# Strategic Priority Assessment 2012-2016 Enhance Learning Through Technology

**Key Concepts Associated with this Priority:**

- Provide staff and students with access to the technology needed to strengthen teaching and learning in ways that are not possible with traditional tools in order to help students master 21st century skills.

- Utilize technology to provide better access to information and interactive media, a wide range of assessment and feedback tools, and the ability to make learning connections locally, nationally, and globally.

- Promote innovative uses of technology that advance the district's educational and operational goals and monitor new approaches for equity, efficiency, and effectiveness.

- Educate students to use technology productively and responsibly.
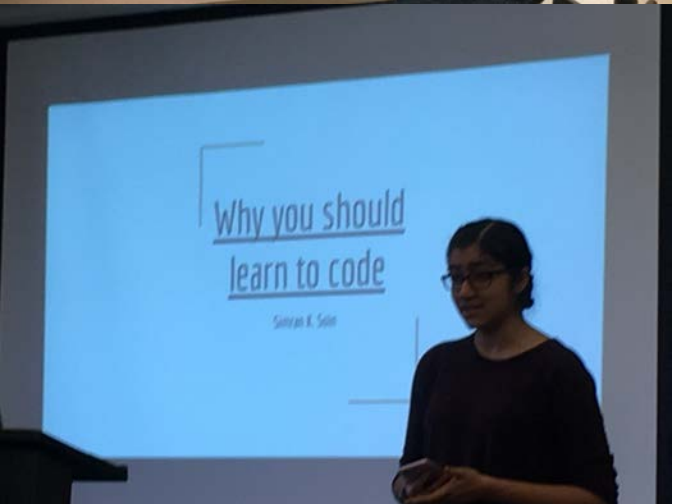
All Pre-K-Grade 4 core classrooms will employ interactive technology daily to improve learning.

Over the course of the past 5 years, all core elementary classes have been outfitted with digital interactive projectors that enable teachers to easily bring the internet and other digital resources into the classroom. There are now 116 of these projectors deployed across all elementary schools. The district has gone beyond this original goal of interactive technology in PreK-4 classrooms and has outfitted all 4th grade classrooms with iPad carts; these carts support one digital device for every two 4th grade students, for a total of 240 devices distributed to 4th grade classrooms across the district.

