ART_ART_07-27-08_B4_EEARU9F.html?sid=101

College High School has been featured on a PBS program, “Where We Stand.”¹¹ Given the documented success of the Metro Early College High School program in developing students’ academic, critical thinking, and other life skills, it is recognized as one of the forerunners of 21st Century Skills education.

Cleveland Heights-University Heights City School District, University Heights

In 2007, the Cleveland Heights-University Heights City School District restructured its strategic goals and objectives to incorporate 21st Century Skills. Its educational approach is called “Preparing All Students for Success in a Global Economy” (PASSAGE). The District’s strategy is described as such on its website:¹²

- ❖ Supporting and reinforcing a culture of collaboration;
- ❖ Recruiting, developing, and retaining highly effective staff;
- ❖ Using data effectively for strategic action;
- ❖ Ensuring access to global content and the development of 21st Century competencies;
- ❖ Improving staff effectiveness with appropriate instructional materials, methodologies, and professional development;
- ❖ Accepting the responsibility to provide support and remove barriers related to Equity and Access.

In addition to this broad strategic reassessment, the district launched the “One to One Teaching and Learning with Technology” initiative, “designed to prepare students for their future, a world of digital technology, global information, and instant communication.”¹³ By 2012, the district plans to provide laptops to all teachers and students in grades 6 through 12, and install a wireless Internet system. According to the initiative guidelines, “increasing access to technology is essential for that future and laptops, within a wireless learning environment, help students to learn in deep and meaningful ways that prepare them for productive participation in a global economy.”¹⁴

This past summer, the District launched “Infinite Campus,” a student information system, which allows for integrated administration of student information, easy stakeholder access, and individualized instruction. It is now the official grade book of grades 3 through 12. The implementation of Infinite Campus was divided into two stages: with the system first covering grades 6 through 12, and then grades 3 through

¹¹ “Where We Stand.” PBS. September 8, 2008. <http://www.pbs.org/wnet/wherewestand/reports/achievement/segment-three-from-full-episode/20/>

¹² “District Vision, Mission, and Strategy.” Cleveland Heights-University Heights City School District.

http://www.chuh.org/boe/district_vision_mission_strategy.shtml

¹³ “One to One Teaching and Learning with Technology Initiative.” Cleveland Heights-University Heights City School District. http://www.chuh.org/family/one_to_one/index.shtml

¹⁴ Ibid.

5 during the second trimester of the 2009-2010 school year. All faculty members attended training workshops before the launch of Infinite Campus in August 2009. Today, faculty and staff can use online instruction tutorials and on-site support if problems arise.¹⁵

Furthermore, one example of a 21st Century Skills project recently undertaken by the district's students is a documentary film festival held in the Heights High School. The project was a collaboration between three classes: an American history class, an AP Literature and Composition class, and a Video Production class.¹⁶ Fourteen teams of students produced digitally recorded video stories about war experiences of soldiers and civilians in World War II, the Korean War, the Vietnam War, during conflicts in the Falklands and Grenada, and in the first Gulf War. Each documentary is approximately five minutes long.

Dalton Local Schools, Dalton

The Dalton Local School District is currently in the process of transitioning to a 21st Century Skills Learning environment, and already has several programs in place. The district's mission statement explicitly evokes the 21st Century Skills initiative:

Whatever it takes to attain our vision, we will continue to improve student achievement while striving to meet the needs of each student by nurturing the strong partnership among parents, community, and schools while maintaining our traditional community values; preparing our students to be capable of adjusting to the ever-changing needs and dynamics of the 21st Century.¹⁷

The district has been especially active in implementing a career-technical focused curriculum, similar to the one at the Upper Arlington High School. Currently, the high school curriculum includes such components as Business, Family and Consumer Science, and Industrial Technology. The following courses are offered in each of these program areas (full course descriptions can be found on the Dalton Local Schools website):¹⁸

¹⁵ "H-UH is Preparing to Implement a New Student Information System." Cleveland Heights-University Heights City School District. http://www.chuh.org/family/infinite_campus/index.shtml

¹⁶ "Everyone Has a Story: War Experience." Cleveland Heights-University Heights City School District. http://www.chuh.org/news/news_12_01a_2009.shtml

¹⁷ "Mission Statement." Dalton Local School District.

http://www.dalton.k12.oh.us/vnews/display.v?TARGET=printable&article_id=4aaf8a774bf6a

¹⁸ "High School Academics." Dalton Local Schools.

<http://www.dalton.k12.oh.us/vnews/display.v/SEC/High%20School%3E%3EAcademics>

Career-Focused Curriculum at Dalton Local Schools

Curriculum Area	Courses
Business	Introduction to Business I/Computer Applications Introduction to Business II Financial Management & Accounting Business Management Internship
Family and Consumer Science	Healthy Food and You I Healthy Food and You II Smart Money Dollars and Cents Relationships Child Development
Industrial Technology	Industrial Technology I Industrial Technology II Wood Products Technology I Wood Products Technology II Computer Aided Drafting and Design

Students may also choose to receive a Career-Technical Diploma, as an alternative to the standard High School Academic Diploma. Students on the Career-Technical track are required to complete the following requirements:¹⁹

- ❖ A career technical occupational preparation program
- ❖ Main stream courses:
 - English – 4 units
 - Mathematics – 3 units
 - Science – 3 units
 - Social Studies – 3 units
- ❖ Two units from one or more of the following, or two additional units from one or more of the areas listed above:
 - Business
 - Computer Science
 - Foreign Language
 - Visual or Performing Arts

In another interesting initiative, Dalton Local Schools offers e-learning online classes as a way to supplement curriculum, avoid scheduling conflicts, and allow homeschooled students to take classes that are not available through the home school curriculum. Only students who demonstrate the ability to self-monitor their progress, time management skills, and diligence are permitted to enroll in online courses. E-

¹⁹ Ibid.

learning courses carry the same credit as normal courses and their scores are recorded in student transcripts.²⁰

Another new program will now allow students to take college-level classes in core academic areas (Math, Science, English, and Social Studies) and business. Beginning this year, Dalton High School offers over 30 credit hours of college-level courses taught by local teachers who have been appointed as adjunct professors. The credits can be transferred to most colleges and appear on an actual college transcript. This program was launched “in preparation for a globally competitive 21st Century” where “our students [will] need advanced studies beyond a high school diploma.”²¹

Oak Hills Local School District, Cincinnati

The Oak Hills Local School District in Cincinnati has several initiatives and programs which promote 21st Century learning in the district’s schools. A key component of the district’s direction in this area is the Business Advisory Council (BAC). The BAC “exists to raise student performance levels, help define educational outcomes, which serve the needs of the employment base, and share technical and managerial expertise.”²² As such, the BAC serves as the interconnection between the workplace and the schools, and allows educators to stay abreast of trends in the marketplace and the needs of employers. As discussed in Section Four, a similar advisory council might prove useful in Upper Arlington’s 21st Century Skills implementation efforts.

Oak Hills also encourages interaction with the community outside school walls through an active community service program. The involvement of students in community service programs is meant to form “21st Century Habits” and raise student awareness of global issues. In the past year, students have volunteered their time to the following projects:

- ❖ Oak Hill High art students donated their works to UGive, a nonprofit group which will auction off the pieces to raise money for children with HIV/AIDS in Africa;
- ❖ Students at C.O. Harrison Elementary School collected money to help the Jewish National Fund to build an indoor playground in Sderot, Israel;
- ❖ Oakdale Elementary students collected school supplies, clothing, and other items to help homeless children succeed in school.

Oak Hills is currently reflecting on possibilities of further integration of 21st Century Skills into the curriculum. This year, Oak Hill High School administrators and faculty will invite parents, community members, and students to discuss “new ways to

²⁰ Ibid.

²¹ “Dual Credit/Early College Informational Meeting.” Dalton Local Schools.

http://www.dalton.k12.oh.us/vnews/display.v/ART/49c794f16751b?in_archive=1

²² “Business Advisory Council.” Oak Hills Local School District.

http://www.oakhills.k12.oh.us/ohlsd08_09/Community/bac.html

integrate collaborative teamwork, innovative models of learning, and technology into the classroom.”²³ Oak Hill High has already incorporated several of the principles of 21st Century Learning through its “Pathways to the Future” program, which encourages students to pursue STEM (science, technology, engineering, math), International Studies, and Visual and Performing Arts courses of study to a gain a “competitive edge” in the global economy of the 21st century. Through “Pathways to the Future,” students gain career, college, and scholarship counseling on an individualized basis from school counselors. They also attend a yearly Career Fair geared specifically towards these disciplines.²⁴

In 2009, the district began to invest in new technology to optimize performance. As of this year, the schools discontinued their use of computer labs, and replaced them with mobile laptop carts. Currently, the student-to-laptop ratio is 2-to-1. Oak Hills also increased the number of SmartBoards available. Most classrooms are now equipped with SmartBoards, and teachers have the ability to check one out if their classroom lacks this tool.²⁵

Orange City School District, Pepper Pike

In 2004, Orange City School District was recognized as a National School Board Association (NSBA) Technology and Learning Salute District for its accomplishments in “integrating technology across the district, and creating an instructional environment where technology is used to support and transform learning experiences.”²⁶ Three years later, the District received the “Impact on Learning” award from the Council of Educational Facilities Planners for the renovation of the Media Center, which is now a state-of-the-art facility with three technology labs, distance video learning, and wireless capabilities.²⁷ Recently, the district also added portable wireless labs and IP videoconferencing equipment to its technology portfolio. In 2007, a group instruction room at Brady Middle School was converted to a multi-media, IP-based conferencing center.²⁸

The faculty is intimately involved in this technological reform. Teachers are encouraged to attend Technology Integration Academies, which are held in the summer and spring, to learn about technology integration in the curriculum and the possible uses of technology in the classroom. The district also maintains a Curriculum

²³ “Highlander Highway.” Oak Hills Local School District.

http://www.oakhills.k12.oh.us/ohlsd08_09/Alumni/hhnewsletter/hhv2.pdf

²⁴ “The Highlander.” March, 2009. Oak Hills Local School District.

http://www.oakhills.k12.oh.us/OHHS/about_OHHS/highlander/pdf/0809/march09master.pdf; “Oak Branch.” October, 2009.

http://www.oakhills.k12.oh.us/ohlsd08_09/District/departments/Communication/oakbranches_pdf/October09.pdf

²⁵ “October Rampage.” Oak Hills Local School District.

<http://www.oakhills.k12.oh.us/rapidrun/main/Rampage/OctoberRampage.pdf>

²⁶ “Awards.” Orange City School District. <http://www.orangeschools.org/district/orange/awards>

²⁷ “History.” Orange City School District. <http://www.orangeschools.org/district/orange/history>

²⁸ “Video Conferencing.” Orange City School District.

<http://www.orangeschools.org/schools/Technology/VideoConferencing>

Resource website with instructional guides on the uses of new technologies like SmartBoards, and technology integration ideas. The district especially encourages teachers to use the ProgressBook online system of grades and students reports.²⁹

Students are, of course, also integrated into the 21st Century Skills transformation. All students are required to compile a model digital portfolio of their work, which can be used during the college application process. Students may also choose to participate in the classes offered by the Computer Applications Department or the Excel Technical Education Career Consortium (TECC). The Computer Applications Department includes classes on basic computer literacy, webpage design, and information technology.³⁰ The Excel TECC offers a technical education program at the Orange City High School with courses in arts and communication, business and administration, construction technologies, education and training, engineering/transportation, environmental and agricultural systems, health science, human services, and information technology.³¹ Recently, students have also been involved in video production. In line with Orange City's focus on engaged learning, students have produced video projects and educational videos, including one about 21st Century Learning Skills at Orange City Schools.³²

Students also provide input on the direction of the district through the Speak Up! Survey project, conducted by Project Tomorrow, an educational nonprofit organization. The survey assesses information about technology use among students, parents, and teachers. To this end, the 2009 survey will be used to “support [the] decisions about 21st Century Learning.”³³

²⁹ “Curriculum Resources.” Orange City School District.

