



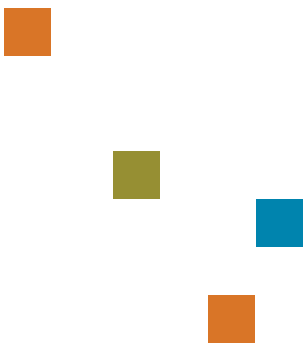
**POWERUP**  
WHAT WORKS

**AUGUST**  
**2013**



## **Technology Implementation Practice Guide**

**■ A School-Wide Approach to  
PowerUp Teaching and Learning**



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# Welcome!

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The Technology Implementation Practice Guide was developed as a companion document to be used in conjunction with the **POWERUP** WHAT WORKS website ([www.PowerUpWHATWORKS.org](http://www.PowerUpWHATWORKS.org)). Whether you are a professional development coordinator, school or district administrator, technical assistance provider working with school personnel, or school specialist or teacher, this Practice Guide can help you **strategically plan** how to **expand the use** of technology tools to support classroom instruction, address the needs of struggling students, and improve teaching and learning for all students, including students with disabilities.

Funded by the U.S. Department of Education, Office of Special Education Programs, PowerUp is a **free**, comprehensive guide that supports your professional learning in using technology to differentiate instruction and personalize student learning in English language arts (ELA) and mathematics.

**Join the PowerUp Community today!**

[www.powerupwhatworks.org](http://www.powerupwhatworks.org)

PowerUp has plenty of activities and content to support professional learning! You can explore:

- ▶ The **PowerUp Tech Matters Blog**, which includes “grab-and-go” resources and ideas on how to use technology in your classroom.
- ▶ **Strategy Guides** to help strengthen your practice and differentiate instruction in ELA and mathematics, including materials such as **Teach With Tech**, **Strategies in Action**, and **Multimedia Supports**.
- ▶ **Professional Development Materials** to plan staff learning events on differentiating and personalizing student learning through evidence-based strategies and the use of technology.
- ▶ **Make Tech Happen**, which provides up-to-date information about technology tools and trends, along with ideas for classroom use.
- ▶ The **Technology Implementation Practice Guide** and Leadership Team Support Materials, which will help you to find everything you need to make technology work in your school and classrooms.
- ▶ **Related Research** that provides the foundation for PowerUp evidence-based practices, materials, and resources.

If you have any questions, send an e-mail to our field coordinator, Kristin Ruedel, at [powerup@air.org](mailto:powerup@air.org).

Looking forward to hearing about your success with PowerUp,

Tracy Gray and the PowerUp Team

**POWERUP** WHAT WORKS

Project Director

# Overview

Technology is everywhere—from the computers and laptops that we work on to the smartphones and tablets that we always carry with us—and it has become an integral part of part of daily life. Shifts in the way we work, play, do business, and interact with each other have resulted in a technology-rich landscape that the students of today are entirely familiar and comfortable with. Children use cell phones, tablets, iPods, wireless Internet, social media, and

multimedia tools to play, create new content, collaborate with one another, and communicate their ideas with the world.

Teachers and school leaders who embrace the power of technology and create technology-rich learning environments not only experience increased student achievement, attendance, and graduation rates but also increased parental involvement, easy access to professional learning opportunities

for staff, and seamless collection and analysis of student and program data. Teachers in technology-rich classrooms and schools use these tools to help all students learn and achieve by personalizing student learning and differentiating instruction to address the needs of struggling students, including students with disabilities. Consider the classroom example below:

Every student in Ms. Brett's fifth-grade class was actively reading about the Civil War. Some used eBooks and highlighting tools to tag information; others accessed tablets, linking to images and primary documents to enrich their learning experience. Some relied on headphones to hear the text read aloud. Accessing and interacting with the information in different ways, depending on the learning needs of each individual student, meant that all the students were actively engaged.

How did Ms. Brett's principal support her efforts to personalize reading instruction? How did Ms. Brett plan her instruction to meet the needs of all students, including struggling learners and students with disabilities? *Read this Practice Guide to learn more about how to systematically enhance technology implementation throughout the school and integrate technology into classroom instruction.*

## Purpose of the Technology Implementation Practice Guide

Students should not have to “power down” when they enter a school building. As you know, the key to effectively implementing technology in your district or school is *systematic planning*. To facilitate this planning process, this Practice Guide presents a *roadmap* for district- and school-wide technology implementation, as well as best practices for integrating technology into instruction in the classroom. In

the Practice Guide, you can find the following:

- ▶ **A step-by-step process or “roadmap” for technology Implementation**, which outlines how to plan, implement, and sustain the use of technology within your school to advance teaching and learning.
- ▶ **Information on hot topics like Bring Your Own Device (BYOD) and one-to-one initiatives, including support on ways to implement in your school or district.**

- ▶ **Best practice recommendations** to support technology integration throughout classroom instruction in order to personalize student learning and meet the needs of struggling students.
- ▶ **Case stories** that detail the experiences of other districts and schools as they implemented and expanded technology use.
- ▶ **Resources** to guide your systemic planning process and develop professional learning opportunities within the school.

- ▶ **Suggestions on how to use the PowerUp WHAT WORKS website** to advance professional learning opportunities in your school and district, and to support your process of planning, designing, and implementing technology.

Guide supports your efforts to:

- ▶ Facilitate and promote school-wide technology implementation
- ▶ Enhance inclusive instruction supported by technology
- ▶ Prepare tomorrow's teachers and leaders

## Who Should Use This Guide?

Whether you are a district or school leader wanting to increase the use of technology in your school(s), a teacher aiming to transform your instruction and use the power of technology to meet student learning standards, a “coach” or professional development coordinator working with staff to enhance instructional practices, a university professor preparing the teachers of tomorrow, or a technical assistance provider working with a district or school on developing strategic action plans, this Practice Guide can help you realize your goals. Used in conjunction with the PowerUp website, the Practice

## How to Use the Practice Guide

To maximize professional learning about technology implementation, we suggest using this Practice Guide in conjunction with the PowerUp website.

The Practice Guide is supported by Leadership Team Support Materials that are designed to facilitate the work of the leadership team as it enhances technology and its use in the school building and throughout instruction. These materials include facilitator guides and PowerPoint slides for team leaders to guide team meetings, resources and materials to support your planning, and a roadmap for setting and accomplishing your goals. [Click here](#) to access the Leadership Team Support Materials.

## What is Educational Technology?

For the purposes of this Practice Guide, we define educational technology as the integration of various electronic tools and applications to support the use of evidence-based instructional strategies that facilitate K–12 instruction and enhance academic achievement. Educational tools and devices can include (but are not limited to) software programs and apps, hardware devices (e.g., desktop and laptop computers, tablets, interactive whiteboards), and Internet applications (e.g., wikis and blogs).

For more information on assistive technology, visit the TechMatrix.

[www.techmatrix.org](http://www.techmatrix.org)

## So what is assistive technology?

Assistive technology (AT) refers specifically to the devices, hardware, software programs, peripherals, and systems used by people with disabilities to enable them to perform tasks that they might not be able to complete on their own. AT covers a wide range of devices and programs, including computers, specially designed keyboards, text-to-speech programs, and so on. Although AT is targeted to assist students with disabilities, advances in AT are often generalized and applied to support any learner in the classroom. For example, text-to-speech programs have

### The Practice Guide Supports

- ▶ District administrators
- ▶ Principals
- ▶ Technology coordinators
- ▶ Professional development coordinators
- ▶ Special education coordinators/teachers
- ▶ Coaches
- ▶ Curriculum specialists
- ▶ University faculty
- ▶ Lead teachers
- ▶ TA providers

proven to be an effective method to support reading instruction. Go to <http://www.assistiveware.com/user-videos> to see how the power of technology can transform a student's life.

## The Role of Research

The Practice Guide incorporates best practice recommendations and solutions to common roadblocks, all of which are grounded in the research and literature on technology implementation and implementation science to foster effective school change. Our wide-ranging literature review included journal articles on findings from research studies, national reports by key organizations, dissertations, and other sources that showcase the practices that districts, schools, and teachers across the nation have found to be effective. In addition, we have documented experiences from our field-test sites and highlighted selected districts and schools from across the country that have a history of successful, systemic implementation of technology.

## Overview of Key Recommendations in the PowerUp Roadmap

The six best practice recommendations are the core tasks of your implementation plan. These will guide you through the ongoing, iterative process of planning, implementing, and sustaining technology use to

### Use the PowerUp website to:

- ▶ Plan professional learning events.
- ▶ Find resources and ideas on technology trends and ways to use technology in the classroom.
- ▶ Strengthen staff practice on how to differentiate instruction in ELA and math.

[www.powerupwhatworks.org](http://www.powerupwhatworks.org)

enhance student learning. As you progress through these tasks, we hope that you will revisit your work in each core component, reflect on your implementation efforts, and review and refine your plans to best meet the needs in your context.

#### ▶ **RECOMMENDATION 1:** **Work as a team**

Effective district- and/or school-wide implementation of technology begins with strong leadership and collaborative team relationships.

#### ▶ **RECOMMENDATION 2:** **Enhance the school vision and set concrete action goals**

Schools that drive the implementation of technology through vision and goal setting are more likely to be successful than those where implementation is driven by the sudden availability of funds.

#### ▶ **RECOMMENDATION 3:** **Gather data to drive decision making**

Technology decisions guided by data-driven decision making advance teaching and learning in the school building.

#### ▶ **RECOMMENDATION 4:** **Define your technology budget**

Consider alternatives to funding, and plan not only for initial costs but also for long-term maintenance and replacement costs to facilitate sustainability.

#### ▶ **RECOMMENDATION 5:** **Plan professional learning opportunities**

It is critical to build the capacity of school staff to use and integrate technology by fostering a school culture that supports continuous learning.

#### ▶ **RECOMMENDATION 6:** **Provide access to technology and support**

Technology use and implementation throughout the district or school building requires continuous support and a systemic process through which teachers can access assistance when experiencing technical difficulties with the technology.



# Technology Implementation Roadmap/Checklist for Success

Use this overview checklist to assess your progress in developing a school plan for technology implementation.

