



Teacher Manual

.....

8th Grade Technology

.....

A COMPREHENSIVE CURRICULUM

SIXTH EDITION

by Ask a Tech Teacher

EIGHTH GRADE TECHNOLOGY

A COMPREHENSIVE CURRICULUM

SIXTH EDITION

Part Nine of the SL Technology Curriculum

Sixth Edition 2021

Visit the companion website at <http://askatechteacher.com> for more resources to teach technology

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Introduction

The educational paradigm has changed—again. Technology has become granular to learning, blended into educational standards from Kindergarten on, like these that expect students to:

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

But how is this taught?

With the nine-volume **Structured Learning Technology Curriculum**. Aligned with Common Core 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 through project-based work. The purpose is not to teach step-by-step tech skills (like adding borders, formatting a document, and creating a blog). There are many fine books for that. What this curriculum does is guide you in providing the **right skills 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 digital risks and responsibilities. The Structured Learning curriculum makes sure students get what they need at the right age with proper scaffolding. The end result is a phenomenal amount of learning in a short period of time.

For skills you don't know, visit our Help blog, AskATechTeacher.com.

● ● ●
“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

There's always someone there who can help.

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 includes topics to be woven into 'most' 21st-century lesson plans:

- *keyboarding—more than typing*
- *digital citizenship—critical with the influx of Chromebooks and iPads*
- *problem-solving—to encourage independence, critical thinking*
- *vocabulary—decode unknown words in any subject quickly*

For more on this, see **“4 Things Every Teacher Must Teach and How”** at the end of Lesson 1.

Besides these four topics, here's a quick overview of what is included in the curriculum:

- *curated list of assessments and images*
- *articles that address tech pedagogy*
- *Certificate of Completion for students*
- *curriculum map of skills taught*
- *monthly homework (3rd-8th only)*
- *posters to visually represent topics*
- *Scope and Sequence of skills taught*
- *step-by-step weekly lessons*

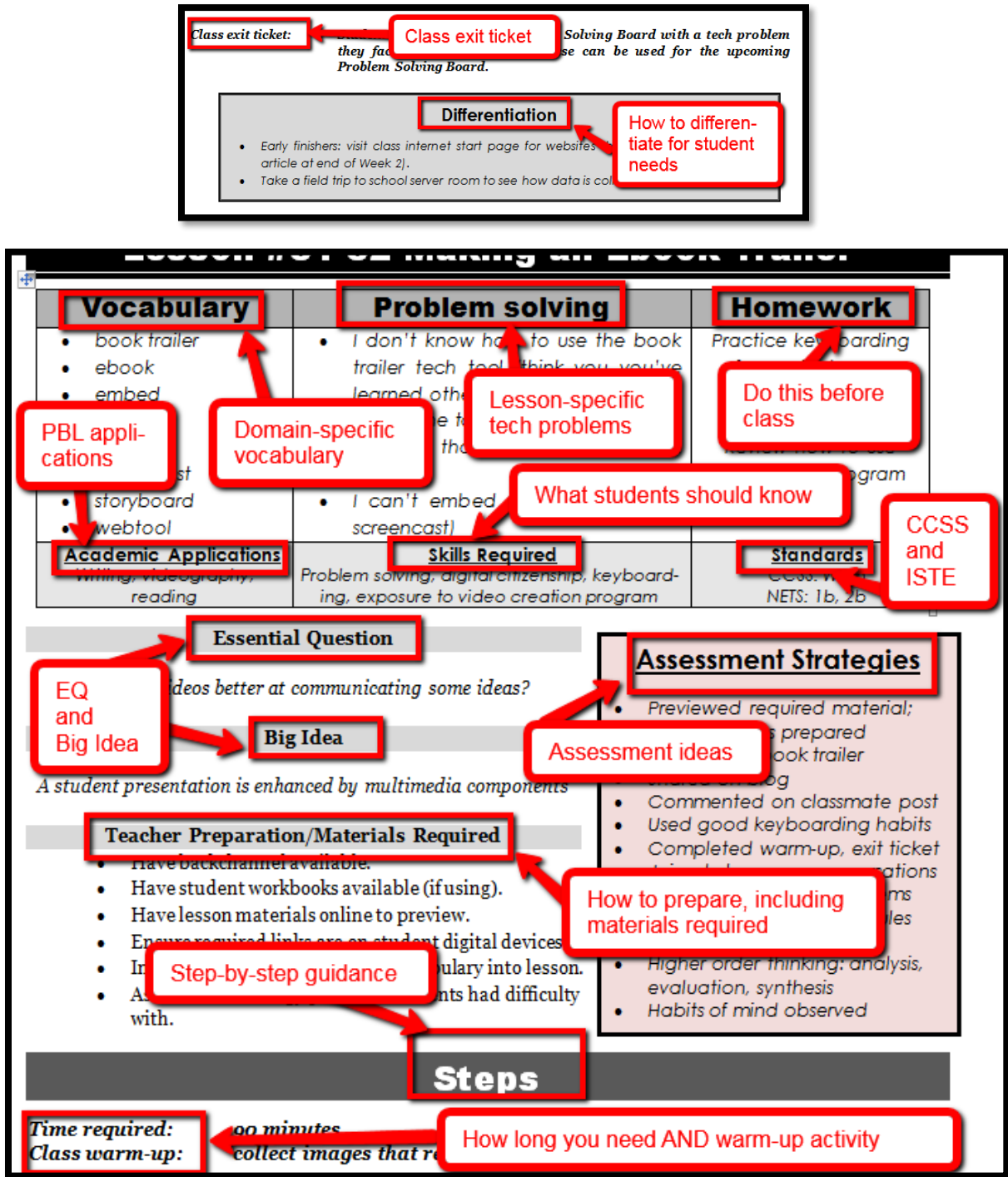
Each weekly lesson includes:

- *assessment strategies*
- *class warm-up and exit ticket*
- *Common Core and ISTE Standards*
- *differentiation strategies*
- *educational applications*
- *essential question and big idea*
- *examples, rubrics, images, printables*
- *homework (for students)*
- *materials/preparation required*
- *problem solving for lesson*
- *steps to accomplish goals*
- *supporting links*
- *time required to complete*
- *vocabulary used*

Throughout the text are links to extend lessons, add enrichment, and/or provide flexibility in your teaching. No PDF? Usually the link is spelled out. If not, Google the name or contact our help site. **BE AWARE:** Links die. If you find one that no longer works, contact us. We may have a work-around. If there is no link, this means it was already provided or shows up readily in a Google search.

Figure 1a-b shows what's at the beginning and end of each lesson:

Figure 1a-b—What's included in each lesson



What's New in the Sixth Edition?

A good tech curriculum is aligned with best practices, which means frequent updates. Consider

changes to technology-in-education since SL's Fifth Edition published in 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 available across multiple platforms, multiple devices.*
- *Keyboarding skills are critical, especially to 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 the Sixth Edition:

- *Lessons are now as likely to be used by any member of the **grade-level team**. You'll learn how to unpack the lesson regardless of which hat you wear.*
- *Ideas are provided to deliver lessons on all **popular digital**.*
- *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.*
- *Each lesson points out **academic applications** of technology.*
- ***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.*
- *Each grade-level curriculum includes **student workbooks** (sold separately).*
- *Each grade level has a **lesson on coding**.*

Who Needs This Book

8th Grade Technology Curriculum: Teacher Manual

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.

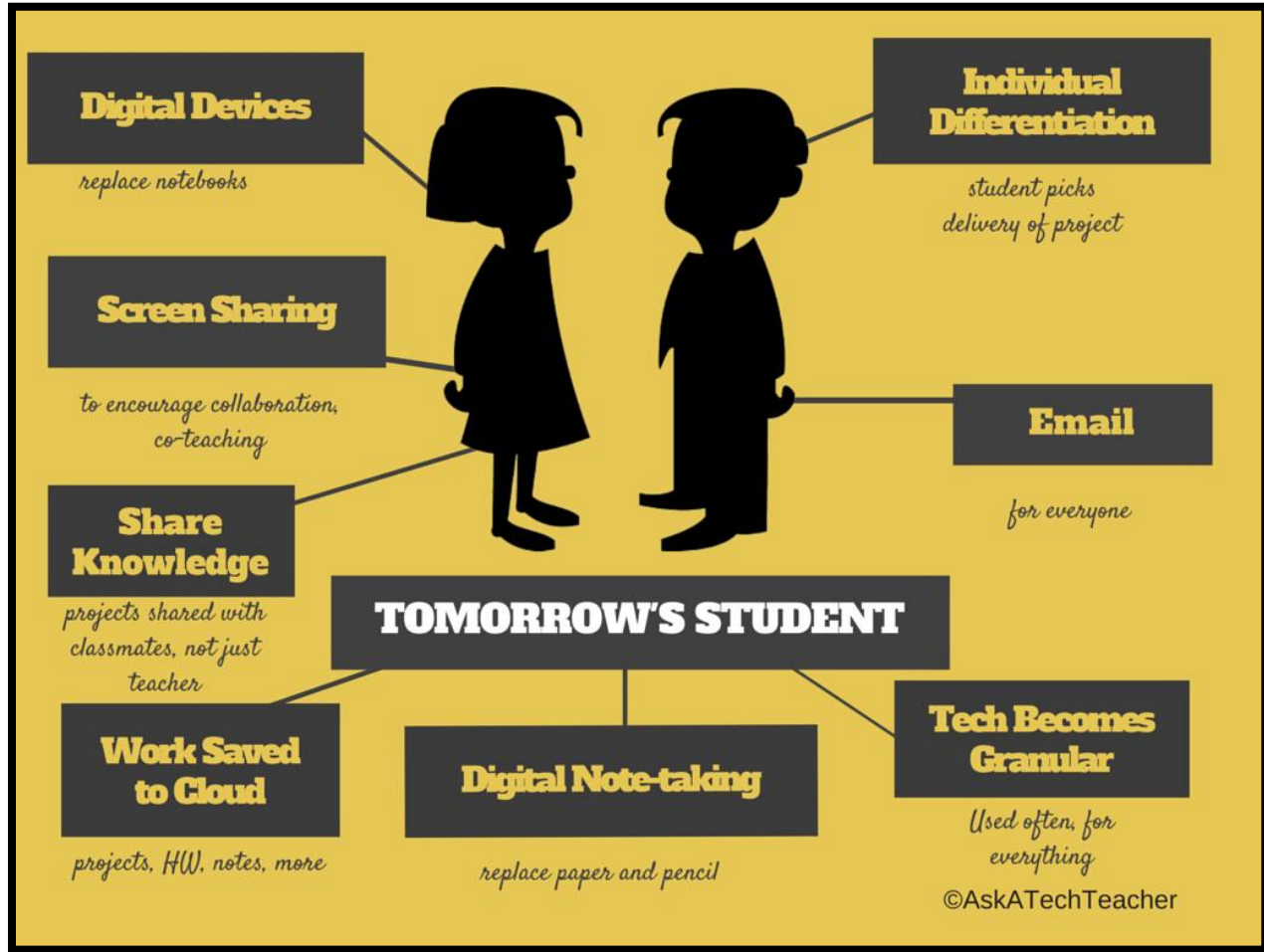
Or you are a grade-level teacher, a tech enthusiast with a goal this year—and this time you mean it—to integrate the wonders of technology into lessons. You've seen it work. Others in your PLN are doing it. And significantly, you want to comply with state/national requirements and/or IB guidelines that 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 curriculum. If not you (the teacher), who will do this? To build **Tomorrow's Student** (Figure 2) requires integration of technology and learning. We show you how.

Figure 2—Tomorrow's student



How to Use This Book

You can use this curriculum on its own—as a teacher manual—or in conjunction with the companion student workbooks (<http://bit.ly/1M0hFix>) (sold separately). Either way, contact Zeke at admin@structuredlearning.net for free start-up training.

If there is a skill students don't get, circle back on it, especially when you see it come up a second or third time through the course of the K-8 curricula. By the end of 8th grade, students have a well-rounded tech toolkit that serves their learning needs and prepares them for college and/or career.

The curriculum map (Figure 3) shows what's covered in which grade. Units taught multiple years reflect increasingly less scaffolding and more student direction. Here's how to use it:

- Determine what skills were covered earlier years. Expect students to transfer that knowledge to this new school year. Review the topics and skills, but don't expect to teach.

8th Grade Technology Curriculum: Teacher Manual

- For skills covered prior years, confirm that was done. If not (for whatever reason), when you reach lessons that require the skills, plan extra time.