<http://www.orangeschools.org/schools/Technology/CurriculumResources>

³⁰ “Computer Applications Department.” Orange City School District.

<http://www.orange.k12.oh.us/teachers/ohs/cingel/index.html>

³¹ “Excel TECC Home.” Excel TECC. http://www.mayfieldschools.org/exceltecc/webtecc/excel_tecc.htm

³² “Videos.” Orange City School District. <http://www.orangeschools.org/videos>

³³ “Speak Up! Survey” Orange City School District. <http://www.orangeschools.org/schools/Technology/SpeakUpSurvey>

Section Three: 21st Century Skills Initiatives across the U.S.

Outside of Ohio, several states have already made significant progress in implementing a 21st Century Skills education. For instance, Iowa and Virginia have developed new state curriculum and instruction standards which incorporate 21st Century Skills. Other Partnership for 21st Century Skills signatory states³⁴ have passed legislation or established councils to guide the transition process.

In states outside of the Partnership, such as California, public charter schools have created successful models for a 21st century learning environment. Overall, the districts profiled below exemplify advanced programs in 21st Century Skills. Among the national districts and/or schools we feature as leaders in 21st Century Skills initiatives include:

- ❖ Amphitheater Public Schools, Arizona
- ❖ Catalina Foothills School District, Arizona
- ❖ Cobb County Public Schools, Georgia
- ❖ Herricks Union Free School District, New York
- ❖ High Tech High, California
- ❖ Jefferson Parish Public School System, Louisiana
- ❖ Hutchinson Public Schools USD 308, Kansas
- ❖ Kearney Public Schools, Nebraska
- ❖ Kettle Moraine School District, Wisconsin
- ❖ New Tech High School, California
- ❖ Niles Township High School District 219, Illinois
- ❖ Putnam County Schools, West Virginia
- ❖ Swain County School District, North Carolina
- ❖ Trussville City School District, Alabama

Amphitheater Public Schools, Arizona

Amphitheater Public Schools have made significant headway in applying 21st Century Skills. According to Amphitheater's website, the emphasis appears to be on the third set of P21's skills – that is, information, media, and technology skills.³⁵ Specifically, the district's technology department posts links to 21st century resources and articles for teachers, including links to P21 affiliate organizations like the Center for Media Literacy and applications like Google for Educators. Also found on the district's webpage for 21st Century Skills resources is Amphitheater's 21st Century podcast (see the very last link).³⁶ This six-minute podcast provides a glimpse of the way the

³⁴ The signatory states include Arizona, Illinois, Iowa, Kansas, Maine, Louisiana, Massachusetts, Nevada, New Jersey, North Carolina, Ohio, South Dakota, West Virginia, and Wisconsin.

³⁵ Amphitheater Public Schools. "Technology Department."
<http://www.amphi.com/departments/technology/21stcentury.html>

³⁶ Ibid.

district's technology coaches have embedded 21st Century Skills into their computer classes. Among the activities mentioned are:³⁷

- ❖ A computing teacher at the Coronado K-8 School requires students in her desktop publishing class to read technical information and take tutorials on using programs like Photoshop and Adobe Acrobat, rather than simply demonstrating it to them;
- ❖ A Coronado K-8 School science teacher has her students access websites like weather.com to track weather in “real time” and over time;
- ❖ A second-grade teacher at Nash Elementary School teaches her students how to blog, while helping them develop their writing, spelling, and grammar skills.

In addition to these in-class activities, the Amphitheater Public Schools Foundation, which raises funds from the community for public education, is currently fundraising for the 21st Century Classroom Initiative.³⁸ This program, the “largest and most ambitious” in the foundation’s history, involves purchasing \$4,000 SmartBoards for the district’s schools.³⁹ To date, the foundation has provided a SmartBoard for each of Amphitheater’s 21 schools, has matched donor funding for 29 more, and is currently ordering an additional ten Boards.⁴⁰

Catalina Foothills School District, Arizona

Catalina Foothills School District appears to have taken large steps in implementing 21st Century Skills initiatives. In fact, Catalina Foothills appears to be one of the only districts for which we found a new curriculum based entirely on 21st Century Skills. Indeed, this emphasis on 21st Century Skills is integrated into the elementary, middle, and high school curricula, in diverse subjects such as: language arts, math, social studies, science, health and physical education, world languages, performing arts, and visual arts.⁴¹ As the district’s website explains:⁴²

Preparing students to meet the challenges of the 21st century is a top priority in the Catalina Foothills School District. To achieve success, our students need to develop new skills and proficiencies.

Core academic subjects - reading, writing, science, math, world languages, social studies, and the arts - remain the foundation of a comprehensive

³⁷ Amphitheater Public Schools. “Amphitheater 21st Century Podcast.” http://ia300241.us.archive.org/2/items/amphi_21st_century_learning/amphi_21st_century_learning.mp3

³⁸ Volunteer Center of Southern Arizona. “Agency Details.” <http://volunteer.united-e-way.org/vctucson/org/220416.html>

³⁹ AMPHI Foundation. “SmartBoards are only the beginning.” <http://www.amphifoundation.org/pages/grants/21centuryclassroom.htm>

⁴⁰ Ibid.

⁴¹ Catalina Foothills School District. “Middle School Program of Study.” http://www.cfsd16.org/public/_century/centMain.aspx?School=Middle%20School

⁴² Catalina Foothills School District. “21st Century Learning Overview.” http://www.cfsd16.org/public/_century/centMain.aspx

education. However, leaders in education and business agree that productivity, teamwork, cultural competence, interactive communication, critical thinking, technology, and systems thinking are also necessary to succeed in school, work, and life.

We are committed to developing students with the ability to think critically, apply knowledge, and use technology and tools to access, evaluate, and communicate information.

In 2006, Catalina Foothills assembled an advisory committee of stakeholders, including business CEOs, entrepreneurs, university officials, professors, parents, and teachers to discuss what students should know and be able to do when they graduate from high school. In addition to a review of the literature on K-12 education, this committee's deliberations led Catalina Foothills to identify three broad categories of 21st Century Skills.⁴³ As the graphic of Catalina Foothills' 21st Century Learning Framework illustrates, within each of these categories are a set of four interrelated skills and knowledge areas that students are expected to develop. The district's 12 21st Century Skills are:⁴⁴

- ❖ Personal and Social Responsibility
 - Leadership
 - Productivity
 - Self-Direction
 - Teamwork
- ❖ Digital-Age Literacy
 - Cultural Competence
 - Global Awareness
 - Interactive Communication
 - Technology and Tools
- ❖ Learning & Thinking Skills
 - Critical and Creative Thinking
 - Data Analysis
 - Scientific Inquiry
 - Systems Thinking

Given this framework, Catalina Foothill's K-12 teachers integrate these skills into standard classroom assignments. Taking into account grade level and development, teachers then assess students' performance on a continuum of one to three:⁴⁵

- ❖ Level 1: The student is actively engaged with the skill, but the focus is often on short-term, day-to-day implementation that requires models

⁴³ Ibid.

⁴⁴ Catalina Foothills School District. "Our Commitment to Learning in the 21st Century."
http://www.cfsd16.org/public/_century/pdf/21st%20Century%20Learning%20Overview.pdf

⁴⁵ Ibid.

- or assistance from the teacher. Few, if any changes, are made in ongoing use;
- ❖ Level 2: The student has established a routine way of working with the skill and is able to use it in different contexts. The student begins to reflect on and assess application of the skill and makes adaptations to vary the use of the skill or enhance results;
 - ❖ Level 3: The student evaluates use of the skill and seeks modifications to achieve an even greater or more collective impact. New developments or innovations in the field or area of study are examined and the student explores new goals.

For each of the 12 categories of skills and knowledge, the district provides a detailed assessment rubric, outlining characteristics of student outcomes at each level.⁴⁶

Further, Catalina Hills gives a glimpse at the ways its schools develop students' 21st Century Skills. The section of the district's website on Learning in the 21st Century provides links to short videos in which students explain what some of the 12 skills mean to them, how they demonstrate them in their schoolwork and extracurricular activities, and why they think mastering these skills is important to their futures. Catalina Foothills teachers also comment on how they embed the development of 21st Century Skills into classes. In particular, the video clips mention some of the following activities and their connections to 21st Century Skills:⁴⁷

- ❖ *Hydrology Project* – Frank Draper's sciences classes at Catalina Foothills High School take field trips to a wash located close to the school to observe hydrological structures. Then, Mr. Draper has students work in teams on tasks like simulating social conflicts that involve using water, experimenting with water flow on stream tables, and using an application called Google Earth to study cases in which sufficient care was not given to the hydrological process. (Skills used: teamwork, technology & tools, scientific inquiry, data analysis, and systems thinking);
- ❖ *Odyssey of the Mind* – In this program, K-12 students work in teams to brainstorm a 13th labor for the Hercules, embed it into a play, and perform the play for an audience. (Skills used: teamwork, productivity, and creative and innovative thinking);
- ❖ *Student-Led Conferences* – Instead of the traditional parent-teacher conferences, students at Esperero Middle School lead conferences with their parents in which they discuss what they have learned and accomplished relative to the goals they have set for themselves (Skills used: leadership and self-direction);

⁴⁶ Ibid.

⁴⁷ Catalina Foothills School Districts. "21st Century Skills Videos." http://www.cfsd16.org/public/_century/centSkillVideos.aspx

- ❖ *Lego Mindstorm* – 4th and 5th grade students at Sunrise Elementary School work in teams to build and program robots to perform nine tasks in two-and-a-half minutes for an international robotics competition. (Skills used: teamwork, productivity, technology and tools, and critical and creative thinking);
- ❖ *Peace Corps Club* – Elementary school children can opt to participate in this club, which teaches them about other cultures and ways of living (Skills used: global awareness and cultural competence).

To date, Catalina Foothill's innovation and progress on 21st Century Skills have been mentioned in a number of sources. For example, an article in the September/October 2008 edition of the *Harvard Education Letter* cites various instructional activities at Catalina Foothills as examples of putting 21st Century Skills education in practice.⁴⁸ Among Catalina's programs, the article notes:⁴⁹

- ❖ In an effort to develop critical thinking, oral communication, flexibility, self-direction, and teamwork skills, ninth-grade humanities instructors Mark Rubin-Toles and Torie Leinbach require students to lead discussions about a book, documentary, or document they have studied. Students are then graded on the quality of their participation. As the article notes, “‘In the beginning, they struggle a lot,’ says Rubin-Toles, who limits his role to mapping the interactions on paper while the students talk. ‘There are these long silences and the kids are very uncomfortable.’”⁵⁰
- ❖ In her kindergarten class, Dana Mulay helps her students use I-Movies software to create videos featuring the solid shapes from mathematics lessons. According to the article, “‘She divided them into teams and, armed with digital cameras, they went into the desert nearby hunting for shapes to photograph. ‘Barrel cactus sort of look like spheres and a seguero [cactus] is a cylinder,’ she says. She downloaded the photos on to laptops brought into the class on carts, and students worked in pairs to make the movies, using invented spelling for captions. The project helped them learn more not only about computers, but also about teamwork and self-direction, she says. ‘It was really amazing to see them problem-solve on their own and focus on what they needed to do.’”⁵¹

Cobb County Public Schools, Georgia

As the second largest district in Georgia, Cobb County has actively worked to incorporate 21st Century Skills within school classrooms and the district strategy. The innovative 21st Century programs at one of district's middle schools were described in

⁴⁸ Nancy Walser. (September/October 2008). “Teaching 21st Century Skills.” *Harvard Education Letter*. <http://www.hepg.org/hel/article/184>

⁴⁹ Ibid.

⁵⁰ Ibid.

