



Teacher Manual

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4th Grade Technology

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A COMPREHENSIVE CURRICULUM

SIXTH EDITION

by Ask a Tech Teacher

FOURTH GRADE TECHNOLOGY

A COMPREHENSIVE CURRICULUM

Part Five of Nine of the SL Technology Curriculum

2024

*Part Five of Structured Learning's nine-volume Technology Curriculum
Visit the companion website at Ask a Tech teacher for more resources and online assistance with
this textbook.*

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Introduction

The educational paradigm has changed—again. Technology has become granular to learning, included in educational standards from Kindergarten onward, like these from Common Core:

- Expect students to demonstrate sufficient command of **keyboarding** to type a minimum of two pages [three by sixth grade] in a single sitting
- Expect students to **evaluate different media** [print or digital]
- Expect students to **gather info** from print/digital sources
- Expect students to integrate and evaluate **information presented in diverse media** and formats
- Expect students to **interpret information** presented visually, orally, or quantitatively [such as interactive Web pages]
- Expect students to make **strategic use of digital media**
- Expect students to use **glossaries or dictionaries** ...
- Expect students to use information from **illustrations and words in print or digital** text
- Expect students to use a **variety of media** to communicate
- Expect students to **use text features and search tools** (e.g., keywords, sidebars, **hyperlinks**) to locate information

But how is this taught?

With the **Structured Learning Technology Curriculum**. Aligned with Common Core State Standards* and National Educational Technology Standards, and using a time-proven method honed in classrooms, students learn the technology that promotes literacy, critical thinking, problem-solving, and decision-making by using it. It's project-based. The purpose is not to teach step-by-step tech skills (like adding borders, formatting a document, creating a blog). There are many fine books for that. What this curriculum does is guide you in providing the **right information at the right time**.

Just as most children can't learn to read at two, or write at four, they shouldn't be required to place hands on home row in kindergarten or use the internet before they understand the risks and responsibilities. The Structured Learning curriculum makes sure students get what they need at the right age. The end result is a phenomenal amount of learning in a short period of time.

If there are skills you don't know, visit our Help blog or visit the online companion resources at Ask a Tech Teacher.

● ● ●

“New technologies have broadened and expanded the role that speaking and listening play in acquiring and sharing knowledge and have tightened their link to other forms of communication. Digital texts confront students with the potential for continually updated content and dynamically changing combinations of words, graphics, images, hyperlinks, and embedded video and audio.”

--CCSS

● ● ●

“Use of technology differentiates for student learning styles by providing an alternative method of achieving conceptual understanding, procedural skill and fluency, and applying this knowledge to authentic circumstances.”

--CCSS

What's in the SL Technology Curriculum?

The SL Curriculum is project-based and collaborative, with wide-ranging opportunities for students to show their knowledge in the manner that fits their communication and learning style. Each grade level in the curriculum includes five topics that should be woven into 'most' 21st-century lesson plans:

- *keyboarding—more than typing*
- *publishing-sharing—to promote collaborative learning*
- *digital citizenship—critical with influx of web-based work*
- *problem solving—encourage critical thinking*
- *vocabulary—decode unknown words in any subject quickly with technology*



In most curricula, you find full lessons devoted to keyboarding, digital citizenship, and problem solving. Here's a quick overview of what is included at the fundamental level:

- *A list of assessments, posters, images*
- *Articles that address tech pedagogy*
- *Certificate of Completion for students*
- *Curriculum map of skills taught*
- *Monthly homework (3rd-8th only)*
- *Scope and Sequence of skills taught*
- *Step-by-step weekly lessons*

Each weekly lesson includes:

- *assessment strategies*
- *essential question and big idea*
- *class warmup and exit ticket*
- *Common Core and ISTE Standards*
- *differentiation*
- *educational applications*
- *examples, rubrics, images, printables*
- *materials required and suggested links*
- *pedagogic articles (if any)*
- *problem solving for lesson*
- *skills—new and scaffolded*
- *steps to accomplish goals*
- *teacher prep and time required to complete*
- *vocabulary used*

Programs Used

General	K-8	2-8
<i>Email</i>	<i>Drawing program</i>	<i>Word processing, spreadsheet, presentation</i>
<i>Google Earth</i>	<i>Keyboarding tool</i>	<i>Desktop publisher</i>
<i>Web tools</i>	<i>Image editor</i>	

Programs used in this curriculum focus on skills that serve the fullness of a student's educational career. Free alternatives are noted where available:

What's New in the Sixth Edition?

A good tech curriculum is aligned with best practices in technology and education. That means it must be updated every few years. Consider the changes in education since 2013:

- *Windows updated its platform—twice.*
- *iPads have been joined by Chromebooks as a common classroom digital device.*
- *There is greater reliance in the classroom on internet-based tools than software. This underscores the importance of teaching digital citizenship to even the youngest learners.*
- *Student work is often collaborative and shared.*
- *Student work is done anywhere, not just the classroom and home, meaning it must be synced and available across multiple platforms, multiple devices.*
- *Keyboarding skills are often critical, especially to summative year-end testing.*
- *Technology in the classroom is the norm, but teacher training isn't.*
- *Education is focused on college and career with tech an organic, transformative tool.*
- *Teachers have moved from 'sage on the stage' to 'guide on the side'.*
- *Students have been raised on digital devices. They want to use them as learning tools.*
- *Using technology is no longer what 'geeky' students do. It's what all students want to do.*
- *Printing is being replaced with sharing and publishing.*
- *More teachers are willing to try technology when used authentically.*



In response, here are changes you'll find in this edition:

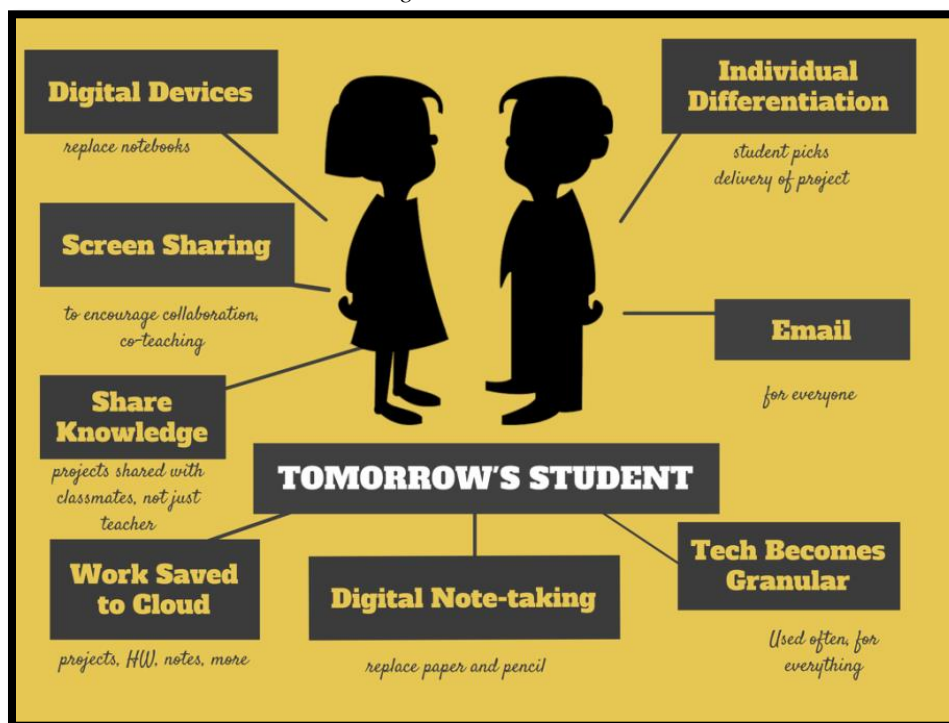
- The lesson audience is now as likely to be the **grade-level teacher as the tech teacher**.
- The importance of **higher order thinking**—analysis, evaluation and synthesis—is called out.
- The importance of **'habits of mind'**—critical to college and career goals—is included.
- It's easy to recognize which **skills are scaffolded** from earlier lessons and which are new.
- Students **understand the process**, not just replicate a skill.
- **Collaboration and sharing** is often required.
- **Differentiation** is encouraged. Teachers learn strategies to meet students where they learn.
- Each lesson includes a **warm-up and exit ticket**, to assess and reinforce student learning.
- A **Table of Images** and a **Table of Assessments** are included for easy reference.
- Updated **Scope and Sequence** includes more references to Common Core.
- **Curriculum Maps** shows which month topics are covered as well as which grade.
- Each grade-level curriculum includes **student workbooks** (sold separately).



Who Needs This Book

You are the Tech Specialist, Coordinator for Instructional Technology, IT Coordinator, Technology Facilitator or Director, Curriculum Specialist, or tech teacher—tasked with finding the right project for a classroom. You have a limited budget, less software, and the drive to do it right no matter roadblocks.

Figure 1--Tomorrow's Student



©AskaTechTeacher

Or you are the classroom teacher, a tech enthusiast with a goal this year—and this time you mean it—to integrate the wonders of technology into lessons. You've seen it work. Others in your PLN are doing it. And significantly, you want to comply with Common Core State Standards, ISTE, your state requirements, and/or IB guidelines that weave technology into the fabric of inquiry.

You are a homeschooler. Even though you're not comfortable with technology, you know your children must be. You are committed to providing the tools s/he needs to succeed. Just as important: Your child **WANTS** to learn with these tools!

How do you reach your goal? With this curriculum. Teaching children to strategically and safely use technology is a vital part of being a functional member of society—and should be part of every school's curriculum. If not you (the teacher), who will do this? To build Tomorrow's Student (Figure 1) requires integration of technology and learning. We show you how.

How to Use This Book

Figure 2a shows what's at the beginning of each lesson. Figure 2b shows what you'll find at the end:

Figure 2a—Beginning of each lesson; Figure 2b—end of each lesson

Week #1—Introduction

Vocabulary	Problem solving	Skills
<p>Where to use lesson</p> <p>• What's the difference between 'save' and 'save-as'?</p> <p>• Select</p>	<p>Domain-specific vocab</p> <p>• What's the difference between 'save' and 'save-as'?</p> <p>• Select</p>	<p>Lesson-specific tech tips</p> <p>• What students learn and/or scaffold</p>
<p>Academic Applications</p> <p>Tech in life, submitting homework, problem solving</p>	<p>Materials required</p> <p>Tech poster, after school tech programs, homework submission</p>	<p>Standards</p> <p>CCSS: Anchor standards</p>
<p>EQ</p> <p>How do I use the computer?</p>	<p>Assessment Strategies</p> <p>• Anecdotal</p> <p>• Joined classroom conversations</p> <p>• Participated with a sense of order and excitement</p> <p>• Completed exit ticket</p> <p>• Room as student found it</p> <p>• Habits of mind observed</p>	<p>Big Idea</p> <p>Process of computer components, functions, and basic computer operation</p>
<p>Teacher Preparation</p> <p>• Have Tech tips posters on walls or in classroom Tech Corner</p> <p>• Test equipment so students aren't frustrated trying to use something that won't work</p>	<p>How do you prepare</p> <p>• Expected student tech problems: Need help? Here's a thread</p> <p>• Step-by-step</p>	<p>Steps</p> <p>Time required: 45 minutes</p> <p>Class warm-up: None</p>

How long you need AND warm-up

- Academic Applications
- Assessment Strategies
- Big Idea
- Class Warm-up
- Essential Question
- Material Required
- Problem solving
- Skills
- Standards
- Steps
- Teacher Prep
- Time Required
- Vocabulary

Class exit ticket:

Class exit ticket

Solving Board with a tech problem they face. This can be used for the upcoming Problem Solving Board.

Differentiation

How to differentiate for student needs

- Early finishers: visit class internet start page for websites (article at end of Week 2).
- Take a field trip to school server room to see how data is collected.

- Class exit ticket
- Class differentiation strategies

4th Grade Technology Curriculum: Teacher Manual

The curriculum map below (Figure 3) tells you what's covered in which grade. Where units are taught multiple years, teaching reflects increasingly less scaffolding and more student direction.

Figure 3—Curriculum Map—K-8

	Mouse Skills	Vocabulary - Hardware	Problem-solving	Platform	Keyboard	WP	Presentation	DTP	Spreadsheet	Google Earth	Search/Research	Graphics/	Coding	WWW	Games	Dig Cit
K	☺	☺	☺	☺	☺					☺		☺	☺	☺		☺
1	☺	☺	☺	☺	☺			☺	☺	☺		☺	☺	☺		☺
2		☺	☺	☺	☺	☺	☺	☺	☺	☺		☺	☺	☺		☺
3		☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺		☺
4		☺	☺		☺	☺	☺	☺	☺	☺	☺	☺	☺	☺		☺
5		☺	☺		☺	☺		☺	☺	☺	☺	☺	☺	☺		☺
6		☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺		☺
7		☺	☺	☺	☺	☺			☺	☺	☺	☺	☺	☺	☺	☺
8		☺	☺	☺	☺	☺			☺	☺	☺	☺	☺	☺	☺	☺

If you're the grade-level teacher, here's how to use the map:

- Expect students to transfer knowledge of earlier-learned skills to this new school year.
- Review the topics and skills, but don't expect to teach.
- If there are skills listed as covered prior years, confirm that was done. If they weren't (for whatever reason), when you reach lessons that require the skills, plan extra time.

Figure 4 is a month-by-month curriculum map for this grade level. In the student workbook, students complete this themselves or as a group when they finish each lesson.