Figure 3—Curriculum Map—K-8

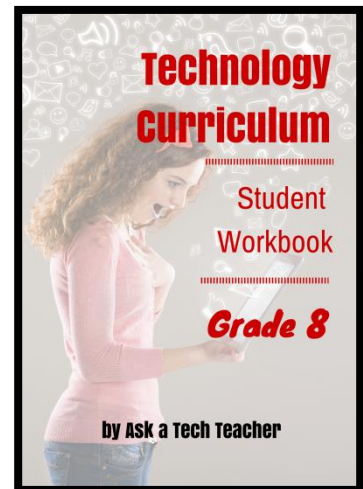
	Mouse Skills	Vocabulary - Hardware	Problem-solving	Platform	Keyboard	WP	Slide-shows	DTP	Spread-sheet	Google Earth	Search/ Research	Graphics/	Co-ding	WWW	Games	Dig Cit
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2		☺	☺	☺	☺	☺	☺	☺	☺	☺		☺	☺	☺		☺
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4		☺	☺		☺	☺	☺	☺	☺	☺	☺	☺	☺	☺		☺
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8		☺	☺	☺	☺	☺			☺	☺	☺	☺	☺	☺	☺	☺

Here are hints on using this curriculum:

- This curriculum uses the 'flipped classroom' approach. Homework prepares students for the class lesson so class time is spent on enrichment. Homework materials can be shared via the class website, blog, wiki, class internet start page, and/or videos. The last can be done via 10-15 minute informal videos providing an overview, your expectations, and where to find resources. Prepare your video with the free Screencast-o-matic or an inexpensive recording program like Snagit, and then upload to YouTube/Vimeo/TeacherTube. Or, share real-time via Google Hangouts (which can be taped directly to YouTube).
- A number of lessons are mixed throughout the year:

Digital Citizenship
Keyboarding
Problem Solving






Figure 1--Student workbook



- 'Academic Applications' provide suggestions on how to blend lessons into your curriculum.
- Invest in student digital workbooks (sold separately — <http://bit.ly/1FVU6Sm>), a student-centric companion to the teacher guide. Here are four reasons why:
 - Full-color projects are at student fingertips, with examples and directions (licensing varies based on plan).
 - Embedded links enable students to click and go—no searching for the site or typing in addresses.
 - Workbooks can be viewed and annotated.

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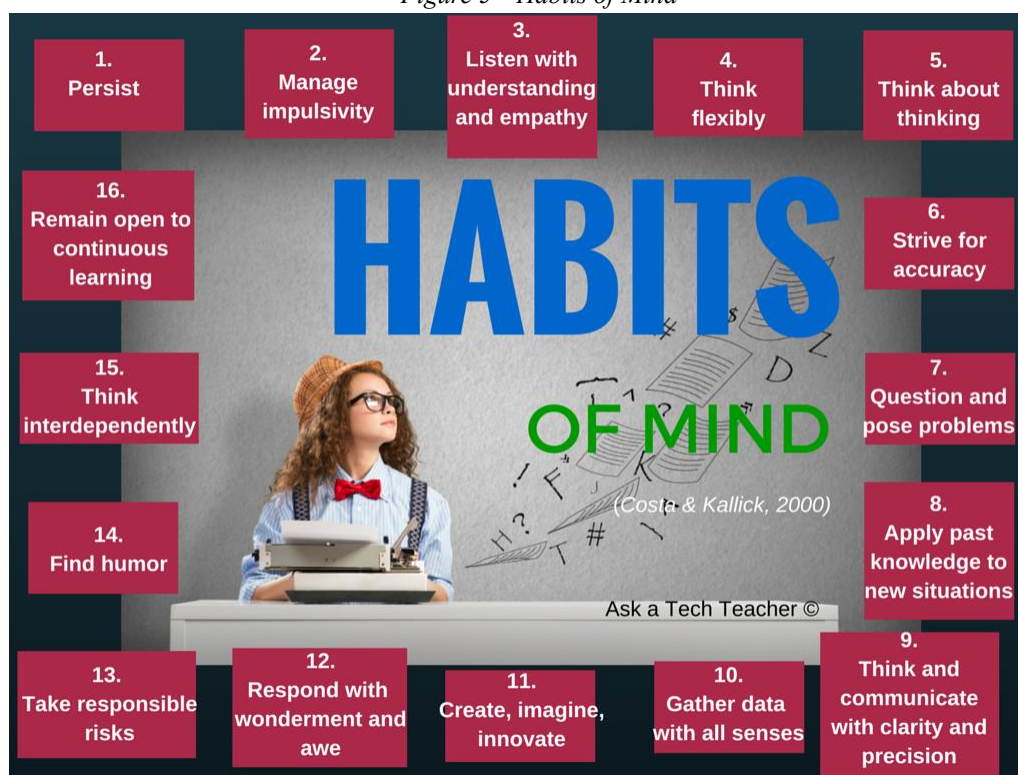
- *Students can work at their own pace.*
- Units focus on strategies useful throughout a student's learning day. Collaborate with grade-level teachers on cross-curricular planners that involve technology.
- Most lessons start with a warm-up to get students into tech and you to finish a prior class.
- 'Teacher Preparation' often includes chatting with the grade-level team. Why?
 - *tie tech into their inquiry*
 - *offer websites for early-finishers that address their topics*
- Some lessons offer several activities that meet goals outlined in the Essential Question and Big Idea. Pick what works best for your student group.
- Check off completed items on the line preceding the step so you know what to get back to when you have time. If you have the ebook, use Acrobat, iAnnotate, Goodreader, Subtext, Notability (Google for websites), or another annotation tool that works for your devices.
- If a poster is not in the Appendix, check for a free printable copy here (<http://bit.ly/1M6uyt0>).

-  indicates video
-  indicates work with a partner
-  indicates an article
-  indicates a poster (in Appendix)
-  indicates workbook material

- Use as much technology as possible in your classroom—authentically and agilely. Make it adaptive and native. 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.
- Always use lesson vocabulary. Students gain authentic understanding by your example.
- 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.
- Expect students to direct their own learning. You are a 'guide on the side', a facilitator not lecturer. Learning is accomplished by both success and failure.

- 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. **This scaffolds critical thinking and troubleshooting when you won't be there to help.**
- Don't expect free time while students work. Move among them to provide assistance and observations on their keyboarding, problem-solving, and vocabulary decoding skills.
- Encourage student-directed differentiation. 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.
- Lessons expect students to develop 'habits of mind' (Figure 5). Read more about Art Costa and Bena Kallick's discussion of these principles at <http://habitsofmind.org> and in the article at the end of Lesson #1. In a sentence: Habits of Mind ask students to engage in learning, not simply memorize.

Figure 5—Habits of Mind



- Every effort has been made to accommodate all digital devices. Lesson samples are often in multiple platforms. If the activity is impossible on your 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 as you follow steps.
- If you're looking for links in the articles (because you have a print book), go to AskATechTeacher.com and search for the article. You'll find links there.

More Help

Need more help? Visit the companion website, Ask a Tech Teacher® (<http://askatechteacher.com>), run by teachers using the curriculum. Here, you'll find:

- *free lesson plans*
- *targeted websites*
- *free tech tips and weekly newsletters*
- *free training videos on tools used in lesson plans*
- *great apps to include on iPads, digital devices*

And more. You can also email admin@structuredlearning.net or askatechteacher@gmail.com.

Finally, here are useful pieces to extend this curriculum:

- *Student workbooks (<http://bit.ly/1FVU6Sm>)—(sold separately) allow students to be self-paced*
- *Digital Citizenship curriculum (<http://bit.ly/1JgKioZ>)— if this is a school focus (sold separately)*
- *Keyboarding Curriculum (<http://bit.ly/1JgKy7t>)— if this is a school focus (sold separately)*
- *Class Internet start page—provides a class agenda, themed links, and more (created by you)*

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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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#11	<i>Word Certification</i>	#31-32	<i>Web Comm. Tools</i>
#12	<i>Gradebook and Budgets</i>		

Arranged by theme

Basics

#1	<i>Introduction</i>
#2	<i>Digital Tools</i>
#3	<i>Keyboarding</i>
#11	<i>Word Certification</i>

Logical Thinking

#4-5	<i>Problem Solving</i>
#13-15	<i>Engineering and Design</i>
#19-21	<i>Visual Learning</i>
#22-24	<i>Robotics</i>
#25-27	<i>Programming with Alice</i>
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Digital Citizenship

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#31-32	<i>Web Communication Tools</i>

Search/Research

#2	<i>Digital Tools</i>
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#9-10	Search/Research
#19-21	Visual Learning
<u>Programming</u>	
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Appendix

Posters

Certificates

6th-8th Technology Scope and Sequence

Check each skill off as students accomplish it

(‘ISTE’ refers to International Society of Technology Educators’ Standard addressed by skill)

Common Core Standards noted where appropriate

**Intentionally
deleted**

Lesson #2 Digital Tools in the Classroom

Vocabulary	Problem solving	Homework
<ul style="list-style-type: none"> • Annotation • App • Backchannel • Benchmark • Blog • Cloud • Digital portfolio • Digital tools • Domain-specific • Hashtag • Linkback • PDF • Plagiarism • Template 	<ul style="list-style-type: none"> • I'm too young for Twitter (use class account) • Avatar didn't show in my blog (ask a neighbor how they did it) • My work disappeared (Google Apps automatically saves; or, Ctrl+Z) • Teacher isn't around and I need help (ask for peer support or student forum) • Just give me a handout (Sorry, we learn through experience and collaboration) • I'm not fast enough decoding vocabulary (keep at it—it gets easier) • I forgot my Evidence (you'll have a chance every month) 	<p>Preview/test tech tools and compare-contrast tables; prepare presentation</p> <p style="text-align: center;">Log in from home/school</p> <p>Prepare for hardware quiz and Summative</p> <p>Keyboard 45 min., 15 minutes a time</p> <p>Find and take poll.</p>
Academic Applications <i>Writing, research, collaboration, sharing, publishing</i>	Required skills <i>familiar with blogs, digital note, annotating PDFs, hardware, avatars, class calendar, digital portfolios, email, vocab decoding tools, keyboarding</i>	Standards CCSS: WHST.6-8.7-9 NETS: 3d, 5a, 6a

Essential Question

How do I use technology to pursue my education?

Big Idea

Students become aware of how tech enhances educational goals

Teacher Preparation/Materials Required

- Have back channel available.
- Have copies (if required) of hardware assessment.
- Talk with grade-level team to tie into conversations.
- Have student accounts for digital tools.
- Have Evidence Board and badges prepared.
- Post links to training videos on digital tools (if using).
- Have copies of blogging agreement (if necessary).
- Integrate domain-specific tech vocabulary into the lesson.
- Something happen you weren't prepared for? Show students how you fix the emergency without a meltdown and with a positive attitude.

Assessment Strategies

- Previewed required material; came to class prepared
- Annotated workbook (if using)
- Used good keyboarding habits
- Completed warm-up, exit ticket
- Completed lesson summative
- Joined classroom conversations
- [tried to] solve own problems
- Decisions followed class rules
- Left room as s/he found it
- Higher order thinking: analysis, evaluation, synthesis
- Habits of mind observed



Steps

Time required: **90 minutes or more, spread throughout the school year**

Class warm-up: *Keyboarding on the class typing program*

- _____ **Homework is assigned the week before this unit so students are prepared.**
- _____ Any questions from homework? Expect students to review unit and come to class prepared.
- _____ Ask what tech problems students had difficulty with.
- _____ Discuss results of interest poll (Exit Ticket from *Lesson #1*).
- _____ Discuss digital tools in general terms. What are they? How are they different from software? Consider these differences (*Figure 9*):

Figure 6—Compare-contrast software vs. online tool

	SOFTWARE	ONLINE TOOL
		
Examples	<i>MS Office, KidPix, Type to Learn, Reader Rabbit</i>	<i>Google Drive apps, ABCYa, Dance Mat Typing</i>
Access	<i>Accessible only from where you installed the software</i>	<i>Accessible from any computer with an internet connection</i>
Compatibility	<i>Varies</i>	<i>Most are compatible across platforms (Windows, Macs, Linux, Chromebooks)</i>
Control	<i>You control</i>	<i>Someone else controls—may be moved or removed without your permission</i>
Cost	<i>Varies</i>	<i>Varies—often free versions are available</i>
Daily use	<i>Depends upon whether your computer works and whether the software is compatible with changes you've made to your computer</i>	<i>Depends upon whether your internet connection works</i>
Limitation	<i>Don't run on iPads, Chromebooks</i>	<i>Run on most computer systems</i>
Maintenance	<i>If it breaks, you have to fix it</i>	<i>If it breaks, someone online fixes it</i>
Security	<i>As secure as your computer is</i>	<i>Depends upon the website's security</i>
Set-up	<i>You must install; might require adaptations to work on your system</i>	<i>No installation required—all you do is go to the site</i>
Speed	<i>Depends upon your system</i>	<i>Depends upon your internet connection</i>
Updates	<i>You do these</i>	<i>Managed by website; always up to date</i>
Where it lives	<i>On your computer (or network)</i>	<i>On the internet</i>
Working with a partner	<i>Difficult</i>	<i>Easy</i>

_____ How about apps? How are they different from software and online tools? Which have students used? Why have they become mainstays in life? See if students come up with ideas such as:

- *to facilitate collaborative work*
- *to enable students easily publish and share a project with classmates*
- *to make communication with multiple audiences easier*
- *to enable use of a wide variety of media and formats*