## Work as a Team

- Identify team members and define roles
- Schedule ongoing team meetings
- Create a communication/outreach plan
- Review and discuss PowerUp

## Define Your Technology Budget

- Review your existing budget
- Determine costs for upgrading infrastructure and purchasing new devices
- Identify funds to meet short-term and long-term goals
- Develop a multiyear plan to support the sustainability of technology costs
- Review and refine your budget as needed

## Enhance Your School Vision and Set Goals

- Collaborate on a shared vision
- Identify your focus
- Set goals

## Plan Professional Learning Opportunities

- Refine professional learning goals and area(s) of focus
- Define professional learning activities

## Gather Data to Drive Decision Making

- Develop a data collection plan
- Gather and upload data
- Identify findings and make recommendations

## Provide Access to Technology and Support

- Update your technology inventory
- Provide technology access
- Provide technology support

# Introduction

## The Potential Role of Technology in Our Schools Today

Technology is everywhere, and it has become an integral and routine part of daily life. Over the past two decades, the use of computers, interactive whiteboards, and multimedia, as well as access to the Internet, has grown exponentially in K–12 classrooms and will continue to flourish. Despite this, however, many schools continue to face challenges related to developing and rolling out a school-wide plan to implement technology. Furthermore, teachers need professional learning opportunities that explore how to integrate technology tools to support their classroom instruction, personalize student learning, and support the diverse needs of all students in the inclusive classroom, particularly struggling students and students with disabilities.

Realized to its full potential, educational technology provides opportunities to

- ▶ **personalize** the students' learning experience
- ▶ **target** specific student needs
- ▶ **advance** learning goals
- ▶ actively **engage** students

To meet these needs, our PowerUp staff are dedicated to providing high-quality, evidence-based

materials and real-world examples to facilitate your school-wide technology implementation efforts, including professional development planning to support teachers as they learn to integrate technology and design technology-infused lessons that meet the needs of all students, including struggling students and students with disabilities.

## Defining School-Wide Technology Implementation and Classroom Technology Integration

In this Practice Guide, we distinguish between “technology implementation” (a school-wide or district-wide process) and “technology integration” (what happens in the classroom with individual teachers and their students). At the district, school, and classroom levels, technology use is most effective when it is routine and transparent, and when it supports curricular goals. We define the terms as follows:

### **Technology implementation**

defines the critical systemic process that districts and schools use to enhance and support the use of technology among all teachers throughout the school building.

### **Technology integration**

focuses on classroom-level instruction with technology to support and expand the Common Core State Standards and curriculum goals.

Use this Practice Guide to inform your decisions related to the systemic process of school-wide technology implementation and to support teachers in their professional learning about classroom technology integration. Let's begin!

# A Roadmap for District- and/or School-Wide Technology Implementation

This section of the Practice Guide provides best practice recommendations on the core components that district- and school-level leadership teams consider as they progress through the process of developing a comprehensive implementation plan. The recommendations are grounded in best practice research, and in the work of districts and schools that have successfully expanded technology in their building(s) and that now use these tools to enhance instruction in the classroom.

## Assessing Readiness

The importance of developing a multiyear comprehensive plan for how the school will approach the process of implementing technology cannot be overstated. **A critical first step is assessing the readiness of your district and/or school for change.** The information that you learn during this initial

step can guide you in your decisions throughout the planning phase and ensure that you are addressing the unique needs, and building on the unique strengths, within your context.

View examples of school readiness tools and checklists to inform your planning in [Appendix A](#)

### What are the options?

Part of assessing readiness is getting a sense of the current technology landscape in your school. What technology tools do you have in the school, and how are teachers using these tools? As with teaching, there is no one-size-fits-all approach to school-wide technology implementation. Schools have demonstrated success with a wide range of approaches to technology implementation, from one-to-one computing or Bring Your Own Device (BYOD) to interactive whiteboards

and rolling laptop carts. Each model of technology usage has its own benefits and challenges. Read the descriptions below and think about which one best describes your school's current approach.

Identifying your approach allows you to gauge the amount of resources currently invested in classroom technologies and the prevalence of these technologies across the school, and it will provide a sense of what your staff thinks about the role of technology in instruction. From this foundation, you will create your plan for enhancing technology implementation in the building and technology integration in the classroom.

For more information about various technology configurations for your school, please refer to [Appendix B](#).

**One-to-One (a computer for every student).** One-to-one (1:1) computing models are exactly as they sound: one computer/laptop/tablet per student in each class.

Benefits	Things to Consider
<ul style="list-style-type: none"><li>▶ Increased student engagement and opportunities for personalization</li><li>▶ Increased student attendance</li><li>▶ Higher student achievement</li><li>▶ Fosters project-based learning, research, and collaboration</li><li>▶ Extends learning beyond the walls of the classroom (anytime and anywhere)</li></ul>	<ul style="list-style-type: none"><li>▶ Initial start-up costs are a significant barrier</li><li>▶ Student safety online</li><li>▶ Potential viruses from downloads</li><li>▶ Usage policies (Will students be able to bring devices home with them?) and repair policies; technology wireless infrastructure</li><li>▶ Classroom management strategies</li><li>▶ Professional learning for teachers</li></ul>

**Bring Your Own Device (BYOD).** BYOD has recently emerged as one approach to getting technology into the hands of every student. It shares many of the same benefits as 1:1 computing models, with the additional benefit of being more cost effective for schools than purchasing a device for every student.

Benefits	Things to Consider
<ul style="list-style-type: none"> <li>▶ Students are ultimately responsible for their own technology</li> <li>▶ Reduced costs in upgrading, repairing, and maintaining school computer labs</li> <li>▶ Increased student engagement and opportunities for personalization</li> <li>▶ Takes advantage of technology that is familiar and comfortable for the student, which can encourage them to be more active learners</li> </ul>	<ul style="list-style-type: none"> <li>▶ Infrastructure/network to support multiple types of devices</li> <li>▶ Usage policies and codes of conduct for usage in the classroom</li> <li>▶ Plans for providing devices to students who do not have access to a mobile device</li> <li>▶ Professional learning for teachers to learn about the variety of devices and ways to support learning with each of the tools</li> </ul>

**Mixed Devices.** While some schools implement the same device, platform, and operating system in every classroom or computer lab, many schools today are opting for mixed device models. In these models, the district may support BYOD policies for middle and high school students but not in elementary schools, or a school may determine that each classroom will have three tablets, four classroom computers, and two e-readers (Kindle or similar).

Benefits	Things to Consider
<ul style="list-style-type: none"> <li>▶ Cost effective</li> <li>▶ Access to a variety of technology tools suited to meet different needs and activities</li> <li>▶ Increased student personalization of learning and differentiation of instruction</li> <li>▶ Teachers can take advantage of the comparative strengths of each type of device</li> </ul>	<ul style="list-style-type: none"> <li>▶ Technology support, maintenance, and installation of multiple programs, operating systems, and platforms</li> <li>▶ Professional learning for teachers on the variety of devices in the classroom</li> <li>▶ Classroom management strategies so that students know the routines around using each piece of technology in the classroom</li> </ul>

**Mobile Laptop Carts or Computer Work Stations.** Mobile laptop carts and computer work stations (i.e., four or five computers in the back of the classroom or in the hallway just outside the classroom) provide students with increased access to computers (in comparison with spending time in a computer lab once or twice per week) and introduce technology into the classroom and day-to-day instruction. Some schools provide one laptop cart for every classroom on a 2:1 model (two students sharing a single laptop) while others share one laptop cart across multiple classrooms.

Benefits	Things to Consider
<ul style="list-style-type: none"> <li>▶ Cost effective</li> <li>▶ Increased student access to technology tools in the classroom</li> <li>▶ Lessens scheduling conflicts in the computer lab</li> </ul>	<ul style="list-style-type: none"> <li>▶ System for teachers to “sign up” for the cart</li> <li>▶ Classroom management strategies for students to access the technology</li> <li>▶ Determine how many carts will be provided</li> <li>▶ Technical support (e.g., keeping the batteries charged)</li> </ul>

## Building Your Implementation Plan

Regardless of the technology option your school is using or wants to achieve, effective implementation requires developing a step-by-step plan to support the initiative.

### Unpacking the “black box” of implementation

As with any new program or policy, increasing the use of technology in your district/school will require an implementation plan that clearly articulates your vision, sets short- and long-term goals, and identifies specific action steps that will facilitate the realization of your goals. Paying attention to the *implementation process*—i.e., how you will initiate, integrate, and maintain technology use in your school setting—is as critical as selecting the devices that students will use and the instructional strategies that teachers will practice. In the implementation plan, you will devise your strategy, evaluate your progress, and make any necessary changes to ensure that you successfully achieve the desired outcomes of instructing with technology—an increase in student achievement, higher levels of student engagement, and personalization of student learning.

Read what other schools and districts have done by viewing their implementation plans in [Appendix C](#).

## Effective Innovations + Effective Implementation = Positive Outcomes

In essence, the implementation process involves coordinated change at the system, organization, program, and practice levels. It is a multiyear process, guided by a shared vision, and it is most successful when the leadership team has thoughtfully built an infrastructure of support for the initiative and has developed professional learning opportunities to build collective capacity. Although recommendations vary in terms of the number of “stages” or “phases” to consider and the terminology used to represent each stage, they possess a number of common core elements. Key elements represented in most implementation and school change frameworks highlight the importance of:

1. A planning phase, an implementing phase, and a scaling-up or sustaining phase
2. Using data to identify needs, set goals, assess progress, and generally inform the process of implementation
3. Creating relationships, collaborating with stakeholders, and building “buy-in”
4. Building collective capacity

Research in implementation science suggests that quality evidence-based programs or practices that are *not* implemented effectively are likely to *fail* and not achieve the desired outcomes.

