



Transformative Budgeting for Digital Learning
NJ Department of Education

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The Challenge, The Opportunity

In order to successfully make the shift to digital learning, districts need to provide reliable student and educator access to technological resources. The challenge for many districts is how to make additional devices and infrastructure available in order to fill any technology gaps. Yet with this challenge comes tremendous opportunity. Readiness for digital learning has accelerated a broader discussion about providing students opportunities to personalize learning and increase readiness for college and the workplace through the development of 21st century skills. Readiness for personalized learning increasingly calls for equitable and high-speed access to digital content and resources.

Most districts are deeply involved in this discussion, with some taking first steps in transitioning to digital learning, while others have already implemented district-wide 1-to-1 initiatives. Many have faced issues with identifying funding for this digital conversion. This paper is intended to assist districts in re-thinking traditional budgetary approaches in order to find possible ways to fund technology initiatives by repurposing existing funding sources, or through *transformative zero-based budgeting*.

Cost efficiencies can be realized through thoughtful conversion to technology-supported practices and can then be used to offset technology costs. By not simply viewing technology expenditures as additions to an existing budget, and by identifying cost efficiencies and then adjusting customary spending patterns, it may be possible to fully or partially fund the shift to digital learning. Successful implementations of this approach, as well as other examples of digital learning shifts, are profiled.

The New Jersey Department of Education is interested in collecting and publishing additional profiles of districts or schools that have met the challenge of funding a shift to digital learning in innovative ways. If you would like to submit your district/school story for consideration of publication, please contact us at edtech@doe.state.nj.us.

Transformative budgeting

Readiness for funding digital learning may require *transformative budgeting*, a process by which innovations in schools are accomplished within existing budgets. The following three essential strategies characterize transformative budgeting when applied to technology readiness for digital learning:

1. *Alignment of technology expenditures with the goals in the district's strategic plans.* Ideally, budget development activities occur after the annual academic planning process. A budget is developed that translates strategic plans into actions and specifies the financial resources necessary to implement the plan. District leaders identify and prioritize expenditures for digital learning that align with the goals in the district's strategic plan. They share this alignment with stakeholders for feedback and support.
2. *A cross-functional budget leadership team that brings together finance, technology, curriculum and instruction.* The team work together from the start to collaboratively investigate options for cost savings, efficiencies and options for alternative funding streams. By working together and not in silos, they ensure priorities for budgeting are transparent and have the support of key stakeholders.

A budget translates a strategic plan into actions and specifies the financial resources necessary to implement the plan.
3. *Transformative zero-based budgeting - a process through which education leaders begin each budget cycle at zero in each category, and then add costs to the budget only when there is evidence that such costs are required to meet goals.* That process includes identifying the metrics and methodology to ensure accountability for learning returns on investment. (The Consortium for School Networking [CoSN] offers a Value of Investment Tool [VOI] for objectively analyzing the anticipated costs and benefits of a proposed project which includes a Return on Investment Worksheet and Project Benefits Worksheet. Visit <http://www.cosn.org/VOIMethodologyTools>.)

With transformative budgeting, a common practice for making decisions about technology expenditures for digital learning is to ask, throughout the budgeting process, “*Will this expenditure support student achievement and data-informed decision making?*”

Where to begin?

Three steps – investigating, planning and implementing – can guide district leaders in identifying the funding needed to implement a technology plan that aligns with New Jersey districts’ visions for digital learning environments. The transition to digital learning requires a clear understanding of what digital learning “looks like” and therefore begins with a vision statement and a technology plan that support that understanding.

This transformative budgeting process takes time, but helps ensure success in efficiently realizing the goals. **Skipping a step or completing it in haste can result in missed opportunities with long-term implications for cost savings.**

Step 1: Investigate

The investigation stage is critical for district leaders to become informed about cost savings through efficiencies with digital tools, resources and network infrastructure and about possible supplemental funding streams. It is also the stage for a clear understanding of district data, such as device and network readiness gaps reported in the NJ Department of Education’s online database tool for gauging testing sites’ technology readiness for online assessments (NJTRAX) (or other technology readiness databases) and the costs for technology support, maintenance and professional development.

This is the time for district leaders to ask questions such as, *“What are possible cost savings with mobile technology, cloud computing solutions or digital instructional content to replace textbooks? Is Bring-Your-Own-Devices (BYOD) feasible for assessment or for digital learning? Should we transition to a 1-to-1 program? Will incorporation of blended or online learning options produce savings? How can we leverage E-Rate discounts? Can we move communications online with a goal of becoming paperless? Where are sources of alternate or supplemental funding? Where have other districts found cost savings and alternate funding sources?”*

Districts will benefit from thinking about a combination of avenues for cost savings and funding such as:

- Cost savings through the use of digital tools and resources
- Efficiencies through re-allocation of existing district funding and resources
- Re-visiting state or federal funding for opportunities for digital resources
- Partnerships with parents and the community
- Re-negotiating contracts with vendors and online content providers and identifying opportunities for collective buying power through collaboration with other districts on technology purchases

A review of the efficiencies made possible through new, innovative uses of technology should enable education leaders to rethink budgets in ways that are transformative, not additive.