- *to encourage cultural understanding and global awareness*
- *to provide options (for example: for communication—email, forums, blogs)*
- *to provide access from anywhere with an internet connection*

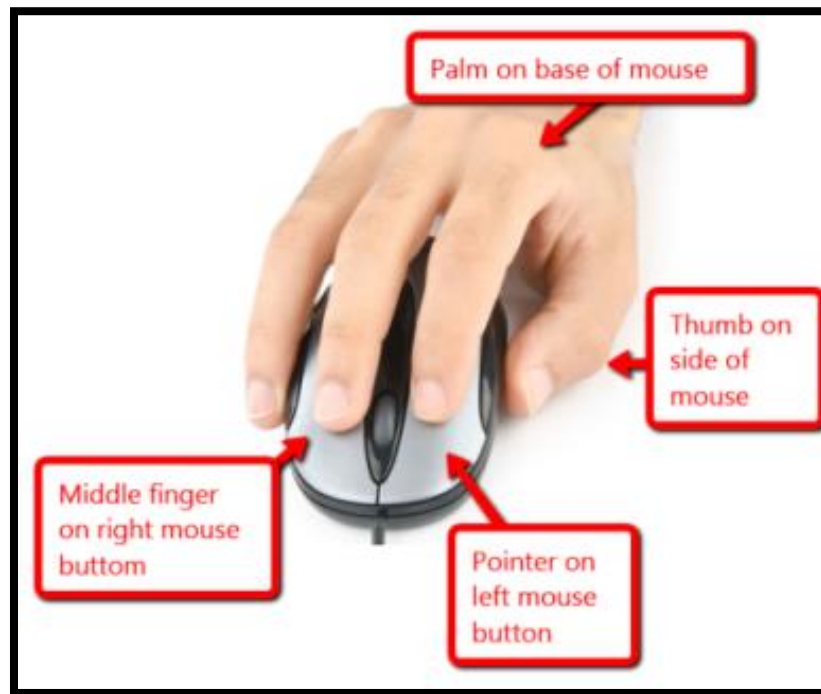
_____ This *Digital Tools* unit has three expected learning outcomes:

- *introduce digital tools to be used in 8th grade*
- *acclimate students to the concept that tech tools enable differentiation, collaboration, sharing, and publishing*
- *show how to employ them in student educational endeavors*

_____ Before reviewing digital tools to be used during class, have neighbors check each other's mouse hold (see *Figure 10*):



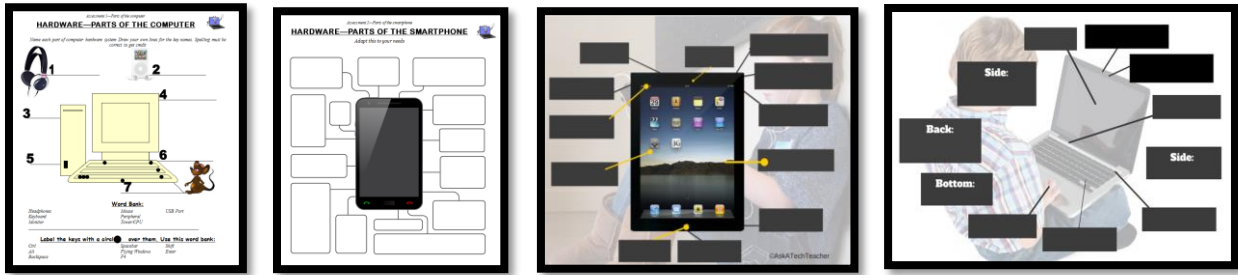
Figure 7—How to hold a mouse



_____ Review your school digital device. Students should know the basic parts and whether they're input or output. *Figures 11a-d* are images of assessments at the end of this Lesson. These can be filled out in student workbooks during classtime. *Figures 12a-b* are sample completed worksheets.

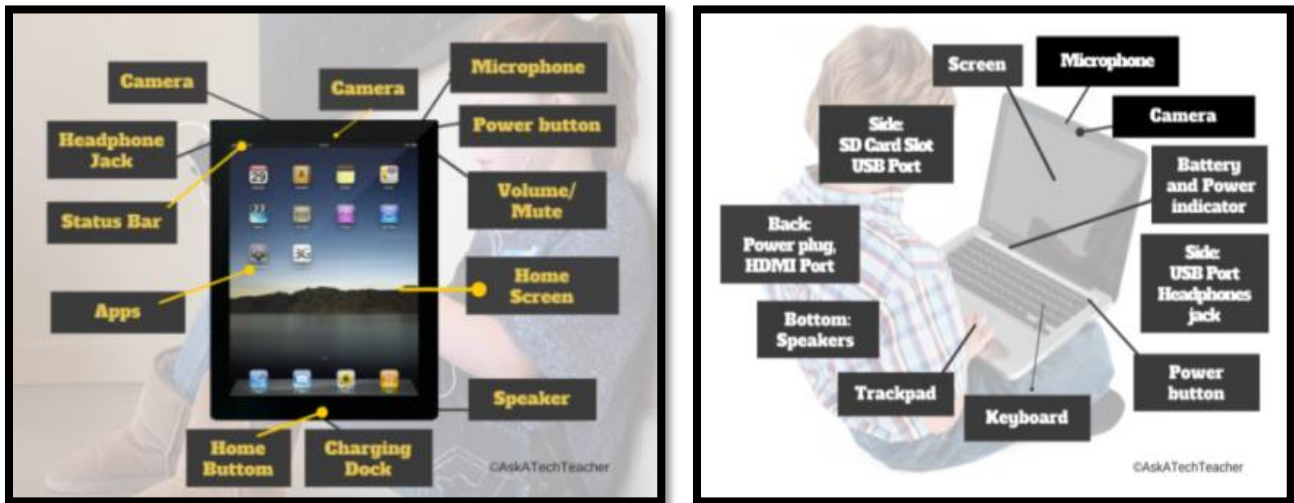


Figure 8a-d—Digital devices and their parts



_____ If necessary, review with students. For example, if you use iPads, ask where the headphones are on this device? Or the mouse? How about the USB Port? Ask students where the iPad microphone is on, say, the PC or Chromebook. How about the charging dock?

Figure 9a—Parts of iPad; 12b—Chromebook



_____ Discuss how understanding hardware helps to solve tech problems. Ask students if they have any personal examples—how they were able to debug hardware issues at home to fix a problem.

_____ Discuss digital citizenship in broad strokes. Remind students of rights and responsibilities inherent to the digital community. You focus on it in another lesson and return to it every time students use internet.

_____ The following tools are discussed in this lesson. Pick those that your students use and add others you have:



- *annotation tool*
- *avatars*
- *backchannel devices*
- *blogs*
- *class calendar*
- *class Internet start page*
- *class Twitter account*
- *class website*
- *digital note-taking*
- *digital portfolios*
- *dropbox*
- *email*
- *Evidence Board*
- *flipped classroom*
- *Google Apps*
- *maps*

- *online quizzes*
- *screenshots and screencasts*
- *student websites*
- *student workbooks*
- *study helper*
- *video channel*
- *vocabulary decoding tools*

_____ Select one student or a group to review each tool with class (with material prepared for homework). Discuss what must be known to use the tool (i.e., log in, location). Include information in articles on blogging and twitter. Ask clarifying questions. Fill in blanks where needed. Be sure information from the rest of this Unit is included.

_____ Adapt the tools and activities to your digital devices (Chromebooks, PCs, iMac, iPads, or other).

_____ At the lesson end, there's a summative project.

Student workbooks



_____ If using the PDF student workbooks that go along with this curriculum, introduce them. Show how to:

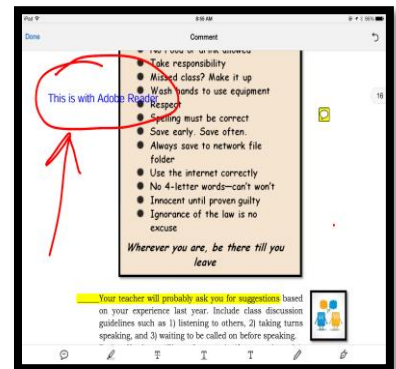
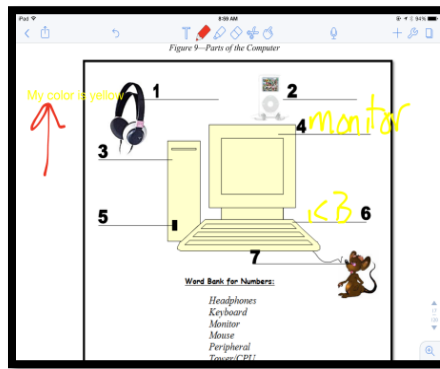
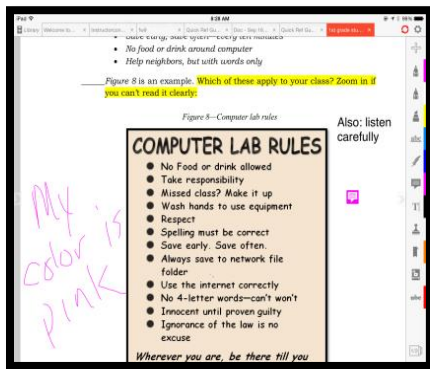
- *open on digital device*
- *access links*
- *find rubrics and project samples*
- *take notes using the annotation tool*
- *complete quizzes and rubrics*

Annotation Tool and Screenshots

_____ If using student workbooks, show students how to annotate their copy with the note-taking tool used in your school such as iAnnotate (Figure 13a), Notability (Figure 13b), or Adobe Acrobat (free—Figure 13c).



Figure 10a—iAnnotate; 13b—Notability; 13c—Adobe Acrobat



_____ If students share the PDF (for example, it's loaded on a digital device that multiple students use), show how to select their own color that's different from other students.

_____ Include a discussion of screenshots. Often, students will annotate a page (say, a rubric) and then save a screenshot of it to their digital portfolio. Depending upon your digital device, you'll use a screenshot tool like one of these:

- **Windows:** the Snipping Tool
- **Chromebook:** hold down the control key and press the window switcher key
- **Mac:** Command Shift 3 to do a full screenshot and Command Shift 4 for a partial
- **Surface tablet:** hold down volume and Windows button at the same time
- **iPad:** hold Home button and power button at same time
- **Online:** a screenshot tool like Jing or Snagit

_____ Point out to students that the annotation tool not only allows them to note-take in the curriculum book, but any PDF they access with their digital device.

_____ Show how students can use a web-based annotation tool (like Snagit or Nimbus—Google for addresses) to mark up a web page and then save a copy to student digital portfolio.

Avatars

_____ Students can create a profile picture with an avatar creator like (Google for address, or use your favorite—*Figures 11a-d* are examples):

- *Monster [yourself](#)*
- *Lego you*
- *Animal [yourself](#)*
- *Madmen yourself*
- *Voki yourself*

Figure 11a-d—Avatars



_____ Discuss the fact that avatars should look nothing like students and include nothing that can be tied back to the student. Consider this the student’s alter-ego. For example, if the student has blue eyes, their avatar should have brown.

_____ These can be used in student wikis, websites, or any digital platform that requires a profile picture. Use them to reinforce a discussion of digital privacy and safety.

Backchannel Devices

_____ The ‘backchannel’ is classroom communication that isn’t from the presenter. ‘Backchannel devices’ encourage students to share their thoughts and ideas, even questions, while a lesson is going on. Typically, the comments show up on the class screen, shared with all classmates, likely anonymously. Students read and respond. You use them to be informed when students get/don’t get a topic s/he is covering.

_____ Popular backchannel options are:

- *Padlet (<http://padlet.com>)— a virtual wall; Figure 15a*

- *Socrative* (<http://socrative.com>)— a closed virtual; Figure 15b
- *Today's Meet* (<http://todaysmeet.com>)— a closed virtual room; Figure 15c
- *Twitter* — a virtual stream organized by hashtags; private or public

Figure 12a-c—Backchannel devices



_____ Why use backchannels? Here are a few reasons:

- *you know what engages students and extend those ideas*
- *you hear from shy students who need a classroom voice*
- *gregarious students can ask as much as they want without dominating class*

_____ Introduce the backchannel to students and demo, and then use it as you introduce the balance of the digital tools. Student feedback will inform whether you teach or review the digital tools.

Blogs

_____ Blogs are short online articles with the purpose of sharing ideas and garnering feedback. In 8th grade, you are particularly interested in the facility to:

- *engage effectively in collaborative discussions with diverse partners*
- *build on others' ideas*
- *express their own ideas clearly*

_____ Review the articles at lesson end on ***13 Ways Blogs Teach Common Core*** and ***8 Things my Blog Taught Me.***



_____ *Figures 16a-c* are examples of student blogs. Notice how posts incorporate text and images:

Figure 13a-c—Student blogs



Student blogs teach writing skills, how to use evidence to support arguments (in both posts and comments), and perspective-taking. They are student-directed, but you approve both posts and comments until students get used to the rules that apply to online conversations.

Blogs reflect student personalities with colors, fonts, and widgets. What students include will help you better understand how they learn and how to reach them academically.