### In a nutshell, implementation is...a plan to foster change.

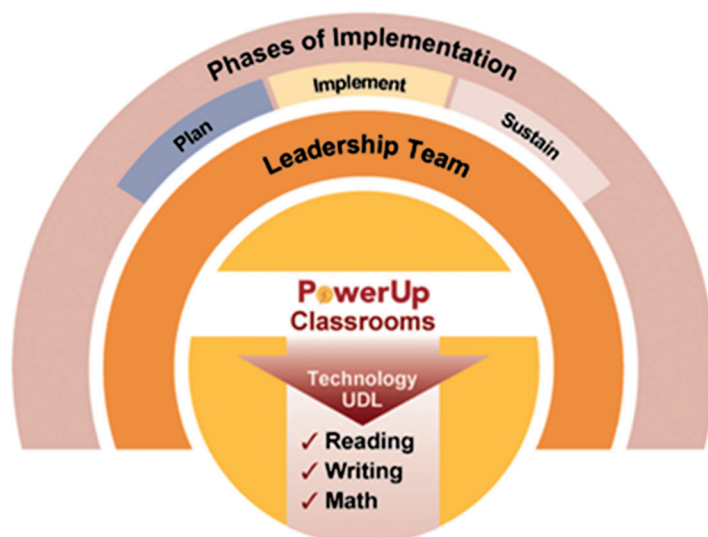
An implementation plan is typically a multiyear process that includes planning, implementing, monitoring and evaluating progress, rethinking, more planning, adapting, and meeting the needs of the stakeholders in your context. Implementation activities are purposeful, and they are defined through a series of concrete, detailed action steps. Specifically, we define technology implementation as the set of activities designed by the leadership team to facilitate the use of technology throughout classroom instruction.

**Implementation is NOT . . .** a specific event. It does not happen all at once, and it does not always proceed smoothly. Implementation is NOT the validation of evidence-based programs.

## The PowerUp Technology Implementation Framework

The PowerUp team has distilled the research on implementation science and developed a **three-phase plan** that leadership teams can use to guide their implementation planning and work—*plan, implement, and sustain*.

With any new school initiative, the leadership team is responsible for demonstrating how the new initiative aligns with the school's vision and supporting teachers as they work to meet the needs of all students in the classroom, including struggling learners and students with disabilities. Enhancing technology use in the classroom and building a school culture that embraces the use of technology to support student learning is no different. As a leadership team, you will create the structure for implementing technology throughout the school, and you will empower teachers in the building to advance their teaching with technology.



Within each of the three phases (plan, implement, and sustain), leadership teams are encouraged to revisit, evaluate, and revise their decisions and action steps, as appropriate, on **six key tasks** to inform future implementation efforts. These best practice tasks are discussed in more detail below and they include the following:

1. Work as a team
2. Enhance your vision and set goals

3. Gather data to drive decision making
4. Define your technology budget
5. Plan professional learning opportunities
6. Provide access to technology and support

View other implementation/school change frameworks in [Appendix D](#).

## RECOMMENDATION 1: Work as a Team

### Overall summary

*Effective district and/or school-wide implementation of technology begins with strong leadership and grows through ongoing collaboration, developing partnerships, and facilitating professional learning. School- and district-level leadership teams are encouraged to make a plan for implementing technology and to develop an ongoing process for monitoring and evaluating systemic change. This plan should be grounded in building the collective capacity of all school staff and engaging multiple stakeholders to work collaboratively.*

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### Recommendations from the literature and practice

Leaders at all levels of the school system can play an instrumental and effective role. Principals, lead teachers, specialist personnel, school board members, superintendents, assistant superintendents for curriculum and instruction, technology personnel, special education and special program staff, parents, and community members all have a role to play in transforming the learning environment to realize the full potential of technology to enhance best practice instruction and advance student learning.

In the school building, the principal plays a critical role in guiding staff through the process of

implementing change. The principal can set the tone in the school by embracing change and establishing expectations that will enable staff to realize their goals. For example, a principal who expects students and teachers to make use of technology tools to advance student learning will establish ways to support teachers and foster a culture of professional learning. As a result, he or she will have more success implementing technology throughout the school and within each classroom.

As a first step, the principal should define a core leadership team to support the work of enhancing technology use throughout the building and creating sustainable school change. This team will be responsible for gathering data to drive decisions, shaping the vision and establishing short- and long-term goals, ensuring teachers have the support and professional learning opportunities that are needed to successfully integrate technology into the classroom, and developing a process for evaluating progress. The team will need to develop a plan for communicating among themselves and for reaching out to other stakeholders who can help them to achieve their goals.

Research suggests that leadership teams that engage stakeholders early in order to establish “buy-in” are more successful. Cast your net widely to include as many individuals as possible, and take steps to involve both internal stakeholders (such as teachers, librarians, students, technology

support personnel, curriculum directors, school board members, and support staff) and external stakeholders (such as parents/guardians, the media, businesses, colleges, and universities). This will ensure that you have a solid foundation of support for the initiative and will build a “demand” for, and a commitment to, using technology to support inclusive instruction.

The leadership team can get organized and begin to mobilize people and resources by developing an outreach and marketing plan to engage external stakeholders, as well as a communication plan to facilitate ongoing progress updates to all stakeholders. Working as a team may sound simple but time restrictions and competing demands on school personnel mean that many schools struggle with finding opportunities to collaborate and ensuring that all members of the team are aware of team activities and decisions. Strategies that can aid you and your team in working together include posting announcements on the district and school websites, maintaining continuous communication with school staff through regular e-mails, scheduling face-to-face meetings with core leadership team members to monitor progress and assign tasks, and providing regular updates to parents and community stakeholders through the school newsletter.



## ACTION STEPS FOR RECOMMENDATION 1

### Work as a Team

- ▶ Identify your core leadership team
- ▶ Plan your outreach and build a community
- ▶ Establish a schedule and routine to ensure effective communication

For additional ideas and support, refer to the Leadership Team Support Materials.

**A CASE STORY** Richland School District II, a nationally recognized district in technology implementation and use of technology throughout classroom instruction, built their success through collaborative team planning. Planning and implementation of their one-to-one technology initiative is an ongoing, comprehensive process that has included multiple stakeholders and collaboration among the various teams working to plan, implement, and sustain their technology initiative. To begin, a steering committee was formed to learn more about one-to-one technology models. The steering committee conducted site visits and researched one-to-one technology models to lay the groundwork for project planning. Based on the work from this committee, numerous teams were formed to support the planning and implementation of the technology initiative. Teams and committees range from district and school personnel, to parent and technical advisory groups. Their steering committee, comprised of representative from all schools, helps to ensure collaboration across schools with the district, and the parent advisory committee works to support communication between the school and parents. At the school level, the leadership team is comprised of the principal, tech specialists, special education staff, and teachers. At the district level, committees work to support:

- ▶ Comprehensive planning, change management, and budgeting
- ▶ Curriculum, instruction, and resources
- ▶ Public outreach and communication with parents
- ▶ Procedures, policies, and practices to design and implement support structures
- ▶ Professional development
- ▶ Evaluation of implementation and revisions to project planning and implementation



## RECOMMENDATION 2: Enhance Your Vision and Set Goals

### Overall summary

*In order to meet student learning needs and achieve high levels of student academic achievement, it is important to enhance and communicate a school vision that includes the use of technology. Develop concrete short- and long-term goals that specify the action steps that are critical to supporting the implementation of technology within the school and the integration of technology throughout classroom instruction. Schools that drive the implementation of technology through the vision and goals of its leaders are much more likely to be successful than those in which implementation is driven by the sudden availability of funds.*

### Recommendations from the literature and practice

Generating and communicating a shared vision is a critical step in creating your technology implementation plan. The leadership team will need to reflect on the current vision for the school and/or district and work to adapt that vision to include the use of evidence-based strategies, supported by technology, that can enhance academic achievement and advance learning in the building. The vision statement should be clear and concise, and it should address the learning outcomes for all student subgroups in the district and/or school, including students with disabilities.

Without a clear vision of what you aim to achieve, it is difficult to plan short- and long-term goals, and the absence of a clear vision is one of the main reasons that technology initiatives fail. You may want to gather ideas from teachers, school board members, and parents throughout the process of refining the school's vision in order to build "buy-in," and to ensure that the ideals of key stakeholders are represented. Once your vision is established, the leadership team will need to develop a plan for communicating this vision to staff, parents, and students in order to foster a shared commitment to achieving the vision.

Although the vision statement outlines the overall direction for maximizing student outcomes in your district and/or school, the leadership team will need to set a focus and establish long- and short-term goals and milestones to achieve the vision. These goals provide the framework for building specific action steps to successfully integrate technology and transform your school environment and instruction in the classroom. When setting your goals, use data-driven decision making (see Recommendation 3) to identify areas of student need, the focus of your initial implementation efforts, areas of teacher need to drive future professional learning workshops, potential barriers and ways to address them, and strengths in the system that you can draw upon.

Leadership teams that focus on concrete, short-term goals and strive for small, early successes are able to build excitement for the initiative and enjoy greater long-term success throughout the

implementation process. Fostering change is a multiyear process that can feel uncomfortable or unfamiliar because you are learning new ways of "doing business." Building feelings of success early in the process can increase confidence and generate momentum for moving forward.

View example goals and vision statements written by districts and schools across the country in [Appendix E](#).

Use the results of your data analysis to help define specific areas of focus for the initial implementation phase. Consider student achievement scores and identify which content areas students appear to be struggling with the most, and consider the professional learning needs of the teachers (relating to the initial implementation) and the workshops or other activities that could be hosted throughout the year, for grade-level and/or targeted groups of teachers. How you plan to focus your initial implementation, roll out the new technology, and integrate that technology into the classroom will depend on your context. Some districts and schools integrated technology in high schools during the first year and middle schools during the second year, and only then moved to equip students and teachers in elementary schools with technology. Some districts started with the schools that had the lowest student achievement test scores (in the hope of increasing student scores), and others required schools to complete an application that demonstrated their readiness for

integrating technology. School-level engagement during initial implementation also varies. In some instances, the leadership team might engage with a specific grade level, handpicking teacher leaders who are already using technology in their classrooms and can serve as champions to foster buy-in from other teachers. In others, the leadership team might engage with all reading specialists in the building in order to foster school-wide integration with all teachers involved.