⁵¹ Ibid.

a recent article by *BusinessWeek Magazine*.⁵² In 2009, *BusinessWeek* also selected a district high school, Wheeler High School, as the best high school in the state of Georgia. *Newsweek Magazine* included eight of the districts high schools on its list of “America’s Top High Schools.”⁵³

In 2005, the District partnered with Apple to purchase approximately 63,000 iBook G4 laptops for students and teachers. The laptop initiative was divided into three phases:⁵⁴

- ❖ *Phase I* – issuing laptops to all Cobb County teachers
- ❖ *Phase II* – provide laptops to all high school students
- ❖ *Phase III* – provide laptops to all middle students

Currently, the District has a one-to-one laptop ratio for teachers and students. All campuses also have Internet access. School and student information is also available online through an online portal. Parents are able to access student grades and attendance data for middle and high school students. Parents can also pay for services such as student lunches and elementary after-school care electronically.⁵⁵

The school district launched its next step in its conversion to 21st Century Skills in the 2007-2008 school year. Seven model schools were selected and equipped with advanced interactive technologies, such as LCD projectors, student response systems, and SmartBoards. Over the course of the year, the district evaluated the performance of the model classrooms, investigating specifically the quality of student achievement, student engagement, and teacher engagement following the introduction of these tools. The district compared standardized test scores, attendance and discipline levels, and overall student satisfaction before and after the installation of technology in model schools. Overall the results have been positive, and the district is now discussing the possibility of introducing similar technologies in all of its schools.⁵⁶

The school district has also begun to employ several web-based tools to facilitate instruction and school administration:⁵⁷

- ❖ *PICASSO*
 - A web portal which provides teachers, students, and parents access to learning standards and objectives, divided by grade level and course. Teachers can also access course outlines, unit outlines, and templates for the creation of lessons;

⁵² “Back to School 2.0,” Op. cit.

⁵³ “Awards and Honors.” Cobb County School District. <http://www.cobbk12.org/aboutccsd/awards/>

⁵⁴ “Power to Learn: Cobb County Laptop Initiative.” February 14, 2005. Cobb County School District. http://mabrymsblog.typepad.com/from_the_desk_of_dr_tyson/images/P2L%20Pages.pdf

⁵⁵ “Three-Year Technology Plan.” Cobb County School District.

http://www.cobbk12.org/schools/elementary_schools.aspx

⁵⁶ “21st Century Classroom Initiative.” Cobb County School District.

<http://www.cobbk12.org/centraloffice/technology/21stCentury/>

⁵⁷ Cobb County School District website. <http://www.cobbk12.org/>

- ❖ *Skills Tutor*
 - an online instruction and tutoring program available to middle schools and high school students;
- ❖ *netTrekker*
 - Teachers and students use netTrekker search software to quickly locate resources for classes and sift through materials for research assignments;
- ❖ *Atomic Learning*
 - Instruction software on the use of technology and the application of 21st Century Skills;
- ❖ *eWalk*
 - Data collection software for classroom data.

In its Three-Year Technology Plan for 2009-2012, Cobb County has made further technology curriculum integration a priority. According to the district's vision, both students and teachers must be actively engaged in the technological transition and the 21st Century learning environment. Descriptions of current 21st Century projects at the district's schools follow:

- ❖ In Mabry Middle Schools, students make iMovie productions for an annual Mabry Film Festival. Each year the movies revolve around a single broad theme (in 2009, the theme was "change"). Students not only make the movies, but vote on categories such as best film, best screenplay, best cinematography, etc. The winners' films are posted on the Mabry Middle School website.⁵⁸
- ❖ At Wheeler High School, seniors are required to complete a senior project similar to the Upper Arlington High School's Capstone project. The final work is comprised of a research paper, a project, and a portfolio. The project must relate to the paper theme and can be presented as an art piece, a photography presentation, a construction exhibit, or another creative medium. The portfolio is required to be a physical display of the steps used to create the project.⁵⁹
- ❖ The District has also created a Cobb Virtual Academy, an online learning school which offers online classes to high school students. Virtual Academy students communicate with teachers remotely, and participate in a rigorous curriculum, which includes AP level courses. The students can work at their own pace and complete a combination of assignments, tests, quizzes, projects, and assessments that permit a teacher to follow their educational progress.

⁵⁸ "Mabry Film Festival." Cobb County School District. <http://www.cobbk12.org/Mabry/filmfestiva/filmfestival09.html>

⁵⁹ "Senior Project." Cobb County School District. <http://www.cobbk12.org/wheeler/seniorproject/index.html>

Further information on the Virtual Academy can be found on the Cobb County School District website.⁶⁰

Herricks Union Free School District, New York

The transition to 21st Century Skills at the Herricks Union Free School District began in 2001. During the initial stages of transition process, the superintendent and district administrators held informational discussions with community members, the education board, and faculty on the academic direction of the college. The meetings led the district to identify the following focus areas to address over the next years:⁶¹

- ❖ Critical thinking skills;
- ❖ Ability to apply information learned in one course in other disciplines;
- ❖ Ability to apply classroom skills in “real-world” scenarios;
- ❖ Communication skills;
- ❖ Global skills.

The following year, the District informally adopted the guidelines set by David Conley’s *Understanding University Success*, and the Partnership for 21st Century Skills’ framework. David Conley’s work describes skills that students need in order to succeed upon entry to college or university. The book was written in collaboration with the Center for Educational Policy Research, Association of American Universities, and describes the foundation skills and content standards identified following a two-year study. The entire document can be found on the Center for Educational Policy Research website.⁶²

The District launched several innovative programs to motivate students and provide opportunities for learning within the 21st Century framework. The District began its involvement in National History Day, a year-long educational program which encourages students to research their topics of interest and creatively present their findings.⁶³ Primary, hands-on research is encouraged and students typically use a variety of media in the History Day presentations.⁶⁴

The District also launched a Partnership with the Foreign Policy Association, a Washington, DC-based non-profit organization. This partnership has allowed teachers to gain access to foreign policy experts. In September, for instance, members of the Herricks Middle School social studies department traveled to World Leadership Forum organized by the Foreign Policy Association, and attended panel discussions led by leaders such as Kevin Rudd, the Prime Minister of Australia, and

⁶⁰ “Cobb Virtual Academy.” Cobb County School District. <http://www.cobbk12.org/cobbvirtuallacademy/about/about.html>

⁶¹ Bierwirth, J. Telephone interview. November 23, 2009.

⁶² Conley, D. *Understanding University Success*. Center for Educational Research. <http://www.s4s.org/cepr.uus.php>

⁶³ Bierwirth, Op. cit.

⁶⁴ “National History Day.” <http://www.nationalhistoryday.org/>

former Secretary of State, Henry Kissinger. The partnership has also allowed Herricks schools to attract notable speakers and guest lecturers.⁶⁵

The District has additionally focused on redesigning its assessment tools. Herricks High School is one of the few schools that employ the College Work and Readiness Assessment (CWRA), an assessment test focused on the student's abilities to analyze information and think creatively to find solutions – skills necessary for success in the 21st century workforce. Elena Silva, a policy analyst with the Education Sector, an independent education policy think tank, describes the CWRA in her report “Measuring Skills for the 21st Century” as having the potential to “to measure complex thinking skills at the same time that we measure a student's mastery of core content or basic skills and knowledge.”⁶⁶ Silva cites an example of a question on the CWRA: students are asked to suggest how to stomp traffic congestion due to population growth following an analysis of model research reports and budgets. The skills required to adequately answer such a problem require not only basic reading comprehension and math skills, but also the ability to analyze data and provide innovative solutions.⁶⁷

As a final stage in the implementation of 21st Century Skills program, the district administration has requested that the board formally incorporate the Partnership for 21st Century's guidelines and David Conley's findings into the mission statements of the Herricks schools. The district board is scheduled to discuss these changes within the upcoming months.⁶⁸

High Tech High, California

High Tech High was founded in 2000 by a group of educators and business leaders with the purpose of preparing students for the workplace of the 21st Century. Its founders, Larry Rosenstock and Gary and Irwin Jacobs, launched the first High Tech High charter school after concerns over the low number of students in technology fields and the lack of necessary skills in the student population entering the workforce. According to Gary Jacobs:

The original concept for High Tech High grew out of the concerns of business leaders and university partners who saw that kids were leaving high school very good at memorizing facts and taking tests and doing well on them, but you ask them to apply what they know or you ask them to talk about or present their work, and they weren't able to do that. So we wanted to look at presentation skills, group work skills, problem-solving skills, and so on... High Tech High was [also] designed to create an environment where

⁶⁵ Bierwirth, Op. cit.

⁶⁶ Silva, E. “Measuring Skills for the 21st Century.” Education Sector Reports. November, 2008. http://www.educationsector.org/usr_doc/MeasuringSkills.pdf

⁶⁷ Ibid.

⁶⁸ Bierwirth, Op. cit.

students are excited about math and science and want to continue their studies in this area.⁶⁹

In the following years, High Tech High expanded outside its initial San Diego campus. As of 2008, the High Tech High program operated eight schools⁷⁰ in the San Diego area: one elementary school, two middle schools, and five high schools, as well as, a Graduate School of Education and a teacher certification program. Although the schools have slightly differing focuses, from media arts to international studies, they all share four common goals:⁷¹

- ❖ Serve a student body that mirrors the ethnic and socioeconomic diversity of the local community;
- ❖ Integrate technical and academic education to prepare students for post-secondary education in both high tech and liberal arts fields;
- ❖ Increase the number of educationally disadvantaged students in math and engineering who succeed in high school and post-secondary education;
- ❖ Graduate students who will be thoughtful, engaged citizens.

All schools also incorporate three principles into the design of curriculum and teaching methods:⁷²

- ❖ *Personalization* – each student has a staff advisor, who monitors their progress and serves as the point of contact with the student’s family. The students are encouraged to pursue their own interests in projects. The schools are designed for individual and small-group learning, hands-on projects, and close teacher-to-student contact;
- ❖ *Adult World Connection* – in 9th and 10th grades, students are encouraged to shadow adults through a workday and perform community service. In the 11th grade, students are required to complete an internship. The classes are also designed to represent real-world work situation and teach schools the use of relevant technology (all students have laptops);
- ❖ *Common Intellectual Mission* – all students are challenged by a unified curriculum. The schools do not employ a tracking system and make no distinction between “college-prep” and “technical” education.

The High Tech High model has proven to be successful, with 100% of students continuing to college and the schools maintaining high scores in state academic

⁶⁹ Wagner, T. *The Global Achievement Gap: Why Even Our Best Schools Don't Teach the Survival Skills Our Children Need—And What We Can Do About It.* New York: Basic Books, 2008, 212.

⁷⁰ “About High Tech High.” High Tech High. <http://www.hightechhigh.org/about/index.php>

⁷¹ “High Tech High Goals.” High Tech High School. <http://www.hightechhigh.org/about/index.php>

⁷² “HTH Design Principles.” High Tech High School. <http://www.hightechhigh.org/about/design-principles.php>

performance rankings.⁷³ High Tech High's initiatives have been featured in the Partnership for 21st Century Skills conferences⁷⁴ and the schools are profiled in Tony Wagner's book, *The Global Achievement Gap*, as programs that have "gained international recognition for their highly innovative education practices – and for their results."⁷⁵

The High Tech High schools are geared towards project learning and an interdisciplinary teaching approach. Most courses incorporate several disciplines and are not text-book oriented. Below are examples of student projects and assignments. As mentioned in Section Four, examples from High Tech High can be used by Upper Arlington in designing interdisciplinary, project-based lessons. Below are examples of student projects and assignments:⁷⁶

- ❖ In a Math II/ Chemistry course at the High Tech High International School, students built pinhole cameras which they used to take black and white photos. They developed the photos in the dark room, scanned the photos, and manipulated them using Adobe Photoshop to create unique digital pieces. The students also visited the Museum of Photographic Arts and Chrome Digital, the last full-service photography facility in San Diego. The project focused on the optics principles of cameras and the chemical processes of photography.
- ❖ For the Graph-It Design project in a Math I and Physics I class at Gary and Jerri-Ann Jacobs High Tech High, students used Excel software to create a portrait of a historical figure. Students identified 124 sets of data points from an image of their choice, and derived 25 different linear equations to reproduce the image. The completed projects were presented in a night exhibition.
- ❖ In a joint project between the 11th grade biology and humanities classes at High Tech High Media Arts, students investigated factors affecting local coastal ecosystems. In the biology class, they studied indicator bacteria levels at six popular coastal locations, as well as the health and diversity of microscopic life in local plankton populations, through microscopes and other equipment on loan from a local non-profit organization. Students then educated community members on local beach destruction and water testing procedures. In the humanities classes, students conducted research on related topics. To present their finding, they created short documentaries, editorials, photo-essays, and art pieces for an exhibition at the school.