Figure 4—Curriculum Map—4th grade, month-to-month

	Sept <i>Wk1-4</i>	Oct <i>Wk5-8</i>	Nov <i>Wk9-12</i>	Dec <i>Wk13-16</i>	Jan <i>Wk17-20</i>	Feb <i>Wk21-24</i>	March <i>Wk25-28</i>	April <i>Wk29-32</i>
<i>Blogs</i>		X						
<i>Class mgmt tools</i>	X							
<i>Coding/Programming</i>		X						
<i>Collaboration</i>				X			X	

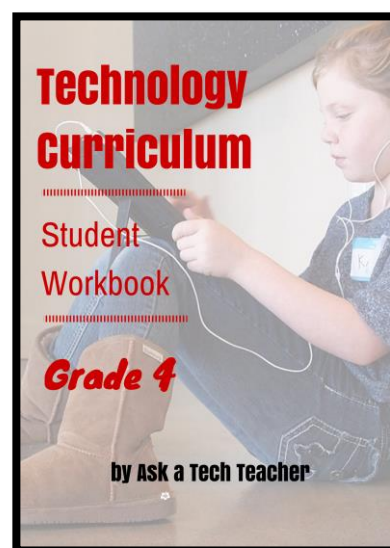
Communication	X	X		X	X	X		X
Computer etiquette	X							
Critical thinking	X		X	X	X			X
DTP				X	X	X		
Digital Citizenship	X	X	X	X	X	X		
Google Earth		X				X		
Graphics					X	X		X
Internet		X	X				X	
Internet privacy		X						
Keyboarding	X	X	X	X	X	X	X	X
Presentations							X	X
Problem solving	X	X	X	X	X	X	X	X
Publishing/sharing				X		X		X
Research		X	X	X			X	
Spreadsheets						X		
Visual learning					X	X		
Vocabulary	X	X	X	X	X	X	X	X
Webtools		X	X	X	X			
Word Processing	X		X	X	X			

Some topics are covered every month. The strategy: spiral and scaffold learning until it's habit.

Here are hints to assist using this curriculum:

- Invest in student digital workbooks (sold separately), a perfect student-centric companion to your teacher guide. Here are suggestions on how to use the workbooks:
 - Full-color projects are at student fingertips complete with examples and directions (licensing may vary depending upon the plan your school selected).
 - With nominal direction, students learn tech skills.
 - Workbooks can be shared through a reader where you and students add your own notes, how-tos.
 - Students can work at their own pace.
 - If you want to use workbooks in your class, buy a multi-user license (room, school, district) to install eworkbooks on multiple devices (even at home with some licenses).
- Teach lessons in the order presented in the book (grades K-5). Lessons introduce, reinforce, and circle back on skills and concepts. Resist the urge to mix up lessons even if your perfect time for

Figure 1--Student workbook

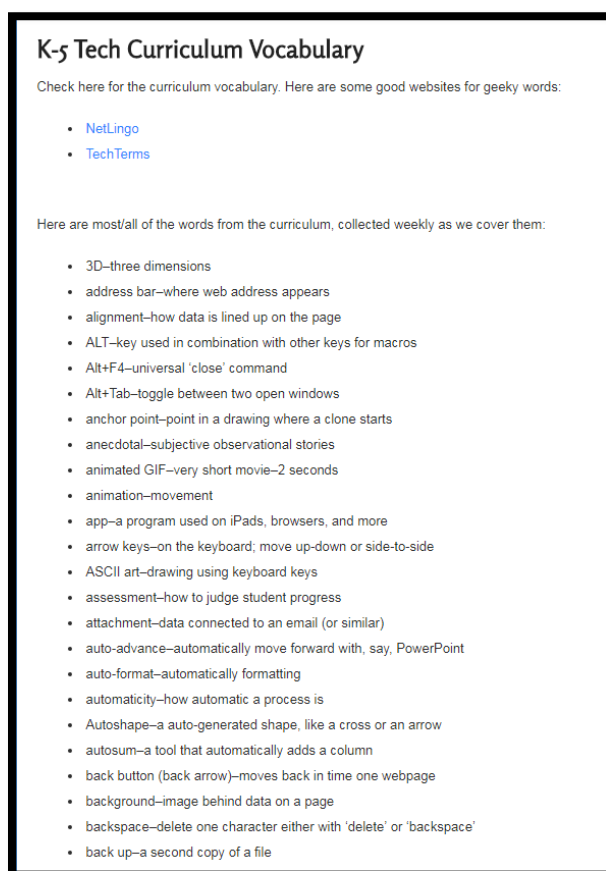


a particular project comes earlier/later than placement in the book. **One exception: Coding.** Unpack this lesson when it works best for you.

- Personalize the skills taught in each lesson to your needs with 'Academic Applications'. These are suggestions for blending learning into your existing curriculum.
- Each lesson starts with a warm-up to get students back into tech and give you time to finish up a previous class. This is especially useful to the tech teacher and the LMS.
- Each class includes an Exit Ticket to wrap up learning.
- 'Teacher Preparation' often includes chatting with the grade-level team. Why?
 - *tie tech into their inquiry*
 - *offer websites that address their topics*
- Check off completed items on the line preceding the activity so you know what to get back to when you have time. If you have the ebook, use iAnnotate, Goodreader, Notable (Google for websites), or another annotation tool that works for your devices.
- We understand when kids and technology collide, sometimes the class is too excited about the learning to move on. Two solutions:
 - *Leave line in front of uncompleted activity blank and return to it when you have time. You'll notice after using this curriculum a few years that students finish material faster.*
 - *Take an extra week. Most school years run 35-40 weeks. This book includes 32 lessons. This provides flexibility for holidays, snow days, field trips.*
- Consider expecting students to back up their work—as a life habit. This can be onto a flash drive, by emailing the document to themselves, or saving to a secondary location on their digital device.
- Don't skip the 'Problem Solving' section. If the problems don't come up in class, bring them up! These are important scaffolding for student ability to think critically and troubleshoot issues when you won't be there to help.
- Always use lesson vocabulary. Students gain authentic understanding of word use by your example. A complete glossary of lesson vocabulary can be found in the free online resources (link mentioned earlier in book). Here, you'll find several hundred easy-to-understand definitions of domain-specific tech words.
- Some lessons provide options. For example, Lesson 7 has multiple choices to teach coding. Review the entire lesson prior to teaching and choose the option most suited to your students. All will accomplish the tech goals.
- Is class shorter than 45 minutes? Highlight what's most important to your goals and leave the rest for 'later'.



Figure 6—Glossary of tech ed vocabulary

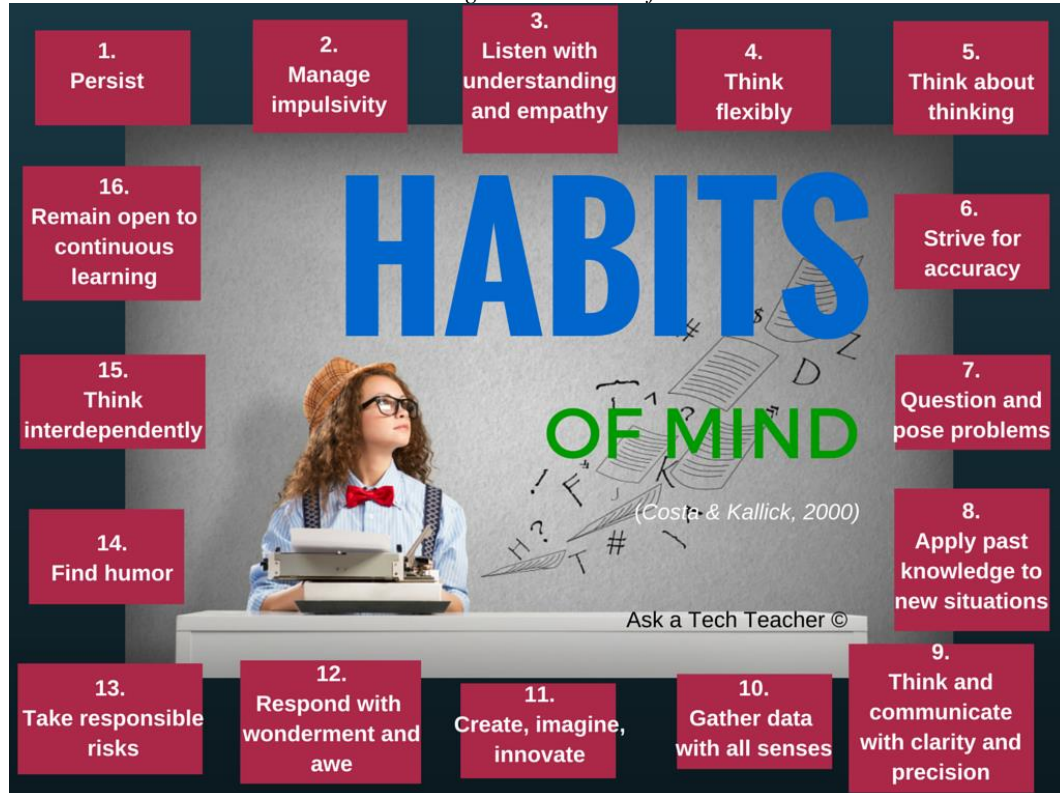


- Expect students to be risk takers. Don't rush to solve their problems. Ask them to think how it was done in the past. Focus on problems listed in the lesson, but embrace all that come your way.
- Expect students to direct their own learning. You are a 'guide on the side'. You are a facilitator, not lecturer. Learning is accomplished by both success and failure. Don't expect to have free time while students work. Move among them to provide feedback and assistance, and make anecdotal observations on their keyboarding, problem-solving, and vocabulary decoding skills.
- Encourage student-directed differentiation, opportunities for them to present their knowledge in ways suited to their abilities. If the Big Idea and Essential Question can be accommodated in other ways, embrace those.
- If you have the digital book, zoom in on posters, rubrics, lessons to enlarge as needed.
- Use as much technology as possible in your class—authentically and agilely. Encourage students to do the same whether it's a smartphone timing a quiz, a video of activities posted to the class website, or an audio file with student input. If you treat tech as a tool in daily activities, so will students.
- Remind students they've learned and understand skills. Check them off in the Scope and Sequence additional times as you circle back on them.








- Lessons expect students to develop 'habits of mind'. You can read more about Art Costa and Bena Kallick's discussion of these principles in *Figure 7*, and in the article at the end of Lesson #1. In a sentence: Habits of Mind ask students to engage in their learning, not simply recite or memorize.

Figure 7—Habits of Mind



- If you need resources on specific topics, visit Ask a Tech Teacher's resource pages.

-  video
-  working with a partner
-  an article
-  a topical poster (usually in the Appendix section)
-  annotatable rubric available in student workbooks (like rubrics)

- If you need resources on specific topics, visit Ask a Tech Teacher's resource pages.
- Every effort has been made to accommodate Chromebooks, PCs, Macs, iPads, and other digital devices. You will often see examples in multiple platforms. If the activity is impossible in a particular digital device (i.e., iPads don't have mice; software doesn't run in Chromebooks), focus on the **Big Idea and Essential Question**—the skill taught and its application to inquiry. Adapt instructions to the tool you use as you work through the steps.

Figure 8—Compatible digital devices

A desktop PC, iMac, laptop, MacBook, Chromebook, iPad, or smartphone



- Throughout the year, circle back on lessons. It takes five times seeing a skill to get it—
 - *First:* They barely hear you
 - *Second:* They try it
 - *Third:* They remember it
 - *Fourth:* They use it outside of class
 - *Fifth:* They tell a friend
- **Need more help?** Go to Ask a Tech Teacher or email askatechteacher@gmail.com.

Typical Lesson

Each lesson requires about 45 minutes a week, either in one sitting or spread throughout the week, and can be unpacked:

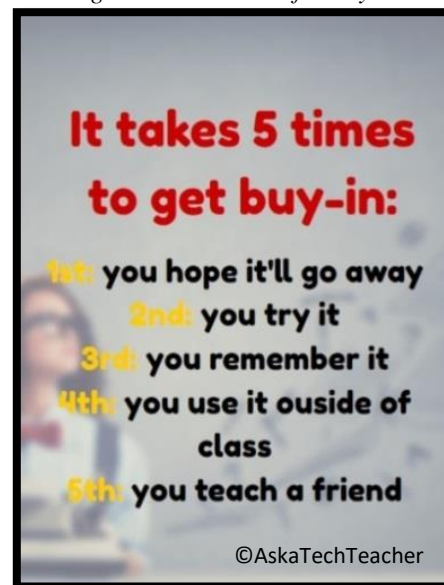
- *In the grade-level classroom*
- *In the school's tech lab*

Both are covered in each lesson. In general terms, here's how to run a lesson in **the tech lab**:

- Post a **simple written schedule** on the class screen:
 - *Warm up*
 - *Main activity*
 - *Exit ticket*

Students start with a visual guideline. Add it to your class blog for students not present. Expect students to start the warm-up when they arrive to class.

Figure 2--Five times for buy-in



- **Warm up about 10 minutes**, often with typing practice. Some days, youngers work on alphabet sites.
- Three students complete **Board presentations** (grades 3-8).
- If it's the end of a grading period, use **Scope and Sequence to review** skills accomplished.
- If starting a **new project, review it** and take questions. If you're in the middle of one, students use the balance of class to work towards completion. Monitor activities, answer questions, help as needed.
- Share websites that **tie into inquiry** for students who complete the current project. Students know websites on this page can be used during free time.
- **Class exit ticket** might include lining up in arrays, answering a poll posted on the class screen, or simply leaving stations as students found them.

Here's how to run the lesson in **the grade-level classroom**:

- Take the lesson pieces mentioned above and scatter them throughout the week. For example:
 - **3-10 minutes for the class warm-up**—at the start the week
 - **10-15 minutes keyboarding practice**—any day
 - **10-15 minutes Board presentations**—any day
 - **15-35 minutes for the project**—any day
 - **2-3 minutes for the class exit ticket**—to reinforce learning
- Check off each activity as accomplished so you know what remains each week.
- In every class, **use tech wherever possible**. Be the model for what you're asking of them.



Here are useful pieces to extend this curriculum:

- *Student workbooks* —allow students to be self-paced and self-directed
- *Digital Citizenship curriculum from Structured Learning*—a good addition if this is a focus of your school
- *Keyboarding Curriculum from Structured Learning*— if this is a focus of your school

Figure 10a—Start page using Protopage; 10b—LiveBinders; 10c—Symboloo



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About the Authors

Ask a Tech Teacher is a group of technology teachers who run an award-winning resource blog. Here they provide free materials, advice, lesson plans, pedagogical conversation, website reviews, and more to all who drop by. The free newsletters and articles help thousands of teachers, homeschoolers, and those serious about finding the best way to maneuver the minefields of technology in education.