In general, student blogs require:

- titles that pull reader in
- tone/voice that fits this type of writing
- linkback(s) to evidence that supports statements
- at least one media to support each article (picture, video, sound)
- understanding of target audience
- understanding of purpose. How is it different from tweets? Essays? Poetry?
- citations—authors name, permission, linkbacks, and copyright where required
- occasional teamwork
- pithy content
- correct spelling and grammar with no slang

Before beginning, students sign an agreement similar to Figure 17a—full size at end of lesson. Ask them to discuss the agreement with parents and bring it to school before the next class. If you’re using workbooks, students can sign the copy in there, take a screenshot, and email that to you.



Figure 14a—Blogging rules; 17b—blogging rubric

Eighth Grade Blogging Rules
(adapted from [Academy of Discovery.wiki](#))

- I will not give out any information more personal than my first name
- I will not plagiarize; instead I will expand on others' ideas and give credit where it is due.
- I will use language appropriate for school.
- I will always respect my fellow students and their writing.
- I will only post pieces that I am comfortable with everyone seeing.
- I will use constructive/productive/purposeful criticism, supporting any idea, comment, or critique I have with evidence.
- I will take blogging seriously, posting only comments and ideas that are meaningful and that contribute to the overall conversation.
- I will take my time when I write, using formal language (not text lingo), and I will try to spell everything correctly.
- I will not bully others in my blog posts or in my comments.
- I will only post comments on posts that I have fully read, rather than just skimmed.
- I will not reveal anyone else's identity in my comments or posts.

Any infraction of the Blogging Rules may result in loss of blogging privileges and an alternative assignment will be required.

Student Signature _____ Date _____

CRITERIA	Exemplary	Proficient	Partially	Incomplete	POINTS
Relevance of Content to Students and Parents	<ul style="list-style-type: none"> 3 points Content has useful information Content is clear, concise, points reader to up to date resources. Blog is updated frequently 	<ul style="list-style-type: none"> 4 points Content points reader to quality resources, informative resources. Resources are clearly described so readers can navigate easily 	<ul style="list-style-type: none"> 2 points Content points to unrelated information. Resources are not clearly described so readers cannot navigate easily. 	<ul style="list-style-type: none"> 0 points Resources point to irrelevant, misleading or inappropriate. Annotations are missing or do not describe what is found 	
Use of Media	<ul style="list-style-type: none"> 4 points Media enhance content and interest. Creativity enhances content 	<ul style="list-style-type: none"> 4 points Most media enhance content. Most flesh out creativity 	<ul style="list-style-type: none"> 2 points Some media don't enhance content. Some use of creativity is evident to enhance content. 	<ul style="list-style-type: none"> 0 points Media are inappropriate or detract from content. 	
Fair Use Guidelines	<ul style="list-style-type: none"> 4 points Fair use guidelines are followed with proper citations. 	<ul style="list-style-type: none"> 4 points Fair use guidelines are frequently followed; most material is cited. 	<ul style="list-style-type: none"> 2 points Sometimes fair use guidelines are followed with some citations. 	<ul style="list-style-type: none"> 0 points Fair use guidelines are not followed. Material is improperly cited. 	
Links	<ul style="list-style-type: none"> 2 points All links are active and functioning. 	<ul style="list-style-type: none"> 2 points Most links are active. 	<ul style="list-style-type: none"> 1 point Some links are not active. 	<ul style="list-style-type: none"> 0 points Many links are not active. 	
Layout and Text Elements	<ul style="list-style-type: none"> 2 points Fonts are easy-to-read Use of bullets, italics, bold, enhances readability. Consistent format throughout 	<ul style="list-style-type: none"> 2 points Sometimes fonts, size, bullets, italics, bold, detract from readability. Minor formatting inconsistencies exist 	<ul style="list-style-type: none"> 1 point Text is difficult to read due to formatting 	<ul style="list-style-type: none"> 0 points Text is difficult to read with misuse of fonts, size, bullets, italics, bold Many formatting tools are misused 	
Writing Mechanics	<ul style="list-style-type: none"> 2 points No grammar, capitalization, punctuation, spelling errors 	<ul style="list-style-type: none"> 2 points Few grammar, capitalization, punctuation, and spelling errors 	<ul style="list-style-type: none"> 1 point 4+ errors in grammar, capitalization, punctuation, and spelling 	<ul style="list-style-type: none"> 0 points More than 4 grammar/spelling/punctuation errors 	
TOTAL POINTS					6/36

Students can create blogs in Edublogs, Class Blogmeister, Blogger (Google for addresses; Blogger comes with Google Apps). They can be public or private.

Discuss blogging netiquette—similar to email etiquette:

- be polite
- use good grammar and spelling
- don't write anything everyone shouldn't read (school blogs are private, but get students used to the oxymoron of privacy and the Internet)

Have students test their blog log-in and add their first ‘Hello!’ post. Remind them to practice good keyboarding as they type.

Once a month, have students post an article that discusses an inquiry topic. Additionally, students should visit and comment on five classmate blogs.

Student comments aren’t always appropriate? Set account so you approve comments before they’re live. And, chat about how supportive comments contribute to the conversation.

Occasionally throughout the year, use the Student Blog Rubric (*Figure 17b*—full-size assessment at end of the lesson) to assess student progress.

Class Calendar

Class calendars can be through Google Apps or another tool that works for your student group. Show students how to access it and how it’s updated to reflect class activities.

If students will edit, demonstrate how to do this by adding upcoming homework.

Encourage students to contribute responsibly to class calendar.

If using Google Apps, students can embed calendar into blogs, websites, or wikis.

For Google Calendar training, visit Google’s comprehensive calendar training.



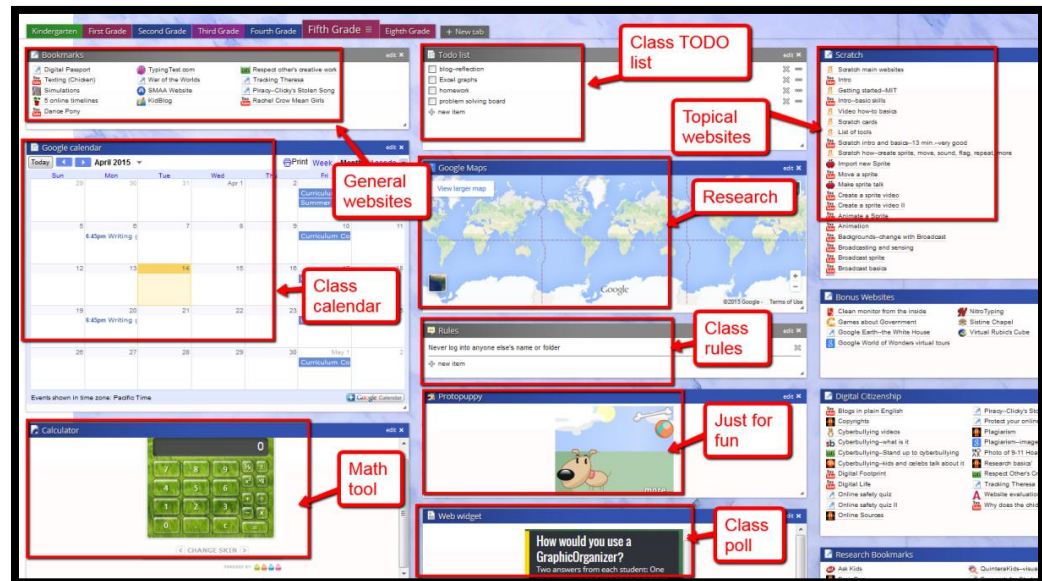
Class Internet Start Page

An Internet start page is a website that comes up when the student opens the Internet. It organizes critical content in a single location and curates links students will use.

Include what students visit daily (i.e., guidelines, calendar, ‘to do’ list, typing websites, research locations, sponge sites, calculator) as well as information specific to the current project.

You might also include pictures of interest, RSS feeds, weather, a graffiti wall, and a class pet.

Figure 15—Class Internet start page



Use Protopage.com (Figure 18), Ighome, or a collection site like Symbaloo (Figure 19a), Portaportal (Figure 19b), LiveBinders (Figure 19c), Diigo, or the class Evernote account (Google names for address).

Figure 16a—Class start page in Symbaloo; 19b—Portaportal; 19c—LiveBinders



Remind students that any time they visit the Internet, do so safely and legally. This will be discussed in depth in another lesson.

See article at end of this lesson, **Class Internet Start Page**.



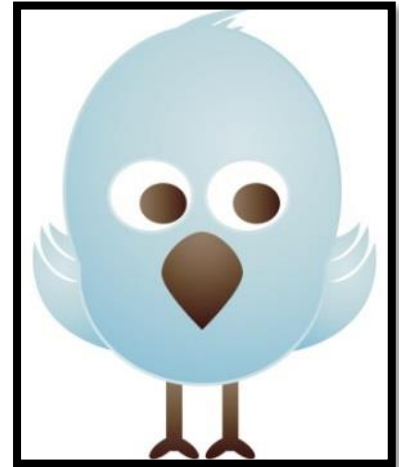
Class Twitter account

Discuss article at end of this lesson, **“13 Ways Twitter Improves Education”**.

Twitter is a natural in the 8th grade classroom. It is hip. Students want to check their stream to see what’s up. Because tweets must be concise, they are an excellent way to teach writing.

Like blogs and wikis, Twitter feeds are used to:

- *engage collaboratively with diverse partners*
- *review key ideas*
- *present findings with descriptions, facts, and details*
- *pose questions that elicit elaboration*
- *acknowledge information from others*



Set up a private class twitter account for announcements, group questions, discussions, and collaboration. Use #hashtags to organize themes like #homework, #class, #questions, and whatever works for your student group.

Most blog and website activity can also be tweeted, so it’s a great redundancy for getting news where it needs to go.

If you prefer, rather than a class Twitter account, have students create their own and join class Twitter feed. Before leaving this section, have each student tweet hello to classmates using #hashtag #introductions.

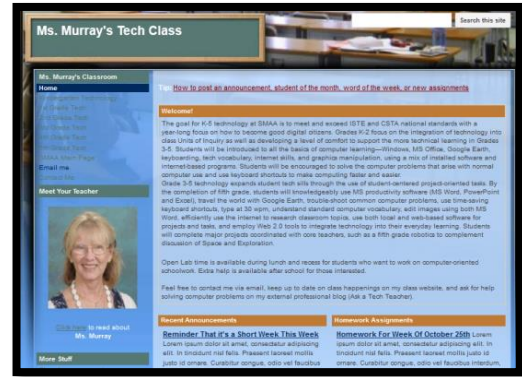
Class Website

_____ Class websites serve as a general resource collection for class information. This is maintained by the teacher, but you may (or not) include students in managing, updating, and posting to the class site.

_____ Class websites include much of the same information that the Internet start page does, but in more detail. For example, you can include information on upcoming field trips with sign-up forms and parent permission slips. You can include links to class events.

_____ Popular inclusions on class websites are:

- *polls*
- *discussion boards*
- *forums*
- *teacher picture and bio*
- *links to class activities*
- *class expectations, standards*
- *link to grades*



_____ Create this using the same tool that students will use for their student blog or website.

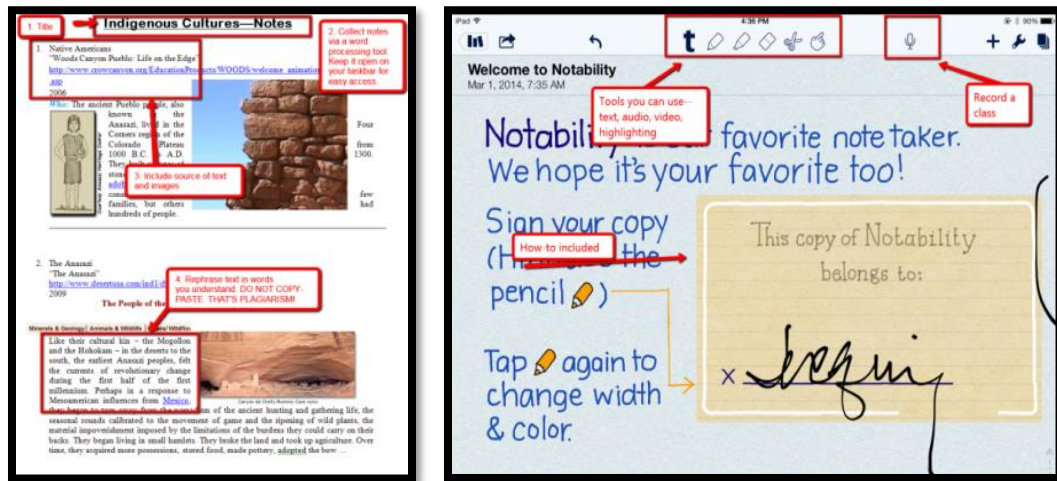
Digital Note-taking

_____ Why take notes (from Common Core):

- *determine central ideas*
- *provide accurate summary*
- *identify key steps*
- *cite text evidence to support analysis*
- *analyze structure used to organize text*
- *analyze author's purpose*