Once you have chosen your focus, it is time to identify your goals. When defining your goals, it is important to establish both short- and long-term goals for your students, teachers, and the school building as a whole. Professional learning goals will likely include building a collective capacity for teaching with technology,



## ACTION STEPS FOR RECOMMENDATION 2

### Enhance Your Vision and Set Goals

- ▶ View missions and goals written by districts around the country
- ▶ Ensure that your vision and goals include reference to how technology will support student learning
- ▶ Record and share your work with staff and parents

For additional ideas and support, refer to the Leadership Team Support Materials.

transforming the classroom and learning experience for students through the use of evidence-based strategies supported by technology, and holding technical workshops on using the new technology devices. In addition, the leadership team will need to set goals related to identifying funding sources, procuring devices, establishing policies and procedures, and so on. For each goal, leadership teams should identify the person who will be responsible for leading

the task, produce detailed action steps to accomplish the goal, establish processes for monitoring implementation and making revisions (when appropriate), and institute systems for evaluating progress. The ongoing collection of evaluation data can help you to reset your goals as you learn and implement change to improve outcomes, and it can increase your success during the sustaining phase of your implementation plan.

**A CASE STORY** Team Academy is an elementary school serving students from Grades 1 through 6. Upon joining PowerUp WHAT WORKS as a field site, the school formed a leadership team that included the Team Academy director, three elementary school teachers, a special education teacher, and an IT media specialist. The main focus of the leadership team was to support school staff to integrate technology throughout instruction. The leadership team met monthly to discuss technology-related issues and plan inservice days for staff to develop knowledge and skills in emerging technology and educational resources. The Leadership Team Support Materials and educational resources of the PowerUp WHAT WORKS website continue to be a great asset to the leadership team to implement technology aligned with the other initiatives already under way in the school. Other school functions such as statewide assessments and unexpected snow days make it challenging to meet monthly, but the team makes every effort to meet regularly.

With a mission of helping all students achieve their potential, the leadership team at a K-6 charter school in Minnesota met to hone their vision for the school and develop short- and long-term goals to increase the use of technology to support classroom instruction. The team assessed the technology available in the building by completing the PowerUp inventory checklist and surveying their teachers on how they used the various technologies available.

The team set a short-term goal to increase use of the interactive whiteboards present in each classroom. They reviewed the research and information briefs on the PowerUp website to learn more about the universal design for learning framework, using the interactive whiteboards to provide multiple means of representation, and support teacher use of the interactive whiteboards to implement evidence-based strategies in reading, writing, and mathematics. To accomplish their goal, the team identified the professional learning needs of their teachers, used the PowerUp website to plan workshops, and worked with teachers in the classroom to plan instruction that targeted the needs of the struggling learners in their classrooms.

## RECOMMENDATION 3: Gather Data to Drive Decision Making

### Overall summary

*The leadership team at the district and school levels is responsible for fostering a culture of data-driven decision making to advance teaching and learning in the building. Data should be used not only to assess and report student achievement but also to identify areas for school improvement, determine short- and long-term school improvement goals, guide professional learning workshops, narrow achievement gaps among student subgroups, and transform student learning.*

### Recommendations from the literature and practice

Schools have been collecting, storing, and reporting data for decades—data on student achievement, data on the number of students receiving special education services, data on the number of students participating in the free and reduced-price lunch program, budget and finance information, human resources data, and so on. Over the past two decades, school, district, and state administrators have been dealing with continuously expanding data reporting requirements and have had to develop extensive databases for storing and reporting these data.

Despite the wide array of data collected at the school and district levels, many districts continue to struggle with using

### Data-driven decision making is about:

- ▶ Collecting appropriate data
- ▶ Analyzing data in a meaningful way
- ▶ Using the data to increase school efficiencies and improve student achievement
- ▶ Communicating data-driven decisions to key stakeholders

data-driven decision making to inform instructional practices in the classroom, the focus of professional learning workshops, and overall decisions about school improvement. Data-driven decision making requires more than simply collecting and reporting data; it requires districts and schools to define the key questions needed to guide data collection activities and instruments, identify who the data will be collected from, determine how the data will be analyzed, and, finally, decide how the results of the analysis will be used to inform short-term and long-term goals. Although collecting and reporting data does not generate change, analyzing and using data can serve as an effective tool to inform school change efforts.

Beyond student achievement data, it is critical that district and school leaders collect and analyze data that will help to inform decisions about the short-term and long-term goals that are required to achieve the vision of the district and/or school. Data can help you to:

- ▶ **Narrow achievement gaps.** With an effective data-driven decision-making system, districts and schools can assess performance data by important student subgroups and address problems at the school and classroom levels.

For example, at the classroom level, principals can use student-level achievement and demographic data to create balanced classrooms.

- ▶ **Improve teacher quality.** District and school leaders can use data to define and target the specific professional development needs of their staff. For example, an analysis of staff's knowledge of, and experience teaching with, certain technologies can inform the need for targeted technical workshops.
- ▶ **Share best practices.** Data can provide useful information about how teachers are using evidence-based practices in reading, writing, and mathematics instruction, and how they are integrating technology tools into best practice strategies. These examples of excellence can be shared with other teachers in the building to foster peer learning opportunities.

Research shows that leadership teams that use data to inform the development of their plans are more successful during the implementing and sustaining phases of the implementation process because they are able to anticipate and proactively troubleshoot barriers unique to their context.

### Four Steps to Conducting a Needs Assessment:

- ▶ Perform a “GAP” analysis
- ▶ Identify priorities and importance
- ▶ Identify cases of performance problems and/or opportunities
- ▶ Identify possible solutions and growth opportunities

As a first step, your leadership team will want to conduct a needs assessment. Start by examining the data that are already being collected within the school

and at the district level. What questions can you answer with these extant data? Next, you will need to determine what questions remain unanswered by the data that you have and how you will gather these data (e.g., through surveys, focus groups, classroom observations) and from whom (students, teachers, parents, other stakeholders). Analysis of these data will help you to identify the current state of education technology in the district and/or school, student achievement by subgroups, and the professional learning needs of teachers, and they should be used to inform your focus and goal-setting activities.

In data-driven cultures, data collection and analysis are ongoing activities that inform each step of the process. Leadership teams that establish ongoing data collection plans to continually assess the effectiveness of their implementation efforts, their impact on student learning, and the changes they produce in classroom teaching are more successful in achieving their long-term goals and vision. It is the responsibility of the leadership team to design questions for ongoing data collection, to analyze those data, and to continually adapt and revise the action steps based on their findings.

## RECOMMENDATION 4: Define Your Technology Budget

### Overall summary

*School operating budgets provide stable financing for ongoing purchases and support. However, school budgets are tight and programs—including technology programs and technology support staff—may be cut in some schools. It is important to consider alternatives to funding and to plan not only for initial costs but also for long-term maintenance and replacement costs to facilitate sustainability.*

### Recommendations from the literature and practice

Budgeting for technology implementation requires planning for costs ranging from new device allocation and upgrading the school infrastructure's connectivity and access points to professional learning and funds to support repairs and/or the replacement of devices. Districts and schools are finding funds not only in their existing budgets but also through technology bonds, grants, and partnerships with companies and organizations. Schools are also using assistive technology labs in local education agencies (which make technology available for schools throughout the district), and they are accepting donated technology from parents, organizations, and companies.

Find grants and other funding options to support your technology purchases and implementation costs in [Appendix F](#).

Developing multiyear budgets is critical to gaining teacher, parent, and student buy-in. If stakeholders view technology implementation as an experiment—with only short-term goals and short-term budget allocations—they are less likely to invest in the professional learning and expend the extra effort initially required to yield success. Multiyear budgets allow for the development of long-term plans and increase the sustainability of the initiative.

As a team, you will need to develop a plan to support the costs associated with implementing and maintaining technology in your district and school buildings. Many districts and schools today initially fund the purchase of new technology devices and/or upgrading of the network infrastructure with a grant and then build maintenance and repair/service costs and professional

learning costs into the district's or school's operating expenses. Some districts have secured funding through a bond voted on by the community or have raised money through fundraisers sponsored by the PTO/PTA, and others have worked with companies to finance the costs of new technology devices. Districts and schools are finding creative solutions to the funding question, including leasing equipment, phasing in computing devices over time to spread out the cost of purchasing devices, selecting devices with lower initial costs (such as netbooks), and making use of BYOD and equipping the school with robust wireless access. Any requested funding should clearly link technology to the bigger picture of teaching and learning. Technology is not an end in itself but instead is a set of tools to foster engaged learning environments and increase student outcomes; successful funding clearly supports a higher purpose than simply the acquisition of hardware and equipment. Ultimately, when exploring budgeting options, it is important

### Explore the following ways to fund your technology implementation goals:

- ▶ Build community support and develop funding out of local resources
- ▶ Seek school budget line items for technology or include technology in other existing budget lines
- ▶ Define ongoing budget costs for professional learning, training, repair, and maintenance
- ▶ Match the value of grants by local contributions
- ▶ Evaluate equipment donations to examine the value of such donations
- ▶ Incorporate discussion of how the results of the funding will be evaluated

to be creative, engage numerous stakeholders, and develop a multiyear plan for financing technology needs.

Review your existing operating budget and consider how your current budget can be altered to support ongoing implementation efforts. By aligning your technology implementation goals with the goals of other school-wide initiatives, you will be able to integrate the costs of technology to support other program goals. For example, in Marengo County Schools in Alabama, the district used funds earmarked to support the needs of students “at risk” to purchase an online software program that teachers could use to create, administer, and track student progress and outcomes. Similarly, professional learning



## ACTION STEPS FOR RECOMMENDATION 4

### Define Your Technology Budget

- ▶ Review your existing budget
- ▶ Determine costs for upgrading infrastructure and purchasing new devices
- ▶ Identify funds to meet short-term and long-term goals
- ▶ Develop a multiyear plan to support sustainability of technology costs
- ▶ Review and refine your budget as needed

For additional ideas and support, refer to the Leadership Team Support materials.

workshops that focus on integrating technology into instruction, and integrating evidence-based teaching strategies into content areas such as reading, writing, and mathematics, can be funded through professional development dollars linked with curriculum and content area development. Explore the different ways in which

technology integration supports programs for students receiving special education services, English language learners, and students in Title I programs, and then refine your existing budgets to include technology use to achieve program goals and outcomes.