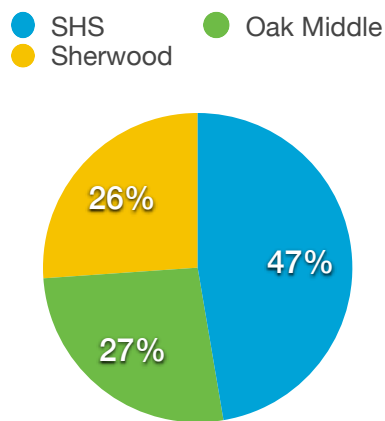## Spotlight: 3rd Grade Coolidge Students Skype with Author
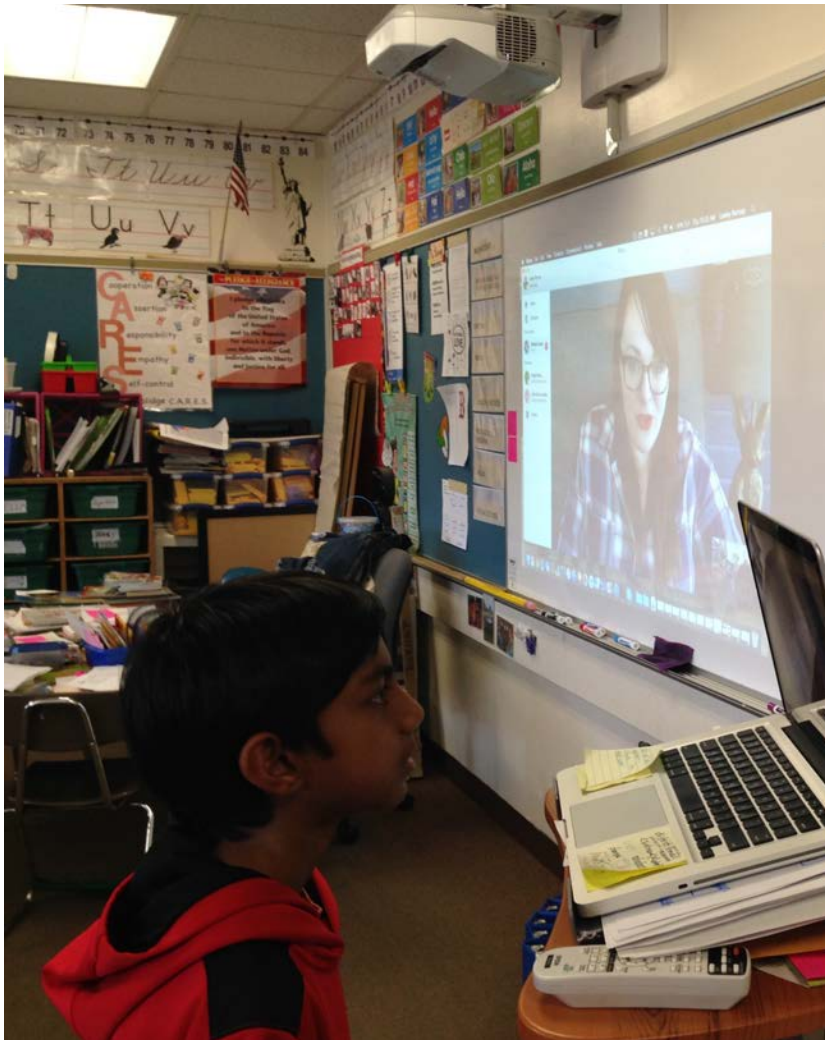
The students in Ms. Burnap's third grade class at Calvin Coolidge Elementary School had an opportunity to Skype with ALA Notable Children's Book author Natalie Lloyd in the spring of 2017. Lloyd, who lives in Tennessee, is the author of The Key to Extraordinary (2016) and A Snicker of Magic (2014). Ms. Burnap used Twitter to secure this opportunity for her students. Lloyd talked to the students about her writing process and her character development, and she previewed a chapter from her upcoming middle-grade book. The students were able to ask questions that helped them grow as writers.
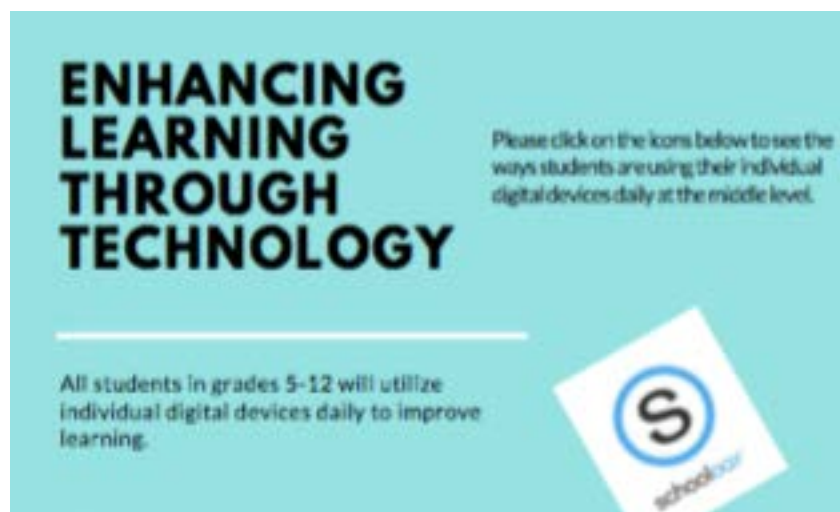
All students in Grades 5-12 will utilize individual digital devices to improve learning.