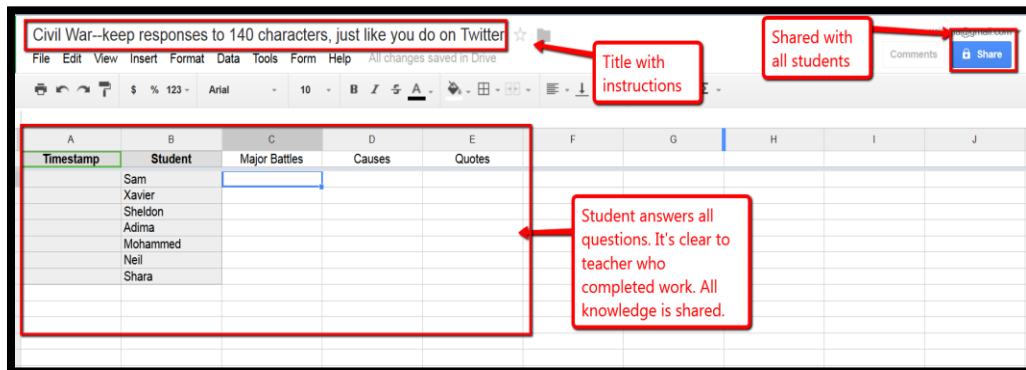
_____ Here are five digital note-taking methods for students:

Figure 17a-b—Note-taking tools—word processing and Notability



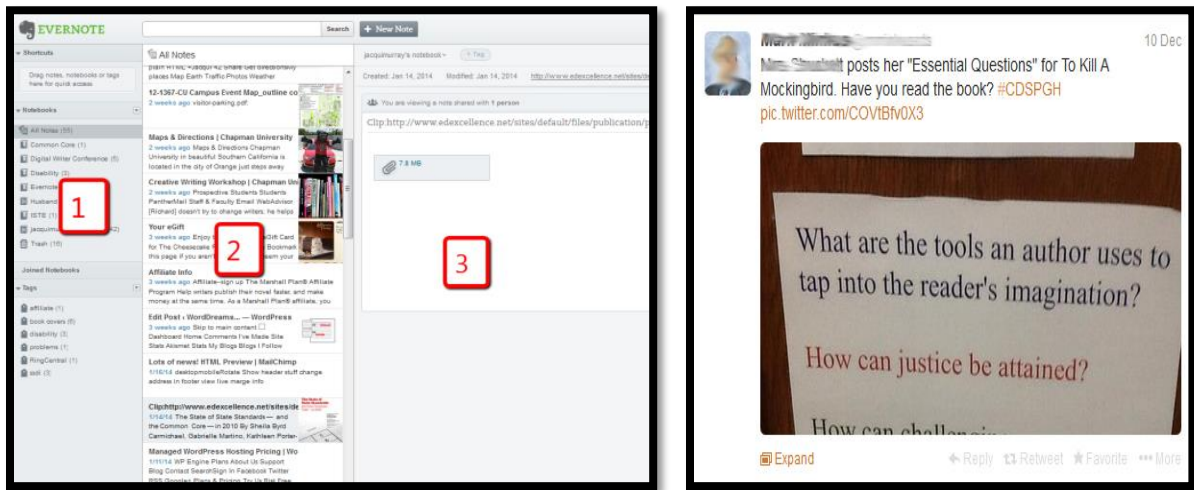
- Word processing program (for any digital device) – Figure 20a
- Notability (for iPads) – Figure 20b
- Google Apps – (for any digital device) – Figure 21 (zoom in for detail)

Figure 18—Collaborative notes in Google Spreadsheets



- Evernote/OneNote (for most digital devices) – Figure 22a
- Twitter (for most digital devices) – Figure 22b

Figure 19a—Evernote; 22b—Twitter



Digital portfolios

Discuss how students use digital portfolios (also known as digital lockers or digital binders):

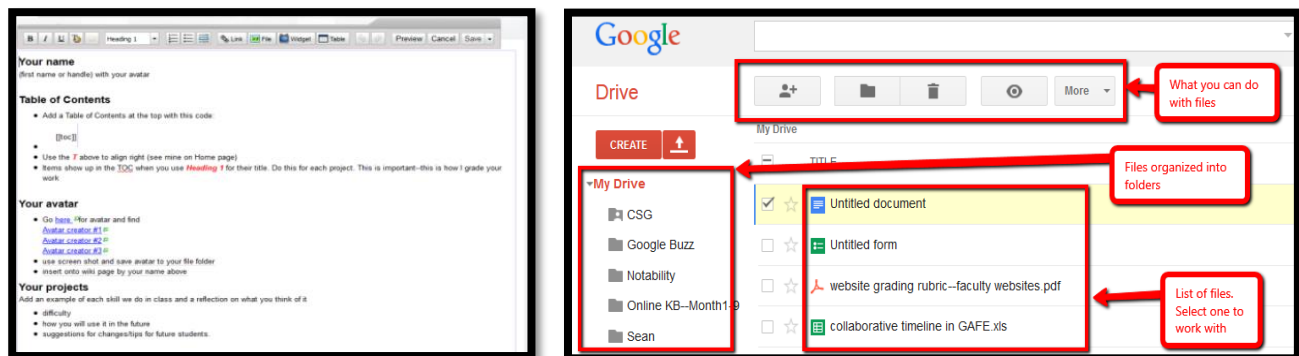
- store work (in Cloud) required in other classes or at home
- interact, collaborate, and publish with peers, experts, or others
- edit or review work in multiple locations
- submit class assignments

There are a variety of approaches to digital portfolios that satisfy some or all of the above uses: 1) folders on school network, 2) fee-based programs from companies such as [Richer Picture](#), 3) cloud-based storage like Dropbox or Google Apps (Figure 23b), and 4) online collaborative sites like [Wikispaces.com](#) (Figure 23a) or [PBWorks.com](#) (Google for addresses).

Review the *Assessment* rubric at the end of this lesson on what students should include in their personal digital portfolio.

Occasionally, use the *Assessment* at the end of this lesson to review student progress with their own digital portfolio.

Figure 20a—Wiki; 23b—Google Drive



Dropbox

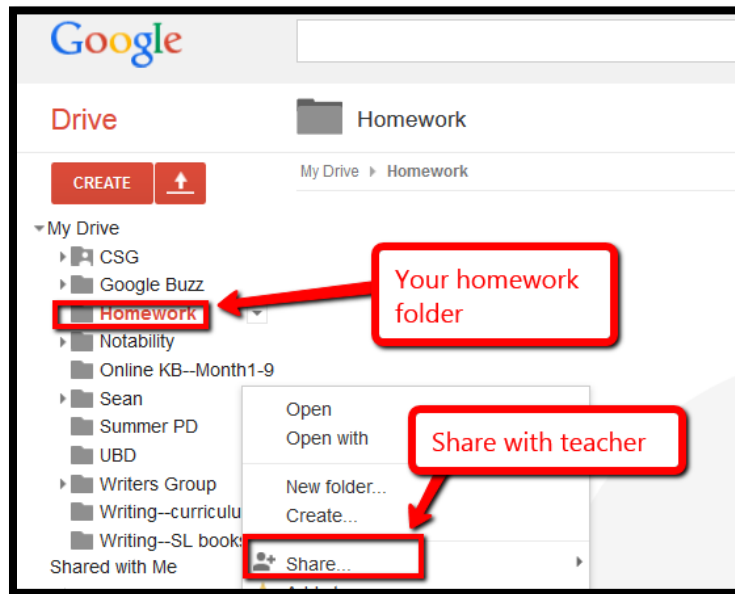
_____ A classwork and homework drop box can be created through the school Learning Management System (LMS), email, Google Apps (through the 'share' function), Google Classroom, or other options. In fact, any alternative to submitting print homework is good.

_____ If your school has this option, review it with students. If not, show students how they will be expected to submit classwork and homework.

_____ If you have Google Apps, create a Homework drop box like *Figure 24*:

- *Each student creates a folder called 'Homework' that is shared with you.*
- *To submit work to you, copy it to that folder so you can view and comment.*

Figure 21—Homework dropbox



Email

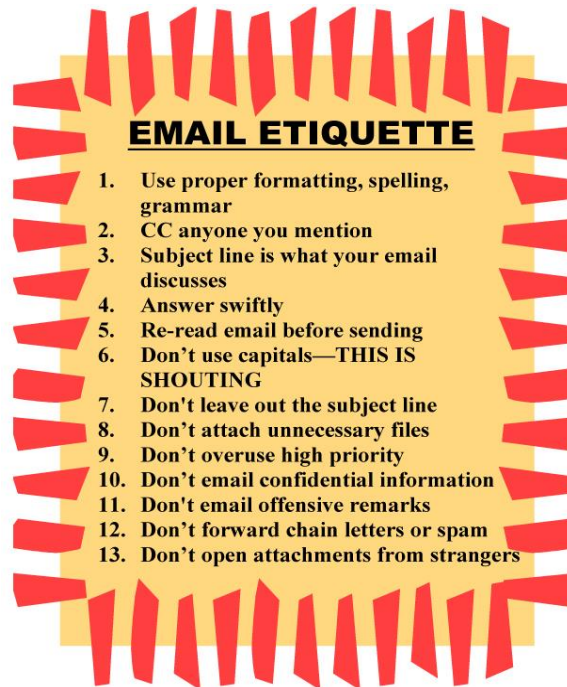
_____ Use a web-based account such as Gmail (comes with GAFE and Google Classrooms).

_____ Review email etiquette (*Figure 25*—full-size poster in Appendix):



- *Use proper writing conventions.*
- *CC anyone mentioned.*
- *Make 'Subject line' topic of email.*
- *Answer swiftly.*
- *Re-read before sending.*
- *Don't use all caps—THIS IS SHOUTING.*
- *Don't attach unnecessary files.*
- *Don't overuse high priority.*
- *Don't email confidential information.*
- *Don't email offensive remarks.*
- *Don't forward chain letters or spam.*
- *Don't open attachments from strangers.*

Figure 22—Email etiquette



_____ If you have student email accounts, review how to use them.

_____ Clarify terms like 'high priority', 'chain letters', and 'CC'.

_____ Let students (and parents) know that the email program they use at home may not match the instructions you've provided. Ask parents to show students how to use the home-based email.

_____ Why is correct grammar/spelling important in email and not so much with texting? Hint: Consider this Common Core standard: *Produce clear and coherent writing in which development, organization, and style are appropriate to task and audience.*

_____ Email addresses are often required for online tools. If students don't have one, here's a work-around from LifeHacker (<http://bit.ly/1oMPDu2>).

_____ Discuss 'spam'. What is it? Why is it sent? What should students do when spam shows up in their email? Show how to manage settings so students don't get spam.

_____ Discuss how email can be used to back-up important documents (by emailing a copy to themselves or creating a draft email with doc attached and stored in 'Draft' file).

_____ When students get an email, follow this checklist:

- *Do you know sender?*
- *Is email legitimate? For example, does the 'voice' sound like sender?*
- *Is sender asking for personal information? Legitimate sources never do.*
- *Is there an attachment? If so, don't open it.*

Evidence Board

_____ The Evidence Board (*Figure 26a*) 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 share how they use tech skills outside of your class. They make a ten-second presentation to class, fill out a badge (like *Figure 26b*), and post it on the Evidence Board by their class. By year end, you want this collection to encircle the classroom.

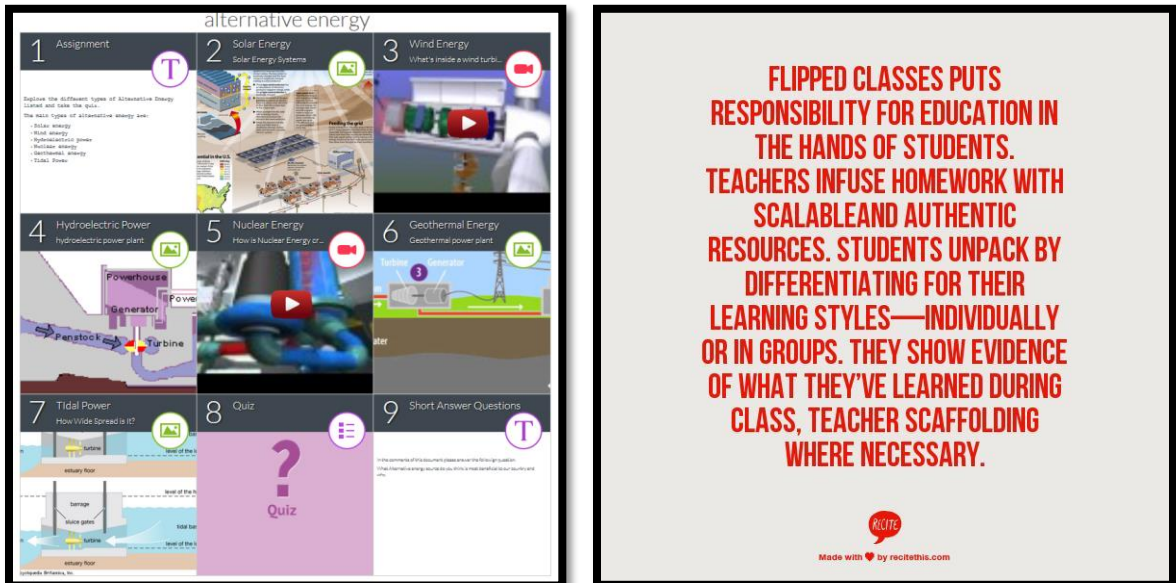
Figure 23a—Evidence Board; 26b—Badge



Flipped Classroom

_____ What is a flipped classroom (see *Figures 27a-b*—zoom in if needed)? In the Flipped Classroom (as used in this curriculum), teachers record their lectures for consumption by students outside of class, and then dedicate class time to project-based learning that supports the homework. This approach allows students to ask questions of their teacher or collaborate with peers *as they're doing the work*, rather than struggling with it at home and asking for help the next day.