## RECOMMENDATION 5: Plan Professional Learning Opportunities

### Overall summary

*It is critical to build the capacity of school staff to use and integrate technology by fostering a school culture that supports continuous learning. By building staff members' confidence with technology and integrating technology into instruction to support student learning, students will achieve higher academic outcomes. Professional learning opportunities should be offered to both administrators and teachers and should be provided in a variety of formats. The frequency of professional learning, and the planning that goes into it, is critical.*

### Recommendations from the literature and practice

Providing professional learning opportunities for administrators and teachers has been the most frequently neglected component of technology integration since schools began using technology. However, professional learning is critical to building the collective capacity of staff and stakeholders

and creating the school change required to transform learning and teaching through the power of technology.

Ongoing professional learning that builds internal capacity and increases the instructional expertise of staff requires time and planning, but it is well worth the investment. Research findings on districts across the country suggest that school leaders who provide time for teacher professional learning and collaboration at least monthly have higher rates of success when integrating school change and implementing technology (Project RED). Teachers will benefit from consistent, ongoing professional learning opportunities that are aligned with school initiatives and goals and that focus on (1) technology logistics, such as the technical skills required to use the new devices and/or software and establishing routines for student use; and (2) pedagogy, best practices, and integrating technology throughout the curriculum to support goals and personalize instruction.

Principals and administrators also need to take time to participate in professional learning opportunities in order to enhance their skills in garnering teacher buy-in and their

knowledge of best practices and technology-transformed learning. Training in change management (for principals and the broader leadership team) has been shown to be one of the most critical aspects of effective technology adoption. Through these professional learning opportunities, your leadership team will enhance their skills in advancing school change initiatives and developing the infrastructure to support the initiative.

### Types of Professional Learning to Consider

- ▶ Coplanning
- ▶ Teacher collaboration
- ▶ Coaching and mentoring
- ▶ Faculty departmental training
- ▶ Online professional learning
- ▶ Summer workshops

When developing a plan for professional learning, leadership teams should ensure that the opportunities are frequent, aligned with school initiatives and goals, and provided in a variety of formats and settings (i.e., workshops, all-day seminars, peer coaching and mentoring, collaborating, coplanning, and online learning). Opportunities for professional learning can be incorporated into a teacher's daily or weekly schedule by using creative scheduling. Blending online and face-to-face professional development can be cost-effective because virtual experiences eliminate the costs of travel and substitutes, and this approach is generally

*“If school improvement is to make a difference for children, it has to be in fundamental ways about improving teaching and learning. Improving instructional capacity has to be the central target of school improvement initiatives.”*

Spillane & Louis (2005)



## ACTION STEPS FOR RECOMMENDATION 5

### Plan Professional Learning Opportunities

- ▶ Refine goals and set focus
- ▶ Define modes of professional learning activities
- ▶ Determine frequency of professional learning opportunities
- ▶ Set concrete, actionable goals
- ▶ Reflect and refine professional learning plan

Start planning your professional learning today by using the Leadership Team Support Materials.

acknowledged to be the most efficient practice. Two important responsibilities of your leadership team are to create ongoing opportunities for professional learning in your district and/or school and to model the expectations around professional learning.

As a leadership team, you will develop a plan for professional learning in your district and/or school. This plan should include initial workshops to launch the initiative, as well as targeted opportunities to support ongoing learning and growth. When

designing these professional learning activities, it is helpful to start with a clearly defined objective that relates to specific action steps for the teacher to implement in his/her classroom. For example, were you to be conducting a series of short, one-hour workshops with reading specialists during their weekly team meetings, you could include a workshop on using technology to enhance student summarizing skills. Participants could be asked to design, implement, and share at least one lesson or activity using technology with the evidence-based

strategy of summarizing prior to the next weekly meeting. During the following meeting, teachers could report out and reflect on how they used the technology, share successes, and troubleshoot issues with their colleagues. Ideally, these actionable objectives should be observable in classrooms so that administrators can keep track of whether they are being implemented effectively.

Generally, it is more effective to provide targeted, bite-size workshops than to try to accomplish all your objectives and goals in a onetime professional learning day. Leadership teams should aim to offer weekly or even biweekly professional learning opportunities to provide the support needed to foster change in practice and to build the confidence in staff to implement the new skills. Teachers will benefit from multiple opportunities to practice their new skills, get feedback on their progress, and reflect on their performance.



**A CASE STORY** “Big D”—a nickname commonly used to describe Dallas, Texas—can also apply to its school district. The 230 campuses in the Dallas Independent School District are spread out over an area of 348 square miles. The district’s special education department’s portfolio is also sizeable, and one component involves itinerant special education teachers traveling to assigned schools to work with inclusion teachers. The work of the “itinerants,” and their own professional development, is guided by Meg, an elementary inclusion specialist.

Meg has been a strong advocate of PowerUp WHAT WORKS since the earliest days of field testing and has described it as “a wonderful resource to add to our toolkit of resources.” She is particularly interested in the sections that focus on reading comprehension and vocabulary—a direct match with the district’s emphasis on having students develop academic vocabulary.

On May 25, 2013, the five itinerant special educator teachers participated in a 2.5-hour workshop that provided the opportunity to delve into and interact with the reading materials, resources, and tools on PowerUp.

Having this group become familiar with the PowerUp reading materials was only a first step. Next, the group would introduce PowerUp to teachers at the schools.

As a trial run, Meg and Carl, one of the itinerant teachers, visited an elementary school to meet with Fran, a new special education inclusion teacher.

The conversation began by getting straight to the heart of the matter:

- ▶ What challenges did Fran face in providing interventions and instructional support to the mostly fifth graders in her caseload?
- ▶ What were the particular needs of the students she saw?

They discussed the strategies Fran used, many of which she gleaned from Google searches. This was a perfect segue to introducing her to PowerUp.

Meg and Carl described what PowerUp offered (especially in reading) and outlined a pathway to follow for finding valuable resources. “Start at the home page; go to the Learning Center, then check out the content,” they suggested. Fran expressed interest in following up.

Besides school visits such as this, Meg has future plans for integrating PowerUp into the ongoing support to her itinerant teachers and, in turn, to special education inclusion teachers. She is responsible for designing training for late summer. Part of the agenda will include “Updates,” with a focus on vetted resources, which is the perfect niche for PowerUp. Meg will highlight the reading content because comprehension and vocabulary development impacts success across the curriculum. Strategies for teaching context clues, word analysis, and semantic mapping can directly improve vocabulary knowledge and use in science, social studies, and other content areas.

## RECOMMENDATION 6: Provide Access to Technology and Support

### Overall summary

*Technology use and implementation throughout the district and/or school building requires continuous support and a systemic process through which teachers can access assistance when experiencing technical difficulties with the technology. If teachers and students are frustrated, technology is less likely to be regularly implemented and, therefore, will not contribute to student improvement.*

### Recommendations from the literature and practice

A reliable network infrastructure is essential in any digital environment. Technology options that are not reliable, or that are difficult to use, can lead to frustration among teachers and lack of use with students. In contrast, when teachers, students, and parents can access an instructional network anytime/anywhere, using technology to enhance instruction increases student engagement and communication and simplifies information sharing. For example, teachers are able to upload lessons and homework assignments to the network for student and parent access or to quickly send messages

*“Education technology can’t fulfill its promise if students can’t get online.”*

**Danielle Kehl & Benjamin Lennett**

We encourage you to seek advice from device manufacturers on network specifications and on developing networks that will support the devices that you have chosen to

to all parents. To maximize the usefulness of technology, digital materials and resources must be available wherever print materials are currently being used—at school, home, grandma’s house, the park, the orthodontist’s office, and so on. Full access to digital resources can lengthen the school day, and more time leads to better results.

Work with the technology coordinator(s) in your school and/or district to ensure that the school is equipped with adequate bandwidth to support the technology devices you have chosen. Students and teachers must have ready and consistent access to online resources to support teaching and learning. Usage can be monitored and possible bottlenecks identified before they affect teaching and learning.

implement within your district and/or school. Most districts and schools will need to update and overhaul their connectivity plans, and it is important to fully understand the financial and physical network requirements needed to handle the amount and types of usage anticipated.

In addition to equipping the school building with secure and reliable

connectivity, the leadership team will need to develop key policies and procedures to support continual implementation. Key decisions will include (but are not limited to):

- ▶ When and how to support student-owned devices, including cell phones
- ▶ Provision of wireless Internet access off school premises (3G–4G)
- ▶ What level of support to provide to the economically disadvantaged
- ▶ Whether or not students will be allowed to take home their devices
- ▶ Parental and student agreement forms on caring for the device at home
- ▶ Maintenance/service plans
- ▶ Charging and storing needs
- ▶ Ways for teachers and students to access technical support as needed

Read example technology policies developed by schools and districts across the country in [Appendix G](#).

Beyond access, the leadership team will benefit from creating a plan for supporting teachers’ use of technology tools. A first step would be to create and maintain an inventory of all available technology tools in the school, in the district, and at local technical assistance centers. Teachers need to know what is available and how to access it. (For example, if your school has a laptop cart, how does the teacher “sign up” to use the computers?)

Once you have developed your inventory and established procedures for teachers to access the devices, you will need to define how you will communicate this information to the teachers in the building. If teachers do not know the processes for accessing the technology within the building, they are not likely to integrate the tools into their lessons.

Review your plan on an ongoing basis to ensure that your inventory is current and your technology tools are accessible, and to identify new



## **ACTION STEPS FOR RECOMMENDATION 6**

### **Provide Access to Technology and Support**

- ▶ Complete/revise your Technology Inventory Record Sheet
- ▶ Plan how you will provide increased technology access
- ▶ Determine how teachers will access support when experiencing technical difficulties and communicate this information to all staff

For additional ideas and support, refer to the Leadership Team Support materials.

strategies to support teacher use of technology as needed. Teachers will need clear guidance on the procedures for accessing devices

as well as technical support when devices fail to operate as expected.