⁷³ "Results." High Tech High Schools. <http://www.hightechhigh.org/about/results.php>

⁷⁴ See the video "The Culture of 21st Century Skills" on the Cyber Summit website hosted by the Partnership for 21st Century Skills. http://www.weareteachers.com/web/cybersummit/classroom/sandiego_culture.

⁷⁵ Wagner, Opt. cit., 207-229.

⁷⁶ "Project Cards." *Unboxed: A Journal of Adult Learning in Schools*, 3, Spring 2009. <http://www.hightechhigh.org/unboxed/issue3/>

- ❖ In a Spanish II class at High Tech High Media Arts, students identified most commonly used Spanish nouns and verbs in specific vocabulary units (such as clothing, food, animals, etc.), and incorporated them into children's stories. They then created a decorated children's book. After the books were completed, the class took a trip to a Tijuana orphanage, where the students read aloud to the children and distributed the finished projects.
- ❖ 8th grade students at the High Tech Middle School studied the Aboriginal Art form and reflected on both abstract and naturalistic qualities of Australian Aboriginal art. For their project, the students selected a wild animal they felt represented their personality, wrote a statement about the qualities they shared with the animal, and created an animal self-portrait using the traditional dotting technique and abstract design elements used by Aborigines.

To complete their course of study at High Tech High schools, students prepare digital portfolios of their work and showcase them to a panel of teachers, other students, parents, and community members. The digital portfolios are available online on the High Tech High website.⁷⁷ As previously mentioned, in the 11th grade, students are required to participate in a ten-week internship in a local business or non-profit organization. In their senior year, the students undertake a culminating senior project.

Jefferson Parish Public School System, Louisiana

In 2006, Cisco Systems donated \$20 million to the Jefferson Parish School System as part of the 21st Century Schools Initiative (21S), an aid project which targeted schools recovering from Hurricane Katrina. In partnership with Cisco Systems, a core group of schools in the district began to convert its systems to state-of-the-art technological capabilities and launched the transition to technology-integrated methods of instruction. Following the initial success, the program was expanded to incorporate a second group of schools in 2007 and is projected to expand to all 87 schools in the district by the end of the 2009-2010 school year.⁷⁸

The initiative has been designed to achieve the following objectives:⁷⁹

- ❖ *Connected Schools* – the establishment of a baseline technology platform that incorporates data, video, and audio;
- ❖ *Connected Learning* – the improvement of administrative efficiency and student performance;

⁷⁷ "Our Schools." High Tech High Schools. <http://www.hightechhigh.org/?show=schools>

⁷⁸ "Educating Every Learner for the 21st Century." Annual Report 2008. Jefferson Parish Public School System. <http://www.jpss.k12.la.us/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=2147490011>

⁷⁹ Ibid.

- ❖ *Connected Communities* – the initiative to promote schools as the hub of the community.

In 2008, many of the schools in the system were heavily damaged following Hurricanes Gustav and Ike. However, the schools rebounded well with the help of Cisco and other partners. Today, the Jefferson Parish schools are using a variety of engaging technologies in classroom instruction including laptops, interactive whiteboards (Promethean boards), student response systems, speakers, mobile laptop carts, projectors, enhanced acoustics, video conferencing, FLIP video cameras, iPods, GPS, and IP telephony. All schools employ a wireless Internet network and a high-speed network infrastructure. Additionally, engaging web 2.0 activities such as podcasting, Skype, blogging, and wikis have been incorporated into the school curricula.⁸⁰

The superintendent of the schools, Diane Roussel, has been especially active in carrying out the 21st Century Skills transition. The superintendent has promoted the 21st Century Skill agenda as a top priority for the district, and has produced a series of video podcasts documenting the transformation.⁸¹ The podcasts report that the incorporation of 21st Century Skills within curricula and instruction methods has had a positive effect on school performance. Following the introduction of new technology to the classroom, attendance rates have increased, the number of suspensions has dropped, and academic achievement has also increased. According to measures of performance on Louisiana Education Assessment Program (LEAP), in 2008, the percentage of Jefferson Parish School students scoring at or above the basic, mastery, and advanced levels in language arts and math improved at almost every organizational level. The percentage of students with unsatisfactory scores on the eighth grade LEAP declined in every subject, and the state test results at Jefferson Parish schools enrolled in the 21st Century Initiative beat the district average for students performing at or above the basic level.⁸²

Hutchinson Public Schools USD 308, Kansas

The Hutchinson Public School District's mission statement urges students to "achieve the skills to live and work in the 21st Century." The incorporation of 21st Century Skills curriculum and programs are top priorities for the district, and have been specifically outlined in the Strategic Plan for 2009-2014. The Plan identifies target areas from the Partnership for 21st Century Skills' Guidelines and matching performance areas to be monitored by the District Board. The target areas are provided below:⁸³

⁸⁰ "Case Study." Cisco Systems. http://www.cisco.com/web/about/citizenship/socio-economic/docs/Cisco-Global_Education-CS-R6.pdf

⁸¹ "Superintendent's Podcasts." Jefferson Parish Public School System. <http://www.jpss.k12.la.us/district/vodcasts.htm>

⁸² "Case Study." Cisco Systems. Opt. cit.

⁸³ "Strategic Plan 2009-2014." Hutchinson Public School USD 308. <http://www.usd308.com/assets/about308/2009-2014%20USD%20308%20Strategic%20Plan.pdf>

Hutchinson PSD 21st Century Skills Target Areas

21 st Century Skills and Focus Areas	Performance Indicators
<ul style="list-style-type: none"> ❖ Global Awareness ❖ Business, Financial and Entrepreneurial Literacy ❖ Civic Literacy ❖ Health Literacy ❖ Creativity and innovation ❖ Critical thinking and problem solving ❖ Communication and collaboration ❖ Information literacy ❖ Media literacy ❖ Information, communication and technology literacy ❖ Flexibility and adaptability ❖ Initiative and self-direction ❖ Social and cross-cultural skills ❖ Goal setting/career planning ❖ Productivity, accountability and work ethic ❖ Leadership and responsibility ❖ Healthy life choices 	Hutchinson High School
	<ul style="list-style-type: none"> ❖ Percent of students completing IB, AP, and Honors Courses ❖ Graduation Rates ❖ Percent of students proficient in math and reading assessments ❖ Percent of students completing one or more classes beyond the Algebra level ❖ Attendance Rate ❖ Number and percentage of students receiving discipline referrals ❖ Percent of students completing career plans ❖ Percent of students above the norm in AAHPERD Health/Fitness assessments ❖ Percent of students proficient on state writing assessments ❖ Percent of students who experience workplace internships, and/or jobs in which employers evaluate work readiness skills ❖ Percent of students acquiring a Work Ready Certificate
	Hutchinson Middle School
	<ul style="list-style-type: none"> ❖ Percent of students completing Algebra I by Grade 8 ❖ Percent of students proficient on state reading and math assessments ❖ Percent of students completing one or more Honors courses
	Hutchinson Elementary Schools
	<ul style="list-style-type: none"> ❖ Percent of students reading at Grade level by beginning of Grade 3 ❖ Percent of students proficient on Grade 3 through 6 state math and reading assessments ❖ Percent of students completing pre-Algebra by Grade 6 ❖ Percent of students achieving 75 percent or above on Scott Foresman Grade 1 year-end reading benchmark assessment ❖ Percent of students proficient in math on Harcourt math end of year Grade 2 Assessment

Hutchinson has a strong academic program that incorporates many of the key skills outlined by the Partnership for 21st Century Skills' Guidelines. Hutchinson High School, for instance, is one out of four Kansas school to offer the International Baccalaureate (IB) Diploma Program for advanced students. Additionally, the

district's administrators have increasingly embraced the emphasis on 21st Century Skills and provide updated access to school records and student report cards through an online platform, the PowerSchool Parent Portal.⁸⁴

The Hutchinson Public School District has also been active in creating student opportunities to learn through applied projects and career-oriented education. The district has a career academy, the Hutchinson Career and Technical Education Academy (HCTEA), where students can select programs in vocational fields, business education, and medical science. Some programs offer Professional Certificates following the completion of the course of study. The complete list of programs is provided below.⁸⁵

Programs at Hutchinson Career and Technical Education Academy	
Auto Body/Collision Repair	Marketing and Lodging Management
Auto Mechanics	Medical Science
Building Trades	Networking and Telecommunications
Business Technologies	Pre-Collegiate Teacher Preparation
Communications Drafting	Pre-Engineering/Project Lead the Way
Electronics	Welding Technology
Family and Consumer Science	Woodworking
Machine Technology	

The curriculum at HCTEA is integrated with the main curriculum of the Hutchinson High School, with several joint offerings in technology and traditional subjects. For instance, joint math and technology courses, designed by teachers from both disciplines, provide an introduction to the applications of mathematics in technology. Several other courses, such as science and technology, are currently being formulated.⁸⁶

The schools of the Hutchinson Public School District are also well-equipped with technological equipment. Each classroom in the district has a SmartBoard and an LCD projector and each teacher has a personal laptop. The district's computer to student ratio is approximately 2.4-to-1. Teachers are encouraged to use technology as part of everyday instruction. The District Technology Committee oversees technology workshops and support services for faculty.⁸⁷

Kearney Public Schools, Nebraska⁸⁸

Kearney Public Schools have recently begun the integration of 21st Century Skills into the school curricula and teaching methods. To initiate the process, the schools led a

⁸⁴ Davis, D. Telephone interview. November 20, 2009.

⁸⁵ Davis, D. "21st Century Skills." E-mail message. November 20, 2009.

⁸⁶ Ibid.

⁸⁷ Ibid.

⁸⁸ All information was obtained from personal correspondence with Dick Meyer, the Director of Curriculum, Instruction, and Assessment at Kearney Public Schools.

series of discussions with the school board, curriculum council, leadership council, and community members about the 21st Century Skills agenda and future changes. The schools have also introduced a series of workshops and 21st Century tutorials for its staff:

- ❖ A 21st Century Skills Retreat for the curriculum council;
- ❖ Presentations and discussions of 21st Century Skills for all curriculum development teams;
- ❖ Summer workshops for teachers on incorporating technology in the classroom to enhance student learning (last summer 73 out of school 350 teachers voluntarily participated in one or more of these sessions);
- ❖ Introduction of learning coaches at elementary and secondary levels to work with teachers on integrating technology in the classroom and reinforcing 21st Century Skills;
- ❖ Differentiated instructional development for staff which focuses on strategies that support 21st Century Skills; and
- ❖ Technology instructions tools and Moodle software to assist teachers in engaging 21st Century Learners.

In addition to the training offerings, the school district began to revise its curriculum according to 21st Century standards. As previously mentioned, all curriculum development teams were introduced to the concepts and goals of the 21st Century Skills agenda. The undergoing curriculum revision process incorporates the principles of Bloom's Taxonomy and has prioritized student engagement and active learning as new curriculum goals. By the end of the process, the schools will work on principles of interactive, project-based learning.