Figure 24a—Blendspace; 27b—flipped class definition



_____ Show students where they'll find their homework (probably on the class website or blog, or pushed out through Google Classroom) and model how they will complete it.

_____ Likely, it will include several pieces:

- *summary video prepared by you*
- *reading material from ebooks or online sources*
- *hands-on work such as keyboard practice*
- *preparatory steps required to participate in the classtime project*

_____ Tools you might use for the summary video include:

- YouTube channel
- Periscope (<http://periscope.com>)
- Vialogues (<http://vialogues.com>)
- Touchcast (<http://apple.co/1HQ2tRp>)

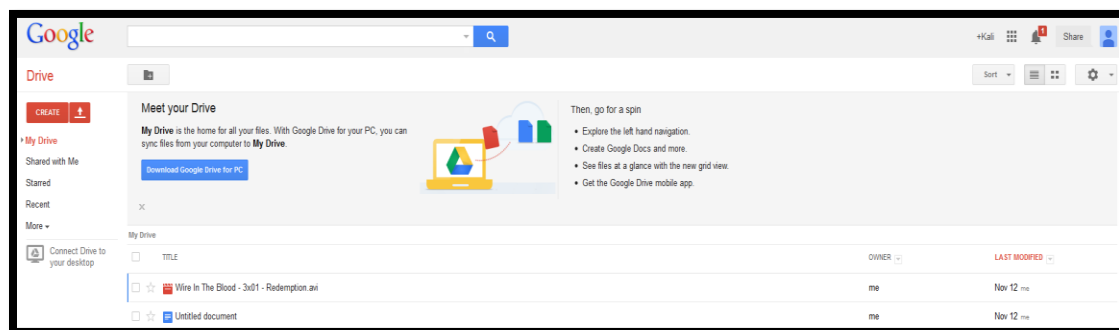
_____ Tools you might use to collect homework materials for students are:

- Blendspace — <http://blendspace.com> (*Figure 27a*)
- Google Classroom
- Google Apps
- Frolyc (<https://www.activitycircle.com/>)
- OfficeMix — <https://mix.office.com/Gallery>
- Knowmia (<http://knowmia.com>) -- create, share, and view video lessons via iPad app
- LessonPaths (<http://lessonpaths.com>)—share and curate theme-based resources

Google Apps

_____ To access Google Apps requires an account. *Figure 28* is what Google Drive might look like:

Figure 25—Google Apps



_____ There are many resources available for teaching how to use Google Apps. If you have trouble finding one, check this list (<http://wp.me/PZUgb-1vv>).

_____ Give students time to explore Google Drive before moving on.

_____ The most popular apps—and the ones students will use the most—are:

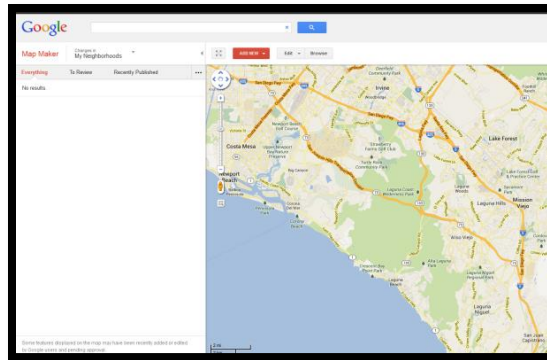
- *Google Docs—for word processing projects*
- *Google Slides—for slideshow presentations*
- *Google Spreadsheets—for the analysis of data using spreadsheets*

- *Google Draw—for visual representation of information*

Maps

_____ Create maps of events, literature, history, and more using Google Mapmaker (<http://www.google.com/mapmaker>). Have available for any time students need to map out class inquiry locations or track events in a novel:

Figure 26—MapMaker



Online Quizzes

_____ Use an online quiz tool from this list (<http://bit.ly/1O997J5>).

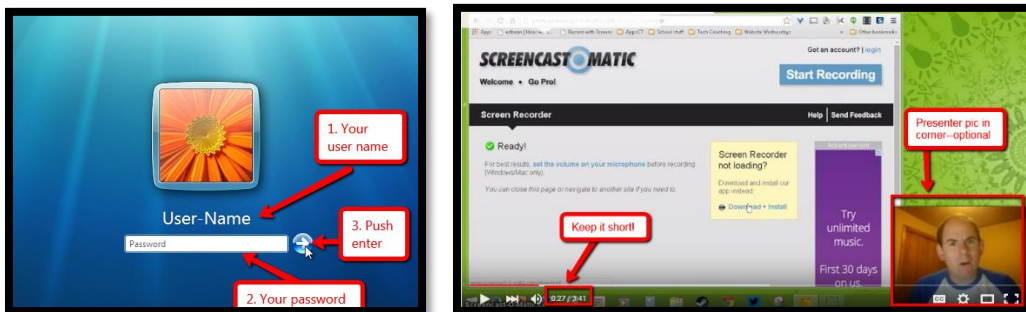
_____ You can also use Google Forms (part of Google Apps for Education). It doesn't matter which as long as students get used to taking quizzes and being graded online, and getting immediate feedback (often). This will be a growing part of Common Core assessment so you want students used to it.

Screenshots and Screencasts

_____ Review detail under 'Annotation and Screenshots'.

_____ Students will use screenshot (still images—*Figure 30a*) tools, apps, or add-ons (depending upon your digital device), as well as screencasts (videos—*Figure 30b*) to record information from their screen. More on this in the lesson on 'Screenshots and Screencasts'.

Figure 27a—Screenshot to explain log-in; 30b—screencast to explain the use of screencasts



Student website

8th Grade Technology Curriculum: Teacher Manual

_____ Most teachers will select either blogs or websites for students, depending upon their goal:

- *Blogs are more interactive and time-sensitive.*
- *Websites more fully cover a topic and new posts don't push older out of the way.*

_____ Like blogs, websites are a great way to encourage reflection, organization, logical thinking, and are a perfect place to embed sharable projects, i.e., Tagxedos and Animotos.

_____ Websites are available with Google Apps. If your school doesn't have Google Apps, free websites can be created at Weebly, Wix, or blog accounts like Wordpress (Google for addresses).

_____ Websites reflect student personalities with colors, fonts, and layout. Encourage creativity.

_____ In general:

- *Website and article titles pull readers in.*
- *Articles review what readers can expect, provide evidence with supporting links, and include a summary of content.*
- *Tone/voice fits this type of writing and intended audience.*
- *Links connect to evidence and links work.*
- *At least one media is provided to support each article (picture, video, sound).*
- *Posts understand target audience. How are website readers different from Tweeting? Or writing essays?*
- *Writing purpose is clear. How is that different from tweets? Essays? Poetry?*
- *Citations are included as needed.*
- *Occasional teamwork is exhibited.*

_____ Occasionally (several times a grading period), assess websites based on the criteria in *Figure 31* (full size assessment at end of lesson):

Figure 28—Student website rubric

Evaluation scale:					
Exemplary:		32-36 points			
Proficient:		28-31 points			
Partially Proficient or Incomplete:		< 28 points (resubmit)			
CRITERIA	Exemplary	Proficient	Partially	Incomplete	POINTS
Relevance of Content to Students and Parents	9 points • Content has useful information. • Content is clear, concise, points readers to up-to-date resources. • Content is updated frequently.	6 points • Content points readers to quality resources, informative. • Resources are clearly described so readers can navigate easily.	3 points • Content points to unrelated information. • Resources are not clearly described so readers cannot navigate easily.	0 points • Resources pointed to are inaccurate, misleading or inappropriate. • Annotations are missing, do not describe what is found.	
Use of Media	6 points • Media enhance content and interest. • Creativity enhances content.	4 points • Most media enhance content. • Most files show creativity.	2 points • Some media don't enhance content. • Some use of creativity is evident to enhance content.	0 points • Media are inappropriate or detract from content.	
Fair Use Guidelines	6 points Fair use guidelines are followed with proper citations.	4 points Fair use guidelines are frequently followed; most material is cited.	2 points Sometimes fair use guidelines are followed with some citations.	0 points Fair use guidelines are not followed. Material is improperly cited.	
Links	3 points All links are active and functioning.	2 points Most links are active.	1 point Some links are not active.	0 points Many links are not active.	
Layout and Text Elements	3 points • Fonts are easy-to-read. • Use of bullets, italics, bold, enhances readability. • Consistent format throughout.	2 points • Sometimes fonts, size, bullets, italics, bold, detract from readability. • Minor formatting inconsistencies exist.	1 point • Text difficult to read due to formatting.	0 points • Text difficult to read with misuse of fonts, size, bullets, italics, bold. • Many formatting tools are misused.	
Writing Mechanics	3 points No grammar, capitalization, punctuation, spelling errors.	2 points Few grammar, capitalization, punctuation, and spelling errors.	1 point 4+ errors in grammar, capitalization, punctuation, and spelling.	0 points More than 6 grammar/spelling/punctuation errors.	
TOTAL POINTS					/30

Study Helper

_____ Study Helpers are online tools that assist students in test preparation, such as:

- *Equizzer—online quizzes*
- *Jeopardy Labs Jeopardy game format*
- *Puzzle maker*
- *Rubrics*
- *Rubrics II*
- *Rubrics/Assessments—long list of resources from Kathy Schrock*
- *Rubrics—for CCSS*
- *Study Blue to make flash cards*



_____ Require these occasionally throughout the year so students are familiar with the concept, comfortable with use, and able to employ them to achieve educational goals.

Video Channel

_____ This is a class video channel on YouTube, Vimeo, TeacherTube or SchoolTube where teacher summaries, homework videos, and how-tos are posted.

_____ Show students how to set channel to 'private'.

_____ Videos can be embedded into blogs, websites, wiki pages, digital portfolios.

Virtual Meeting Rooms

_____ Students meet each other or the teacher to discuss class activities outside of class time. This can be a study group, tutoring, or a group to prepare a class project.

_____ Popular tools are:

- *Google Hangouts*
- *Skype*
- *Blab*



... (Google for addresses) or any tool that allows students to get together online in real-time for the purpose of furthering their education journey.

_____ Depending upon your school culture, you may require parent permission slips for this.

Vocabulary Decoding Tools

_____ Show students how to access the native apps or webtools on their digital devices that decode vocabulary students don't understand. Depending upon the device, these will be on the:

- *digital device homepage*
- *browser toolbar*

- *a shortkey*
- *a right click*

Show students how to quickly look up words from any class rather than skip over content that includes the word. Let them practice with several of the words in this lesson's *Vocabulary* list.

Options include:

- *right click on word in MS Word and select 'Look up'*
- *right click in Google Apps (i.e., Google Docs) and select 'research'*
- *use an online resource like Dictionary.com*
- *use a browser app or plug-in*

Summatively

Students work in groups to become familiar with digital tools. When (or as) they review a tool, expect them to:

- *blog about it and comment on each other's blogs*
- *set up groups in Google Apps*
- *participate in an out-of-school Google Hangout to share materials, desktops, teach each other how to do skills, and share thoughts on the class digital tools*
- *collect online tool links to a central location like their blog sidebar*
- *check in on class Twitter feed sharing how far they are, questions, ideas, using topic #hashtags*
- *create a homework drop box through Google Apps and share at least one doc with the teacher*
- *create a group folder and share information with group members*



Have student groups create a slideshow, Prezi, or another communication tool (think back to tools used in seventh grade) answering questions about one or more digital tools:

- *what is it*
- *what do I use it for*
- *what are the pros and cons*

A note: Every chance you get, use technology to facilitate teaching. Lead by example. Students will see you use tech quickly and facilely and follow your good example. They want to use tech. Don't discourage them!