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1. Certificate of Completion
2. Homework

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K-5 TECHNOLOGY SCOPE AND SEQUENCE©

*Aligned with ISTE (International Society for Technology in Education) and Common Core State Standards
Check each skill off with I (Introduced), W (Working on), or M (Mastered)
Organized by ISTE Standards 1-7*

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Lesson #1—Introduction

Vocabulary	Problem solving	Skills
<ul style="list-style-type: none"> Digital Embed Landscape PC Portrait Right-click menu Right-mouse Start page UN-PW USB port 	<ul style="list-style-type: none"> Double-click doesn't work (enter) Monitor doesn't work (power on?) What if computer doesn't work? (move mouse around) What's Select-do (select first, and then do what you need done) How do I change page layout? What's the difference between 'save' and 'save-as'? Where do I find class calendar? 	<p>New</p> <p>Class rules Some posters</p> <p>Scaffolded</p> <p>Problem solving Log-ins Digital citizenship Hardware Mouse skills</p>
<p>Academic Applications</p> <p>Tech in life, submitting homework, problem solving</p>	<p>Materials Required</p> <p>Posters, after school tech program, last year class rules, Evidence Board, workbooks (if using)</p>	<p>Standards</p> <p>CCSS: Anchor standards NETS: 1a, 1b</p>

Essential Question

How do I use technology?

Big Idea

Students develop an awareness of technology and how it enhances educational goals

Teacher Preparation

- Talk with grade-level team so you tie into conversations.
- Have posters up with tech hints.
- Test all equipment.
- Ensure all required links are on student digital devices.
- Be prepared to integrate domain-specific tech vocabulary into lesson.
- Collect words students don't understand for upcoming Speak Like a Geek Board presentations.

Assessment Strategies

- Understood tech in their life, log-ins, and more
- Completed exit ticket
- Joined classroom conversations
- Left room as s/he found it
- Higher order thinking: analysis, evaluation, synthesis
- Habits of mind observed

Steps

Time required: 45 minutes in one sitting or spread throughout the week

Class warm-up: None

_____ Before beginning, explain your expectations for the students' time with you—what is the **21st century tech-infused lesson plan** (see article at end of lesson)?

_____ Clarify the pervasiveness of technology in the lives of your students by drawing a silhouette of a student on the class screen and ask students what they use technology for in their lives. As they mention activities, add them to your drawing. It may look like *Figure 11*:



Figure 11—Digital Student



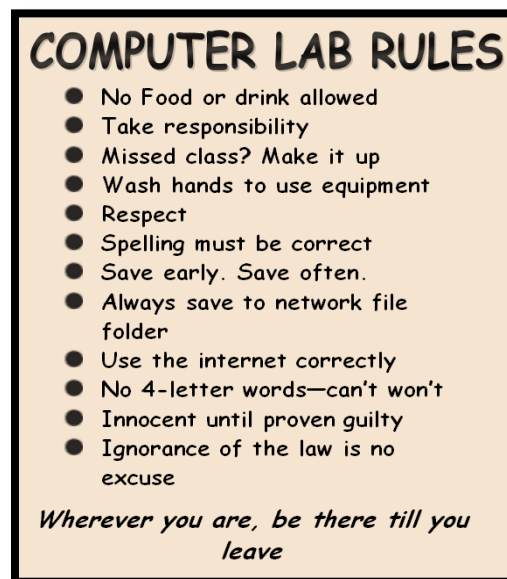
_____ Tour classroom. Show students where everything is. Review important posters, i.e., difference between 'save' and 'save-as', difference between 'backspace' and 'delete', 'save early save often', Mulligan Rule, portrait and landscape (posters in Appendix).

_____ Review 'Select-Do' (poster in Appendix). What does that mean? (Hint: You must select something before you can do to it).

_____ Collect rules from students to guide classroom actions, including:



Figure 12—Classroom rules



- No excuses; don't blame others; don't blame computer.

- *Save early, save often—about every ten minutes.*
- *No food or drink around digital devices. Period.*
- *Respect the work of others and yourself.*
- *Keep hands to yourself. Feel free to help neighbors, but with words only.*

_____ You may start with a list like *Figure 12* from the prior year.

_____ Make sure to include class discussion guidelines such as 1) listening to others, 2) taking turns while speaking, and 3) waiting to be called on before speaking.

_____ Discuss the wide variety of digital tools students will use this year to complete projects. Let students know that you are open to alternative suggestions. For example, if you suggest Wordle, a student can request Tagxedo. Approval is required, but it will be granted if the tool fulfills project needs. Expect students to use evidence to build their case, compare-contrast their tool to your suggestion, and draw logical conclusions.

_____ Offer a Keyboarding Club after school two days a week to accommodate students who can't do their homework at home or would like to practice keyboarding. Limit it to 45 minutes so everyone can get home in time for dinner.

_____ Also offer after-school help on those same days for students who need assistance with a tech skill or a project involving tech. Request student volunteers who will commit to assisting classmates. You may collaborate with your school's STAR program, where students volunteer for activities as part of their class requirements.

_____ Review homework policy (homework in back of this text): due at the end of each month. Students submit homework in the manner that works best for your group (email, Google Apps, or another). Homework is keyboard practice, one row at a time from Popcorn Typer:

- *months 1-3: practice only one row per month*
 - *1st month: homerow*
 - *2nd month: QWERTY row*
 - *3rd month: lower row*
- *months 4-9: practice all rows*
- *too easy? cover hands*

_____ Discuss the evidence board (*Figures 13a* and *13b*). This is a bulletin board that celebrates student transfer of knowledge from tech class to home, friends, or other educational endeavors. About once a month, students will have an opportunity to share how they use the tech skills they've learned in other classes, at home, or with friends. They will fill out a badge (like *Figure 13b*) and post it on the Evidence Board by their class. By the end of the year, you want this collection to encircle the classroom.

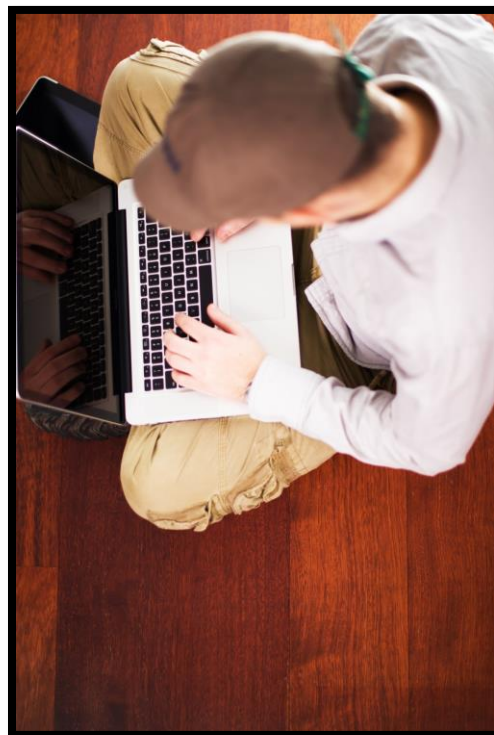
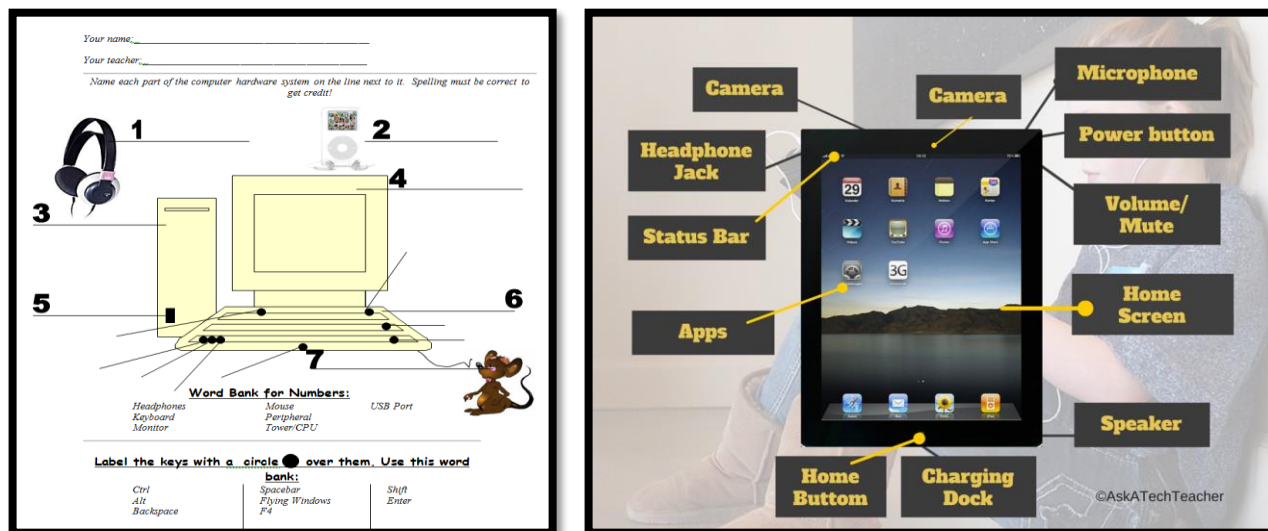


Figure 13a—Evidence board; 13b—badge



Review computer parts. *Figure 14a* is generic. Find the parts on your school's devices (there's a full-size copy at the end of the lesson to use for a study guide and testing) in preparation for the upcoming assessment. For example, if you use iPads, ask students where the 'headphones' are on this device (see full-size assessment at end of lesson)? Or the mouse? How about the USB Port (there is none)? Ask students where the iPad microphone (see *Figure 14b*) is on, say, the PC or Chromebook you use. How about the charging dock? Smartphones—there's a full size assessment at the end of the lesson.

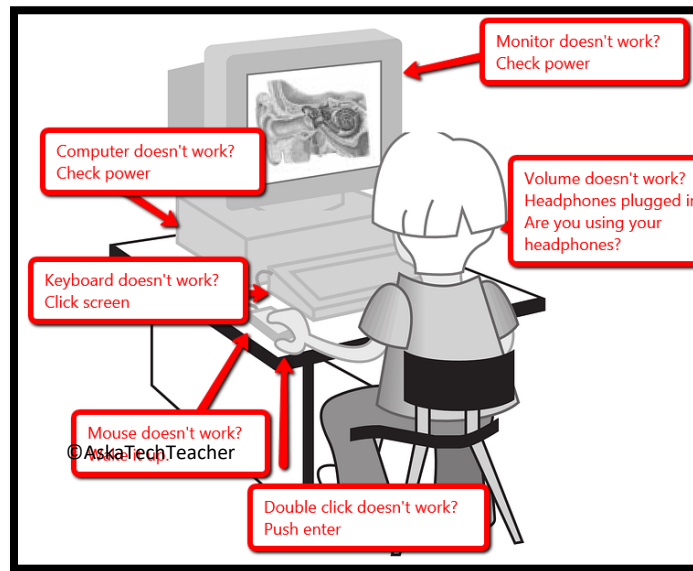
Figure 14a—Parts of computer; 14b—Parts of iPad



- mouse buttons—left and right, double click, wheel in center
- CPU—power button, CD drive, USB port
- monitor—power button, screen, station number
- headphones—volume, size adjustment, connection to CPU
- keyboard—home row, F-row, enter, spacebar, ctrl, alt, shift

Discuss how understanding hardware helps to solve tech problems (*Figure 15*).

Figure 15—Hardware-related problems and solutions



Review mouse hold with a neighbor (see Figure 16). If this isn't already a habit, make sure students hold the mouse correctly every time they use it:

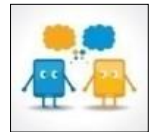
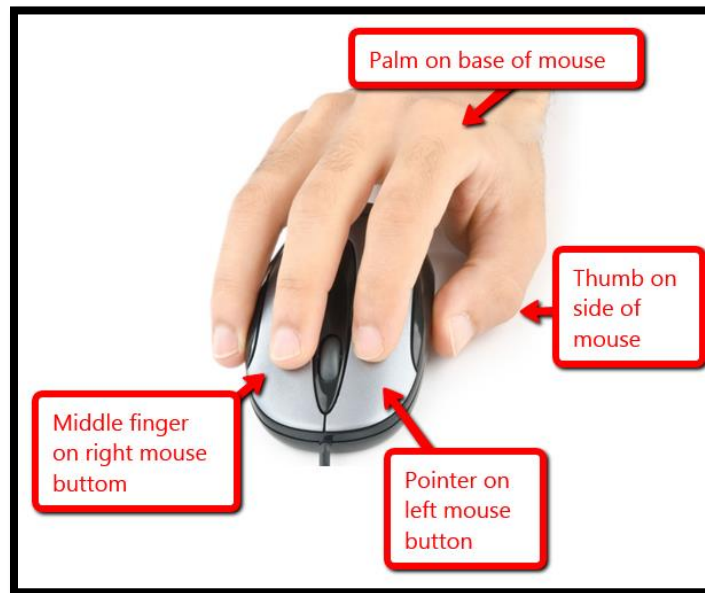


Figure 16—Mouse hold



Reinforce the importance of students solving their problems. This includes hardware (Figure 15). Relate them to your digital device. For example, if sound doesn't work on the Chromebook, what should students do? This will be discussed in depth in the Problem Solving lesson.

Review how parts connect—behind CPU, under table, in front ports.

Review how to log in. What does 'User Name' and 'Password' mean? How are these unique to each student? More on this later.

Provide a template to collect log-ins for programs and websites (Figure 17)—more on this later:

Figure 17—UN and PWs

User Name/Passwords		
PROGRAM	UN	PASSWORD
Keyboard program		
Math program		
Computer		
Class wiki		
Add'l		
Add'l		

Discuss **digital citizenship**. You'll cover it in depth throughout the year and in Lesson 6. Remind students any time they visit the internet, they do so safely and legally.

Discuss the **class internet start page** (see article at end of this lesson). An internet start page is a website that comes up when student opens internet. It organizes critical content in a single location and curates links students will use on a weekly basis.



Continually throughout the class, check for understanding.

Remind students: next week is the first keyboarding speed and accuracy quiz.