Active 21st Century Skills initiatives in the district also include the introduction of new technologies into the classroom. School administrators have created a plan to renovate classrooms over the next four years and provide laptops, SmartBoards, and other tools for classroom use. The schools now have media specialists who work with teachers in integrating technology and new resources in research and learning activities.

Innovative 21st Century Skills classroom projects at the Kearney Public Schools include:

- ❖ Ben Franklin Distance learning project – a presentation of a Ben Franklin impersonator performance made available to schools within the district and a few outside the district using Codec and LifeSize software;
- ❖ A Middle School website creation project for advanced students;
- ❖ PowerPoint Jeopardy games as a pre-assessment and review tool for use in the classroom; and

- ❖ Book review podcasts in elementary schools English classes. The podcasts summarize the book and include illustrations to create a digital storyline of the books.

Kettle Moraine School District, Wisconsin

Over the last several years, the Kettle Moraine School District has launched a project to transform its schools to meet the demands of the future and convert to a 21st Century Skills framework. In 2005, the district set up a Task Force, headed by the Superintendent and the Principal of the Cushing Elementary School, to orchestrate the transition. The Task Force is composed of twenty-five members who represent the larger community, the parents, the student body, alumni of the schools, and educators. The Task Force meets regularly to discuss the transitional plan and needed reforms in the district, and in 2006 held a community forum where sixty-five community members provided their input. In 2007, the Task Force presented a final report to the District Board of Education.⁸⁹

The report identifies four key target areas that were found to be essential for the transformation of the schools: developing leadership, creating partnership, accessing 21st century communication, and fostering research and development. The Task Force specifically focused on the need for teachers and community members to accept new models and fully commit to the transformation. The report also discusses various scenarios of Kettle Moraine's future directions. The full report can be found on the Kettle Moraine's Transformation Task Force's website.⁹⁰ Specific prescriptions of the report are summarized below:

- ❖ Encourage teachers, the leaders of the classroom, to shift away from command-and-control style leadership and allow students to self-organize through direction and guidance;
- ❖ Develop partnerships with the community to establish feedback loops and improve self-assessment;
- ❖ Form networks of communication to spread information quickly and in a transparent manner. Use technologies which disseminate information most rapidly – such as blogs, e-mail, and electronic surveys; and
- ❖ Establish a “baseline” of accepted practices in curriculum, instruction, staff development, and supervision that are proven to enhance student learning.

Following the formulation of the transformation plan and objectives, the district formed committees to conduct feasibility studies and assess the viability of program initiatives suggested by teachers. Currently four such feasibility studies are examining the possibilities of launching an on-line learning program, a Fine Arts Academy at the

⁸⁹ “Task Force Timeline.” School District of Kettle Moraine. <http://www2.kmsd.edu/ttf/timeline.html>

⁹⁰ “Transforming Education in Kettle Moraine: Recommendations for Meeting the Needs of All Learners.” School District of Kettle Moraine Transformation Task Force. <http://www2.kmsd.edu/ttf/report.html>

high school, a Talent Development Magnet to serve elementary and middle school students, and four-year old Kindergarten (4K). The studies engage the members of community and consider budgetary issues to analyze whether the programs are worthwhile and realistic.⁹¹

The overall push for 21st Century Skills also continues. As the Director of Instructional Services for the District explained, “21st Century Skills are at the forefront of all our conversations and continue to drive our critical thinking about relevancy and a meaningful curriculum. We have a lot more learning to do, but we are making progress in this regard.”⁹² Most recently, the administration has turned to two recent publications for guidance: Tony Wagner’s *The Global Achievement Gap*⁹³ and Rick Stiggins’ work on Assessment for Learning.⁹⁴ Both of these works focus on the implementation of 21st Century Skills within the classroom and the formation of independent and motivated learners. The school district also participated in the 2009 Conference organized by the Partnership for 21st Century Skills to report on its progress, triumphs, and challenges.

New Tech High School, California

The New Tech High School was founded in 1996 in Napa Valley, California and its model has since been replicated in over forty schools in nine states. The New Tech High School was created following concerns of local business leaders over the lack of necessary skills among students entering the workforce. The New High Tech model upholds the following principles:⁹⁵

- ❖ *Engagement of learners* – project-based learning engages students to become active learners and take responsibility for their work. It also reconfigures the roles of the teacher and student, with the teacher becoming a coach and mentor, rather than just a lecturing instructor.
- ❖ *A culture of empowerment* – students and teachers share responsibility for their work and school administration. The classroom is meant to represent a workplace, where each individual is accountable and respected by others.
- ❖ *Integrated use of technology* – all classrooms have a 1-to-1 computer ratio and web access to allow students to become self-directed learners. New Tech’s Proprietary Web-based system, the PeBL Collaborative Learning Environment, enables students to share and collaborate on projects. Students are also able to access their grades online and monitor them throughout the day.

⁹¹ “The School District of Kettle Moraine Feasibility Study Framework.”

<http://www.kmsd.edu/aboutus.cfm?subpage=847978>

⁹² Kotowski, T. “21st Century Skills.” Email message. November 25, 2009.

⁹³ Wagner, T. *The Global Achievement Gap: Why Even Our Best Schools Don’t Teach the Survival Skills Our Children Need—And What We Can Do About It.* New York: Basic Books, 2008.

⁹⁴ See for instance: Stiggins, R. 2002. “Assessment Crisis: The Absence of Assessment FOR Learning.” *The Phi Delta Kappan*, 83:10, 758-765. http://131.193.130.213/media//stiggins_r_2002.pdf

⁹⁵ New Technology High School website. <http://www.newtechhigh.org/Website2007/index.html>

The New Tech High School model is founded on the doctrine of project-based learning. Instead of daily homework, teachers assign long-term assignments in which students work individually, with a partner, or in a group. The assignments typically require students to create multimedia projects and essays, and are presented to the class upon completion. All students maintain digital portfolios of their work. To complete their course of study students are required to also participate in an internship and take four courses in the Napa Valley College.⁹⁶

This model has proven successful: 95% of all students continue on to postsecondary education, with 40% of students graduating in technology and science fields. New Tech High has also been noted as a forerunner in 21st Century Skills education. A 2008 *New York Times* article found the New Tech High model to be “at the forefront of the drive for technology-enabled reform of education”⁹⁷ and *Education Week* has termed the school “High Tech Heaven.”⁹⁸ Innovative curriculum projects at High Tech High have also been featured on the Partnership for 21st Century Skills’ cyber summit website and can serve as models for lesson plans in Upper Arlington schools.⁹⁹ Such projects include:

- ❖ In a joint American Studies and History class, students are assigned to argue opposite sides of the debate surrounding the inclusion of intelligent design in school curriculum for a mock school board hearing. Working in teams of 8 to 10, students have to prepare for a mock trial: find supporting witnesses, legal precedents, and come up with opening and closing arguments. Each student must also write a report about the history of separation of church and state in the U.S., and read a relevant play.¹⁰⁰
- ❖ In a Physiology class, students participate in a “Body Works” project. They are given limited information on five medical patients, and are asked to diagnose each patient. They then must use a medical database to assess background information and lab tests for each patient. Students are also required to make a magazine or website on pathogens, pathogen prevention, and relevant functions of the human body.¹⁰¹
- ❖ In a Genetics class, students are asked to predict the phenotype of the individual who would result from a genetic cross between themselves and another student. They then provide genetic counseling to other students in the

⁹⁶ Ibid.

⁹⁷ Lohr, S. “At School, Technology Starts to Turn a Corner.” *The New York Times*. August 16, 2008. www.nytimes.com/2008/08/17/technology/17essay.html?scp=2&sq=Lohr&st=cse

⁹⁸ Borja, R. “High Tech Heaven.” *Education Week*. May 29, 2002.

<http://www.edweek.org/ew/articles/2002/05/29/38newtechhigh.h21.html>

⁹⁹ “In the Classroom.” Partnership for 21st Century Skills Cyber Summit.

<http://www.weareteachers.com/web/cybersummit/classroom>

¹⁰⁰ Ibid.

¹⁰¹ “Biology Scope and Sequence.” Napa New Technology High School.

<http://www.newtechhigh.org/Website2007/CurricularMaps/Curriculum%20Map-%20Biology.pdf>

class and present their findings. Students draw on principles of inheritance and genetics and use Punnett squares to complete this project.¹⁰²

Niles Township High School District 219, Illinois

The Niles Township High School District 219 has explicitly incorporated 21st Century goals and language into the district mission and strategy. The district's approach to 21st Century Skills integration is especially interesting because of clear formulation and innovative promotion of the district's "Vision for the Future" five-year plan.

In 2009, the District created a cohesive strategy to bring the district schools curricula, technologies, and teaching methods up to 21st Century standards.¹⁰³ The plan is divided into five separate steps:¹⁰⁴

1. Advance and integrate 21st Century literacy and science, technology, engineering, and mathematics (STEM) subjects;
2. Ensure a rigorous curriculum and a common final exam;
3. Engage students in anywhere/anytime learning via laptops;
4. Commit to a capital improvement plan;
5. Establish and enhance partnerships with parents, community organizations, and outside agencies.

Each of these steps is described in detail within the plan outline and includes specific targets for reaching the goals described above. For instance, Step 1 targets include:¹⁰⁵

- ❖ The creation of a \$350,000 STEM research center with laboratory facilities and presentation areas;
- ❖ A review of the current STEM programs of study and course sequencing;
- ❖ The design of comprehensive course guides with learning targets and a final exam;
- ❖ The development of closer links with industry and business, with an eye on grant funding for research in STEM centers;
- ❖ Increased focus (including budgetary) and new, higher requirements for STEM courses; and
- ❖ Recommendations to the Board of Education and other relevant groups regarding aforementioned goals.

Currently, all courses are being reviewed through a collaborative curriculum development process.¹⁰⁶ The District has used the guidelines described by Richard

¹⁰² Ibid.

¹⁰³ "A Vision for the Future of the District." Niles Township High School District 219. <http://www.niles-hs.k12.il.us/sites/default/files/A%20Vision%20for%20the%20Future%20of%20District%20219.pdf>

¹⁰⁴ Quoted verbatim. Ibid, 1.

¹⁰⁵ Ibid, 4-7.

DuFour and Robert Eaker in the 2004 book *Whatever It Takes: How Professional Communities Respond When Kids Don't Learn*¹⁰⁷ to conduct the curriculum review. Seven late-start dates and a summer workshop have been built into the teacher schedule to allow for curriculum revision. The process will be completed in the 2014-2015 school year with the creation of district-wide common curriculum guides, learning targets, and final assessments for all courses. Additionally, all teachers will gain proficiency in the use of “currikis,” wiki pages with course materials and course standards, and other online collaborative tools.¹⁰⁸ Up to date, the departments of Foreign Languages, Applied Science and Technology, and Physical Welfare have completed the revision process.¹⁰⁹

In addition to the curriculum review, the district has also launched an ambitious technology program with the goal of reaching a 1-to-1 laptop-student ratio by the end of the five-year plan. This past fall, the District gave selected students the first Netbook laptops as part of a pilot program. Next fall, Netbooks will be introduced to study halls and other common areas, where students will be able to check them out for personal use. By the fall of 2014, the District projects that all students will have a Netbook.¹¹⁰

In addition to the laptop launch, schools will additionally provide infrastructural support and training to student and teachers. Freshmen students will receive technology skills and 21st Century Skills training when they receive their Netbook computer. The students will be able to access print and charging stations located throughout the schools and enjoy a wireless internet connection. Since the fall of 2009, the District has had wireless internet coverage.¹¹¹

Perhaps one of the most notable features of the District's plan, are the videos that have been used to publicize it. On its website, the district has published five professional quality videos that discuss each of the five steps of “A Vision for the Future” document and explain the reasoning behind it.¹¹² The videos include music, text, and clips of students in classrooms, as well as, a fast-talking voiceover. They are an efficient way to publicize the District's plan, explain the vision behind it, and demonstrate the technological capability of the District. The Upper Arlington City School District might consider creating a similar innovative resource to inform the community and parents about its 21st Century transformation.