Class exit ticket: *Students send a well-constructed email, tweet, or comment to a classmate and reply to one they receive appropriately.*



Differentiation

- Explore inside computer.
- [Click here](http://www.youtube.com/watch?v=Uuzcil8qCYM) for discussion on using Padlet <http://www.youtube.com/watch?v=Uuzcil8qCYM>.
- What's PollDaddy? [Watch this video](http://www.youtube.com/watch?v=EdEqCE9XuJM). <http://www.youtube.com/watch?v=EdEqCE9XuJM>.
- What's Evernote? [Watch this video](http://bit.ly/1RwG4yg) -- <http://bit.ly/1RwG4yg>.
- For more Google Apps, try these (find links here -- <http://bit.ly/1P8b2yv>):
 - [Forms](#): Create surveys, quizzes, and collect information
 - [Map Maker](#): Create a map, or update a map of a specific destination
 - [Scholar](#): Research and analyze sources from books, websites, other
 - [Tour Builder](#): Use Google Earth to create an online tour of anywhere in world
 - [Translate](#): online translation tool for any text
 - [YouTube EDU](#): Access and view educational content
- How do you use Prezi? Check this [YouTube](#)
- Create a Voki as an introduction to student wiki or blog.
- Create a [Tagxedo](#) on what students think about technology, what tools they're excited to learn, or a profile of themselves. Share on wiki, Site, or blog.
- Students who finish can start homework preview of next unit posted to class website, wiki, Google Drive—wherever works best for your class community.

"In theory, there is no difference between theory and practice. But, in practice, there is."

- Jan L.A. van de Snepscheut

**Intentionally
deleted**

Lesson #4-5 Problem Solving

Vocabulary	Problem solving	Homework
<ul style="list-style-type: none"> Authentic problems Conjecture Deductive reasoning Democratic society Inductive reasoning Mathematical language Proportional reasoning Responsible citizen Visual learner 	<ul style="list-style-type: none"> What's the difference between 'save' and 'save-as'? Why 'save early save often'? Which tool do I use (what works best?) It's confusing (ask a friend to explain why they like it) I couldn't get on the keyboarding website (try another one) I tried to solve the problem (try another strategy; failure is fine) 	<p>Review word processing, quotes, problem-solving strategies (for quiz)</p> <p>Select problem/date for Problem-solving Board</p> <p>Review webtools and know which you will use</p> <p>Keyboard for 45 minutes, 15 minutes at a time</p>
Academic Applications Critical thinking, math, other academic topics	Required Skills Familiarity with speaking and listening standards, problem solving, online tools, digital citizenship	Standards CCSS: Stds for Math.Practice NETS: 4c, 6d

Essential Question

How does technology help problem solving and logical thinking?

Big Idea

Make things as simple as possible, but not simpler (Albert Einstein)

Teacher Preparation/Materials Required

- Have backchannel available.
- Have Problem-solving Board rubrics, online sign-up.
- Have lesson materials online to preview.
- Update class calendar with activities.
- Integrate domain-specific tech vocabulary into lesson.
- Ensure all required links are on student digital devices.
- Ask what tech problems students had difficulty with.
- Something happen you weren't prepared for? Show how you react without a meltdown and with a positive attitude.
- Know which tasks weren't completed last week and whether they are necessary to move forward.

Assessment Strategies

- Previewed required material; came to class prepared
- Annotated workbook (if using)
- Signed up for Board
- Worked well in a group
- Completed warm-up, exit ticket
- Joined classroom conversations
- [tried to] solve own problems
- Decisions followed class rules
- Left room as s/he found it
- Higher order thinking: analysis, evaluation, synthesis
- Habits of mind observed

Steps

Time required: 90-270 minutes, spread throughout the class grading period
Class warm-up: Keyboard on class typing program, paying attention to posture

This lesson is part of many lessons—not a stand-alone. Students learn to consider

themselves ‘problem solvers’.

Homework is assigned before class so students are prepared for class projects.

_____ Use backchannel program like Today’s Meet or Socrative to determine student understanding and where you might offer assistance.

_____ Review articles at the end of this lesson, *How to Teach Students to Problem Solve, 5 Must-have Skills for New Teachers*, and *Let Students Learn From Failure*.



_____ Any homework questions? Have students sign up for Problem-solving presentation via class Google Calendar (if you don’t have Google Apps, use Sign-up Genius or similar).

_____ Call on students to share how to solve problems—oral quick quiz.

_____ 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?

_____ Problem solving is closely aligned with logical thinking, critical thinking, reasoning, and thought habits. Discuss why students should become problem solvers (hint: refer to prior point—most people students go to for assistance are wrong half the time). Discuss characteristics of a ‘problem solver’ (from Common Core):

- attend to precision
- value evidence
- comprehend and critique
- demonstrate independence
- make sense of problems and persevere in solving them
- use appropriate tools strategically
- understand other perspectives

_____ Discuss ‘Big Idea’—quote from Albert Einstein. Discuss great quotes about problem solving in *Figure 43 (full size at the end of the lesson)*.

Figure 29—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 <i>smart</i>, 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>
--	--

_____ Discuss shortcuts (from *Keyboarding* lesson). How are they problem solving? Demonstrate this by asking students to tell you how to perform a skill. Is it easier to share the shortcut?

Discuss problem-solving strategies:

- Act out a problem
- Break a problem into parts
- Draw a diagram
- Guess and check
- Observe and collect data
- See patterns
- Think logically
- Try to solve before asking for help
- Try, fail, try again
- Use Help files
- Use tools available
- Distinguish relevant from irrelevant information
- Use what has worked in past
- Work backwards

See Figure 44 for ‘How to Solve a Problem’ (full size in appendix):



Figure 30—How to solve a problem



When students face a problem, use Figure 44 strategies to solve it before asking for assistance.

Here are two projects to reinforce problem solving in everyday life:

- Problem-solving board
- Analysis of authentic problem-solving skills

Problem-solving Board

Students teach classmates common problems faced when using technology. Ideally, you have collected these throughout the year from students, other teachers, and parents—the types of

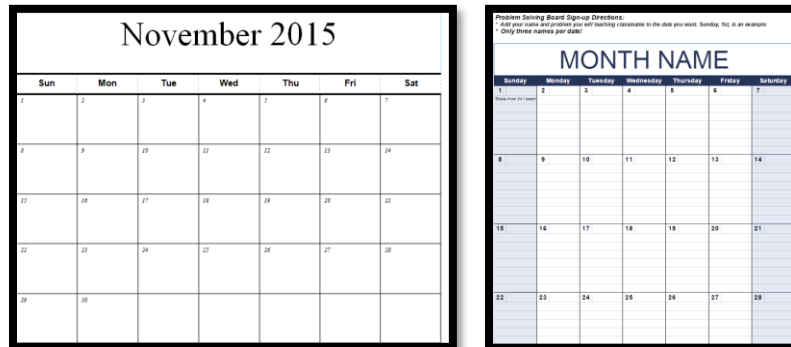
problems that stopped students as they tried to use tech in their education journey. This list might include (*Figure 45*):

Figure 31—Common tech problems

Problem	
My browser is too small	I can't find a tool
Browser toolbar missing	My screen is frozen
Can't exit a program	My menu command is grey
What's today's date	Can't find Bold, Italic
Double click doesn't work	Can't find the program
Start button disappeared	Internet toolbar's gone
Program disappeared	My computer doesn't work
Erased my document	My programs are gone

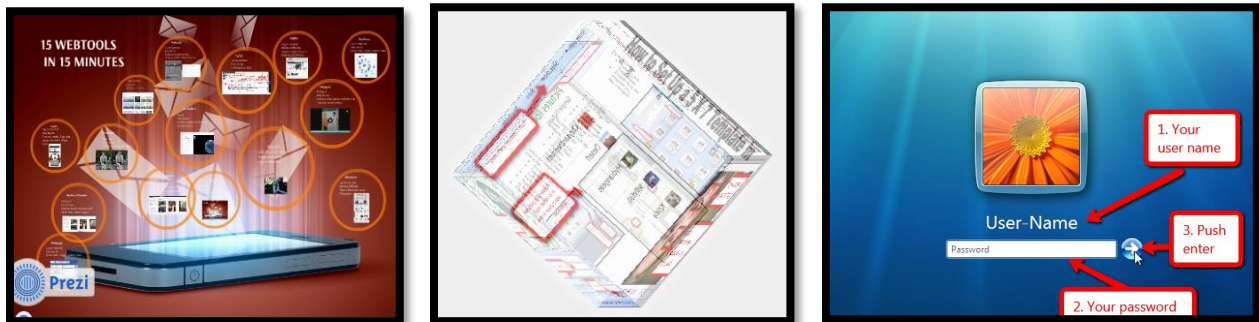
- _____ See a longer list at end of lesson. By the end of 8th grade, students should know all of these.
- _____ Students, working in groups, select a problem from the list you provide that they will teach classmates, and then select the date they'll do it. You can provide sign-up forms via a Padlet wall embedded into the class start page (*Figure 46a*), SignUp Genius, a shared spreadsheet (*Figure 46b*), or another method that works for you.

Figure 32a-b—Problem-solving Board sign-ups



- _____ **Note: Throughout the year, keep a list of problems for next year's Board.**
- _____ Student groups use one of the online tools they are familiar with from earlier grades or prior lessons in eighth grade in their presentation. This may include:

Figure 33a—Prezi presentation; 47b—Photocube; 47c—Screenshot



- Animoto or a video
- Comics
- online slideshow
- Photocube (Figure 47b)
- Prezi (Figure 47a)
- Scratch
- a screencast or screenshot (Figure 47c)
- SketchUp

_____ Students can get solutions from family, friends, or online sources.

_____ Students pay attention to these considerations when preparing project:

- Determine target audience, goal, and purpose of presentation.
- Download and use public domain clipart.
- Work as a team.

_____ Each project is expected to:

- convey information, offer insights and analysis
- organize content so that problem solution is evident
- use headings, illustrations, and multimedia, as well as text to teach
- introduce presentation with one or several of the problem-solving quotes

Figure 34—Problem-solving Board rubric

PROBLEM SOLVING BOARD

Grading Rubric

Name: _____

Knew question	_____
Use problem solving strategies to solve problem	_____
Sequenced ideas logically in arriving at solution	_____
Looked audience in eye	_____
No umm's, stutters	_____
No nervous movements (giggles, wiggles, etc.)	_____
Demonstrated command of language	_____
Answered audience questions with evidence	_____
Overall	_____

_____ During presentation, students will:

- Present findings in a focused manner with descriptions, facts, details, and examples.
- Use appropriate eye contact, adequate volume, and clear pronunciation.
- Adapt speech to the context and task.
- Take questions. The audience is responsible for making sure speaker makes sense.

_____ Student groups get three class periods to organize, produce and share project via embed into

blog or website. Use a fourth class for presentations.

Entire presentation takes about three minutes. *Figure 48* (Assessment at the end of this lesson) is a sample of the rubric you can fill out from your iPad.

Review digital rights and responsibilities before using the internet search functions. Include citations to any media shared with students.

Analysis of authentic problem-solving skills

During the grading period, student identify five-ten problems faced in any part of their life—home, school, or personal—and what problem-solving strategy they used to solve it. They'll record them in a spreadsheet shared with classmates and the teacher. Data curated with include (see *Assessment 14a-b* for examples):

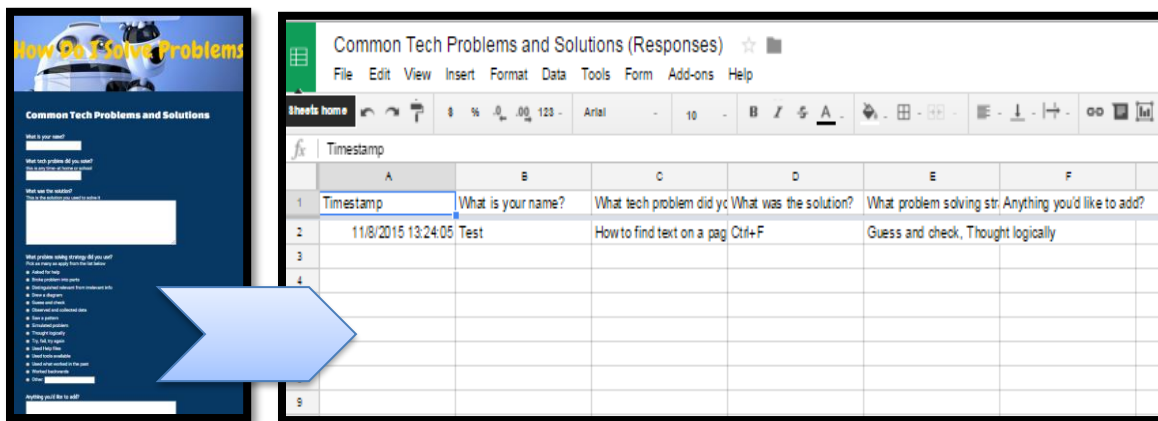
- *what tech problem they faced*
- *how they solved it*
- *what strategy they used from the list*
- *any additional comments*

At the end of class, it will be a resource students can draw on for future problems.

Here's how this works:

- *Student records 5-10 problems faced during the grading period in a Google Spreadsheet created by you and shared with students.*
- *Student answers a Google Forms poll (like Assessment 14a) that you share.*
- *They must have 5-10 of these during the grading period.*

Assessment 1a-b—Problem solving authentic data



Throughout class, check for understanding.