# Appendix A: School Readiness Tools and Checklists to Inform Your Planning

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**The School Planner Roadmap** . This checklist-based tool will allow school leadership teams to assess and plan for key areas of technology implementation (Work as a Leadership Team, Collect Data to Drive Decision Making, Form a Shared Vision and Goals, Provide Professional Development, and Provide Access to Technology and Support). The assessment provides three levels of readiness (already established, in process, and not addressed).

[http://powerupwhatworks.org/lib/doc/School\\_Planner\\_Roadmap\\_FINAL.pdf](http://powerupwhatworks.org/lib/doc/School_Planner_Roadmap_FINAL.pdf)

**EdTech Locator**. This tool provides free access to an online self-assessment of readiness for technology implementation school-wide (consisting of five questions), as well as a planning worksheet to advance the process. There are separate sections for teachers, administrators, tech coordinators, and PD coordinators, which also include descriptors/markers of individual stages (early, development, and target) of task completion.

<http://www.edtechlocator.org/#assess>

**Digital Learning Day—Self-Assessment, Project 24**. This online survey allows for self-assessment of readiness to implement digital learning (in Project 24’s seven areas: Professional Learning, Budget and Resources, Curriculum and Instruction, Academic Supports, Use of Time, Data and Assessment, Technology and Infrastructure). The end product is a PDF report that includes analysis and recommendations for each of the mentioned areas and links to additional resources. The survey takes less than two hours to complete.

<http://digitallearningday.org/news-and-events/project-24/self-assessment/>

**Massachusetts School Technology and Readiness Chart (STaR Chart)**. This document is a rubric-like chart that allows for self-assessment on readiness progress toward the implementation of best practices on the technology continuum. It includes four areas for assessment (Teaching and Learning, Educator Preparation and Development, Administration and Support Services, and Infrastructure for Technology), with descriptors for individual levels of progress (early, developing, proficient, and advanced).

<http://www.doe.mass.edu/boe/sac/edtech/STaR.pdf>

**Texas STaR Chart**. This document is a rubric-like chart that allows for self-assessment on readiness progress toward the implementation of best practices on the technology continuum. It includes five areas for assessment (Teaching and Learning, Educator Preparation and Development, Leadership, Administration and Support Services, and Infrastructure for Technology), with personalized descriptors for individual levels of progress (early, developing, proficient, and advanced).

<http://starchart.epsilen.com/docs/TxTSC.pdf>

# Appendix B: Information and Resources About Various Technology Configurations for Your School

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## One-to-One—A computer for every student

**Sunnyside Unified School District (SUSD).** SUSD shares information about the vision and goals behind the One-to-One program, which aims to prepare students for 21st century learning by assigning a laptop to each student for continuous use for school work and homework. A PowerPoint presentation of the program is available, as well as FAQs and additional resources (some links do not appear consistently functional).

<http://www.susd12.org/one-one-computing>

**Walled Lake Consolidated School District (WLCSD).** WLCSD shares information on their Anytime Anywhere Learning (AAL) Laptop Program. A video (3:45 minutes in duration) is available, as is additional information regarding technology support and requirements for the program, and curriculum, program enrollment, and research studies completed for AAL.

<http://www.wlcsd.org/programs.cfm?subpage=359522>

**Henrico Country Public Schools (HCPS).** HCPS provides information regarding their Teaching and Learning initiative, including the vision, technology requirements, and other tips for providing students with access to computers and the Internet and helping teachers to use eLearning methods and materials.

<http://www.henrico.k12.va.us/Technology/InstructionalTechnology.html>

**The Challenges of 1:1 in the Classroom.** Daniel Donahoo—a contributor to the New Media Consortium (NMC) and a researcher and author of childhood learning and development, technologies, and emerging literacies—blogs on the challenges associated with, and tips for successfully implementing, 1:1 technology devices (tablets, iPads, and so on).

<http://www.nmc.org/news/challenges-11-classroom>

**1:1 Model Research—National and State Perspectives.** This report by Dr. Corn (affiliated with the William and Ida Friday Institute for Educational Innovation) provides a summary of findings from a national and state perspective on 1:1 computing programs. The results address student learning outcomes, teaching approaches, and the critical components of such programs.

[http://s3.amazonaws.com/mooc-ed.org/course\\_readings/DLT+1-1+Research+Summary.pdf](http://s3.amazonaws.com/mooc-ed.org/course_readings/DLT+1-1+Research+Summary.pdf)

## Tablets

**Using Your Tablet in the Classroom: An App Summary.** [Description Missing](#)

<http://blogs.princeton.edu/etc/2012/12/06/using-your-tablet-in-the-classroom-an-app-summary/>

**One Tablet Per Child?** This article by Susan McLester, a contributor to *District Administration*, discusses the benefits of using tablets. The article includes a downloadable chart on “What to look for in a tablet” (including type of tablets [13], pricing, operating system, features, resolution/display, weight, storage, dimensions, connectivity, and battery life) for those school districts interested in investing in such a project.

<http://www.districtadministration.com/article/one-tablet-child-0>

## Bring Your Own Device (BYOD)

**Bring Your Own Technology/Device.** This website provides a toolkit that includes perspectives and recommendations for educators and school and district leaders who are implementing BYOD programs (links to research and reports about policies and practice are available as well). The tool includes BYOD for teachers, the potential and the challenges of BYOD, policies for BYOD use, mobile learning, and models of BYOD.

<http://www.digitalllearningday.org/learn-and-explore/digital-learning-tools/bring-your-own/>

**Chromebooks and BYOD Success in Education: Access to Windows Applications and Virtual Desktops—From Any Device.** This is a white paper by Ericom on using Chromebooks and BYOD. It provides information on the challenges of using IT in education (such as application management, cyber security, and hardware distribution), Chromebooks as solutions (such as hosting, longevity of devices, and administration), Chromebook access to Windows applications and desktops (BYOD, individual case study), and device replacement, protection, and availability (such as virus and malware protection, and classroom use).

<http://www.ericom.com/specs/WP-Chromebook-and-BYOD-Success-Education.pdf>

**Hanover Public School District (HPSD) Implements a BYOD Model—Learn More.** HPS is showcasing their actual BYOD model, which includes information regarding policies, how to connect, tech support, nine themes/expectations of digital citizenship, NETS standards, acceptable devices and required software/recommended browser, professional development links and resources for HPS employees, and BYOD FAQs for students, parents, and teachers.

<http://byod.hanoverpublic.org/>

## Mixed Devices

**From Distraction to Engagement: Wireless Devices in the Classroom.** This article addresses the issue of student distractibility when surrounded by and working with wireless devices. It includes information regarding applications such as the Respondus LockDown Browser (which prevents students from straying from the URL they are supposed to be working on), a link to ConnectEd podcasts on mobile learning, and ideas about using the classroom's wireless community to benefit the learning environment.

<http://www.educause.edu/ero/article/distraction-engagement-wireless-devices-classroom>

**Challenging the Model of 1:1 with BYOD.** Edutopia, a George Lucas Educational Foundation project, presents a blog on a specific hybrid model of the 1:1 computing program and BYOD (implemented by a school district in Vermont) and addresses issues such as how to mix the devices in use, how to allow for ongoing experimentation and professional development, and how to provide a structure of support through coteaching and planning. The readers' comments on the blog also provide links to additional resources on BYOD-like initiatives or components.

<http://www.edutopia.org/blog/challenging-one-to-one-model-amanda-paquette>

## Mobile Laptop Carts

**Wireless in the Classroom.** This article by Rhett McDaniel, an educational technologist with the Vanderbilt Center for Teaching, reflects on the use of wireless devices in college classrooms. The article is divided into sections that address the need for classroom policies (with statement models by various professors and their syllabi), instructional strategies, links to best practices for laptops in the classroom, and instructor and student

feedback on their prior and current experiences using wireless classrooms. (Two videos created by students also are available, each of which lasts between 5 and 10 minutes.)

<http://cft.vanderbilt.edu/teaching-guides/technology/wireless/>

**Use of Laptops in the Classroom: Research and Best Practices.** This paper, authored by professionals affiliated with the University of Michigan, explores the use of laptops and other mobile devices (iPads, smartphones, tablets). The results of the survey they conducted among college students (undergraduate and graduate) on the use of wireless technology in the classroom are included.

[http://www.crlt.umich.edu/sites/default/files/resource\\_files/CRLT\\_no30.pdf](http://www.crlt.umich.edu/sites/default/files/resource_files/CRLT_no30.pdf)

**The Unwired Classroom: Wireless Computers Come of Age.** This article for *From Now On: The Educational Technology Journal* summarizes the author's findings regarding the use of wireless computers in schools, following classroom observations in several U.S. states. Information on the benefits of using wireless laptops for classroom learning is included, as well as additional resources relating to this topic.

<http://www.fno.org/jan01/wireless.html>

## Mobile Learning

**Mobile Learning Anytime Everywhere.** This mLearn book gathers 56 papers on mobile learning presented during the third annual mLearn conference in 2004. Topics include (but are not limited to) using learning theories to design instruction for mobile learning devices, JAVA environment for learning design, collaborative learning on mobile phones, engaging and supporting mobile learners, wireless learning communities, mobile awareness, tablet technology for higher education, virtual cooperation, distance learning, mobile learning games, adaptive mobile learning devices, e-learning applications, assessment in a mobile environment, mobile workplace learning (case study), mobile lessons, blended learning, and the ethical and legal challenges of mobile learning.

<http://www.voced.edu.au/content/ngv36586>

**A Beginner's Guide to Mobile Learning.** This article outlines some basic rules for mobile learning and includes links to five educational resources: EcoBug (a science game), Evernote (a note-taking and organization app), LetterSchool (which focuses on handwriting), MIT App Inventor (which allows you to create your own app), and PSAT Ace (a PSAT practice exam).

<http://www.teachthought.com/trends/mobile-learning-trends/a-beginners-guide-to-mobile-learning/>

**Anytime Anywhere Learning: Mobile Education and the Wireless Industry.** This brochure, produced by CTIA - The Wireless Association, addresses the benefits of mobile learning. It includes information about digital books, mobile devices, and mobile applications, as well as a list of the most popular iOS, Windows, Android, and Blackberry applications for education.