Class exit ticket: *Students tack a post-it on Problem Solving Board with a tech problem they faced last week. These will be used for the upcoming Problem Solving Board.*

Differentiation

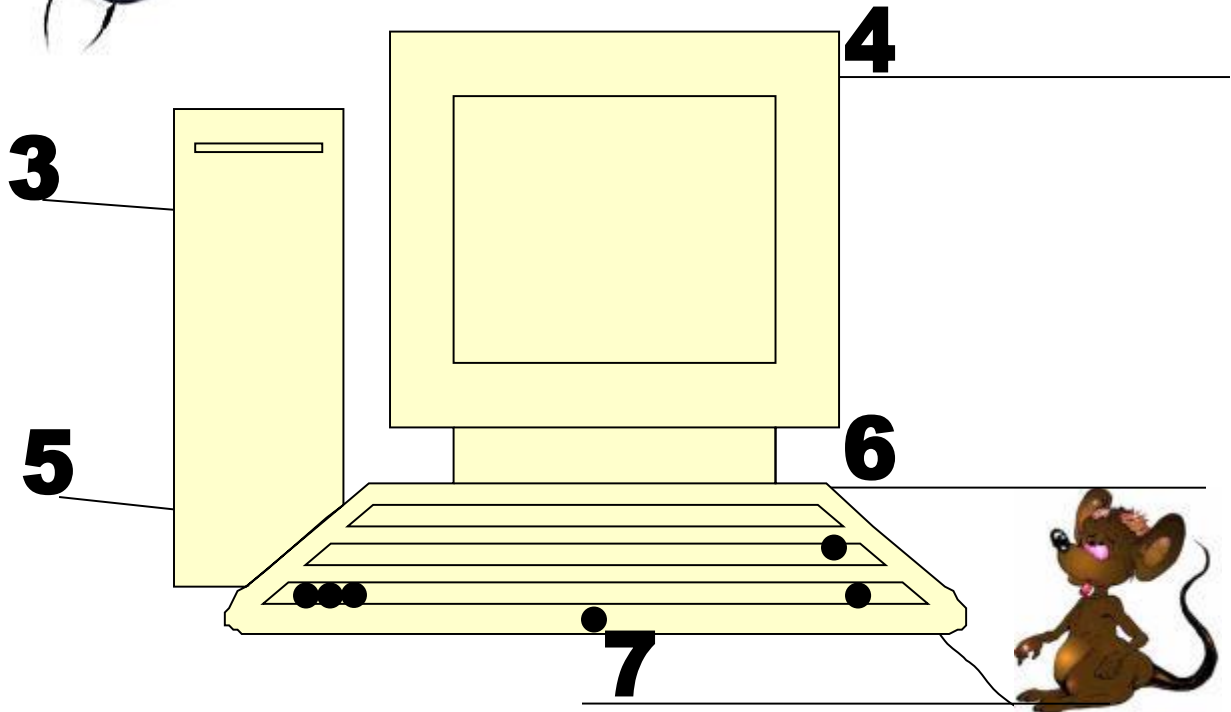
- For more assessment strategies, read '5 Authentic Assessment Tools' at lesson end.
- Early finishers: visit class internet start page for websites that tie into classwork.
- Take a field trip to school server room to see how data is collected and curated.
- Have a calendar of class events. You may update it or you may assign this task on a revolving basis to a student. Embed it into class website, wiki, or blog with quizzes, project due dates, and more. Add the upcoming keyboarding speed quiz (next week)

"A printer consists of three main parts: the case, the jammed paper tray and the blinking red light"

Assessment 1—Hardware Quiz

HARDWARE—PARTS OF THE COMPUTER

Name each part of computer Draw your own lines for the key names. Spelling must be correct to get credit



Word Bank:

Headphones
Keyboard
Monitor

Mouse
Peripheral
Tower/CPU

USB Port

Label the keys with a circle ● over them. Use this word

bank:

Ctrl
Alt
Backspace

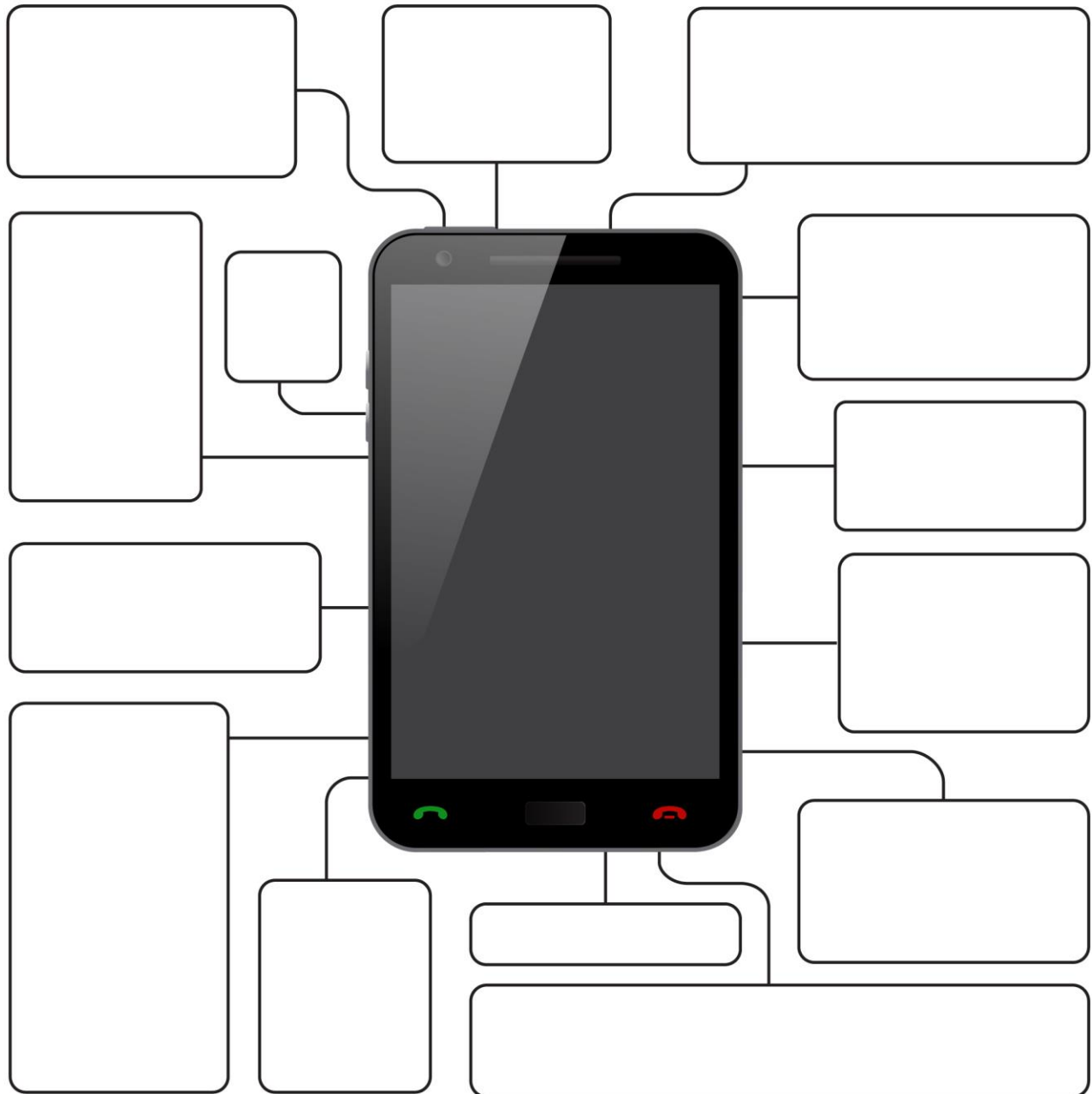
Spacebar
Flying Windows
F4

Shift
Enter

Assessment 2—Parts of Smartphone

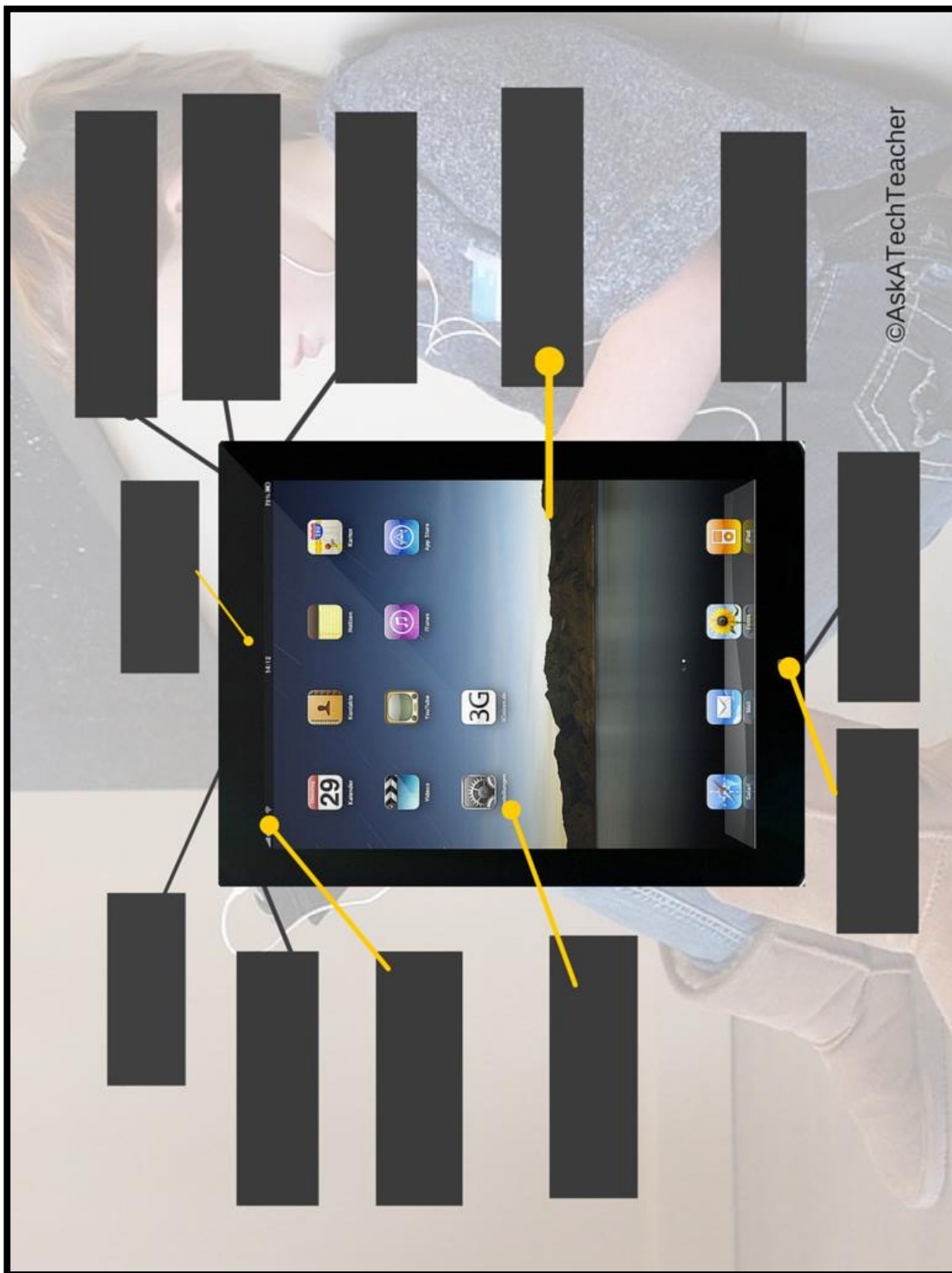
HARDWARE—PARTS OF THE SMARTPHONE

Adapt this to your needs



Assessment 3—iPad assessment

IPad Assessment



Assessment 4--Chromebook



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Article 1—21st Century Lesson Plan

21st Century Lesson Plan

Technology and the connected world put a fork in the old model of teaching—teacher in front of the class, sage on the stage, students madly taking notes, textbooks opened to a particular chapter being reviewed, homework as worksheets based on the text, tests regurgitating important facts. Did I miss anything? This model is outdated **not because it didn't work** (many statistics show students ranked higher on global testing years ago than they do now), **but**

because the environment changed. Our classrooms are more diverse. Students are digital natives, already in the habit of learning via technology. The 'college and career' students are preparing for is different so the education model must be different.



Preparing for this new environment requires radical changes in teacher lesson plans. Here are seventeen concepts you'll want to include in your preparation:

1. Students are graduating from high school unable to work in the jobs that are available. It's the teacher's responsibility to insure students **learn over-arching concepts** such as how to speak to a group, how to listen effectively, how to think critically, and how to solve problems. The vehicle for teaching these ideas is history, science, literature, but they aren't the goal.
2. To focus on the over-arching concepts above, make learning **platform-neutral**. For example, when teaching spreadsheets, make the software or online tools a vehicle for practicing critical thinking, data analysis, and evidence-based learning, not for learning one brand of software or a particular spreadsheet tool. Besides, what you use at school may not be what students have at home. You don't want students to conflate your lessons with 'something done at school'. You want them to apply them to their life.
3. **Morph the purpose from 'knowing' to 'understanding'**. Teach the process, not a skill. Students should understand why they select a particular tool, not just how to use it. Why use a slideshow instead of a word processing program? Or a spreadsheet instead of a slideshow? Expect students to be critical thinkers, not passive learners.
4. **Transfer of knowledge is critical**. What students learn in one class is applied to all classes (where relevant). For example, *word study* is no longer about memorizing vocabulary, but knowing how to decode unknown academic and domain-specific words using affixes, roots, and context.
5. **Collaboration and sharing** is part of what students learn. They help each other by reviewing and commenting on projects before submittal to the teacher (Google Apps makes that easy). The definition of 'project' itself has changed from 'shiny perfect student work' to *review-edit-rewrite-submit*. You grade them on all four steps, not just the last one. This makes a lot of sense—who gets it right the first time? I rewrote this article at least three times before submitting. Why expect differently from students? **Plus:** No longer do students submit a project that only the teacher sees (and then a few are posted on classroom bulletin boards). Now, it is shared with all classmates, so all benefit from student work.
6. **Self-help methods** are provided and you expect students to use them. This includes online dictionaries and thesauruses, how-to videos, and access to teacher assistance outside of class. These are available 24/7 for students, not just during classroom hours. This happens via online videos, taped class sessions, the class website, and downloadable materials so students don't worry that they 'left it in their desk'.