A cross-functional leadership team can “divide and conquer” this investigation by distributing investigative responsibilities. For example, some members can participate in conferences, others discuss strategies with other districts or experts, while others may examine current vendor agreements to seek lower cost alternatives. The team can then convene to share, discuss and build scenarios for implementing strategies and share those possibilities with stakeholders for their feedback, and ultimately, their buy-in. Districts often skip this investigation step and move directly to planning and implementing, with the risk of missing significant cost-saving options and reverting to traditional budgeting processes.

In the section *Learning from Other Districts* that follows below, three districts, [Springfield Public Schools](#) in NJ, [Baltimore County School District](#) in MD, and [Plumsted Township School District](#) in NJ, highlight strategies for re-allocating existing funds to align with a priority for digital learning. All the district scenarios included in this section illustrate innovative strategies for cost savings by leveraging digital solutions. A section on [additional Funding Sources in this document](#) lists historical sources of funding to investigate or revisit for funding options.

Step 2: Plan

Phase 1: The planning process begins with the cross-functional team together with members from finance, technology (educational, informational and assistive), curriculum, assessment, instruction, parents, students and any other stakeholders with an interest in digital learning. Having such a team of stakeholders participating in this process will help clarify goals and strategies for the district, make assumptions explicit and build consensus. Starting with the district strategic plan for transitioning to a digital learning environment, the team agrees upon priorities; identifies the cost-saving strategies to implement; and matches digital learning and assessment expenditures with appropriate funding streams. In addition, they identify evaluation metrics to use to ensure learning return on investment. Thorough investigation in *Step 1* prepares the team for this collaborative work.

The team also develops a roadmap that identifies (1) which technology and support are mission-critical and must be done immediately, (2) what can be done within three years, and (3) what is longer term,

Importance of Professional Development

Some districts strongly recommend that ahead of any other purchases, funding begin with provisioning teachers with devices and with meaningful, sustained professional development. Helping teachers understand the shift to digital learning and what it means in the classroom is the critical first step in transforming learning. If teachers can see that students are comfortable working with different devices and that implementing policies and practices for safe and constructive use of technology is possible, they may have less reticence in implementing BYOD. Their enthusiasm for digital learning creates excitement for students and results in best practices that they can share with parents, the community and the school board, which leads to support with funding.

Mark Edwards, Superintendent for Mooresville Graded School District in NC, who spearheaded the widely acclaimed “21st Century Digital Conversion” program, believes that teachers need meaningful, sustained professional development and the time to complete it. The district builds 10 early-release days into the school year for professional development. Each summer more than 90% of teachers attend a Mooresville summer training institute. Prior to the digital conversion, teachers were encouraged to experiment and collaborate to find the most effective methods and digital learning resources.ⁱ

though planning beyond five years may be impractical. They take into consideration technology support and maintenance services and teacher and administrator professional development.

Phase 2: With planning in place, the district is now staged for *transformative zero-based budgeting*, a process by which innovations in schools can hopefully be accomplished within existing budgets. Unlike additive budgeting, zero-based budgeting begins from a zero base; nothing is in the budget simply because it was there previously. Expenditures for digital conversion are built dollar by dollar from the ground up. Items are added only when there is evidence that such costs are required to meet upcoming goals.

Transformative zero-based budgeting eliminates outdated efforts and expenditures and concentrates resources where they are the most effective. The process reduces the risk of automatically including existing programs that might not support new goals.

Step 3: Implement

At this stage, the district may be implementing some or all of the strategies for which they identified funding. For example, they may be piloting *1-to-1* programs or BYOD in a class or school; may be taking the first steps toward digital communication; or may be developing blended learning courses. They will be applying the evaluation metrics they identified for learning return on investment as these initiatives are implemented.

Critical to success in implementation is to ensure the district has the buy-in of the broad group of stakeholders who will participate either directly or indirectly in the new programs or processes taking place, such as parents, students and the community. As part of this buy-in, some districts may also seek supplemental funding from these stakeholders.

Successful districts strongly advocate for carefully laying the groundwork with stakeholders in order to secure their support. Following are some tips from school leaders:

Elements of Transformative Zero-Based Budgeting for Digital Learning and Assessment

- *The budget begins with a zero base, with no expenditures held over from a previous budget.*
 - *Budget line items align with district's strategic plan for digital conversion.*
 - *A cross-functional team prioritizes expenditures based on evidence that the costs are required to meet goals, and creates a roadmap for a 3-5 year plan.*
 - *The team identifies supplemental sources of funding through new revenue streams or by re-visiting historical funding options (i.e., E-Rate, parent and community donations, textbook funds, etc.)*
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- Be ready to sell your story.** District and school leaders not only need to believe in the district’s vision and plan, but need to tell the story confidently. In Forest Grove School District, in Oregon, for example, building principals have emerged as critical players in convincing the board and the community of the urgency of prioritizing funding to support a digital conversion essential for their vision to engage students and transform learning. They had to be well prepared to answer game-changing questions regarding safety concerns and in describing what digital learning looks like. ⁱⁱⁱ
- Strategic communication with stakeholders:** Parents, the community, business groups, the chamber of commerce and other key stakeholders need to hear and embrace the story in order to respond to appeals for funding. As one district leader noted, “There is no substitute for getting out into the community” to convince them to help identify sources of funding.
- Prepare teachers to understand and embrace the shift to digital learning.** Teachers generate the excitement with their students for learning. Some districts recommend that funding begin with providing teachers and administrators with devices and meaningful, sustained professional development, to prepare them for the transition to digital instruction and learning, and that this be done before the purchase of student devices. Input from teachers early on will ensure money is directed for purchasing technology tools and resources teachers believe will improve student learning.