[http://files.ctia.org/pdf/filings/CTIA\\_Mobile\\_Education\\_and\\_Wireless\\_Industry.pdf](http://files.ctia.org/pdf/filings/CTIA_Mobile_Education_and_Wireless_Industry.pdf)

## Interactive Whiteboard Use

**The Art and Science of Teaching/Teaching with Interactive Whiteboards.** This article by Robert Marzano summarizes the findings of a study on teaching with interactive whiteboards. It includes recommendations for teachers and discloses some of the pitfalls of using such technology.

<http://www.ascd.org/publications/educational-leadership/nov09/vol67/num03/Teaching-with-Interactive-Whiteboards.aspx>

**Using Electronic Whiteboards in Your Classroom: Benefits.** A list of key findings from various reports on the use of electronic/SMART whiteboards in the classroom. Links to the full reports are provided (though not all the links are functional).

<http://www.waukeshaschools.com/WIT/smartBoard/benefits.htm>

**Ten Ways to Get Smart With SMARTboard.** A list of examples of specific classroom activities that can be completed with the SMARTboard (including board games, graphic organizers, PowerPoint presentations, click-and-drag activities, united streaming, interactive flannel board, notetaking and brainstorming, and interactive websites).

<http://www.techlearning.com/from-the-classroom/0015/ten-ways-to-get-smart-with-smartboard/43707>

**SMART Exchange.** This website provides practical classroom activities organized by subject (Art and Design, ELA, Information and Communications Technology, Music, Social Studies, Science, Citizenship, Geography, Library and Informational Sciences, Special Education, Cross-curricular, Health and PE, Mathematics, Religion, English as a Second Language, History, Modern Foreign Languages), grade level (prekindergarten through postsecondary), and file type (lessons, question sets, collaborations, widgets, ideas, activity packs, applications, videos, images, PDFs, add-ons).

<http://exchange.smarttech.com/#tab=0>



# Appendix C: Implementation Science Frameworks

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**Implementation Science: What Do We Know and Where Do We Go from Here?** This is a PowerPoint presentation on the stages of implementation frameworks. It includes steps toward success, challenges, ideas for further research, readiness assessment, and examples.

<http://www.researchconnections.org/files/childcare/pdf/FranksPresentation.pdf>

**National Implementation Research Network.** This is the landing page for the National Implementation Research Network.

<http://nirn.fpg.unc.edu/>

- ▶ **Learn Implementation.** This provides information on defining implementation, forming implementation teams, stages and cycles of implementation, and measurement.  
<http://nirn.fpg.unc.edu/learn-implementation>
- ▶ **ImpleMap: Exploring the Implementation Landscape.** This document outlines the key planning elements needed for successful implementation.  
<http://implementation.fpg.unc.edu/resources/implemap>
- ▶ **Stages of Implementation Analysis: Where Are We?** This planning tool can be used to assess, plan, and track the implementation of evidence-based programs and evidence-informed innovations.  
[http://implementation.fpg.unc.edu/sites/implementation.fpg.unc.edu/files/resources/AIHub-SISEP-Stage sOfImplementationAnalysisWhereAreWe.pdf](http://implementation.fpg.unc.edu/sites/implementation.fpg.unc.edu/files/resources/AIHub-SISEP-Stage%20OfImplementationAnalysisWhereAreWe.pdf)
- ▶ **Establishing a Framework for the Implementation of Evidence-Based Programs.** This poster summarizes the steps (methods and recommendations) required to establish a framework for the implementation of evidence-based programs.  
<http://nirn.fpg.unc.edu/sites/nirn.fpg.unc.edu/files/resources/NIRN-APHA-PosterSession-12-2004.pdf>

**Stratosphere - Fullan.** This video (15 minutes in duration), presented by the author of the book *Stratosphere*, addresses the relationship between technology and pedagogy. Michael Fullan speaks of effective technology integration and the new role of teachers in the 21st century.

<http://thedigitalfrontline.com/2012/06/25/stratosphere-michael-fullan/>

**Kotter's 8-step Change Model.** This article describes the change model authored by John Kotter, a professor at Harvard Business School, and published in his 1995 book, *Leading Change* (see below for a link to a graphic of the model).

[http://www.mindtools.com/pages/article/newPPM\\_82.htm](http://www.mindtools.com/pages/article/newPPM_82.htm)

- ▶ **Kotter's 8-Step Change Model Diagram.** This links to a graphic of John Kotter's change model.  
<http://3.bp.blogspot.com/-dPdlugG7Tnc/Tb92avD3Nsl/AAAAAAAAAFg/MIVXyC9np2E/s1600/kotter4.gif>

**State- and District-Level Planning for Progress.** This website describes the Project 24 framework, which predicts seven key areas for the successful use of technology and digital learning (academic supports, budget and resources, curriculum and instruction, data and assessments, professional learning, technology and infrastructure, and use of time).

<http://www.all4ed.org/project24>

**Missouri Department of Education Six-Step Process in Creating a Technology Plan.** This is a model of a technology plan provided by the Missouri Department of Education. It includes the six steps required to create a technology plan (getting started; technology mission statement; current technology raw data and analysis; goals and objectives; development and implementation of the plan with action plans and timelines; and dissemination, monitoring, and evaluation of the plan), as well as additional resources with a downloadable Tech Plan Scoring Guide and other templates.

<http://dese.mo.gov/divimprove/instrtech/techplan/gettingstarted.htm>

# Appendix D: See What Other Schools and Districts Have Done by Viewing Their Implementation Plans

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**Roadmap for Large-Scale Technology Implementations.** This provides a checklist for large-scale technology implementation (leadership, infrastructure, classroom technology).

[http://merrillville.schoolwires.net/cms/lib02/IN01001403/Centricity/Domain/120/Roadmap\\_for\\_Large\\_Scale\\_Implementations.pdf](http://merrillville.schoolwires.net/cms/lib02/IN01001403/Centricity/Domain/120/Roadmap_for_Large_Scale_Implementations.pdf)

**Project Planning Overview.** This provides samples of forms, implementation tools, and professional development tools.

<http://www.projectred.org/>

▶ **Sample Implementation Timeline**

<http://www.projectred.org/sample-implementation-timeline.html>

**Del Mar Union School District Technology Plan.** This is a sample technology plan for 2013–16 for Del Mar Union School District. It includes duration, stakeholders, a curriculum component, a professional development component, infrastructure, hardware, technical support and software, funding and budget, monitoring and evaluation, effective collaborative strategies with adult literacy providers, and effective research-based methods and strategies.

[http://www.dmusd.org/cms/lib02/CA01001898/Centricity/Domain/64/TechPlan\\_DelMar\\_final.pdf](http://www.dmusd.org/cms/lib02/CA01001898/Centricity/Domain/64/TechPlan_DelMar_final.pdf)

**Rocky Point Union Free School District Technology Plan.** This is a sample technology plan for Rocky Point Union Free School District. It includes the vision, goals, planning process, status of current implementation, objectives for 2011–14, implementation time frame, technical support, financial plan, and overall plan evaluation.

<http://www.rockypointschools.org/pdf/techplan.pdf>

**Charlotte-Mecklenburg Schools Technology Plan.** This is a sample technology plan for Charlotte-Mecklenburg Schools. It includes the vision, strategic priorities, a shared services model, universal access to personal teaching and learning devices, access to digital teaching and learning resources (including digital textbooks), a model of technology-enabled professional development, and 21st century leadership for an LEA.

<http://www.cms.k12.nc.us/mediaroom/Documents/2012-2014%20Tech%20Plan.pdf>

**Falmouth Public School Technology Plan 2012–2014.** This is a sample technology plan for Falmouth Public Schools. It includes community and parent involvement, a mission statement, the vision, goals and objectives, the action plan, equipment needs, collaboration with adult literacy providers, strategies for improving academic achievement and teacher effectiveness, integration of technology and curricula, instruction and assessment, technology type, costs, coordination, funding resources, external supporting resources, steps to increase accessibility, promotion of various curricula and teaching strategies to promote technology integration, professional development, innovative delivery strategies, accountability measures, and technology budget recommendations.

<https://docs.google.com/document/d/1MsL83GViw9t1Sy5pVVTBV3gcWLoTyy6vpxi9oUGZv5k/edit>

# Appendix E: Example Goals and Vision Statements Written by Districts and Schools Across the Country

Below are several example goal and mission statements. We have added **emphasis** to key words.

**Henrico Public Schools.** “The mission of the Henrico County Public Schools is to “inspire, empower and educate every student to be prepared for success in the 21st century.” This is accomplished by creating **21st century learning environments** in which the instructor is a content expert, provides engaging, student-centered 21st century instruction, and where 21st century **technology** tools are available for instruction. When all three pieces are in place, 21st century instruction exists.”

**Leland School District Technology Department.** “It is the vision of the Leland School District to develop highly educated, well-rounded students who are excited about learning and who will, as a result, become lifelong, self-directed learners. Through the use of current and cutting edge **technology** we strive to prepare today’s students for tomorrow’s advanced technological opportunities and challenges.”

“The **technology mission** of the Leland School District is to assure that learners can adapt to the challenges of the 21st century through the access and utilization of technology in gathering, using, and communicating information in order to make responsible decisions as global citizens.”

- ▶ **Geary Public Schools.** “**Technology** shall be implemented to enhance, improve, engage and stimulate the learning environment for all students to advance their educational experience and skills in order to prepare them to live and work in a global community. Therefore, the challenge of educators is to equip students with knowledge, skills, and values that will enable them to live effectively, productively, and enjoyably in our continuously changing world. Inherent is the intent to help each student reach his/her full potential as a human being.”

- ▶ **Sussex Wantage Regional School District.** “The Sussex-Wantage Regional School District (SWRD) believes that schools must provide optimum **technology** opportunities for students to learn about the natural world and human global society. To do so means that **technology** must be integrated across the curricula at all grade levels, and support achievement of the NJ Core Content Curriculum Standards. The classroom environment must demonstrate a commitment to and daily use of technology, preparing our students for the digital 21st Century.