7. **Teachers are transparent** with parents. You let them know what's going on in the classroom, welcome their questions and visits, communicate often via email or blogs when it's convenient for them. That doesn't mean you're on duty around the clock. It means you differentiate for the needs of your parents. Your Admin understands that change by providing extended lunch hours, compensatory time off, or subs when you're fulfilling this responsibility.
8. **Failure is a learning tool.** Assessments aren't about 'getting everything right' but about making progress toward the goal of preparing for life
9. **Differentiation is the norm.** You allow different approaches as long as students achieve the Big Idea or answer the Essential Question. You aren't the only one to come up with these varied approaches—students know what works best for their learning and present it to you as an option.
10. The **textbook is a resource**, supplemented by a panoply of books, primary documents, online sites, experts, Skype chats, and anything else that supports the topic. This information doesn't always agree on a conclusion. Students use habits of mind like critical thinking, deep learning, and evidence-based decisions to decide on the right answers.
11. The **lesson plan changes from the first day to the last**—and that's OK. It is adapted to student needs, interests, and hurdles that arise as it unfolds, while staying true to its essential question and big idea.
12. **Assessment** might include a quiz or test, but it also judges the student's transfer of knowledge from other classes, their tenacity in digging into the topic, their participation in classroom discussions, and more.
13. **Vocabulary is integrated into lessons**, not a stand-alone topic. Students are expected to decode words in class materials that they don't understand by using quickly-accessed online vocabulary tools, or deriving meaning from affixes, roots, and context.
14. **Problem solving is integral** to learning. It's not a stressful event, rather viewed as a life skill. Who doesn't have problems every day that must be solved? Students are expected to attempt a solution using tools at their disposal (such as prior knowledge, classmates, and classroom resources) before asking for help.
15. **Digital citizenship is taught**, modeled and enforced in every lesson, every day, and every classroom. It's no longer something covered in the 'tech lab' because every class has as much potential for working online as offline. Every time the lesson plan calls for an online tool or research using a search engine or a YouTube video, teachers review/remind/teach how to visit the online neighborhood safely. It's frightening how students blithely follow weblinks to places most parents wouldn't allow their child to visit in their neighborhood. Just as students have learned how to survive in a physical community of strangers, they must learn to do the same in a digital neighborhood.
16. **Keyboarding skills are granular.** They aren't used only in the computer lab, but in every class students take. If students are using iPads, Chromebooks, laptops, or desktops for learning, they are using keyboarding—which means they must know how to do so efficiently, quickly, and stresslessly. Since keyboarding benefits all classes, all teachers—including the librarian—become partners in this effort. I go into classrooms and show students the broad strokes; the teacher reinforces it every time the student sits down at the computer.
17. **Play is the new teaching.** It is a well-accepted concept for preschoolers and has made a successful leap to the classroom, relabeled as 'gamification'. Use the power of games to draw students into learning and encourage them to build on their own interests. Popular games in the classroom include Minecraft, Mission US, Scratch, and others. If your school is new to this concept, clear it with admin first and be prepared to support your case.

Habits of Mind vs. Common Core vs. IB

Pedagogic experts have spent an enormous amount of time attempting to unravel the definition of 'educated'. It used to be the 3 R's—reading, writing, and 'rithmetic. The problem with that metric is that, in the fullness of time, those who excelled in the three areas weren't necessarily the ones who succeeded. As long ago as the early 1900's, Teddy Roosevelt warned:

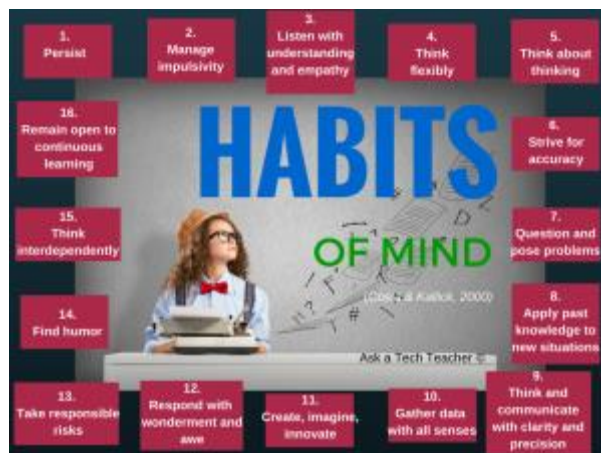
"C students rule the world."

It's the kids without their nose in a book that notice the world around them, make connections, and learn natively. They excel at activities that aren't the result of a GPA and an Ivy League college. Their motivation is often failure, and taking the wrong path again and again. As Thomas Edison said:

"I have not failed. I've just found 10,000 ways that won't work."

Microsoft founder, Bill Gates, and Albert Einstein are poster children for that approach. Both became change agents in their fields despite following a non-traditional path.

In the face of mounting evidence, education experts accepted a prescriptive fact: student success is not measured by milestones like 'took a foreign language in fifth grade' or 'passed Algebra in high school' but by how s/he thinks. One curated list of cerebral skills that has become an education buzz word is Arthur L. Costa and Bena Kallick's list of sixteen what they call Habits of Mind (Copyright ©2000):



- | | |
|---|---|
| 1. <i>Persisting</i> | 9. <i>Thinking and Communicating with Clarity and Precision</i> |
| 2. <i>Managing impulsivity</i> | 10. <i>Gathering Data through All Senses</i> |
| 3. <i>Listening with Understanding and Empathy</i> | 11. <i>Creating, Imagining, Innovating</i> |
| 4. <i>Thinking Flexibly</i> | 12. <i>Responding with Wonderment and Awe</i> |
| 5. <i>Thinking about Thinking</i> | 13. <i>Taking Responsible Risks</i> |
| 6. <i>Striving for Accuracy</i> | 14. <i>Finding Humor</i> |
| 7. <i>Questioning and Posing Problems</i> | 15. <i>Thinking Interdependently</i> |
| 8. <i>Applying Past Knowledge to New Situations</i> | 16. <i>Remaining Open to Continuous Learning</i> |

Together, these promote strategic reasoning, insightfulness, perseverance, creativity and craftsmanship.

But they're not new. They share the same goals with at least three other widely-used education systems: 1) Common Core (as close as America gets to national standards), 2) the International Baccalaureate (IB) program (a well-regarded international curriculum, much more popular outside the US than within), and 3) good ol' common sense.

For the rest of the article, visit Ask a Tech Teacher.

Article 3—Which class internet start page is best?

Which Class Internet Start Page is Best?

The internet is unavoidable in education. Students go there to research, access homework, check grades, and a whole lot more. As a teacher, you do your best to make it a friendly, intuitive, and safe place to visit, but it's challenging. Students arrive there by iPads, smartphones, links from classroom teachers, suggestions from friends—the routes are endless. The best way to keep the internet experience safe is to catch users right at the front door, on that first click.



How do you do that? By creating a **class internet start page**. Clicking the internet icon opens the World Wide Web to a default page. Never take your device's default because there's no guarantee it's G-rated enough for a typical classroom environment. Through the 'settings' function on your browser, enter the address of a page you've designed as a portal to all school internet activity, called an 'internet start page'. Sure, this takes some time to set-up and maintain, but it saves more than that in student frustration, lesson prep time, and the angst parents feel about their children entering the virtual world by themselves. They aren't. You're there, through this page. Parents can save the link to their home digital device and let students access any resources on it, with the confidence of knowing you've curated everything.

In searching for the perfect internet start page, I wanted one that:

- *quickly differentiates for different grades*
- *is intuitive for even the youngest to find their page*
- *is customizable across tabbed pages to satisfy changing needs*
- *presents a visual and playful interface to make students want to go there rather than find work-arounds (a favorite hobby of older students)*
- *includes an immediately visible calendar of events*
- *hosts videos of class events*
- *provides collaborative walls like Padlet*
- *includes other interactive widgets to excite students about technology*

Here are four I looked at:

Symboloo

A logo-based website curation tool with surprising flexibility in how links are collected and displayed. It's hugely popular with educators because collections are highly-visual and easy to access and use. Plus, Symboloo collections made by one teacher can be shared with the community, making link collections that much easier to curate.

The downside: Links are about all you can collect on Symboloo.

Only2Clicks

Great for youngers with their big bold buttons, colorful interface.

The downside: Too often, I have technical glitches as I try to set up collections. Maybe it's just me. Another downside: Like Symbaloo, Only2Clicks is focused mostly on link curation. If I want to add widgets, I have to select from their list. With kids, no matter how comprehensive the list, it misses the one I really really need.

Ustart

Offers a good collection of useful webtools for students including links, news, calendar, notes, even weather. It provides tabs for arranging themed collections (like classes) and is intuitive to set up and use. It even includes options for embeddable widgets like Padlet. This is the closest to what I needed of all three.

Overall: This is a good alternative to the one I selected.

Protopage

Protopage did everything on my list. It's flexible, customizable, intuitive, and quick to use with a scalable interface that can be adjusted to my needs (2-5 columns, resize boxes, drag widgets between tabs—that sort). I set up a separate tab for each grade (or you can set up tabs for subjects). The amount of tabs is limited only by space on the top toolbar. Resources included on each tab can be curated exactly as you need. Mine includes:

- *oft-used websites*
- *themed collections of websites*
- *a To Do list*
- *an interactive map*
- *a calculator*
- *a calendar of events*
- *edit-in-place sticky notes*
- *pictures of interest*
- *rss feeds of interest*
- *weather*
- *news*
- *widget for polling the class (Padlet)*

In addition, the Protopage folks are helpful.

Whenever I have a problem (which is rare), they fix it quickly.

5 Authentic Assessment Tools

Assessments have become a critical piece to education reform. To prepare students well for college and career means they must deeply learn the material and its application to their lives and future learning. That means assessing student knowledge authentically and accountably.

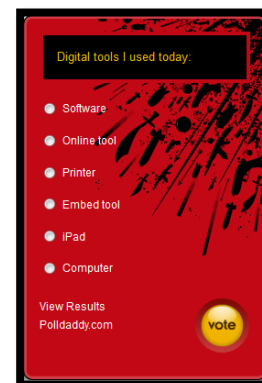
A well-formed assessment is not always measured by a grade. Sometimes it derives evidence of learning from anecdotal observation, watching students apply prior learning, working in groups, or participating in classroom discussions.

Thanks to technology, there are lots of fun and effective ways to assess learning in ways that transform your classroom. Here are seven ideas:

Polls

Polls are quick ways to assess student understanding of the goal of your daily teaching. It measures student learning as much as lesson effectiveness. Polls are fast—three-five minutes—are anonymously graded and shared immediately with students. It lets everyone know if the big idea of the lesson is understood and if the essential questions have been answered.

These can be graded, but are usually used formatively, to determine organic class knowledge before moving on to other topics.



Quick Quizzes

These are one-two question checks during class to measure understanding. They are either delivered at an assigned time during class (where everyone participates at once) or are questions students answer when they gain that knowledge from a lesson. Both approaches are a great way for a teacher to determine if she has explained a topic clearly enough that students have a useful understanding of it.



A nice by-product of letting students answer questions when they're ready is they get a topic much faster than you expect. That means you know when to move on to more challenging information.

Gameshows

Team students up with study materials and prep time. This may be fifteen minutes or an entire class—you decide. Encourage them to strategize how to work best as a team. For example, they may decide to assign experts on topics or all be generalists. They may also select a captain, depending upon what type of 'gameshow' is being played.

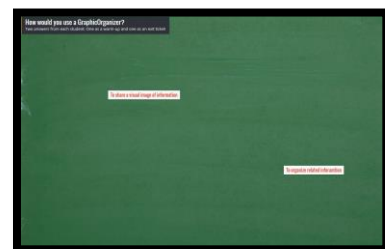


When prep time is completed, review gameshow rules. They will differ depending upon the gameshow you select. Then get started! They'll think it's a game as you see what they really know on a subject.

Virtual Wall

Ask students a question and have them add their answer to a virtual wall.

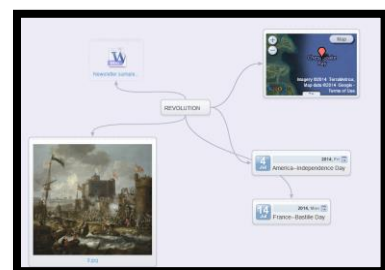
Virtual walls are also great ideas for reviewing a subject prior to a summative assessment. Have each student post an important idea they got from the unit with significant required details.



Brainstorm

Create a group mindmap to evaluate what the class knows on the subject. This is well-suited to informing you what the class as a whole understands from your teaching, but also creates an excellent study guide for students.

Assessments that work best are those that are fresh and new to students, requiring they think critically and creatively as they share knowledge. What do you use to organically assess student learning?



For more assessment ideas, Education.com has a good discussion on the importance of assessment.

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Lesson #4—Problem Solving

Vocabulary	Problem solving	Skills
<ul style="list-style-type: none"> Cerebral Inductive reasoning Irrelevant Life skill Relevant 	<ul style="list-style-type: none"> I tried to solve the problem, I asked for help and the person didn't know the answer Nothing works! 	<p>New Using a poll</p> <p>Scaffolded Problem solving Keyboarding</p>
<p>Academic Applications Any class, school and life, college and career</p>	<p>Materials Required keyboard program link, Problem Solving Board rubrics, Evidence Board badges</p>	<p>Standards CCSS Standards for Math. Practice NETS: 4a, 5c</p>

Essential Question

How do I solve a problem I've never seen before?

Big Idea

Problem solving is 'cerebrally-stimulating—and fun!

Teacher Preparation

- Know which tasks weren't completed last week.
- Verify all required links are available.
- Be prepared to integrate domain-specific tech vocabulary.
- Know if you need extra time to complete this lesson.
- Collect words students don't understand for Speak Like a Geek Board beginning later. Use a physical Vocabulary Wall (i.e., a bulletin board) or a virtual wall like Padlet. Students independently add words.
- Commit one after-school session per week to help students problem solve. You may use student helpers.