Mark Edwards, Superintendent for Mooresville Graded School District, found it took two years to build trust, enthusiasm and a shared vested interest in the district’s now highly acclaimed 1-to-1 initiative.

Preparing for a digital conversion began with the “why”: “Why are we taking on this initiative and what do we want to accomplish with it?” For Mooresville, that meant improving student engagement in their learning, preparing students for the 21st century workplace, closing achievement gaps and increasing graduation rates. The process of creating a shared vision for digital learning and development of a strategic plan that aligns with that vision prepares districts to answer the “why.” But to move on to “how” districts can secure the funding to support that strategic plan, districts have to first lay the groundwork by securing support from stakeholders. ⁱⁱ

Learning from Other Districts

Following are examples of strategies districts have used as they have budgeted for a transition to digital learning.

❖ Model 1: Aligning existing budget with the priority for digital learning

Springfield Public Schools

LOCATION: Springfield, NJ

NUMBER OF STUDENTS: 2,158

In 2006, Springfield Public Schools in New Jersey launched the first phase of their 1-to-1 initiative. Without bonds or seed money to kick-start the project, Superintendent Michael Davino needed to convince stakeholders that student access to digital tools and resources, which was both equitable and ubiquitous, needed to be a priority for the district. *“I believe that technology as a tool for education is here to stay and must be treated as such. Any discussion of technology that treats it as an ‘add-on’ relegates it to being able to be cut from the budget. Technology is as critical for student learning as textbooks and teachers.”^{iv}*

His first step was to attend elementary school PTA meetings to explain to parents that they would not see technology purchases over the next four years and the rationale behind it. The district would use a phased-in approach that re-purposed the existing technology budget to purchase laptops a grade level at a time. The district began by distributing laptops to students in grades 7 and 8 in year one. Over the next three years, grades 6 through 12 were phased-in. Davino observed, *“Too often the perception is that technology needs to be distributed across all constituencies at the same time so that no one feels left out. But this approach often results in poor implementation.”* This phased and focused strategy enabled Springfield Public Schools to stay budget-neutral. By the end of year one, parents could already see the value of digital learning for the middle school students.

Evidence of the impact of technology in student learning extends beyond current students to alumni. Students returning from their first year in college have shared that they are “way ahead” of their peers in using technology to construct and share their learning, and are perceived as leaders in their classes.

Superintendent Davino notes that as a result of their 1-to-1 initiative the district is well staged for online assessment, noting that the students’ familiarity with the devices prepares them to use those devices in testing.

Cost efficiencies:

- Springfield Public Schools has successfully re-purposed their existing technology budget to support a phased-in 1-to-1 initiative without supplemental parent funding.
- The district now combines laptop deployment with iPads, focusing student use of iPads for consumption and laptops for creation of information. This targeted use allows for over-all cost savings in devices.

- A transition to digital communication, such as student progress reports and board meeting communication, has significantly reduced printing costs.

To learn more about *Springfield Public Schools District Technology Goals and Three Year Technology Plan*, visit the district [Web site](#).

❖ Model 2: Centralizing technology funds and expenditures

Baltimore County School District

LOCATION: Baltimore, MD

NUMBER OF STUDENTS: 104,160

Baltimore County Public Schools (BCPS) in Maryland, has launched an ambitious initiative to transition to digital learning through the deployment of 1-to-1 devices to all teachers and students in grades K-12 (108,000 students) by 2018. The goal is to prepare students for a globally competitive world through personalized and deeper learning, made possible with 24/7 access to digital tools and resources. Lessons learned from a pilot program currently taking place in ten elementary “Lighthouse Schools” guides them in this roll-out.

To support this \$200 million dollar project, BCPS looked internally for savings and efficiencies. As a county school system, the district does not have a direct path to tax or pass bonds. Superintendent Dallas Dance began by creating a new digital curriculum and instruction-focused position within the district. Long time BCPS leader, Ryan Imbriale, became the Executive Director of Digital Learning. The position focuses on gathering counsel and expertise from stakeholders throughout the district and community and for project implementation. Next, the school system’s Executive Director of Information Technology, Lloyd Brown, and his staff inventoried the current school technologies and the funding streams used by each school. With the aggregate of monies budgeted to support technology, both instructional and administrative, the leadership team then recommended centralizing the funding of technology from individual schools to the school system’s technology department. For the schools, this centralization translates into improved service, renewed and managed network infrastructures, better bandwidth and a systemic approach for equitable distribution of devices for teachers, students and administrators.

Cost efficiencies:

- BCPS maintains that a centralized approach to technology funding will result in a more systemic, equitable and cost effective strategy for funding a 1-to-1 initiative. However, Brown acknowledges that those savings may not be enough to fully fund the multi-year project. The district will request additional funds from the County Council as a cost analysis progresses.

To learn more about digital learning at Baltimore Public Schools, visit [here](#).

❖ Model 3: Cost savings and efficiencies with BYOD, blended and online learning, and community partnerships

Quakertown Community School District

LOCATION: Quakertown, PA

NUMBER OF STUDENTS: 5,333

Educators in Quakertown Community School District (QCSD), in suburban Bucks County Pennsylvania, recognized the tremendous potential for 1-to-1, blended and online learning to not only personalize learning for their students and offer them opportunities to participate in courses beyond the district walls, but also to realize significant cost savings.