¹⁰⁶ Ibid, 9.

¹⁰⁷ DuFour, Richard, Rebecca DuFour, Robert Eaker, and Gayle Karhanek. 2004. *Whatever It Takes: How Professional Communities Respond When Kids Don't Learn*. Bloomington: Solution Tree.

¹⁰⁸ “A Vision for the Future.” Opt. cit., 12-13.

¹⁰⁹ Ibid, 10.

¹¹⁰ “Anywhere Anytime Learning.” Niles Township High School District 219. <http://sharepoint.niles-hs.k12.il.us/technology/aal/Wiki%20Pages/Home.aspx>

¹¹¹ “A Vision for the Future.” Opt. cit., 23.

¹¹² “5 Year Goals.” Niles Township High School District 219. <http://www.niles-hs.k12.il.us/district/district-information/5-year-goals>

Putnam County Schools, West Virginia

The Putnam County Schools of West Virginia have been active in incorporating 21st Century Skills into curricula and creating student projects that would channel the 21st Century Skills agenda. Putnam County is one of many school districts in West Virginia that are currently undergoing the transformation to a 21st Century Skills curriculum. The West Virginia Department of Education recently developed new curriculum and teaching standards to reflect the 21st Century Skills principles, as defined by the Partnership for 21st Century Skills. Named Global 21, the state's strategic plan to transform public education, has been formally finalized this year.¹¹³ The Putnam District participated in the development of the state-wide initiative, with teachers from Putnam providing input on curriculum development through online and in-person forums.¹¹⁴ In 2006, two elementary school principals also attended the West Virginia 21st Century Leadership Institute, an instructional series of workshops offered by the state Department of Education.

Recently, Putnam Country partnered with Dr. Mike Hall in adopting Hall's original 21st century curriculum, "High School 101."¹¹⁵ The "High School 101" curriculum seeks to lower drop-out rates, and includes the following micro-units: communication skills, personal learning styles, technology literacy, people skills, choices/consequences, test taking/study skills, time management, business savvy, tolerance/diversity, and financial literacy.

Putnam County has also developed a comprehensive 2008-2010 strategic and technology plan that addresses the transformation to a 21st Century Skills learning environment. The plan identifies such weak areas as outdated software, lack of digital projectors in many classrooms, and the need for further staff development in the area of technology integration (although 91% of teachers have attended instructional seminars).¹¹⁶ The plan also identifies the following steps for 21st Century Skills integration:¹¹⁷

- ❖ Identify 21st Century Teacher Leaders to guide the county revision of curriculum maps;
- ❖ Adjust the county prioritized and mapped curriculum to reflect 21st Century content standards and objectives;
- ❖ Correlate existing district technology to revised curriculum maps;
- ❖ Provide professional development opportunities and disseminate revised curriculum maps;

¹¹³ "21st Century Learning Chronicle." West Virginia Department of Education. <http://wvde.state.wv.us/tt/2009/WV%20Global21%20Chronicle%202009.pdf>

¹¹⁴ Ibid., 3.

¹¹⁵ "High School 101." <http://www.drmikeyhall.com/HS101/index.htm>

¹¹⁶ "Putnam County Schools Strategic Plan." 2008. Putnam County Schools. <http://boe.putn.k12.wv.us/co/about/documents/strategic.pdf>

¹¹⁷ Ibid., 17.

- ❖ Implement 21st Century content standards and objectives.

In addition, Putnam County identified specific technology goals, such as:¹¹⁸

- ❖ Replace older servers (Pentium III);
- ❖ Provide access to the local area network and wireless Internet to staff and students;
- ❖ Employ two Computer Curriculum Specialists to assist teachers as they integrate technology into all areas of the curriculum;
- ❖ Employ two Technology Integration Specialists to assist teachers at Poca Middle and High Schools as they integrate technology into all areas of the curriculum;
- ❖ Support library collection conversion to InfoCentre and Destiny to provide increased access to media center materials;
- ❖ Provide high school teachers with access to Turnitin to help students understand plagiarism is and how to avoid it;
- ❖ Provide math remediation to Poca Middle students using Apangea online software;
- ❖ Promote the use of high-quality instructional Internet resources such as Teach21, ThinkFinity, and SAS;
- ❖ Utilize distance learning at high schools to provide specialized courses and overcome scheduling problems;
- ❖ Support local schools in NASA e-missions, virtual field trips, and other distance learning opportunities;
- ❖ Implement Edline to improve communication with parents and students by providing access to grade reports and teacher's assignments;
- ❖ Implement IssueTrak software for help desk and work order management. Maintain help desk during school year.

The district schools' programs have been featured on the Partnership for 21st Century Schools' cyber summit website¹¹⁹ and in the West Virginia Model Classrooms projects.¹²⁰ The following are examples of 21st Century Skills projects in the district's schools:

- ❖ In Hurricane High School, students investigated the pros and cons of nuclear power facilities by answering the question, "Should we open a nuclear power plant and waste facility in Putnam County?" The students were divided into think groups, and produced vodcasts, podcasts, and a magazine spread that addressed the question. The students also composed a recommendation letter

¹¹⁸ Ibid., 18-20.

¹¹⁹ "In the Classroom." Partnership for 21st Century Skills Cyber Summit. <http://www.weareteachers.com/web/cybersummit/classroom>

¹²⁰ "Model Classrooms." West Virginia Department of Education. <http://wvde.state.wv.us/professional-development/model-classrooms/>

addressed to the Governor of West Virginia following the completion of their research.

- ❖ In a mathematics class at Hurricane High, students use trigonometry functions to measure the height of a flag pole at the school. The students conduct Internet research to learn how to make an inclinometer and then use trigonometry ratios to calculate the flag pole height.
- ❖ In a Buffalo Elementary School class, 4th grade students created museum visiting brochures for other students in the county. The brochures discussed important works of art and appropriate behavior in a museum setting. In this project, students used Microsoft PowerPoint and Microsoft Publisher software.

Swain County School District, North Carolina

The Swain County School District is a forerunner in the implementation of 21st Century Skills methods in the Appalachian region. The district has historically struggled with problems such as high drop-out and truancy rates. As a result, the district embraced the 21st Century Skills framework in order to engage the student body and provide more effective preparation for higher education and the workplace.¹²¹

The Swain County School District has been especially active in utilizing technology and technology-based teaching methods in its curriculum. The district has a strong technology program, equipment, and broad band connection speeds as recommended by the Partnership for 21st Century Skills.¹²²

The Swain Middle School, for instance, has launched a technology program prescribed by North Carolina's "Impact" technology guidelines.¹²³ The school currently has a laptop laboratory that every teacher can sign-out for the day, teacher laptops in every classroom, LCD equipment, SmartBoards as well as other tools and diagnostics to facilitate instruction. The technology program employs a media coordinator, professional technicians, and a technology facilitator instructor to assist the faculty and encourage the use of technology in the classroom.¹²⁴

To advance student understanding of computer software, the computer program offers such classes as "Exploring Business Technologies" and "Computer Skills

¹²¹ Ash, R. "21st Century Skills." Email correspondence. November 19, 2009.

¹²² Ibid.

¹²³ "Impact: Guidelines for North Carolina Media and Technology Programs." <http://www.ncwiseowl.org/Impact/docs/IMPACTrev1.31.08.pdf>

¹²⁴ Ash, Op. cit.

Competency Preparation” for students in the middle school and high school.¹²⁵ To assess the impact of the program, the school maintains a website survey for students where they report how often they used technology during the school year and leave feedback on the effectiveness of the program.¹²⁶

In order to raise the global awareness of students, the District administrators are considering launching a Chinese language program for the K-12 students. There are currently Chinese classes offered at the Swain High School, taught by a Chinese exchange teacher who was matched with the school by the American Council for International Education. Four administrators from the district are planning to travel to China this year through a Habana-College Board program in order to establish permanent exchange links.¹²⁷ A similar program at Upper Arlington City schools may raise the profile of the school and increase global awareness among students – a key tenet of 21st Century Skills guidelines.

Trussville City School District, Alabama

The Trussville City School District was founded in 2005. During the initial planning stages of the District’s schools, the superintendent, Suzanne Freeman, the district board, and other administrators devoted a lot of energy to implementing a 21st Century Skills framework. The Superintendent and the Director of Curriculum spent hours in community discussion meetings to introduce their vision for the schools and receive feedback. Over the last few years, the school leaders have continued this practice, often holding focus groups with parents and community members.¹²⁸

As part of the curriculum development process, the technology department, headed by Director of Technology, Shawn Nutting, worked in close contact with the district administrators and the teachers. The department created a comprehensive student-data software management system, and recruited a Technology Integration Specialist to assist teachers in designing creative methods that incorporate technology in the classroom. The Technology Integration Specialist also works closely with the four “technology team leaders” at each Trussville City School, who serve to provide immediate aid to teachers during equipment failure or when teachers need help setting up a wiki or blog.¹²⁹

In order to get the teachers on-board initially, the District held a series of workshops, which culminated in the Trussville Educator Technology Conference, held in January

¹²⁵ “Sanford’s Corner.” Swain County Middle School.

<http://www.swain.k12.nc.us/education/staff/staff.php?sectionid=37&>

¹²⁶ “Impact Survey for Student.” Swain County Middle School.

http://www.surveymonkey.com/s.aspx?sm=NZi68w7VFZX9LHJvWLPcIg_3d_3d

¹²⁷ Ash, Op. cit.

¹²⁸ “Building 21st Century Schools Requires Top-to-Bottom School District Support.” The Alabama Best Practices Center.

<http://abpc21.org/building.html>

¹²⁹ Ibid.

2007. The District's 300 teachers gathered at Hewitt-Trussville Middle School for live and online presentations from a mix of outside experts and a dozen innovative teachers from across the system. According to the school officials, the Conference marked a turning point in the teachers' attitude towards the use of new and technologically-based instruction methods.¹³⁰

Most recently, the District also started to recruit Lead Technology Teachers. Lead Technology Teachers, like Technology Specialists, are full-time classroom teachers, but receive extra professional development and release time to build technology-infused lessons that focus on 21st Century skills. The Lead Teachers model the lessons in their own classrooms and spread the knowledge in after-school workshops and annual technology training days.¹³¹

The intensive efforts by school administrators and technology experts have led to the creation of innovative student programs and projects:

- ❖ Students in a technology class at Hewitt-Trussville Middle School investigated the history of their school through recorded interviews of residents in the area. The interview podcasts, photos, and videos were uploaded on a wiki page named "Voices from the Schoolhouse."¹³²
- ❖ Teachers at Paine Intermediate School arranged a phone call via Skype with a Peace Corps volunteer in Senegal who discussed malaria spread and prevention with the fourth-grade students. The students also worked to raise money for a non-profit organization called Nothing But Nets after learning that many people in Africa catch malaria because they do not own mosquito nets. The students put up posters around the school and filmed a video presentation on the issue, which was shown on the school's closed-circuit morning news show, WPIN.¹³³
- ❖ WPIN is entirely produced, directed, and staffed by fourth and fifth-grade students from the Paine Intermediate School. The students apply and audition for positions, and receive comprehensive training on the use of broadcast equipment. The students also meet with a former broadcaster at NBC's Birmingham affiliate, who provides input and even judges the student auditions.¹³⁴

¹³⁰ Ibid.

¹³¹ Ibid.