As of the 15-16 school year, all students in grades 5-12 were provided with an iPad as a tool to enhance their learning.   In a recent survey of 70% of students reported being better organized because of the iPad, 68% of students shared that they were more like to revise their work when it as done on an iPad, and 51% of students report that they do better work when they use an iPad.

There are a total of 3,778 student devices deployed across the middle and high school levels. The chart below shows the distribution across SHS, Oak, and Sherwood.

● SHS   ● Oak Middle
● Sherwood

26%
47%
27%

Spotlight: Appendix A Oak and Sherwood Technology infographic

ENHANCING LEARNING THROUGH TECHNOLOGY

Please click on the icons below to see the ways students are using their individual digital devices daily at the middle level.

All students in grades 5-12 will utilize individual digital devices daily to improve learning.

388,661 Total Visits	**5,488,951** Page Views Avg 431.62 Per User	**00:08:31** Avg. Time Per Visit	**13,814** Comments Posted Avg 1.09 Per User	**64,201** Submissions Avg 5.05 Per User	**51,371** Files Uploaded Avg 4.04 Per User

User Type · Schools

● Shrewsbury Public Schools   ● Sherwood Middle School   ● Parker Road Preschool   ● Shrewsbury High School   ● Oak Middle School
● Floral Street School   ● Spring Street School   ● Calvin Coolidge School   ● Walter J. Paton School   ● Beal Early Childhood Center
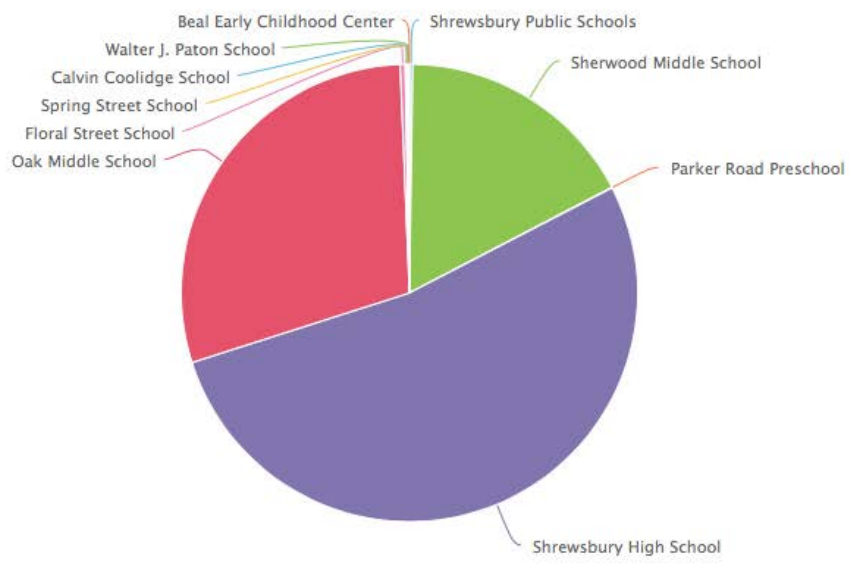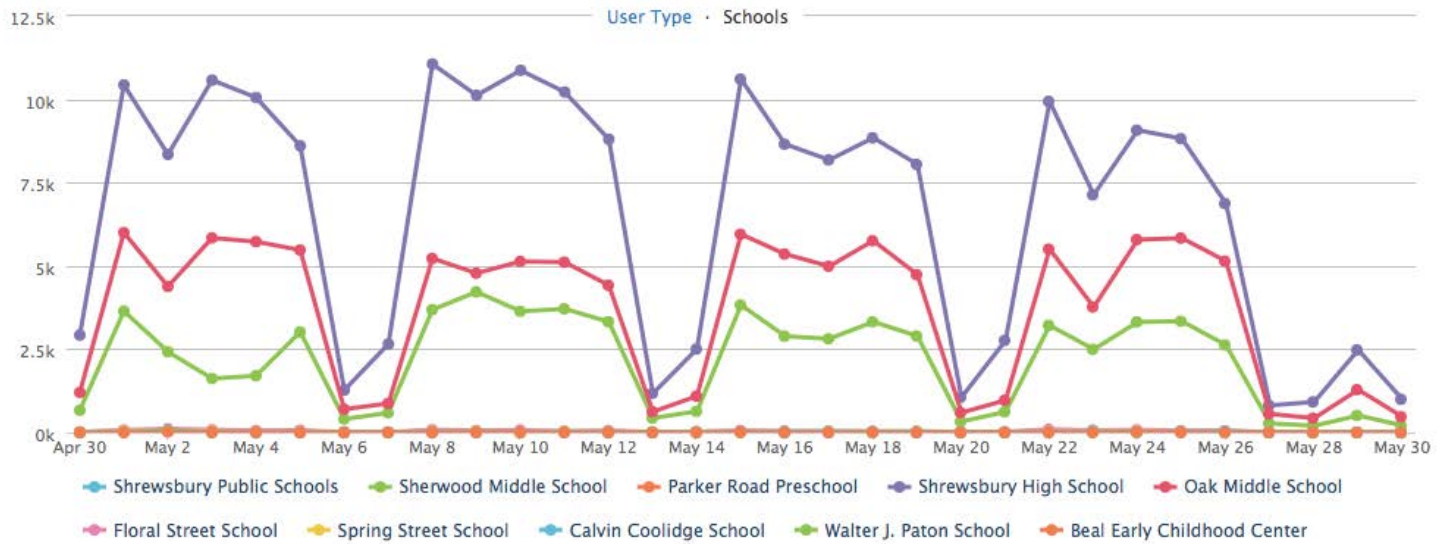
Schoology is the learning management system that is utilized by our students and educators to assist in the organization of digital resources and for work submission. **The data above shows the level of activity that has a taken place during May 2017 on this learning platform.** As expected, schools that have all students with digital devices, see a significant amount of traffic and interaction on this platform.