Beginning in the 2008-2009 school year, QCSD transitioned to a digital learning program with the development of its *21st Century Education Strategy*. Key components of that strategy include: 1) a K-12 Cyber School; 2) grades 9 to 12, 1-to-1 laptop initiative where students use a laptop at school and home; 3) a bring-your-own-device (BYOD) initiative; and 4) the integration of digital learning content and resources in traditional classrooms.^v

To support these initiatives, the district prioritizes investment in network infrastructure. According to Superintendent Lisa Andrejko, *“Typically, you buy laptops, refresh them every four years, and give hand-me-downs to the lower grades. Even with the price of technology coming down, [that] is not a model we can sustain... We place emphasis on improving the network infrastructure, and give students the freedom to access the network in a variety of ways. We supply laptops, but students often bring their own devices.”*^{vi}

QCSD has partnered with local businesses, such as Best Buy, Verizon, and Comcast, to offer discounts on hardware and affordable high-speed Internet access to students’ families. This supports students in completing a portion or all of their course work from home.

QCSD’s cyber and blended learning programs have been highlighted on [Digital Learning Day 2013](#), by iNacol in earning the “Innovative Program Award” in 2011, by the [Christensen Institute](#), and others.

With the implementation of digital learning, QCSD has found efficiencies for cost avoidance and revenues that may have otherwise been missed.

Cost efficiencies:

- Blended options have brought substantial sums in per-pupil revenues back to the district by re-enrolling students who had left to go to cyber/charter schools. Cost savings have ranged from \$190,000-\$230,000 per year in students returning to the school district from outside cyber/charter schools.
- QCSD’s second largest source of revenue not derived from taxes is its partnership with other districts. In 2011 it opened Bridges Virtual School, an initiative that enrolls students from other districts in online courses taught by QCSD teachers and provides professional development on blended learning for teachers in those districts. Bridges also helps other school districts start and

sustain their own cyber programs. In 2011-12 Bridges grossed more than \$156,000.^{vii} A virtual summer school yielded \$20,000 in 2012.

- In the process of their digital conversion, QCSD found they could move away from block-scheduling to a more traditional, seven-period schedule, which increased teachers' instructional time by one hour.
- The district spends \$250,000 annually to replace approximately 500 old laptops for a cost of \$500 each. However, it allows students to bring their own technology (laptops, tablets, smart phones), which helps keep the costs from being even higher.
- Comcast provides \$9.95 per month Internet service for any family that qualifies for free or reduced-price lunch and does not already have service at home. (See [Internet Essentials](#) for more information about this program).

To learn more about Quakertown Community School District's *21st Century Learning Initiative*, visit the [QCSD Technology Department Web site](#) and the [QCSD 21st Century Learning Initiative](#).

To learn more about QCSD's partnership with the Teacher's Union and implementation of its 21st Century Learning initiative, see this [publication](#).

❖ **Model 4: Innovative Uses of Technology**

New Milford High School

LOCATION: New Milford, NJ

NUMBER OF STUDENTS: 644

New Milford High School in New Milford, NJ, has a forward-thinking vision for 21st century learning that includes the opportunity for all learners to develop skills in creativity, communication, collaboration and digital responsibility. As part of that vision, they recognize that students and teachers must have ready access to 21st century digital tools and resources in order to develop these critical skills.

New Milford HS has carts of Chromebooks, MacBooks, netbooks and PCs, along with a Mac lab and three PC labs. They also support BYOD. But in 2009, they realized they had not tapped into their underutilized Wi-Fi and the plethora of free Web 2.0 tools. So began an investigation and integration of tools and apps such as Instagram, Twitter, Google Apps, and Pinterest, commonly used outside the classroom, into learning activities aligned with the Common Core standards and ISTE NETS for Students.

At the same time, Principal Eric Sheninger, author of *Digital Leadership: Changing Paradigms for Changing Times* (Corwin Press), embarked on a personal investigation of innovative uses of technology for teaching and learning. By engaging in conversations through social media, learning how other schools have integrated technology, and by providing teachers and students with opportunities to pilot the use of digital tools in the classroom, he discovered creative ways to use digital tools and resources that significantly impact instruction and kindle a passion for learning among students. With this knowledge, and to supplement funding from the district's operating budget, Sheninger sought strategic partnerships with technology vendors who donated innovative technology and professional development in return for pilots in the classroom. The district also hired a library/media specialist with complete autonomy for budget to support students with their use of creative tools and environments

such as Makerspace consisting of 3D printing technology, MaKey MaKey kits, Little Bits bar, and a Lego table.

According to Sheninger, “It’s imperative for school leaders to become knowledgeable about technology and the impact of technology on learning. It’s that knowledge that will lead to more informed budgetary decisions.”^{viii}

Cost efficiencies:

- The district leverages strategic partnerships for supplemental funding for technology purchases. For example, in return for conducting pilots -
 - One vendor provided technology that enabled teachers to create and upload lessons and support a district goal to shift to a flipped classroom instructional model.
 - Another donated monies used to supplement the school budget in order to create a world-class Makerspace. Recently students used a 3-D printer in their business classes (to create a replica of student store under development, for example) and for use in independent student projects.
- The district uses Apple TV, an iPad and an HDMI projector to create a mobile interactive whiteboard for use in multiple classrooms (about \$1,500) instead of costly whiteboards for each classroom at about \$2,500 each.
- The district encourages students’ independent study through the use of [Open Courseware](#) at no cost to the district.
- New Milford HS integrates free Web. 2.0 tools in the curriculum.