¹³² "Voices from the Schoolhouse." Alabama Best Practices Center. <http://abpc21.org/classroom20.html>

¹³³ "Back to School 2.0." *Business Week*. September 7, 2007.

http://www.businessweek.com/technology/content/sep2007/tc2007094_281993.htm

¹³⁴ "WPIN Broadcasting." Alabama Best Practices Center. <http://abpc21.org/broadcasting.html>

- ❖ A History and an English teacher at the Hewitt-Trussville High School maintain discussion boards through the school's Sharepoint intranet where they post question prompts relating to current events or school issues and record student responses. Typically, each prompt elicits at least 50 to 60 responses from students. The discussion board allows students to discuss relevant issues outside of class time and gives a voice to the quieter students in the class.¹³⁵

The Trussville City School District has also partnered with the Alabama Best Practices Center, an organization which promotes 21st Century Skills learning in Alabama, and became a recipient of a two-year grant project sponsored by the Center and the Microsoft Corporation. The Alabama Best Practices Center and Microsoft Partnership offers conferences, live online workshops, and an e-mail based learning exchange to teachers and administrators learning about new technology tools and methods. The partnership has so far extended aid to forty schools, including the Trussville City District schools, working intensively with groups of four to five teachers at a time. According to an article published by the Alabama Best Practices Center, the partnership is geared to move educators and classrooms “beyond keyboarding, word processing and LCD projectors to exploit the teaching/learning potential (as one 21st Century educator has described it) of the greatest technological innovation since the Gutenberg printing press—the Internet.”¹³⁶

¹³⁵ “Student Discussion Groups Beat the Classroom Clock.” Alabama Best Practices Center.
<http://abpc21.org/beattheclock.html>

¹³⁶ “Alabama’s 21st Century Schools are Blazing Trails through Cyberspace.” Alabama Best Practices Center.
<http://abpc21.org/blazingtrails.html>

Section Four: Upper Arlington City School District in the 21st Century

This section profiles the 21st Century Skills integration process at Upper Arlington City School District. We describe the main 21st Century initiatives in the District and compare its progress in the area with selected peers discussed in the previous sections. All information that is not specifically cited in this section was obtained via correspondence with the Associate Superintendent of Upper Arlington City Schools, Deborah Binkley.

Strategy and Development

Like many schools which seek to prepare students for the 21st Century, Upper Arlington has incorporated strategies of 21st Century Skills implementation into its larger strategic plan. **The District's Strategic Plan for 2009-2014 states, "We will develop and implement a systemic plan to embed and support Twenty-first Century skills in all areas."**¹³⁷ The plan outlines six specific results that will achieve this outcome:¹³⁸

- ❖ The district will define the leadership characteristics needed to become a leader in 21st Century Skills in Ohio;
- ❖ The district will create a committee to oversee the implementation of 21st Century Skills in the district;
- ❖ The guidance of the advisory committee will provide a vision for the implementation of 21st Century Skills;
- ❖ Teachers will be competent in the incorporation of 21st Century Skills in classrooms;
- ❖ The Human Resources Department will use 21st Century technology; and
- ❖ The District will continue the IB continuum.

Upper Arlington has already begun the process of 21st Century Skills implementation. **Perhaps the most notable of the district's 21st Century Skills initiatives is the employment of six 21st Century Skills Integration Coaches.** The Integration Coaches work with teachers to design lesson plans and answer technology questions. The coaches also set up workshops and talks about new resources and technologies available in the schools. Toby Fischer, one of the Integration Coaches, reports that teachers have taken full advantage of the services that he and his team provide. Although the Integration Coaches only interact with some teachers on a regular basis, at least half of teachers have worked closely with the integration coaches on projects and lesson plans.¹³⁹

¹³⁷ "The Upper Arlington City Schools Strategic Plan, 2009-2014." Upper Arlington City School District. <http://www.uaschools.org/documents/Strategic%20Plan/StratPlan%20Aug09FINAL.PDF>, 8.

¹³⁸ Ibid.

¹³⁹ Fischer, Toby. Telephone Interview. January 7, 2010.

As previously discussed, other districts often employ technology specialists to aid teachers in integrating technology into the classroom or provide training to selected teachers on 21st Century lessons and projects. For instance, the Trussville City School District described in Section Three, trains full-time teachers to serve as Technology Specialists and Leaders, and advise others on technology questions and lesson design ideas. **However, no other school district profiled in this report employs professionals whose sole function is the integration 21st Century Skills into the curriculum.** The integration coaches are an invaluable resource in the process of 21st Century Skills implementation.

21st Century Skills in the District's Academic Program

The Upper Arlington City School District offers a competitive academic curriculum and many resources to its students. **Notably, Upper Arlington is one of thirteen Ohio districts which offer the diploma International Baccalaureate (IB) curriculum.**¹⁴⁰ The IB program has explicitly incorporated 21st Century Skills development into its mission, and is recognized as one of the most rigorous and effective academic programs.¹⁴¹ IB students at Upper Arlington, as well as AP students, have the privilege of borrowing books from OhioLink, a consortium of Ohio college and university libraries.

The mainstream academic curriculum at Upper Arlington Schools has also undergone the transition to 21st Century Skills. Examples of unique 21st Century projects and activities at Upper Arlington City schools include:

- ❖ The Senior Capstone Project– as part of this senior graduation requirement, students research a topic of interest, write a reflective statement about their work, and present the final product to an audience consisting of former (elementary and middle school) teachers, current teachers, parents, and community members. Students are required to use technology throughout the capstone process. Peers provide input through online assessments via the Moodle program.
- ❖ History Day– students in Upper Arlington High School participate in the National History Day and often create multimedia presentations about research topics of their interest.
- ❖ Marshmallows in Motion– a project in which 5th grade students design a machine to launch a marshmallow to the highest height possible with the greatest accuracy. Through videochat, the 5th grade students consult 9th grade

¹⁴⁰ Ohio Association of IB World Schools. <http://www.ohioib.org/schools.html>

¹⁴¹ "Mission." International Baccalaureate. <http://www.ibo.org/mission/>. See also Wallis, Claudia and Sonja Steptoe. "How to Bring Our Schools of the 21st Century." *Time Magazine*. December 10, 2006. <http://wikiwithus.pbworks.com/f/How%20to%20Bring%20Our%20Schools%20Out%20of%20the%2020th%20Century.pdf>

students on their designs ideas. High school students also review the journals that the 5th graders keep during the project. On the day of the final project presentation, 9th grade students travel to the middle school to consult the designers on any immediate problems that might arise and observe the competition.¹⁴²

- ❖ 6th graders in a science class at Hastings Middle School work on a project, which requires them to research the biography of a scientist, create a mock resume for the individual, draw a portrait, and produce a brochure of their findings. All these materials are then uploaded to a wiki page.¹⁴³
- ❖ In a geometry class, in order to learn the concepts of area and perimeter, students designed houses using Google SketchUp software. They then determined the areas and perimeters of various rooms in the house.¹⁴⁴

These examples demonstrate the curriculum innovations that are already in place in the district. **Students routinely employ Web 2.0 resources, research through online databases, and use new mediums like podcasts, blogs, and Skype in everyday assignments. In addition to the integration of 21st Century skills into the classroom, the Upper Arlington City District offers a variety of opportunities for career development and service learning.** Career development programming in the High School allows students to meet and shadow professionals, discuss their career goals with members of the community, and speak to college students about their experiences.¹⁴⁵ The service learning activities push students to participate in community service throughout the school year. The Upper Arlington middle schools and high school have been named National Service Learning Leader Schools, and Upper Arlington is one of six model districts for service learning in the state of Ohio.

In accordance to 21st Century Skills guidelines, the High School offers several courses of study geared specifically towards career literacy in the 21st Century: Business, Industrial Technology, and Family and Consumer Science. The course offerings in each of these disciplines are presented below:

Upper Arlington High School Course Offerings
Business
Introduction to Business
Integrated Computer Applications
Business Law
Entrepreneurship and Business Management
Personal Finance

¹⁴² Fischer., Opt. cit.

¹⁴³ Hirsch, Barbara. Telephone interview. January 7, 2010.

¹⁴⁴ Fischer, Opt. cit.

¹⁴⁵ "Career Development." Upper Arlington City High School. <http://www.uaschools.org/index.aspx?NID=1869>

Upper Arlington High School Course Offerings
IB Business and Management (2 year sequence)
Industrial Technology
Industrial Technology Survey Wood II- IV (3 courses) Intermediate Drafting Advanced Drafting (Advanced Architecture or Advanced Engineering) Engineering Graphics
Family and Consumer Science
Living Today Food for Fitness Learning with Children On Your Own

Upper Arlington also encourages students to pursue internship positions as part of an independent study for school credit. Internships and outside work experiences allow students to understand the demands of the workplace and determine future career paths.

Technology in Upper Arlington City Schools

Several infrastructural characteristics of the Upper Arlington district demonstrate 21st Century technology capabilities:

- ❖ The wireless internet network at the Upper Arlington High School;
- ❖ A technology laboratory at the High School allows students to receive help with technology projects;
- ❖ All classrooms in the High School are equipped with a desktop computer for teacher's use;
- ❖ A laptops-for-teachers program at the High School where twenty-five teachers receive laptops and software. Teachers selected for the program complete sixty hours of professional development training on the incorporation of technology into class design;
- ❖ Twenty-five teachers and intervention specialists have iPods to facilitate instruction;
- ❖ Interactive whiteboards (SmartBoards) are in use in the language, math, science, and music classrooms at the Hastings Middle School; and
- ❖ One-to-one laptop ratio at the Upper Arlington Community High School.

In addition to hardware, students, parents, teachers, and administrators are increasingly relying on software and online resources. Several of these include:

- ❖ NoodleTools online software provides research tools, such automatic citations, online notecards, and research tips for students;
- ❖ Brainpop programs include online quizzes, puzzles, activities, and homework help in a variety of subjects;

- ❖ Moodle software is used by teachers and students for digital submissions of assignments, feedback, and online collaboration; and
- ❖ PowerSchool networks for student information management and reporting.

In addition to these programs, students have access to myriad library resources, including EBSCO Host, Britannica Online, NewsBank: Access World News, and others. Each school building also has a technology team which collaborates with Integration Coaches to consult school faculty and staff on the use of technology in the classroom.

Current Strengths and Future Directions

The Upper Arlington School City District has been successful in implementing 21st Century Skills. Like many of its peers discussed in this report, the District has incorporated 21st Century Skills into its strategy and has followed the Partnership for 21st Century's guidelines to create a 21st Century learning environment. **In comparison to Ohio and national school districts, Upper Arlington is in advanced stages of 21st Century Skills promotion.** Several 21st Century characteristics of the District include:

- ❖ The use of Integration Coaches— as previously mentioned, no other district employs full-time professional Integration Coaches. Integration coaches are a valuable resource and a teacher aid within the framework of a transformation to a 21st Century Skills learning environment;
- ❖ The widespread use of software and online tools;
- ❖ Project-based learning and the use of technology in the classroom;
- ❖ Cooperation between students from different school buildings and grades;
- ❖ The incorporation of 21st Century Skills into lesson plans; and
- ❖ A variety of career-oriented courses and career development opportunities.

Although Upper Arlington City School District only began to focus on 21st Century Skills recently, it has already made significant progress. With the continuation of the program and continued efforts of the Integration Coaches, all classrooms will begin to prioritize 21st Century Skills in everyday lessons.

New directions in 21st Century Skills development that Upper Arlington City School District might consider include:

- ❖ **Continued emphasis on global literacy and awareness**
 - While Upper Arlington offers three languages (French, German, and Spanish), some of its peers offer an extended language curriculum with courses in Chinese, Arabic, or Russian. For instance, Swain County offers Chinese language classes (see pg. 37-38). Upper Arlington might consider forming partnerships with local colleges and universities to

extend its curriculum offerings. The Dalton School District (see pg. 9-11) offers such opportunities to its students and has found the program to be successful.

- Upper Arlington could also consider launching an exchange program to engage its students and raise the global profile of its schools. As previously mentioned, the Swain County District (pg. 37-38) is currently working with contacts in China to establish a permanent exchange program.

❖ **Continued technological investment**

- Although Upper Arlington schools are equipped with the latest technologies, such as laptops, projectors, and in the high school, SmartBoards, the district is still far from achieving the 1-to-1 laptop ratio of many its peers (with the exception of Community High School). In Upper Arlington High School, there are only about 300 desktop computers. The computer to student ratio is then approximately 1-to-6, much lower than in other 21st Century programs.