Assessment Strategies

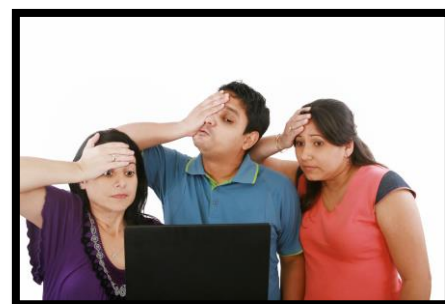
- Anecdotal
- Committed to solving problems
- Decisions followed class rules
- Left room as student found it
- Completed warm-up, exit ticket
- Joined class conversations
- Higher order thinking: analysis,

Steps

Time required: 45 minutes in one sitting or spread throughout week
Class warm-up: Set up hardware problems around the room. As students enter, they solve the one related to their station before starting class.

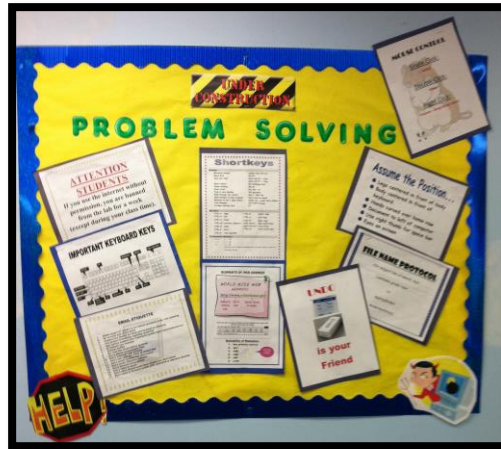


- Start Hardware Quiz (Assessment 1, 2 or 3). Give students 5-10 minutes. Remind them spelling counts. They can retake for full credit. This is called the **Mulligan Rule**, taken from golf (Appendix).
- When students finish, practice keyboarding using Popcorn Typer or Dance Mat Typing or another tool that **focuses on one row at a time** while the rest of the class finishes. Students used these last year so they should begin independently. Observe posture and use proper hand position with no flying hands.



- _____ Turn music on to establish a typing rhythm for students. Encourage them to type to the beat.
- _____ Review speed and accuracy quiz from last week. Any common problems—hunt-and-peck? Using a finger for spacebar? Flying elbows?
- _____ Any evidence of learning to post on Evidence Board?
- _____ Review Problem Solving corner of classroom—where you collect common tech problems students will be expected to solve wherever they use digital devices (see *Figure 33*).

Figure 33—Problem-solving board



- _____ Reinforce the importance of students solving their own problems. This includes hardware. For example, if sound doesn't work on the Chromebook, what should students do? What if it's an iPad? This will be circled back on throughout the year.
- _____ Sign up for Problem-solving Board—starts next week. Remember 3rd grade? This is the first of three Presentation Boards this year:

1. *Problem-solving board*
2. *Speak Like a Geek*
3. *Google Earth Board*

- _____ All three Board presentations are independent investigation, risk-taking for cautious students, and presentation skills practice. Here's how this Board works:

- *Post sign-up sheets by the class door where they're easily found. Include slips of paper (Figure 34) that students can track important information:*

Figure 34—Board info required

My name: _____
My question: _____
My presentation date: _____

- *Alternatively, have sign-ups online where they can be shared through:*
 - *Office 365*
 - *Padlet (using calendar template)*
 - *SignUp Genius*

- Each student signs up for a date and a problem to present.
- Student gets solution from family, friends, or even teacher as a last resort.
- Presentation date: Student tells classmates problem, how to solve it, takes questions.
- Entire presentation takes about three minutes.



_____ Assessment 9 is an example of the Board assessment to share with students:

Assessment 9—Problem-solving board rubric

PROBLEM SOLVING BOARD	
Grading Rubric	
Name:	_____
Class:	_____
Knew question	_____
Knew answer	_____
Asked audience for help if didn't know answer	_____
No umm's, stutters	_____
Look audience in eye	_____
No nervous movements (giggles, wiggles, etc.)	_____
No nervous noises (giggles,)	_____
Overall	_____

_____ Load a copy of Assessment 9 for each student onto your iPad. As students make their presentations, annotate your grading onto the form and save/share/publish.

_____ Students may sign up in groups, as long as there is one problem per group member.

_____ A little background: Problem-solving Board covers tech issues faced in class. As you move through the year, collate a list of problems for next year's Board. Start with the problems students posted as a class exit ticket after Lesson 1. Include problems students had with tech in homework, at home as they used tech for a school assignment, with classroom digital devices—from all parts of their life. Figure 35 is a sample list of common tech problems:

Figure 35—Common computer problems

Common Computer Problems	
What if the double-click doesn't work	What is protocol for email subject line
What if the monitor doesn't work	What does 'CC' mean in an email
What if the volume doesn't work	How do I exit a screen I'm stuck in
What if the computer doesn't work	How do I double space in Word
What if the mouse doesn't work	How do I add a footer in Word
What's the right-mouse button for?	How do I add a watermark in Word
What keyboard shortcut closes program	How do I make a macro in Word
How do I move between cells/boxes?	How do I add a border in Word
How do I figure out today's date?	How do I add a hyperlink in Word
What if the capital doesn't work	Keyboard shortcuts for B, I, U
What if my toolbar disappears	What if the program disappears
What if the document disappears	What if the program freezes
Keyboard shortcut for 'undo'	What is the protocol for saving a file

_____ Include shortcuts like *Figure 36*:

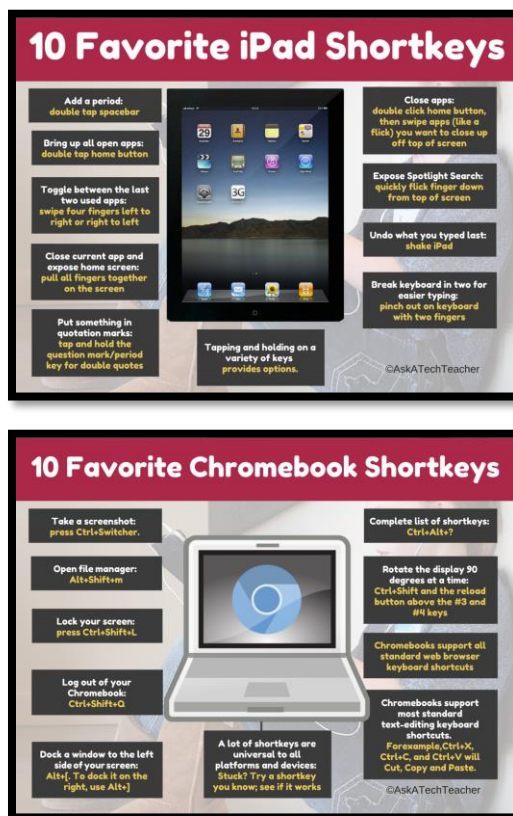
Figure 36—Common shortcuts

Windows	
Maximize window	Double click title bar
Quick Exit	Alt+F4
Toggle between two windows	Alt+tab
Show start menu	WK (Windows key)
Show desktop	WK+M
Peek at your desktop	WK+spacebar
Walk through the taskbar	WK+T, WK+Tab
Open new browser tab	Click scroll on mouse
Minimize all but 1 open window	Shake win. u want (aero-shake)
Task Manager	Ctrl+Shift+Escape
General	
CTRL+C: Copy	CTRL+L: Left align
CTRL+X: Cut	CTRL+R: Right align
CTRL+V: Paste	CTRL+B/U/I: Bold, Upline/italic
CTRL+Z: Undo	CTRL+or-: Zoom in/out www
CTRL+P: Print	CTRL+2 Double space
CTRL+K: Add hyperlink	Shift+Alt+D/T:Date/Time
CTRL+E: Center align	

_____ Why are shortcuts considered in the category ‘problem solving’?

_____ See *Figures 37a* and *37b* for examples of platform-specific shortcuts:

Figure 37a—iPad shortkeys; 37b—Chromebook shortkeys



- _____ If you can't read these posters, zoom in (if you have a digital copy of this book) or find most of them in the back of the book.
- _____ Board presentations provide an authentic method of practicing presentation skills discussed in Common Core under 'Speaking and Listening'.
- _____ While students are signing up, classmates can practice keyboarding or visit inquiry-based websites you've listed on the class internet start page (or wherever you collect links for class use).
- _____ Remind students that *Important Keys* quiz is next week.
- _____ Discuss Problem Solving, life skill that transcends a subject.
- _____ Review article at lesson end: **"How to Teach Students to Solve Problems"**.
- _____ Discuss what it means to be a 'problem solver'. Who do students go to when they need a problem solved? Do students believe that person gets it right more often than others? Would they believe most people are wrong half the time?
- _____ When students face a problem, try to solve it before asking for assistance. Use strategies in Figure 38 **How to Solve a Problem**.
- _____ Discuss 'Big Idea': Is problem solving 'cerebrally-stimulating? Is it fun? Why or why not? Discuss quotes in Figure 39.
- _____ Discuss student responsibility to make up missed classes. How is this 'problem solving'?
- _____ Discuss why you ask students to solve hardware problems independently.
- _____ Problem solving is aligned with logical thinking, critical thinking, reasoning, and habits of mind. Discuss characteristics of a 'problem solver' (from CC for Mathematical Practice):

- Use appropriate tools strategically.
- Attend to precision.
- Make sense of problems and persevere in solving them.



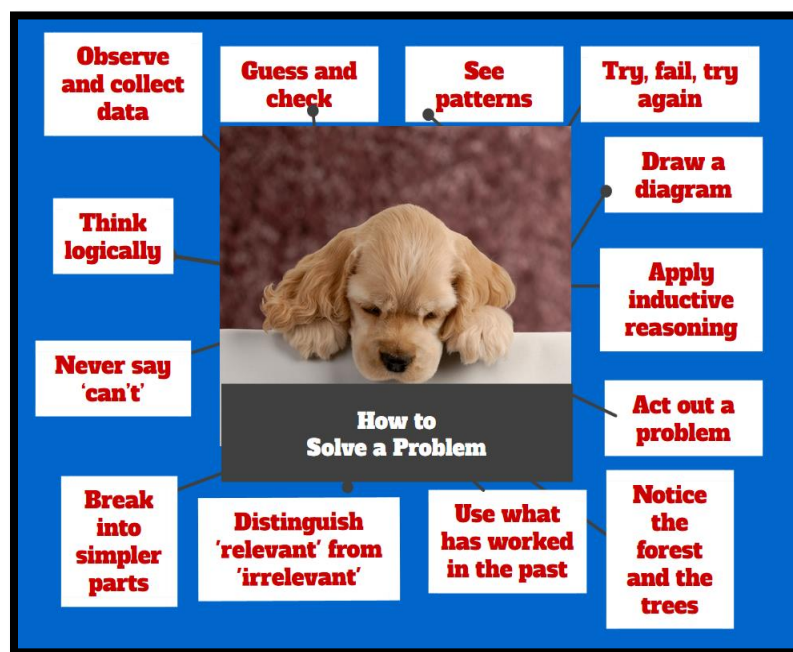
- *Value evidence.*
- *Comprehend as well as critique.*
- *Understand other perspectives.*
- *Demonstrate independence.*



_____ How do these compare-contrast to the strategies in *Figure 38, How to Solve a Problem.*

_____ Discuss these strategies with students. Asks them for personal examples of each. If they don't have any, prod them gently with your personal experiences. What is the overlap between solving math problems and solving life problems?

Figure 38—How to solve a problem



_____ Discuss common problems students will be expected to solve by the end of 4th grade by referring back to those included in the Problem-solving Board.

_____ Problems at the beginning of each weekly lesson relate to the activities they will complete during the week. They may or may not be different/the same as those on the Problem-solving Board. By the end of each lesson, expect students to solve these independent of assistance.

_____ For your own problem-solving skills: Read the article at the end of this lesson, ***“What Happens When Technology Fails”?***



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Figure 39—Problem-solving quotes

Great Quotes About Problem Solving

<p>"In times like these it is good to remember that there have always been times like these." — Paul Harvey <i>Broadcaster</i></p> <p>"Never try to solve all the problems at once — make them line up for you one-by-one." — Richard Sloma</p> <p>"Some problems are so complex that you have to be highly intelligent and well-informed just to be undecided about them." — Laurence J. Peter</p> <p>"Life is a crisis - so what!" — Malcolm Bradbury</p> <p>"You don't drown by falling in the water; you drown by staying there." — Edwin Louis Cole</p> <p>"The significant problems we face cannot be solved at the same level of thinking we were at when we created them." — Albert Einstein</p> <p>"It is not stress that kills us. It is effective adaptation to stress that allows us to live." — George Vaillant</p>	<p>"The most serious mistakes are not being made as a result of wrong answers. The truly dangerous thing is asking the wrong questions." — Peter Drucker <i>Men, Ideas & Politics</i></p> <p>"The problem is not that there are problems. The problem is expecting otherwise and thinking that having problems is a problem." — Theodore Rubin</p> <p>It's not that I'm so <u>smart</u>, it's just that I stay with problems longer. — Albert Einstein</p> <p>No problem can stand the assault of sustained thinking. — Voltaire</p> <p>The problem is not that there are problems. The problem is expecting otherwise and thinking that having problems is a problem. — Theodore Rubin</p> <p>Problems are only opportunities with thorns on them. — Hugh Miller</p>
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_____Remember: Bring science book next week.

Class exit ticket: **Take a poll that asks students to choose problem-solving strategies they are most likely to use in the future.**

Differentiation

- If homework is due, make sure it's added to class calendar.
- Add next week's Important Keys quiz (template in Appendix) to class calendar.
- Unplug hardware so students must fix the problem before they start the day's lesson.
- Early finishers: visit class internet start page for websites that tie into classwork.

How to Teach Students to Solve Problems

Of all the skills students learn in school, **problem solving** arguably is the most valuable and the hardest to learn. It's fraught with uncertainty—what if the student looks stupid as he tries? What if everyone's watching and he can't do it— isn't it better not to try? What if it works, but not the way Everyone wants it to? When you're a student, it's understandable when they decide to let someone tell them what to do.

But this isn't the type of learner we want to build. We want risk-takers, those willing to be the load-bearing pillar of the class. And truthfully, by a certain age, kids want to make up their own mind. Our job as teachers is to provide the skills necessary for them to make wise, effective decisions.