4

All educators will participate in collaborative professional development in the use of educational technology and successfully apply this in the classroom.

Shrewsbury educators have engaged in a wide range of professional development activities designed to become both personally comfortable with digital tools and to move to integrated technology into classrooms and a high level. Below please find a sampling of the types of courses, workshops, and other learning opportunities that have been afforded to staff during the 5 year strategic priority time frame.

Summer Institute Offerings

- The Advanced iPad Classroom (2013)

- The iPad Classroom (2013, 2016)

- Teaching Elementary Grades with Technology (2013, 2016)

- Passion Driven Leadership in a Digital Age (2014)

- The Google Infused Classroom (2014)

- Utilizing technology to Improve Teaching and Learning in Secondary Mathematics (2014)

- Video Creation in the Classroom (2015)

- Integrating Schoology into Your Professional Practice (2015, 2016)

- Navigating the Complexities of On-Line Information (2017)

- Cultivating Creativity Through Problem Solving in Secondary Math (2017)

Teacher led Innovation Team for studying and problem solving 1:1 implementation at SHS

Teacher led 4th grade 1:2 training

Teacher led EdCamp model at middle level

On-going Schoology training for 5-12 staff

Teams of teachers and administrators annually attend MassCue (state-wide technology integration) conference and/or iPad Summit or Innovation Summit (sponsored by EdTech Teacher)

Student Innovation Team at SHS provides support to teachers on implementing specific technology tools in classrooms

Technology tools modeled as part of faculty meetings and other professional structures

Leading Innovation in the Classroom: Making Significant, Positive Changes

Beth Holland, EdTech Teacher

Scott Berkun defines innovation as "significant, positive change" but what are the changes that we *could*, or *should*, be making in the classroom? With so many different concepts floating around - blended learning, individualized learning, project-based learning, and more - that compete with the everyday pressures of school, the concept of innovation can seem overwhelming. However, one common theme sits at the heart of all of these concepts: ensuring that students become active learners who can easily adapt to a fast-paced, technology-rich world. Over the course of three days, we will explore strategies for designing the types of experiences that will allow students to develop the skills that they need to succeed in a modern world. Participants will leave with concrete ideas and plans for making significant, positive changes in the coming school year.