To learn more about New Milford High Schools programs, visit the district’s [Web site](#).

❖ **Model 5: Replacing textbooks with digital content**

Vail School District

LOCATION: Vail, AZ

NUMBER OF STUDENTS: 10,615

Vail School District in Arizona, has led the way in the use of digital content as a strategy for meeting their goal to better prepare students for the 21st century and at the same time reduce textbook expenditures. The district has adopted the [Beyond Textbooks](#) program, which combines easy-to-use, web-based tools with open education resources (OER), instructional content made available for free online. Teams of teachers develop units using their own teacher-made lessons and content from subscription services and free online resources. A peer-review process ensures standards alignment and content quality. The district reports that costs for teacher time to develop and adapt the curriculum are less for this type of development than for the purchase of analog content. Time and effort is equivalent to the teachers’ previous work in aligning analog content, but offers greater benefits.

“Open educational resources” are teaching, learning and research resources that reside in the public domain and are freely available to anyone over the Web. They are an important element of an infrastructure for learning and range from podcasts to digital libraries to textbooks and games. It is critical to ensure that open educational resources meet standards of quality, integrity, and accuracy—as with any other educational resource—and that they are accessible to [all students including] students with disabilities.^{ix}

Cost savings:

- Project Red research has calculated an overall 8% cost reduction – even when hardware and maintenance costs are factored in – by using online courses, digital content, online assessment and professional development. Eleven other districts in Arizona are now following this successful model. ^x

Cost savings per student: Digital Content vs. Textbooks^{xi}
Empire High School, Vail, Arizona

Textbook vs. digital costs	Total
Annual textbook cost per student	\$125
Digital content cost per student	\$84
Digital content cost savings per student	\$41 (33% savings)

Source: Interview with Matt Federoff, CIO, Vail School District, Vail, Arizona

To learn more about Vail School District’s cost savings with digital content visit this Project Red [publication](#). For information about the district’s Beyond Textbooks program visit the district [Web site](#).

❖ **Model 6: Zero-based budgeting**

Plumsted Township School District

LOCATION: New Egypt, NJ

NUMBER OF STUDENTS: 1,767

Plumsted Township School District, a four-school district in central New Jersey, has taken small and deliberate steps towards a transformation to digital learning. Key to their success is a commitment to zero-based budgeting, a process by which they re-set to zero each expenditure to ensure yearly budgets align with their strategic plan. The process has enabled the district to work over a period of three years towards the purchase of a cart of Chromebooks or iPads for each grade level in the district by 2015. The district has also allocated \$100,000 for a new wireless controller and 43 access points district wide to meet the expected demand of increased Wi-Fi traffic on the network.

According to Sean Gately, Plumsted Township School District Business Administrator/Board Secretary, *“Three years ago, we did not envision the technology options and pricing available today. Our practice of zero-based budgeting has allowed a fluid process for identifying technology purchases that align with our district’s evolving digital learning needs that take advantage of current best pricing.”*^{xii}

Consolidating budgets for technology at the district level gives the district the flexibility to ensure each classroom in the district has the same base-level of technology, that includes an interactive whiteboard and LCD projector. At the same time, the district recognizes that a one-size-fits-all solution does not work across K-12 grade levels, and that the best device for primary students will differ for students in high school. Technology expenditures at the district-level allow for this customization. In addition, the

district knows that their teachers need the leeway to drive the curriculum and that digital learning will evolve from their development of that curriculum, rather than from devices purchased.

Another district strategy for implementing cost efficiency is through their Green Team initiative, which prepares students to be life-long environmental stewards. Led by Colleen Gravel, Director of Special Projects, the Green Team works to incorporate sound environmental practices into the curriculum while also working to reduce costs. Each staff member of a school Green Team has a laptop and Google mail and apps for online collaboration. Initiatives include paperless days in each school.

Plumsted Township School District gathers data on costs associated with the use of technology by students and teachers. They use this data to identify cost efficiencies and savings on an on-going basis.

Cost-efficiencies:

- With zero-based budgeting, the district has been able to fund their technology plans with existing budgets.
- With the help of the Green Team, the district is monitoring electric consumption over time as they add devices. Accordingly, they implement strategies such as the use of watt meters, smart power strips and automatic device shut-downs to minimize consumption. This work-in-progress has yielded data, for example, on the greater consumption of power by older devices in their computer labs as compared to newer devices.
- The district embraces BYOD for their students, allowing the district to focus on funding a wireless infrastructure to support BYOD and district-owned devices.

To learn more about instructional technology at Plumsted Township School District visit the district [Web site](#).

❖ **Model 7: Leveraging online learning**

Walled Lake Consolidated School District

LOCATION: Walled Lake, MI

NUMBER OF STUDENTS: 15,455

After piloting Web-based classes in summer school, Walled Lake Consolidated School District in Michigan is ramping up for the fall, offering English and Math classes online to any high school students who would like to participate, with significant savings for both families and the district. Registrants can complete coursework from home or any other place that offers internet connectivity and get face-to-face support from teachers available in a lab during the first and last period of each school day.