It's not a stand-alone subject. It starts with a habit of inquiry in all classes—math, LA, history, science, any of them. I constantly ask students questions, get them to think and evaluate, provide evidence that supports process as well as product. Whether they're writing, reading, or creating an art project, I want them thinking what they're doing and why.

Common Core puts problem solving front and center. It comes up in ELA ("*Students will be challenged and asked questions that push them to refer back to what they've read. This stresses critical-thinking, problem-solving, and analytical skills that are required for success in college, career, and life.*"), but is inescapable in Math. In fact, students cannot fully meet the Math Standards without understanding how to effectively approach the unknown. Consider the Standards for Mathematical Practice that overlay all grade levels K-12:

- *Make sense of problems and persevere in solving them*
- *Reason abstractly and quantitatively*
- *Construct viable arguments and critique the reasoning of others*
- *Model*
- *Use appropriate tools strategically*
- *Attend to precision*
- *Look for and make use of structure*
- *Look for and express regularity in repeated reasoning*

Do these sound like great strategies for everything, not just math? How about deciding what classes to take? Or whether to make a soccer or basketball game on the weekend? Or which college to attend? Using these eight tools strategically, with precision, and tenaciously is a great first step.

The question becomes: How do students **learn to use them**? Certainly, as they accomplish their grade-level math curriculum, you as teacher remind them they aren't doing a multiplication problem (or an Algebra one); rather they're reasoning abstractly or using appropriate tools strategically, or expressing regularity in repeated reasoning. But for deep learning, hands-on authentic experience is required. Let's say, for example, the class is investigating the purchase of an MP3 player. Should they purchase an iPod, a smartphone, a dedicated use MP3 player, or a different option? How do students arrive at a decision—solve that problem? Ask students to work through the steps below as they address a decision. Ask them to note where they accomplish one or more of the Standards for Mathematical Practice above:



1. What do you want in an MP3 player? Should it play music, show videos, pictures, communicate with others, be a phone also? Make that list so you know how to evaluate information as you collect it (**compare/contrast**).
2. What do you know about the topic (**evidence**)? Have you seen some you liked or didn't like? What have you heard about those on your list? You are a good resource to yourself. Don't discount that. You'll be surprised how much you know on a variety of topics. This step is important to college and career. Future employers and schools want you to think, to use your intelligence and your knowledge to evaluate and solve problems.
3. What advice do knowledgeable friends have (**perspective taking, collaboration**)? You want the input of MP3 users. Your friends will think whatever they own is the best, because they're vested in that choice, but listen to their evidence and the conclusions they draw based on that. This is important to a team-oriented environment. Listen to all sides, even if you don't agree.
4. **Dig deeper (close reading)**. Check other resources (**uncover knowledge**). This includes:
 - *people who don't like the product*
 - *online sources. Yep, you might as well get used to online research if you aren't yet. Statistics show more people get their news from blogs than traditional media (newspapers, TV) and you know where blogs are.*
 - *your parents who will bring up topics friends didn't, like cost, longevity, reliability*
5. **Evaluate your resources (integration of knowledge)**. How much money do you have? Eliminate the choices that don't fit your constraints (money, time, use, etc.) If there are several choices that seem to work, this will help you make the decision. You might have to save money or get a job so you can afford the one you've chosen. Or, you might decide to settle for a cheaper version. Just make sure you are aware of how you made the choice and are satisfied with it.
6. What are the **risks involved** in making the decision (**reflection**)? Maybe buying an MP3 player means you can't do something else you wanted. Are you comfortable with that choice?
7. **Make a decision (transfer learning)**. That's right. Make a decision and live with it knowing you've considered all available information and evaluated it logically and objectively.



Optionally, you might have students evaluate problem solving in their favorite game, say, Minecraft. All it requires is that they think about what they're doing as they play:

- *What is the goal of Minecraft? How is it best achieved*
- *What does the student know about playing the game that can be used in achieving the goal?*
- *Does working with friends and gaining feedback make life easier in Minecraft?*
- *How does experience in the game affect progress?*
- *And so on...*

This is how students become the problem solvers required of their Future. When the day comes that how they solve a problem affects the direction their life takes (college, career, marriage, children, a tattoo), they'll be happy to have strategies that make it easier.

What Happens When Technology Fails?

Has this happened to you? You spend hours rewriting an old lesson plan, incorporating rich, adventurous tools available on the internet. You test it the evening before, several times, just to be sure. It's a fun lesson with lots of activities and meandering paths students undoubtedly will adore. And it's student-centered, self-paced. Technology enables it to differentiate authentically for the diverse group of learners that walk across your threshold daily.



Everyone who previewed it is wowed. You are ready.

Until the day of, the technology that is its foundation fails. Hours of preparation wasted because no one could get far enough to learn a d*** thing. You blame yourself—why didn't you stick with what you'd always done? Now, everyone is disappointed.

Implosions like this happen every day in tech-centric classrooms. Sometimes it's because the network can't handle the increased traffic, or students can't log in due to a glitch, or the website server goes upside down—nothing a teacher can do about that. Really, the reason doesn't matter. All that matters is an effort to use technology to add rigor and excitement to an old and tired lesson plan fails, leaving the teacher more technophobic than ever. With the pride of place iPads and Chromebooks and 1:1 programs are getting in curriculum decisions, tech problems will be common, varied, frustrating, show-stopping, and nauseating. They will be wide-ranging, everything from a student's device not having required software to the classroom systems not hooking up to the school's network or WiFi. Students will look to their teacher for solutions and the teacher will become best friends with a colleague in thick glasses and the pasty tan of someone rarely away from their computer, whose conversation includes domain-specific words like *gig*, *server*, and *modem* rather than the score of the weekend football games.

To many, 'tech problem' equates to the mind-numbing, bone-chilling feeling of 'I have no idea what to do'.

In a word: Failure. Not a feeling veteran teachers like. As a culture, we eulogize those who go bravely through gates of fire, can think under pressure, are never beaten down, and who can connect the dots even when they're bouncing all over the landscape:

No problem can stand the assault of sustained thinking. (—Voltaire)

Success consists of going from failure to failure without loss of enthusiasm. (—Winston Churchill)

Far better is it to dare mighty things, to win glorious triumphs, even though checkered by failure... than to rank with those poor spirits who neither enjoy nor suffer much, because they live in a gray twilight that knows not victory nor defeat. (—Theodore Roosevelt)

I've learned you can tell a lot about a teacher by the way s/he handles three things: a rainy day, parents who drop in unexpectedly, and a lesson plan that explodes.

It doesn't stop with the teacher, either. What about when we ask our students to use one of the gazillion available internet tools to communicate-collaborate-share-publish—those exciting Common Core words that are code for 'technology-rich'. Now, when students don't turn in homework, their entirely believable excuse is 'the computer ate my homework' because most everyone has had it happen to them. When I attempt to unravel what happened with questions like: *Where did you save it?* I get the deer-in-the-headlights-look that says: *How am I supposed to know the answer to THAT question?*

Having said all this, I am willing to stipulate: Tech failure is inevitable. There are too many moving parts. Too many circuits and algorithms and scripts and wires shoved under a desk to expect it to go right all the time or even most of the time. Exorcise any thought of *perfection* in the same sentence as *tech* from your syntax. But if fear of failure is a reason NOT to use technology, no one would ever cross that digital threshold. So let's ignore the absolute inevitability of failure, and address the question: *What do I do when it happens?*

I have three ideas:

Prepare for it

I'm not fatalistic. I'm realistic. Technology—be it phones, scanners, your house's water meter, your child's online report cards, the Smart TV you just purchased—fails often and will continue to do so into the foreseeable future. In that way, it is very human. Perfection is well outside of its programming.

Knowing that, bone up on the **Law of Technology Failures**: *The reliability of technology is directly proportional to your needs.* To decode that: Tech fails most often where it is needed most. Prevent failures by having back-ups—not just of data, but devices, hardware, systems. For example, if you're trying to get to Disneyland from Arkansas with three friends, each with Google Maps (or my new favorite, Waze) on their phones, said phones will never run out of battery power. Ever. Redundancy. Install three browsers on your computer so if Firefox won't work, Chrome will. Build in time for system reboots (because that solves at least half the tech problems that plague a classroom). Pre-test relevant systems to become familiar with glitches. Sure, tech will still fail, but not in areas in which you are prepared.

Having said that, keep in mind the **corollary to the Law of Technology Failures**: *The better technology works, the safer you'll feel with it, the less redundancy you will activate.*

Be a problem solver

Dylan Thomas said this as well as anyone in history:

Do not go gentle into that good night. Rage rage against the dying of the light.

Embrace problems. Own them. Here are three basics that will get you through many a stressful tech day:

1. **Know the basics.** My job requires tech every day so I've solved a lot of problems. I've found there are only about twenty that account for 80% of the downtime. The top two: If the digital device won't start, check to see if it's plugged in. If power isn't the problem, reboot. Those two

solve about half of the tech traumas I face in the classroom. There are eighteen more I'm equally prepared for. Track yours by writing each down as it happens. Soon, you'll find it's the same ones over and over. The tech version of Groundhog Day.

2. **Google the problem.**
3. **Be a risk-taker.** Sure we mouth that to our students and Common Core expects it in college- and career-ready students, but does that mean teachers too? Well, yes. Make that who you are. Grin in the face of problems. Model solutions. As Edwin Cole famously said, *"You don't drown by falling in the water; you drown by staying there."* Don't drown. Don't stay there. Stand up and you may discover it's only an inch deep.

Build in alternatives

Many times this year during the nation's premiere tech-in-ed conference—ISTE—the internet didn't work. Lots of reasons why—all that mattered was that presenters couldn't access their presentations. Most handled this with aplomb either with screenshots or animated descriptions of what might have been. No one quit and walked off the stage.

Let's face it: If you're over the age of ten, you know life runs off of Plan B.

What else can you do?

- **Don't expect technology to remain unchanged**—Links die, by some counts, about 4% a year. The website you used last week can be 404—not working today (for example: Nimble Fingers for keyboarding). The favorite software you've used for years could be incompatible with system updates (i.e., Oregon Trail). Your new digital device won't run a handful of the programs you use regularly. Prior to presenting, go through the tool you're going to use or the process you're teaching—see if it actually works as it used to.
- **Use it as a teachable moment**—show students how you handle stress, problems, frustration. It's a learning experience. It's an opportunity to stretch that magnificent big brain and devise a solution. It's a chance to ask students, *"What would you do?"*
- **Don't apologize**—save apologies for something you caused. Tech failures are the cause of the Universe.

Tech is the third leg to the 'inevitable experiences' stool, along with death and taxes. Personally, I don't know anyone who hasn't had a major tech failure. You know it's coming. That's out of your control. The only thing you can control is how you react to it.

Intentionally deleted

Lesson #15—Holiday Flier, Cover Page

Vocabulary	Problem solving	Skills
<ul style="list-style-type: none"> Backup Border Cover page Ctrl+P Double-space DTP Font Layout Placeholder QWERTY Schemes Sidebar Template Text box Text box Title page Watermark 	<ul style="list-style-type: none"> Can't find 'save' (use Ctrl+S) Clicked file-print—nothing (Is there a clue on screen?) How do I back up my work? How do I fold this card? (top down, side-to-side) I can't find my file folder (are you logged in as correct user?) I can't type on page (did you add a text box?) Not prepared for presentation (take a deep breath. You know more than you think) Printer didn't work (where'd you print?) What's 'A' mean at end of text box (text overflowed text box) 	<p>New</p> <p>Cover page Title page Compare-contrast productivity tools</p> <p>Scaffolded</p> <p>One-page greeting Compare-contrast skills Tables Online research Greeting cards Keyboarding skills Problem solving</p>
<p>Academic Applications</p> <p>Reports, greeting cards, community service</p>	<p>Materials Required</p> <p>DTP, Speak Like a Geek rubric, keyboarding program, word processing tool, Evidence Board badges, workbooks (if using)</p>	<p>Standards</p> <p>CCSS.ELA-Literacy.W.4.4 NETS: 4a-b, 6a-d</p>

Essential Question

How do I use technology to create a quick one-page document?

Big Idea

Tech can create sophisticated materials for home and school

Teacher Preparation

- Know what event students can make fliers for.
- Have grading rubrics for Speak Like a Geek.
- Talk with grade-level team so you tie into conversations.
- Ensure that all required links are on student computers.
- Know which tasks weren't completed last week.
- Integrate domain-specific tech vocabulary.
- Know whether you need extra time to complete lesson.

Assessment Strategies

- Completed project
- Followed CCSS writing guidelines
- Properly used images
- Worked independently
- Used good keyboarding habits
- Completed warm-up, exit ticket
- Joined classroom conversations
- [tried to] solve own problems
- Decisions followed class rules
- Left room as s/he found it

Steps

Time required: *45 minutes in one sitting or spread throughout the week with a block of 30 minutes for project*

Class warm-up: Keyboarding on school typing tool

_____ Speak like a Geek board starts today (or right after holidays). Students present information, take audience questions. Grade is based on knowledge and confidence. If necessary, review

_____ Remember: Homework due end of each month (practicing all keys by now).

_____ Any evidence of learning to post on Evidence Board?



_____ Students start desktop publishing unit. What is 'desktop publishing'? What's different between the way DTP shares information and word processors? Prompt students to consider the importance of color, layout, and design elements in creating a project. Show students *Figure 74* and ask them as a group to fill in the blank cells.