Beth's Bio

With over 17 years of educational experience, Beth provides expertise in mobile learning, K-12 education, and assistive technology. She is an authorized Google Education Trainer as well as a doctoral student at Johns Hopkins University. Beth has presented nationally and internationally, including the Projetto Invitro Annual Conference in Italy, ASCD, TEDxMosesBrown, COSN, the MassCUE Technology Conference, CECA, GaETC, and the EdTechTeacher iPad Summits.

She also blogs regularly for Edutopia and EdTech Researcher at Education Week. Beth previously served as the Director of Academic Technology at St. Michael's Country Day School. While there, she implemented professional development programs for the faculty, designed new projects, taught students in grades 2-8, facilitated the integration of technologies to differentiate instruction, and helped to design their iPad pilot program. Beth holds an Ed.M. in Technology, Innovation, and Education from the Harvard Graduate School of Education, and a B.S. in Communications from Northwestern University.

Deploy technology tools and utilize digital content to enhance learning, communication, and customer service for students, staff, parents, and community members.

Shrewsbury Public Schools have researched and invested in a wide range of digital products that are either designed to benefit student learning or to better the operational efficiency of the district. In as spring 2017 survey, 77% of 5-12 educators reported that their teaching benefitted from iPad use. Below please find a representative sample of some the technology tools and skills that have been introduced into the district over the course of the five year period of the Strategic Plan.

Enhance Learning:

- All students in grades 4-12 have been issued computer accounts to allow for the electronic completion and sharing of work.

- During the 2015-16 school year, the district implemented the *Schoology* learning management system (LMS) to allow teachers to easily curate and share digital resources with students, for student to participate in on-line discussion forums, and for students to hand in work electronically to their teachers.

- After a pilot during the 15-16 school year, the SHS math department supplemented its instructional materials with *Aleks*, an artificial intelligence based software that is able to support students by providing an individualize pathway for learning the discreet skills of high school mathematics.

- *Apple Classroom* allows teachers to both push out digital content and monitor what students are doing during classroom time on their devices. This software is in the early stages of implementation with 25.56% of educators reporting that they use it in their classrooms.

- The *Notability* app, which is provided to all students in grades 5-12, provides students with a digital notebook that can be annotated and allows for digital images to be directly uploaded into a specific notebook page.

- 82% of students in grades 5-12 report that they know how to or could teach someone to import and edit video.

- 45% of students in grades 5-12 report that they know how to or could teach someone to create and update a web page.

- 93% of students in grades 5-12 report that they know how to or could teach someone to create a multi-media presentation

Spotlight: SHS Vernier LabQuest2 Probes

Technology-Enhanced Chemistry Lab

The Science Department at Shrewsbury High School recently received a $75,000 grant from the MA Life Science Center (MLSC) that enabled department director David Hruskoci to purchase sophisticated science equipment that is expected to enhance students' ability to collect and analyze data in meaningful ways. Teachers are collaborating to investigate the new devices and determine how to best utilize them to enhance instruction. Some teachers have already begun incorporating the new technology into their classrooms.

Melanie Johnson (left) and Rachel St. Pierre (right) using the LQ2 to collect temperature data

A real-time temperature vs. time graph produced with LQ2 and temp. probe

The equipment includes various sensors that can be used in all science subjects and a device called the Vernier LabQuest2 (LQ2), which is a smart-phone sized device that is used to collect data from sensors. It has a touch screen and wireless connectivity. Not only can students use it to collect and analyze data, but they can also use it to store, print, or share data via email.