Cost efficiencies:

- Superintendent Bill Hamilton (retired) says that the savings offered by this program are impressive. For the online summer school classes, parents were charged \$99 instead of the \$265 they had previously paid for summer school – and it was the first summer that the district broke even. Since the infrastructure and computer lab needed to support the program were already in

place, hardware has not been a new expenditure. Teams of teachers and administrators provided extensive review prior to the launch of the program and the teachers’ union worked closely with the district to make it happen. ^{xiii}

- The online provider the district chose (Edgenuity) charges based on the number of simultaneous users – rather than the total number of students enrolled – which helps bring down the costs.
- According to Superintendent Hamilton, *“Since the teachers are mostly monitoring and giving students feedback, we estimate that each teacher can supervise 75 students per hour and that one .8 FTE, full-time equivalent, can support up to 300 students; this translates into a 60% savings over traditional stand-up classes.”*

Traditional Course vs. Online Course Costs (Walled Lake) ^{xiv}	Total
Incremental cost per student per instructional year for two face-to-face courses per semester	\$950
Online per student per instructional year cost including teacher support	\$383
Online per student per instructional year cost savings for two online courses per semester	\$57 (60% savings)

- Hamilton adds that a lot of time and money has been saved by moving parent communications and other administrative tasks online, including lunch payments and access to food service accounts, class registration, progress reporting and more.

For more information about how Walled Lake Consolidated School System has used online courses to improve student outcomes and reduce costs, visit [here](#). To learn about Walled Lake Consolidated School System’s BYOD program, visit the district [Web site](#).

❖ **Model 8: Impact of BYOD**

Rockdale ISD

LOCATION: Rockdale, TX

NUMBER OF STUDENTS: 1,697

Initially, Rockdale ISD in rural Texas provided iPods for their 150 sixth grade students through an internal district grant request and award. Although the focus of this project was enhanced student learning, the staff quickly realized that the student engagement that resulted from integrating the technology into classroom activities also drove down absenteeism resulting in an estimated increase of student day funding of \$1500 per year (for five classrooms with a approximately 130 students). (In Texas, funding is predicated on student day attendance. If a student is absent, there is no funding for that student that day.)

With these encouraging results, Rockdale ISD now encourages both middle and high school students to bring their electronic devices to school for education purposes, devices that include, but are not limited to personal computers, cell phones, smart phones, iPods, iPads, iPhones, mp3 players and tablets.

Cost efficiencies:

- Use of online testing for quizzes and other student exercises saves teachers an average of three hours per week of manual grading. (It should be noted that finding and incorporating apps and other resources took time initially.)
- Rockdale discovered that enhanced engagement and collaboration does not happen just at the student level, but among teachers also. Better teacher retention is also an expected savings in personnel search, hiring and training expenses.

To learn about Rockdale ISD's technology budget and technology plan, see the [Rockdale ISD Technology Plan 2013-2016](#).

❖ **Model 9: Leveraging open-educational resources and digital communication**

Niles Township High School District 219

LOCATION: Skokie, IL

NUMBER OF STUDENTS: 4,726

Niles Township High School District 219 in Illinois has had a 1-to-1 program since 2010. The District 219 Anywhere-Anytime 21st Century Learning plan states: "Digital learning environments made possible with a 1-to-1 deployment encourage students to read, write, and compute by providing access to the Internet and Web 2.0 technologies. Teachers can help students conduct research, and improve information literacy skills. Anywhere-anytime learning, facilitated by a 1-to-1 deployment, bridges the digital divide where all students have equal access to information, learning resources and the digital tools that will make the difference in their success in the 21st century working and learning environment."^{xv}

District 219 has found that the 1-to-1 deployment has saved money in many areas, though it has not tried to develop a rationale for this educational enhancement based on either budgetary benefits or test score enhancements. Instead it makes clear, it's goal for "Schools to begin to capitalize on the talents and interests of this collaborative, resourceful, and innovative generation of thinkers by bringing them the tools that they are already familiar with and use them for their academic achievement."

Cost efficiencies:

- The Chromebooks that are now being used work seamlessly with Google and have cut printing costs and infrastructure costs (for example, they have been able to eliminate the \$40,000 a year cost of maintaining and running their exchange server).

- Ubiquitous access to online Open Source instructional resources like HippoCampus allows the district to gradually do away with expensive textbooks. (The textbook for a health course, for example, costs \$83.98.) Because they are piloting the CK12 Flexbook in 8 classes, they have a one-time cost savings of \$20,575 (they have a seven-year textbook replacement cycle). Next year, there will be a cost savings of \$105,814 district wide because all classes will be using CK12 Flexbook (from the CK-12 Foundation, which according to YouTube offers customizable, free, curriculum-aligned K-12 content to meet student and teacher needs).
- Eliminating many labs has made space available for other needs.
- Delivering report cards and progress reports electronically has saved \$25,000 a year on postage.

Visit the [Anywhere Anytime Learning Plan](#) and the District [Web site](#) for more information.

❖ Model 10: Leveraging digital resources and devices

Maine Township High School District 207

LOCATION: Park Ridge, IL

NUMBER OF STUDENTS: 6,894

Maine Township High School District 207 in Illinois, under the leadership of Assistant Superintendent of Technology and Learning, Hank Thiele, decided to embark on a 1-to-1 deployment of technology when sufficient quality digital resources became available to allow them to replace expensive textbooks. In fall 2013, they began a 1-to-1 Chromebook deployment for students in grades 9 and 10. Over the next two years, each in-coming Freshman class will be added to the program, as well as transfer students in the other participating grades. By 2015, all students in grades 9 through 12 will have Chromebooks (approximately 6500 students).