Figure 74—Compare/contrast tools—A

Element	Presentation	Word processing	Spreadsheets	DTP
Purpose	Share a presentation	Share words		
Basics		Text, design second to content		
Sentences		Full sentences, proper conventions		
Content	Slides are like a bullet list			
Use		As complete resource		
Presentation		Speaker reads from document		
What else				

_____ When they're done, it'll look something like *Figure 75*:

Figure 75—Compare/contrast B

Element	Presentation	Word processing	Spread--sheets	DTP
Purpose	Share a presentation	Share words	Turn numbers into information	Share information using a variety of media
Basics	Graphics-based Design is important to content Layout communicates Few words, lots of images	Text-based Design is secondary to content Layout may detract from words Primarily words communicate	Number-based Focus on tables, graphs Little text; lots of statistics and data Almost no words	Mix of media—equal emphasis on text, images, layout, color
Sentences	Bulleted, phrases	Full sentences with proper conventions	None	Full sentences, bullets,
Content	Slides cover basics, to remind presenter what to say	Thorough discussion of a topic. Meant to be complete document	Statistics, data, charts, graphs	To draw an audience in;
Use	As a back-up to presentation	As complete resource	To support other presentation methods	Good way to group information for easy consumption
Presentation	Speaker presents with their back to the slideshow	Speaker reads from document	Speakers uses it in a presentation or 1:1	Speaker passes out as a handout or take-way
What else				

_____ Students have made fliers, cards, magazine covers with DTP if you used this curriculum in K-5:

Figure 76a—Fliers from 1st grade; 76b—2nd grade; 76c—3rd grade



_____ Select one of the following three projects for your student group:

- *Fliers*
- *Cover pages*
- *Greeting cards*

Project #1: Fliers

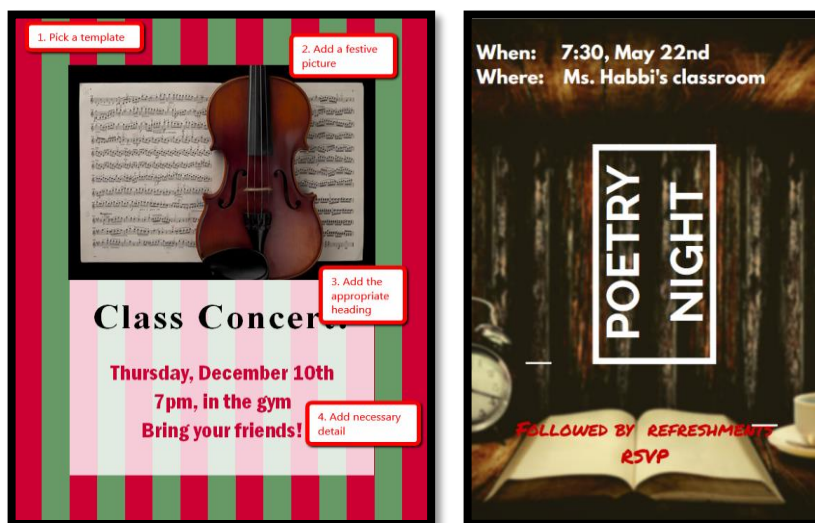
_____ Characteristics of a desktop publishing flier include:

- *clear, coherent, concise writing*
- *text, images, design engages the audience*

_____ Discuss purpose of flier. Is there a holiday concert coming up? A play? A classroom event they'd like fliers to post around school? Pick one.

_____ Review desktop publishing program used at your school (*Figure 77a* is from Publisher; *Figure 77b* is from Canva). *Figure 77a* includes steps to create a flier:

Figure 77a—DTP flier projects in Publisher; 77b—Canva



- *select template*
- *select themed picture*

- *add a title (i.e., Class Concert)*
- *add details*

_____ If students get pictures from internet, discuss virtual neighborhood. How can they stay safe?

_____ Save to digital portfolio; print/publish/share, as appropriate to your student group.

_____ When finished, students work on the timeline for next week's trifold (called *My Life Events*).

- *Create a 3x10 table in a word processing program.*
- *Organize as 'Year', 'World Event', and 'My Event'.*
 - *'Year' is the nine years of the student's life, sequentially.*
 - *'World Event' is something big that happened around the world during that year of the student's life. The goal: Provide perspective on what the student experiences compared to what the world does.*
 - *'My Event' is a big event in the student's life. This isn't 'I had a birthday', rather 'I got a baby brother'.*
- *Fill in all required information. Provide resources for researching these events, such as Info Please's Year by Year.*
- *Figure 78 is an example:*

Figure 78—My Life Events timeline table

Year	World Event	My Event
2015	ISIS is considered by some the world's greatest threat	I changed schools
2014	Russia took Crimea from the Ukraine	My essay won a prize
2013	Beijing air pollution levels declared hazardous to human health	I received an award
2012	Kateri Tekakwitha became first native American saint	I won my first violin competition
2011	Osama bin Laden died	My brother joined the Army
2010	The Winter Olympics took place	We got a new dog
2009	Johanna Sigurdardottir took office as Iceland's first female prime minister.	My brother started college!
2008	Bobby Fischer died	My sister graduated from USNA
2007	Barry Bonds passed Hank Aaron as all-time American home run hitter	My dog got cancer

_____ Students use their knowledge of creating tables in this project. Include:

- *one event per year in your life (column three—My Event)*
- *one event per year from around the world (column two—World Event)*

_____ Students use their online research knowledge to select web-based information for their table.

Project #2: Cover Pages

_____ Today, we create cover pages for a class project. What is the purpose of a cover page?
Encourage students to come up with these:

- *Draw reader in.*
- *Provide information for categorizing work.*
- *Provide contact information.*

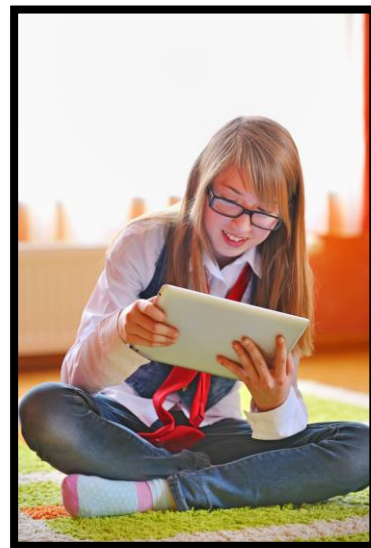
_____ We'll use a word processing program (*Figure 79a*), but you can also use Publisher, Google Apps (*Figure 79b*), or an online free tool like Canva (*Figure 79c*).

_____ Open program used in your school. Type in title page info (any font, size 36, Bold). Center vertically/ horizontally on page, double-spaced.

_____ Add picture (i.e., mission) as watermark; add same picture at bottom as decoration; add border—no art borders. Why not?

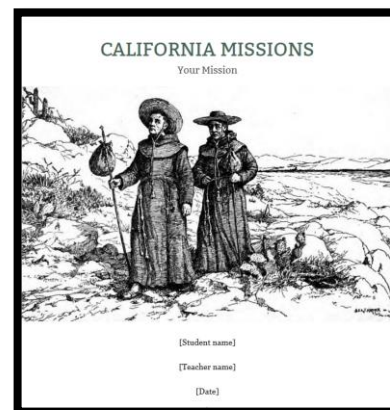
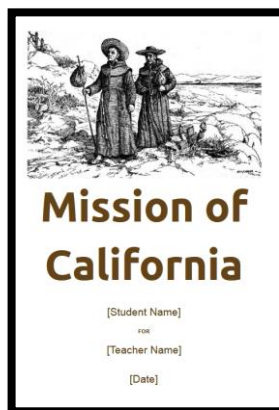
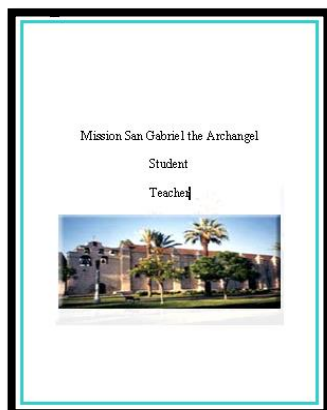
_____ Discuss why students can use internet images for this school project. Refer to:

- *copyrights*
- *fair use*
- *public domain*
- *scholarly research*
- *digital rights and responsibilities*



_____ Students are familiar with cover page skills; expect them to act independently.

Figure 79a—Cover in Word; 79b—Google Apps; 79c—Canva



_____ Before printing, check 'print preview' for layout.

Project #3: Greeting Cards

_____ Remember designing cards in the past (if you've been using the SL tech curriculum):

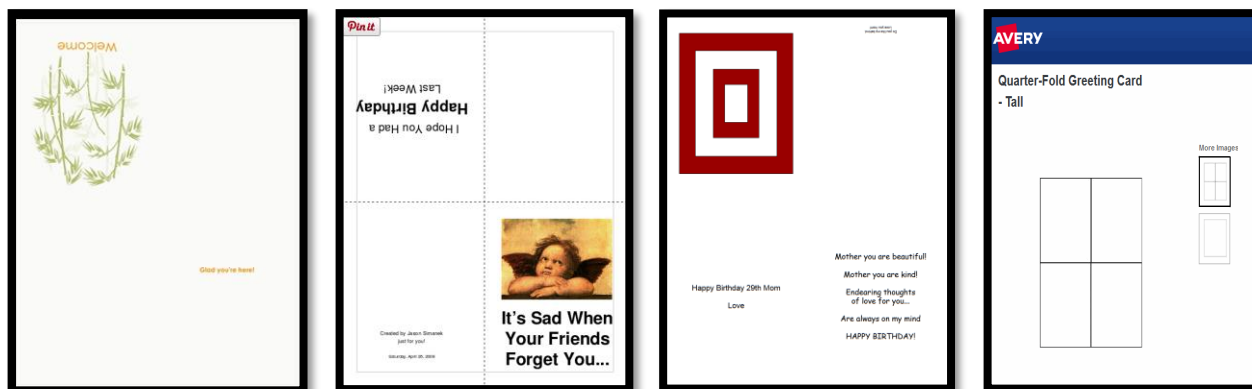
Figure 80a—Greeting cards in 1st grade; 80b—2nd grade; 80c—3rd grade



Figure 80a is a one-page card in a drawing program created in 1st grade; Figure 80b is a one-page card in a desktop publishing program created in 2nd grade; Figure 80c is a folding card (like you might buy in a store) created in either a software or online tool in 3rd grade.

Use any desktop publishing program you have available in your school—or even an online tool. Figure 81a uses Word; Figure 81b uses Open Office; Figure 81c uses Google Apps; Figure 81d uses an online tool:

Figure 81a-d—Greeting card templates



Open the desktop publishing program. Find the template for ‘greeting cards’. How you do this will vary by digital tool. Preview the program first so you know how to accomplish this.

Discuss ‘templates’ with students, what they are, and their purpose for not only creating greeting cards but lots of other documents.

Since fourth graders have used this tool often in the past, let them work independently, adding images, editing text, and tweaking the layout. Help if they get stuck, but give them time to problem solve before you step in.

Those new to cards: Minimize this. Just edit text and add a picture.

Greeting cards are excellent projects to practice writing conventions being reviewed in student classes. Consider forming the card’s message to include skills being discussed in class, i.e.:

- Use precise language and domain-specific vocabulary to inform about or explain the topic (CCSS.ELA-Literacy.W.4.2.d).
- Use relative pronouns (CCSS.ELA-Literacy.L.4.1.a).

- *Spell grade-appropriate words correctly, consulting references as needed (CCSS.ELA-Literacy.L.4.2.d).*

_____ Save (Ctrl+S) to your digital portfolio. Print. If you need help folding, see *Figure 82*.

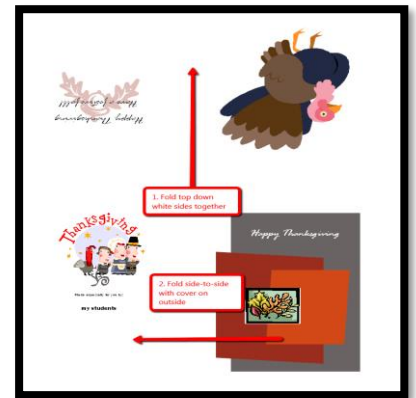
_____ Save (Ctrl+S).

_____ Throughout class, check for understanding.

_____ When students finish, they can work on their My Life Events table in preparation for next week's project.

Class exit ticket: ***Students show you how far they are on My Life Events table.***

Figure 3--How to fold card



Differentiation

- Add My Life Events table due date to class calendar.
- Add homework due date to class calendar
- Use cover page as a title page, with adjustments.
- Students go to Ask a Tech Teacher's holiday themed websites (on the resource pages).
- Anytime you can inject tech into class, do it! Students love seeing gadgets in action. For example—take a video of students working and upload to class website/blog/wiki.

**Intentionally
deleted**

CLASSROOM POSTERS

- 1. Backspace and Delete**
- 2. Digital Neighborhood**
- 3. Email Etiquette**
- 4. Fair Use**
- 5. Here's What We've Done**
- 6. How I Learn**
- 7. How to Save—4 Ways**
- 8. I Can't Find My File**
- 9. Internet Research**
- 10. K-5 Keyboarding Stages**
- 11. Keyboarding Hints**
- 12. Landscape**
- 13. Netiquette Rules**
- 14. Portrait**
- 15. Save or Save-as**
- 16. Save Early Save Often**
- 17. Select-Do**
- 18. Troubleshooting Computer Problems**
- 19. What's a Mulligan**
- 20. Why Learn to Keyboard?**



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Which book	Price (print/digital/Combo)
K-8 th Tech Textbook (each)	\$25.99 + p&h
K-8 Combo (all 9 textbooks)	\$248-450
K-8 Student workbooks (per grade)	\$199/640/1900 (room/school/district)
35 K-6 Inquiry-based Projects	25.99 + p&h
55 Tech Projects—Vol I,II, Combo	\$18.99 /\$35.38—digital only (free shipping)
K-8 Keyboard Curriculum—3 options	\$20 and up + p&h
K-8 Digital Citizenship Curriculum	\$19.95/25.99/50.38 + p&h
CCSS—Math, Language, Reading, Writing	\$26.99 ea/80 for 4—digital only (free s&h)
K-5 Common Core Projects	\$29.95/23.99/48.55 + p&h
Themed webinars	\$8-30
Summer PD classes (online—for groups)	\$795
Summer tech camp for kids	\$179 + p&h
College credit classes (online)	\$497 and up
Digital Citizenship certificate class	Starts at \$29.99
Classroom tech poster bundles	Start at \$9.99
PBL lessons--singles	\$.99 and up
Bundles of lesson plans	\$4.99 and up (digital only)
Tech Ed Scope and Sequence	\$9.99 and up (digital only)
New Teacher Survival Kit	\$285-620+ p&h
Homeschool Tech Survival Kit	\$99 + p&h
Mentoring (30 min. at a time)	\$50/session
169 Tech Tips From Classroom	\$9.99 (digital only)
Consulting/seminars/webinars	Call or email for prices

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