Students in Dr. Lowery's chemistry class recently conducted an experiment in which they used these devices along with temperature probes to investigate two types of chemical reactions (endothermic and exothermic) in which energy is absorbed or released. Rather than using traditional thermometers to measure temperature, record data in a table, and then later plot data on graph paper by hand in order to see the changes in temperature, students were able to quickly and efficiently collect real-time temperature data and immediately view graphs of the change in temperature over time.

Dr. Lowery believes that these devices will decrease the time it takes to complete labs such as this one. He also expects that these devices will enable students to see patterns in their data much more quickly. This will enable teachers and students to use more class time for analyzing data and drawing conclusions.

Enhance Communication:

- In 2015, a new website was launched to streamline information access for parents and the community http://schools.shrewsburyma.gov

- During the 2015-16 school year, the district implemented the Schoology learning management system (LMS). Along with its instructional benefits, the system allows both students and parents to access class resources and assignments at any time on the web.

- SchoolMessenger has been implemented as a centralized method of mass communication with parents and community members, for both administrators and teachers. The district has recently been able to use this system to automatically translate messages to parents in their requested language.

Enhance Customer Service:

- Online payment through SchoolPay has been implemented and is integrated with PowerSchool, reducing staff time spent processing payments and increasing convenience for parents.

- The PowerSchool Parent Portal has been enhanced and customized to provide a streamlined experience for parents registering for the bus, for music lessons, and for athletics. In addition to added convenience for parents, these enhancements save staff time spent tracking registrations and payments.

- Point-of-sale systems have been implemented in each school's cafeteria, speeding up lunch lines, allowing for parents to replenish their student's lunch account online, and reducing staff time spent processing lunch applications and payments.

Appendix A

ENHANCING LEARNING THROUGH TECHNOLOGY

Please click on the icons below to see the ways students are using their individual digital devices daily at the middle level.

All students in grades 5-12 will utilize individual digital devices daily to improve learning.

1 WORKFLOW

Utilizing the learning management system, Schoology, teachers can post assignments and resources. Students can access these materials and submit completed work for review. Due to 1:1 access, students are provided with a consistent and efficient means of workflow.

2 COLLABORATION

1:1 technology promotes collaboration among students and between students and teachers. Using Google Drive, students have the ability to share their work and receive critical feedback. The technology also provides the opportunity for students to work together to create a common project allowing for everyone's voice to be heard both within and outside the classroom.

3 RESEARCH

Research is an important skill that is developed at the middle level. 1:1 technology provides students with direct access to online resources including websites, data bases, and teacher curated content. Applications like NoodleTools are used by students to create and organize notes and sources. Through the research curriculum, students are taught how to evaluate online sources.

4 PRODUCTIVITY

Google Presentations, Infographics, and iMovies are just a few of the ways students use the 1:1 technology for producing high-quality presentations. Students are provided opportunities for voice and choice in demonstrating their learning. Productivity apps also help students to express their creativity in meaningful ways.

5 ORGANIZATION

Students are able to use their iPads to organize and maintain their assignments and resources without having to manage unwieldy binders. They access Schoology to download assignments and submit work. Students also use folders in Notability and Google Drive to sort and categorize information from their various classes.

6 COMMUNICATION

1:1 technology supports the high level of communication required in 21st century learning environments. Apps such as Google Drive, Schoology, and Explain Everything are the roads students travel on to develop these skills. The technology also allows students and teachers to communicate and engage both inside and outside of the classroom.

7 STUDY TOOLS

Teachers in the 1:1 learning environment can utilize a variety of applications and features to promote effective study skills with their students. Students have easy access to notes and presentations from class that can be used for review. Online games and flashcards promote reinforcement of concepts and skills.

8 OWNERSHIP OF LEARNING

Tools such as Schoology, Google Drive, and Notability empower students to be in control of their learning, organization, and work habits. Teachers post homework, project assignments, rubrics, study guides, and reference materials on these platforms. With open access to these resources, the responsibility shifts to the student to figure out how to utilize these tools to drive their own learning and organizational process.