Historically, students enrolled in Maine 207 have purchased their own textbooks. Now instead of textbooks, 9th graders will pay \$305 and 10th graders \$300 for Chromebooks, with the option of purchasing insurance. This will result in a savings of an estimated \$225 for each student. Students who are eligible under the state's free and reduced-price meal guidelines will receive Chromebooks at no cost to the student's family. The district will pay for those computers, just as it now pays for textbooks for eligible students.^{xvi}

Cost efficiencies:

- The district will save \$225,000 over the cost of the former textbook-only program over the next three years
- Replacement of print texts with e-texts. These cost savings increase over time as the district continues to move to more open source materials.
- The costs of in-house IT services are now provided for free by Google. Specifically, the district has moved an in-house email system for all staff and students to Google and to an in-house file storage system for all staff and students.
- The district is planning for 60% fewer desktop computers. Therefore, the cost of maintaining and replacing those is removed from the budget. They will be able to reduce the number of

desktops by about 300 a year for 5 years, saving about \$180,000 in the first year and ultimately saving \$900,000 a year.

For more information on Chromebooks and the 1-to-1 program in Maine 207 visit this [Web site](#).

❖ **Model 11: Cost saving efficiencies with notebooks, cloud computing and student support**

Leyden High School District 212

LOCATION: Northlake, IL

NUMBER OF STUDENTS: 3,455

In fall 2012, Leyden High School District 212, just outside of Chicago, rolled out Chromebooks to all 3,500 students. Principal Jason Markey says the 3G notebooks that store data on a cloud cost about \$100 per student, per year, and the district is able to afford them because they are cheaper than filling labs with more expensive desktop computers.^{xvii}

In addition to yielding cost savings, the deployment of Chromebooks has provided an opportunity for Leyden to prepare its students for careers in technology. Both East and West Leyden are offering a Tech Support Internship (TSI) class as a peer help desk. TSI students participate in a “boot camp” during the summer to be trained on the Chromebooks and other tools the school will be offering to students, such as Google Apps for Education. The TSI course is offered every period of the day allowing the students in TSI to provide basic support for Chromebooks all day long for both students and staff. *“We use a traditional 50-minute period, and with Chromebooks, [students] can spend all 50 minutes learning,”* he says. *“With traditional laptops, teachers and students might spend 5 to 10 minutes each period battling with the technology.”*^{xviii}

Students can select their own pathway to learning. They can choose from: Certifications, where they pursue industry certifications; Computer Programming or Networking, where they gain hands on experience in computer programming or networking; Communications, where they implement new communication technologies for Leyden students and staff; or App Development, where they build and develop apps for the Chrome Browser, iOS, and Android devices.

Cost efficiencies:

- Expensive desktop computers in labs have been replaced with a deployment of 1-to-1 3G notebooks, which store data on a cloud, and which cost about \$100 per student per year.
- Because the students provide technical support for the Chromebooks and Google now handles many traditional IT functions (email, file storage, calendar support, office applications), district technology staff are freed up to work with teachers and staff on projects to further improve Instruction.
- In addition to the savings on textbook costs mentioned above, the district also will save money as more types of classwork become digital, using Google, and less printing is done. The district will also save money because the number of labs and the amount of in-house IT services provided will decrease.

To learn more about Leydon High School District's 1 to 1 with Chromebooks, visit the district's [Web site](#). Also see the [Leyden Techies Web site](#).

Funding Sources

Re-visiting historical sources of funding for digital tools and resources and leveraging collective purchasing strategies may result in new opportunities for consistent funding streams. The recently updated E-Rate program, for example, may offer opportunities for increasing bandwidth. Non-reoccurring funds may be identified to support short-term digital learning initiatives (e.g., for innovative pilot programs) by leveraging business partnering, community donations, and special grants.

Cooperative Purchasing

Some school districts are collaborating about selecting the same device, e.g., Chromebooks, and using their collective buying power to drive down the price. In New Jersey, many school districts are taking advantage of the NJDOE Broadband Initiative to join a cooperative purchasing consortia in order to purchase bandwidth more efficiently. See http://njdigitallearning.org/nj_digital_learning_portal_library/broadband-consortia-project/ for more information.

E-Rate and ConnectED

[E-Rate](#) has undergone a much-needed revamp of funding priorities, with a shift from support for voice communications to broadband. Broadband support funding has increased. As part of the [ConnectED](#) project, several corporations are providing significant product discounts and in-kind services.