❖ **Cross-disciplinary projects and activities**

- 21st Century Skills guidelines emphasize the need for interdisciplinary and holistic learning. Upper Arlington City Schools should continue to engage students through interdisciplinary projects and activities and emphasize common themes and skills across subjects. For sample interdisciplinary assignments and projects, see profiles of the High Tech High School (pg. 22-25) and New Tech High School (pg. 31-33).

❖ **21st Century assessments**

- As previously mentioned, a recent study of school assessments and tests has found that commonly used performance measures do not truly evaluate students' 21st Century Skills.¹⁴⁶ Upper Arlington might consider adopting one of the assessments recommended by the report, such as the College Work and Readiness Assessment (CRWA), employed by Herricks Union Free School District (pg. 21-22).

❖ **Continued engagement with community and parents**

- To further engage community member and parents in the 21st Century Skills initiative and receive valuable outside input, the Upper Arlington City School District could create advisory councils or committees. Such models were used in the Catalina Foothills School District (pg. 15-18), and in the Oak Hill Local School District (pg. 11-12). The advisory councils helped the districts in identifying future directions and provided a strong link to the outside community.

¹⁴⁶ Silva, Opt. cit.

- Upper Arlington currently contains information on 21st Century Skills and its strategy on its website. However, to garner further attention from parents and community members, the District could expand these materials and deliver them through innovative mediums. As discussed in Section 2, an interesting approach might be the creation of videos or podcasts that effectively present the key features of the 21st Century Skills framework and describe the district's strategy in addressing 21st Century Skills. For reference, see the profile of Niles Township School District 219 (pg. 33-34).

Section Five: Profiled District Data

Table 1: Ohio Peer District Data¹⁴⁷

School District	Total Enrollment*	Number of Schools	Revenue per Student*	Attendance Rate	Graduation Rate*	% Minority	Average ACT Score*	Average SAT Score*	Designation
Upper Arlington	5,201	7	\$14,296	96%	97%	9%	25	1132	Excellent with Distinction
Cleveland Heights-University Heights	6,257	13	\$17,195	95%	93%	83%	19	1014	Continuous Improvement
Dalton	999	4	\$9,196	96%	99%	4%	23	1090	Excellent with Distinction
Oak Hills	8,200	9	\$8,352	95%	97%	6%	22	998	Excellent with Distinction
Orange City	2,352	4	\$22,977	96%	100%	34%	24	1100	Excellent with Distinction

*Figures for the school year 2007-2008.

Note: Because the Metro Early College High School is a relatively new program, data for the school is unavailable and is not included here.

Table 2: National District Data

School District	Total Enrollment	Number of Schools	Revenue per Student*	Attendance Rate*	Graduation Rate*	% Minority	Average ACT Score	Average SAT Score
Upper Arlington	5,201	7	\$14,296	96%	97%	9%	25	1132 (Math and Reading Only, Writing N/A)
Amphitheater ¹⁴⁸	16,178	22	\$8,877	96%	86%	46%	-	-
Catalina Foothills ¹⁴⁹	4,724	8	\$10,259	99%	97%	35%	N/A	M-582 R-569 W-557 ¹⁵⁰

¹⁴⁷ Revenue per Student and Total Enrollment were found via National Center for Education Statistic's Public School District Search, <http://nces.ed.gov/CCD/districtsearch>; All other figures are from Ohio Department of Education District Score Cards, <http://ilrc.ode.state.oh.us/>.

¹⁴⁸ Data collected from the following sources: "Amphitheater Community." Amphitheater Public Schools. <http://www.amphi.com/files/F07024B705CB47D5BD2F202EEBC8DF81.pdf>; "District Scorecard." Arizona Department of Education. <http://www10.ade.az.gov/ReportCard/DistrictDetails.aspx?id=4406&ReportLevel=2>; National Center for Education Statistics' Public School District search, <http://www.nces.ed.gov/ccd/districtsearch/>

¹⁴⁹ Data collected from the following sources: "District Information." Catalina Foothills School District. http://www.cfsd16.org/public/_distInfo/distMain.aspx; National Center for Education Statistics' Public School District search, <http://www.nces.ed.gov/ccd/districtsearch/>

¹⁵⁰ "High School Basic Report." Catalina Foothills. http://www.cfsd16.org/public/_distInfo/pdf/SAT%20Scores.pdf

School District	Total Enrollment	Number of Schools	Revenue per Student*	Attendance Rate*	Graduation Rate*	% Minority	Average ACT Score	Average SAT Score
Cobb County ¹⁵¹	107,307	114	\$11,098	-	84%	54%	22.1 ¹⁵²	M-519 R-515 W-500 ¹⁵³
Herricks Union ¹⁵⁴	4,082	5	\$20,918	97%	98%	53%	N/A	M-591 R-541 W-560
High Tech High ¹⁵⁵	2,500	8	-	90%	100%	58%	N/A	1548 ¹⁵⁶
Hutchinson USD 308 ¹⁵⁷	4,917	14	\$10,455	95%	-	30%	22.8 ¹⁵⁸	N/A
Jefferson Parish ¹⁵⁹	44,844	88	\$11,859	92%	59%	68%	18.8*	N/A
Kearney Public Schools ¹⁶⁰	5,110	18	\$9,201	96%	86%	8%	22.4	N/A
Kettle Moraine ¹⁶¹	4,416	6	\$11,076	96%	97%	8%	23.5	N/A
Niles Township HSD 219 ¹⁶²	4,625	2	\$22,178	93%	93%	51%	22.3	N/A
Putnam ¹⁶³	9,214	23	\$9,559	97%	88%	4%	21.5 ¹⁶⁴	N/A

¹⁵¹ Data collected from the following sources: "Strategic Target, 2009-2014." Cobb County School District. http://www.cobbk12.org/board/StrategicPlan_targets_101409.pdf; National Center for Education Statistics' Public School District search, <http://www.nces.ed.gov/ccd/districtsearch/>

¹⁵² "Cobb ACT Scores Rise in All Subjects." Cobb County School District.

http://www.cobbk12.org/centraloffice/accountability/testscores/2008-09/2009_ACTRelease&Tables.pdf

¹⁵³ "Cobb County SAT Scores." Cobb County School District.

http://www.cobbk12.org/centraloffice/accountability/testscores/2008-09/2009-08-25_SAT.pdf

¹⁵⁴ Note: All data is for the school year 2007-2008, graduation and attendance data for the year 2006-2007. Data collected from the following sources: "Herricks Union School District Report Card." New York Department of Education. <https://www.nystart.gov/publicweb/District.do?year=2008&county=NASSAU&district=280409030000>; "Herrick High School Profile." Herrick Union Free District.

http://www.herricks.org/files/54/Herricks_Profile_08.pdf; National Center for Education Statistics' Public School District search, <http://www.nces.ed.gov/ccd/districtsearch/>

¹⁵⁵ "About High Tech High." High Tech High. <http://www.hightechhigh.org/about/>; "DataQuest." California Department of Education. <http://dq.cde.ca.gov/dataquest/>; National Center for Education Statistics' Public School District search, <http://www.nces.ed.gov/ccd/districtsearch/>

¹⁵⁶ Figure is representative of Gary and Jeri-Ann Jacobs High Tech High, 2006-2007 only. "California Schools Guide." *Los Angeles Times*. <http://projects.latimes.com/schools/sat-scores/ranking/page/1/>

¹⁵⁷ National Center for Education Statistics' Public School District search, <http://www.nces.ed.gov/ccd/districtsearch/>

¹⁵⁸ "HHS ACT Scores Improve." Hutchinson High School. <http://www.usd308.com/news4.php?page=4>

¹⁵⁹ Data collected from the following sources: "District Performance Report 2007-2008." Louisiana Department of Education, <http://www.louisianaschools.net/lde/pair/DCR0708/DCR026.pdf>; "About Our District." Jefferson Parish Public School System. <http://www.jpss.k12.la.us/about-out-district/>; National Center for Education Statistics' Public School District search, <http://www.nces.ed.gov/ccd/districtsearch/>

¹⁶⁰ Data collected from the following sources: "District Snapshot." Kearney Public Schools.

<http://kearneypublicschools.org/modules/cms/pages.phtml?pageid=75916&sessionid=bfdccb2278335be8c1219aa051583e7>; "District Profile." Nebraska Department of Education. <http://reportcard.nde.state.ne.us>; National Center for Education Statistics' Public School District search, <http://www.nces.ed.gov/ccd/districtsearch/>

¹⁶¹ Data collected from the following sources: "Facts & Figures." Kettle Moraine School District.

<http://www.kmsd.edu/aboutus.cfm?subpage=160987>; National Center for Education Statistics' Public School District search, <http://www.nces.ed.gov/ccd/districtsearch/>

¹⁶² All data is for the school year 2007-2008. Data collected from the following sources: "District Report Card." Niles Township High School District 219. <http://sharepoint.niles-hs.k12.il.us/webdocs/School%20Report%20Cards/District%20Report%20Card.pdf>; National Center for Education Statistics' Public School District search, <http://www.nces.ed.gov/ccd/districtsearch/>

¹⁶³ Data obtained from the following sources: "Putnam Country Report Card." West Virginia Department of Education. <http://wveis.k12.wv.us/nclb/pub/rpt0708/cache%5Cpdf072.pdf>; National Center for Education Statistics' Public School District search, <http://www.nces.ed.gov/ccd/districtsearch/>

School District	Total Enrollment	Number of Schools	Revenue per Student*	Attendance Rate*	Graduation Rate*	% Minority	Average ACT Score	Average SAT Score
Swain County ¹⁶⁵	1,191	6	\$10,628	94% ¹⁶⁶	92% ¹⁶⁷	18%	N/A	M-482 R-490 W-472 ¹⁶⁸
Trussville City	4,118	4	\$10,021	97% ¹⁶⁹	86% ¹⁶⁹	12%	21.3 ¹⁷⁰	N/A
Napa New Tech High ¹⁷¹	356	1	-	-	100%	42%	N/A	1580 ¹⁷²

¹⁶⁴ McClanahan. "ACT Scores in Putnam County Top In State and Nation." West Virginia Media. 2009. <http://wowktv.com/story.cfm?func=viewstory&storyid=44605&catid=45>

¹⁶⁵ Data obtained from the following sources: "School Report Cards." Public Schools of North Carolina. <http://www.ncschoolreportcard.org/src/>; National Center for Education Statistics' Public School District search, <http://www.nces.ed.gov/ccd/districtsearch/>

¹⁶⁶ "Swain County Schools." Great Schools. <http://www.greatschools.net/cgi-bin/nc/district-profile/165>;

¹⁶⁷ Scott, J. 2008. "North Carolina's Top Dropout Rates Found in State's Poorest Counties." East Carolina University. http://www.ecu.edu/cs-cfac/comm/COMM3321/upload/2008_NCdropouts_poorCounties.pdf

¹⁶⁸ Figures for 2008-2009 school year. "The North Carolina 2009 SAT Report." <http://www.dpi.state.nc.us/docs/accountability/reporting/sat/2009/satreport2009.pdf>

¹⁶⁹ Figures for 2006-2007. "State Board of Education Report Card 2006-2007." Alabama Department of Education. <https://docs.alsde.edu/documents/ReportCards/2006-2007/205/205.pdf>

¹⁷⁰ Figures for 2006-2007. "State Board of Education Report Card 2006-2007, Hewitt-Trussville High School."

Alabama Department of Education. <https://docs.alsde.edu/documents/ReportCards/2006-2007/205/2050890.pdf>

¹⁷¹ DataQuest Database. California Department of Education. <http://dq.cde.ca.gov/dataquest/>

¹⁷² "California School Guide." *Los Angeles Times*. <http://projects.latimes.com/schools/sat-scores/ranking/page/1/>

Appendix: Useful Contact Information

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