The SWRD implements technology as an integrated tool that maximizes work efforts to enhance learning and teaching. Each student and staff member will utilize technology to access and organize information, plan for the attainment of goals, and increase communication. The SWRD strives to provide the latest technology at a level that is serviceable and supported within staff and budgetary means. This is done on an equitable basis across the district.”

- ▶ **Cranston Public Schools.** “**Technology** in the Cranston Public Schools will afford increased opportunities for students to attain challenging educational standards. Through information technology resources, students in the Cranston Public Schools will be empowered to think more critically, communicate more effectively, solve problems more creatively, and be actively engaged in their learning. By creating a technology rich environment, a community of lifelong learners will be provided with the skills to succeed in our constantly changing information age.”

Technology Mission Statement:

“In order to prepare our students for their future world, a world of constant change, we must provide technology rich learning environments in which our investment in technology and training is equal to our students’ educational needs, supports our curriculum, and prepares our students to be knowledgeable and productive users of technology.”

- ▶ **Tunica County School District.** “The School Board, administration, teachers, support staff, and classified personnel envision working as a team that is committed to guiding our students toward the goal of academic excellence. We will provide an educational environment that utilizes *technology*. We will provide integrated instruction that enables students to become literate to function in the 21st Century.”

“The *technology mission* of the Tunica County School District is to incorporate current and emerging technologies into the educational process in order to:

- Enhance the quality of instruction by making technology available to students, parents and teachers, both on and off campus.
- Use technology to improve learning of basic skills, problem solving strategies, and critical thinking.
- Integrate technology into the curriculum by providing computer/Internet access to staff, students and parents.
- Utilize computer-assisted instruction in alternative learning environments.
- Provide opportunities for students to research, create, and publish using a variety of tools in all curricular areas.
- Use computer-assisted instruction in alternative learning environments.
- Provide opportunities for students to research, create, and publish using a variety of tools in all curricular areas.
- Use computer-assisted instruction as a supplement to traditional teacher-directed instruction.
- Provide training and support for teachers to utilize technology for classroom management and instruction.
- Promote student centered learning with the teacher acting as a facilitator and manager.”

# Appendix F: Policy Documents to Facilitate the Processes for Working With Teachers, Parents, and Students

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**Pascack Valley Regional High School District Policies and Forms.** Form templates and user guides for the 1:1 eLearning initiative program developed by the district.

<http://www.pascack.k12.nj.us//site/Default.aspx?PageID=184>

**Kent City Schools Tablet Take Home Policy.** Parent and student tablet handbook (care, maintenance, accessories, cost, damaged/lost, distribution, and usage).

<http://www.kentcityschools.org/highschool/tablet-information/tablet-handbook/>

**Tablet Computer Policy Manual Procedures and Information, Riggs High School, Pierre, South Dakota.** Procedures and information for users of the HP EliteBook Tablet PC (usage, maintenance, and care).

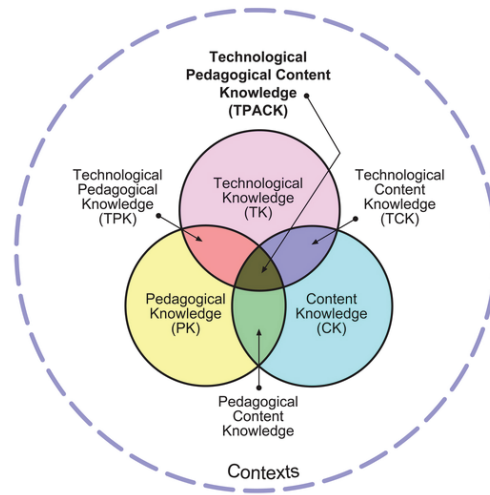
<http://pierre.k12.sd.us/media/pierreschoolsfactor360com/uploads/FormsPolicies/tabletcomputerpolicymanual.pdf>

**Hamlin School District Student Tablet Handbook.** Handbook includes student pledge, general guidelines, maintenance, repair, user terms and conditions, and acceptable use policy.

<http://www.hamlin.k12.sd.us/PDF%20documents/tablet%20handbook%2009-10.pdf>

# Appendix G: Technology Integration at the Classroom Level

**The TPACK (Technological Pedagogical Content Knowledge) framework** lays out the knowledge areas that teachers need in order to successfully integrate technology into their teaching. As you can see in the graphic, the TPACK model emphasizes the importance of teachers building their instruction on the interplay of pedagogical, content, and technological knowledge. Districts and schools across the country have found success in using this framework in professional learning workshops to help teachers move beyond using technology as a supplementary tool and toward integrating the tools to support and enhance instruction.



More information and resources can be found on the [TPACK website](#).



**The SAMR (Substitution, Augmentation, Modification, Redefinition) model**, created by Dr. Ruben Puentudura, is another framework to support teachers as they think about how technology is currently integrated into their classrooms and develop a vision for how they could evolve their use of technology tools throughout instruction. According to Puentudura, “the ultimate goal of technology integration is to completely redefine how we teach and learn, and to do things that we never could before the technology was in our hands.”

Let us consider the different ways teachers can instruct using a tablet and apps. Teachers who use the apps as a “substitution” choose apps that do things you could do with regular classroom tools, such as reading an eBook, creating flash cards, or practicing fast facts and phonics. Teachers who have moved into the “modification” and “augmentation” phases are using apps that add functionality to regular classroom aids (like an eBook that reads to you, an encyclopedia that calculates equations, or a magazine that is built around your interests). Teachers in the “redefinition” phase have moved beyond regular classroom tools and now choose apps that perform tasks that would not be possible without the use of technology, such as building collaborative narrated digital slide shows, helping students with autism learn social cues, or creating a movie. For more information, view a series of [podcasts](#) by Dr. Puentudura or visit his [blog](#).

# Glossary

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**1:1 computing:** One computer/laptop/tablet per student in each class.

**21st Century Learning and Skills:** Generally used to refer to certain core competencies—such as collaboration, digital literacy, critical thinking, and problem solving—that advocates believe schools need to help students thrive in today's world.

## A

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**Assistive technology:** Devices, hardware, software programs, peripherals, and systems used by people with disabilities to enable them to perform tasks that they might not be able to do on their own.

**“At risk”:** A student who, by virtue of his or her circumstances, is statistically more likely to fail academically. Those determining the criteria of at-risk status often focus on ethnic minorities, students who are academically disadvantaged, students who are disabled, students who are characterized by low socioeconomic status, and students on a probationary status as a result of past behavioral issues.

## B

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**Bring Your Own Device (BYOD):** Students are responsible for bringing their own technology to class.

## C

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**Classroom technology integration:** Classrooms where technology plays an integral role in the delivery of instruction, and where the curriculum is primarily delivered electronically. Teachers guide student learning of the Common Core State Standards through project-based learning activities that are driven by student interest and that take advantage of 21st century technologies.

**Common Core State Standards (CCSS):** The culmination of an extended, broad-based effort to fulfill the charge issued by the states to create a new generation of K–12 standards in order to help ensure that all students are college and career ready no later than the end of high school.

**Core Leadership Team:** A team that supports the work of enhancing technology use throughout the school building and creating sustainable school change. This team is responsible for gathering data to drive decisions, shaping the vision and establishing short- and long-term goals, ensuring teachers have the support and professional learning opportunities needed to successfully integrate technology into the classroom, and developing a process for evaluating progress.

## E

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**eBook:** A digital, book-length publication that can be read on devices such as computers, tablets, and eBook readers.

**Educational technology:** The integration of various electronic tools and applications to support the use of evidence-based instructional strategies that facilitate K–12 instruction and enhance academic achievement.

**Educational tools and devices:** Software programs and apps, hardware devices (e.g., desktop and laptop computers, tablets, interactive whiteboards), and Internet applications (e.g., wikis and blogs).



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**G**

**GAP analysis:** An assessment of a student's performance that is measured against potential performance, allowing a teacher and student to target specific areas for improvement.

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**I**

**Implementation activities:** Purposeful activities to implement, defined through a series of concrete, detailed action steps.

**Implementation plan:** A plan to clearly articulate a vision, set short- and long-term goals, and identify specific action steps that facilitate realization of goals.

**Implementation process:** A multiyear process including planning, implementing, monitoring and evaluating progress, rethinking, more planning, adapting, and meeting the needs of stakeholders in a particular context. It is not a specific event, nor is it the validation of evidence-based programs.

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**L**

**Learner-centered classrooms:** A classroom in which a teacher acts as a facilitator or coach and supports students in developing understanding through exploration, research, discovery, and collaboration.

**Lesson plan:** A teacher's detailed description of the course of instruction for an individual lesson.

**Lesson Plan Builder:** A three-part tool that guides a user through a step-by-step planning process. The tool includes how to teach suggestions, examples of classroom practice, technology tips, resources, and research.

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**M**

**Mixed devices:** When a variety of devices, platforms, and/or operating systems are used in every classroom and computer lab.

**Mobile laptop carts or computer workstations:** Four to five computers in the back of the classroom or just outside the classroom. They provide students with increased access to computers (compared with accessing a computer lab once or twice per week) and introduce the use of technology into the classroom and day-to-day instruction.

**Mobile learning:** Any sort of learning that happens when the learner takes advantage of learning opportunities offered by mobile technologies.

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**P**

**Project RED:** A national research and advocacy plan to investigate how technology can help reengineer our education system.

## T

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**Technology implementation:** The critical systematic process through which districts and schools can enhance and support the use of technology among all teachers throughout the school building, and the set of activities designed by the leadership team to facilitate the use of technology throughout classroom instruction.

**Technology integration:** Classroom-level instruction with technology to support and expand the Common Core State Standards and curriculum goals.

## U

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**Universal Design for Learning:** A framework for designing learning environments that maximize learning opportunities for all learners, enabling all individuals to gain knowledge, skills, and enthusiasm for learning by providing rich supports for learning and reducing barriers, while maintaining high achievement standards for all students.

## V

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**Vision statement:** A clear and concise statement of a shared vision that addresses the learning outcomes for all student subgroups in the district and/or school, including students with disabilities.





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