Federal grant funds – ESEA (Titles I, II, III) and IDEA

The U.S. Department of Education’s Office of Educational Technology published a [Letter](#) (November 19, 2014) on how funds from ESEA (Titles I, II, III) and IDEA may support the use of technology to improve instruction and student outcomes. Examples clarify opportunities to use federal grant funds to support digital learning, including: (1) improving and personalizing professional learning and other supports for educators; (2) increasing access to high quality digital content and resources for students; (3) facilitating educator collaboration and communication; and (4) providing devices for students to access digital learning resources.^{xx}

Houston ISD is paying \$6 million for the first phase of its PowerUp initiative, in which devices will be distributed to students and staff members in 11 schools. All of those dollars are being reallocated from existing pots of money, including federal Title I and Title II funds, to be used for disadvantaged students and teacher training.^{xix}

Grants (local or federal)

Grants can be a great way to get a project with major up-front costs implemented. Keep in mind the need for sustainability. Following are funding/grant Web sites:

- [Get Ed Funding](#) shows corporate funding opportunities

- [eSchool News magazine](#) is similar to Tech & Learning with a wide range of grants available
- [Edutopia](#) links to larger grant opportunities
- [Fund for teachers](#) also lists grant opportunities for targeted programs and classrooms

Community and business partnerships, donations, support

In most cases, various sources of donations toward a digital learning project are insufficient for full implementation. But donations toward visible items, such as laptop bags or protective cases for tablets, can be funded, perhaps with a corporate logo or other incentive.

Also, having families pay for insurance and using donations to pay insurance for students who cannot afford the insurance payment is an approach to augment other funding sources.

Internal diversion of funds

It's a question of priorities. Following a successful pilot of BYOD, for example, if it is important enough to support mobile devices for all students (district provided BYOD or hybrid) then efficiencies may need to be implemented elsewhere.

Forsythe County Schools, in Georgia, asks parents to donate old smartphones, which can be used on the Wi-Fi network without a data plan. To support students in using devices for learning beyond the school, the district asks businesses with free Wi-Fi to put a sticker in their windows and the district offers a directory listing of those resources.

They also purchase [Kajeet SmartSpot™](#) to send home with students who have no internet access.^{xxi}

Leasing or Phased Implementation

While not a source of funds, the use of leasing and phased grade-by-grade implementation helps to reduce the impact of the initial implementation and device costs, leveling the budget from year to year. Leasing also helps to maintain the refresh cycle.

Budgeting Tools and Resources

A steadily increasing number of resources and tools have been developed to assist districts in the budgeting process. Following are a few examples from some well-known organizations.

Click the title of the resource to go directly to the Web site.

Consortium for School Networking (CoSN)

CoSN's SmartIT initiative offers technology leaders tools and resources for IT investments, including:

Value of Investment

The Value of Investment (VOI) tool from CoSN guides districts through a cost-benefit analysis of proposed projects. The VOI includes a financially focused Return on Investment form, but also highlights quantitative and qualitative benefits for students, teachers, staff, and the community. The tool focuses on how the project will address the district's mission, goals, and mandates. The tool includes case study examples.

Green Computing

CoSN provides tools and resources to help school leaders reduce their school district carbon footprint. The Energy Usage Calculator allows school districts to estimate the annual kilowatt hours and related costs for computer use by K-12 users and the related datacenter infrastructure.

Annenberg Institute

Assessing Inequities in School Funding within Districts: A Tool to Prepare for Student-Based Budgeting

This report from the Annenberg Institute provides guidance to district leaders on calculating and analyzing weighted average expenditures for each school within a district based on types of student populations. Specifically the tool calculates a weighted index for schools and compares how many schools are considerably above or below the mean in funding for types of student populations. The purpose is to identify inequities in funding for types of student populations.

AASA - Budget Toolkit

The American Association of School Administrators has gathered a series of white papers providing guidance to its members on budgeting and managing staff and community reactions to budget cuts. The papers include case studies of how school leadership has handled school budget cuts.

Project Red

1-to-1 Cost Savings Calculator

Members of Project Red can download a tool that helps analyze potential areas where schools and districts can reduce costs to move investments toward 1-to-1 computing. The tool allows users to customize the number of students affected in each category and calculates the per-student and total cost savings. The tool provides Project Red's estimation of how much a 1-to-1 professional learning, teacher attendance, space savings, power savings, digital core curriculum savings, disciplinary actions, post-secondary remedial education, digital supplemental materials vs. print, copy machine cost calculations, online assessment, dual/join/AP course enrollment, paperwork reduction, and end-of-course failure.

Cost Comparison Tool

This infographic shows the total costs and the cost per student for a 3:1 traditional classroom versus a 1-to-1 classroom. The tool is not interactive and user comments critique the tool for not taking into account cost savings from a 1-to-1 program such as reduced printing costs or moving to digital Open Educational Resources.

K12 Blueprint

Funding Technology Initiatives Toolkit

K12 Blueprint's Funding Technology Initiative Toolkit is a collection of documents to assist districts in developing a technology funding plan. The tools include customizable presentations and information on reallocating funds, fundraising, funding models, BYOD options, parent contributions, purchasing, broadband, and examples of funded programs.

Alliance for Excellent Education

Project 24

Project 24 offers comprehensive district-level tools to support systemic planning around the effective use of technology and digital learning to achieve the goal of "career and college readiness" for all students.

Endnotes

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^{ix} "Use of Technology in Teaching and Learning," US Department of Education. <https://www.ed.gov/oii-news/use-technology-teaching-and-learning>

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^{xviii} "5 Reasons Chromebooks Make Sense for Schools," EdTech Magazine." Fall 2013.

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^{xx} United States Department of Education, Office of the Secretary Letter. [November](#) 19, 2014.

^{xxi} "How BYOD Programs Can Fuel Inquiry Learning," Mind/Shift.

<http://blogs.kqed.org/mindshift/2014/01/how-byod-programs-can-fuel-inquiry-learning/>