Class exit ticket: *Enter one problem into Google Form.*

Differentiation

- Have one student create Google Form for Problem Solving to be used to track class results.
- Add 'other' to the poll and let students share their own unique strategy with classmates.
- If student can't attend class (say, parent's car doesn't start), they can present via a virtual classroom like Google Hangout.
- Student has a problem they'd like to share that isn't from the list. If it relates to the education journey, consider allowing it (maybe they'd like to share how to run a Google Hangout).

Assessment 2—Problem-solving Board

PROBLEM-SOLVING BOARD

Rubric

Name: _____

Problem solved: _____

- Knew question _____
- Knew answer _____
- Asked audience for help if didn't know answer _____
- No umm's, stutters _____
- No nervous movements (giggles, wiggles, etc.) _____
- No slang _____
- Overall _____

Figure 35—Common tech problems

	Problem	Solution
1.	My browser is too small	<i>Double click blue bar</i>
2.	Browser toolbar missing	<i>Push F11</i>
3.	Can't exit a program	<i>Alt+F4</i>
4.	What's today's date	<i>Hover over clock Shift+Alt+D in Word</i>
5.	Double click doesn't work	<i>Push enter</i>
7.	Start button disappeared	<i>Use Windows button</i>
8.	Program disappeared	<i>Check taskbar</i>
9.	Erased my document	<i>Ctrl+Z</i>

10.	I can't find a tool	Right click on screen; it'll show most common tools
11.	My screen is frozen	Clear a dialogue box Press Escape four times
12.	My menu command is grey	Press escape 4 times and try again
13.	Can't find Bold, Italic, Underline	Use Ctrl+B, Ctrl+I, Ctrl+U
14.	Can't find the program	Push Start, use 'Search' field
15.	Internet toolbar's gone	Push F11
16.	My computer doesn't work	Check monitor/tower power, plugs
17.	My programs are gone	Are you logged in correctly?

Common problems students face with computers

Assessment 3—Problem-solving presentation rubric

Problem-solving Presentation Assessment						
Problem solving: Webtool used: Strategy used:			Student/Team:			
Pts	Investigate	Design	Plan	Create	Evaluate	Group
0	Team does not complete investigation to standard discussed in class	Team does not complete design to standard discussed in class	Team does not complete plan to standard discussed in class	Team does not complete work to standard discussed in class	Team does not complete evaluation to standard discussed in class	Team does not work together to standard discussed in class
1-2	Team states problem but not clearly, vaguely, understanding skills required. Students have difficulty verbalizing steps required to complete	Team addresses some detail about how project will be presented with selected tool, but leaves critical elements out	Team project plan contains some goals for completing project; timeline is not sustainable	Team creates at least part of storyboard, timeline, product/solution	Team evaluates product/solution as they work, but does not adapt plan or project to problems that arise	Team occasionally works well as a group, but has difficulty allocating work and arriving at consensus

<p>3-4</p>	<p><i>Team states problem clearly with a strong understanding of skills required. Team shows evidence of researching and describes solution in detail</i></p>	<p><i>Team addresses all specifics required to create a how-to and present to class</i></p>	<p><i>Team produces a plan that contains a clear and achievable goal for using time wisely during class</i></p>	<p><i>Team uses appropriate techniques and equipment, storyboard is effective. Team follows plan, and modifies when required, resulting in good quality project</i></p>	<p><i>Team evaluates how-to project and their performance; suggests ways to improve, and tests solution before presenting to class</i></p>	<p><i>Team frequently incorporates group member input into project, showing respect for the value of all members</i></p>
<p>Total</p>						<p>/20</p>

Figure 36—Great quotes about problem solving

Great Quotes About Problem Solving

Success consists of going from failure to failure without loss of enthusiasm.

—Winston Churchill

In times like these it is good to remember that there have always been times like these.

— Paul Harvey *Broadcaster*

Never try to solve all the problems at once — make them line up for you one-by-one.

— Richard Sloma

Some problems are so complex that you have to be highly intelligent and well-informed just to be undecided about them.

— Laurence J. Peter

Life is a crisis - so what!

— Malcolm Bradbury

You don't drown by falling in the water; you drown by staying there.

— Edwin Louis Cole

The significant problems we face cannot be solved at the same level of thinking we were at when we created them.

— Albert Einstein

It is not stress that kills us. It is effective adaptation to stress that allows us to live.

— George Vaillant

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 *Men, Ideas & Politics*

Eighty percent of success is showing up.

—Woody Allen

The problem is not that there are problems. The problem is expecting otherwise and thinking

that having problems is a problem.

—Theodore Rubin

On the infrequent occasions when I have been called upon ... to play the bongo drums, the introducer never seems to find it necessary to mention that I also do theoretical physics.

—Richard Feynman

Do not keep saying to yourself, if you can possibly avoid it, "But how can it be like that?" because you will get "down the drain," into a blind alley from which nobody has yet escaped. Nobody knows how it can be like that.

—Richard Feynman

The problem is not that there are problems. The problem is expecting otherwise and thinking that having problems is a problem.

— Theodore Rubin

It's not that I'm so smart; it's just that I stay with problems longer.

—Albert Einstein

There is a great difference between worry and concern. A worried person sees a problem, and a concerned person solves a problem.

—Harold Stephens

While average people are thinking negatively about problems, successful people view their problems positively. They love problems. They eat them for breakfast.

Why? Because problems create value; the more problems you can solve, the more valuable you will be, the more money you will make, the more responsibility you will have.

—Brian Klemmer

No problem can stand the assault of sustained thinking.

—Voltaire

Problems are only opportunities with thorns on | them.

—Hugh Miller

Article 1—How to Teach Students to Solve Problems

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 more than 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 as they play, think about what they're doing:

- *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.

Article 2—5 Must-have Skills for New Tech Teachers

5 Must-have Skills for New Tech Teachers

If you teach technology, it's likely you were thrown into it by your Admin. You used to be a first grade teacher or the science expert or maybe even the librarian and suddenly, you walked into school one day and found out you'd become that tech person down the hall you were always in awe of, the one responsible for classroom computers, programs, curriculum, and everything in between. Now that's you—the go-to person for tech problems, computer quirks, crashes and freezes, and tech tie-ins for classroom inquiry.



You have no idea where to begin.

Here's a peek into your future: On that first propitious day, everything will change. Your colleagues will assume you received a data upload of the answers to every techie question. It doesn't matter that yesterday, you were one of them. Now, you will be on a pedestal, colleague's necks craned upward as they ask: *How do I get the class screen to work? We need microphones for a lesson I'm starting in three minutes. Can you please-please-please fix them?* You will nod your head, smile woodenly, and race to your classroom for the digital manuals (if you're lucky) or Google for online help.

Let me start by saying: Don't worry. Really. You'll learn by doing, just as we teach students. Take a deep breath, engage your brain, and let your brilliance shine.

That's the number one skill—confidence—but there are five other practical strategies that have worked for those who came before you. Consider:

Be a communicator

Talk to grade-level teachers weekly. Scaffold your lessons with what they teach. Ask them to stay during tech class and offer on-the-spot tie-ins between what you teach and they say in class. Yes, they might want/need the time for planning or meetings, but the benefit to students of this team-teaching approach is tremendous. And it benefits the teachers, also. Many of them are not yet sold on integrating tech into their classrooms. They know they must if they're in one of the 46 Common Core adoptive states, but they don't like it, don't know how to do it, and don't see why it's so important. When they see you do it, they will be more willing to weave it into their lessons. For example, when they hear how you reinforce good keyboarding skills, they will be more likely to insist on those traits in their classroom.

Be a risk-taker

Flaunt your cheeky geekiness. Start a Twitter feed. Use your iPhone as a timer or the iPad to scan in an art project for a digital portfolio. At any opportunity, share your geek glee. Let them see that tech is part of life, not a subject taught in school. It's a habit, a time-saver, a facilitator, a joy. It won't take long to convert them. A couple of admiring glances from friends or appreciative thanks from parents and they'll be sold.

Be an explorer

Go to the grade-level classrooms and demonstrate how technology is part of learning. This can be via iPads, the class pod of computers, the netbooks, or whatever is available. Ask students what they are doing in class and offer tech methods to make it easier. For example, are they submitting homework in a pile on the teacher's desk? Try a drop box—or email. Could they type reports instead of handwrite them (I know—this gets philosophic, so be prepared for [that discussion](#))? Instead of hand-drawn posters where success leans toward the artistically-talented, could they use Glogster? Encourage students to plug in during class.

Be a negotiator

You need parental buy-in on tech ed, but it is a topic typically outside their comfort zone. I often hear from 2nd grade parents that their children know more than they do (I'm talking MS Office, internet use, and some online tools). Understand that this frightens them and part of your job is to mitigate their fears. Here are some ideas:

- Have your door always open. Be ready and willing to talk with them about how to complete their child's projects—not so they can do for them, but so they feel it is within their child's grasp. Take as long as needed and welcome them to return.
- Answer parent tech questions, even if it's about a home computer. My experience is these are often simple, but intimidating. If you mitigate fear, you maximize support for tech ed.
- Offer a parent class to teach skills students are learning. Listen to your group. What makes these intelligent adults nervous about tech? Solve it for them. I often start with an agenda and end with a free-for-all, where I answer questions or help parents create fliers for soccer teams or solve home-based tech problems. It's all good. They leave feeling I'm a partner.

Don't take life too seriously

Have a sense of humor about everything. You're going to have computer meltdowns. It's why robots can't replace teachers, so embrace chaos. One of the true joys of tech is the puzzling. Why doesn't the mouse work? Why does a website work on one computer and not another? Where'd the taskbar go? Let students see how much fun it is to engage the brain.

Let Students Learn From Failure

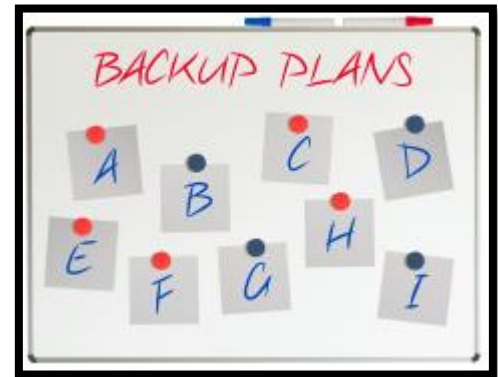
Too often, students—and teachers—believe learning comes from success when in truth, it's as likely to be the product of failure. Knowing what doesn't work is a powerful weapon as we struggle to think critically about the myriad issues along our path to college and/or career. As teachers, it's important we reinforce the concept that learning has many faces. Here are ten ways to teach through failure:

Use the Mulligan Rule

What's the Mulligan Rule? Any golfers? A mulligan in golf is a do-over. Blend that concept into your classroom. Common Core expects students to write-edit-resubmit. Make that part of every lesson. After submittal, give students a set amount of time to redo and resubmit their work. Some won't, but those who do will learn much more by the process.

Don't define success as perfection

When you're discussing a project or a lesson, don't define it in terms of checkboxes or line items or 100% accuracy. Think about your favorite book. Is it the same as your best friend's? How about the vacation you're planning—would your sister pick that dream location? Education is no different. Many celebrated 'successful' people failed at school because they were unusual thinkers. Most famously: Bill Gates, who dropped out of college because he believed he could learn more from life than professors.



Education pedagogists categorize these sorts of ideas as *higher-order thinking* and *Habits of Mind*—traits that contribute to critical thinking, problem solving, and thriving. These are difficult to quantify on a report card, but critical to life-long success. Observe students as they work. Notice their risk-taking curiosity, how they color outside the lines. Anecdotally assess their daily efforts and let that count as much as a summative exam that judges a point in time.

Let students see you fail

One reason lots of teachers keep the same lesson plans year-to-year is they are vetted. The teacher won't be surprised by a failure or a question they can't answer. Honestly, this is a big reason why many eschew technology: Too often, it fails at just that critical moment.

Revise your mindset. Don't hide your failures from students. Don't apologize. Don't be embarrassed or defeated. Show them how you recover from failure. Model the steps you take to move to Plan B, C, even X. Show your teaching grit and students will understand that, too, is what they're learning: How to recover from failure.

Share strategies for problem solving

Problems are inevitable. Everyone has them. What many people DON'T have is a strategy to address them. Share these with students. Post these on the classroom wall. When students have problems, suggest they try a strategy from this list, and then another, and another. Eventually, the problem will resolve, the result of a tenacious, gritty attack by an individual who refuses to give up.

Exult in problems

If you're geeky, you love problems, puzzles, and the maze that leads from question to answer. It doesn't intimidate or frighten you, it energizes you. Share that enthusiasm with students. They are as likely to meet failure as success in their lives; show them your authentic, granular approach to addressing that eventuality.

Assess grit

Success isn't about right and wrong. More often, it's about grit—tenacity, working through a process, and not giving up when failure seems imminent. Statistically, over half of people say they 'succeeded' (in whatever venture they tried) not by being the best in the field but because they were the last man standing.

Integrate that into your lessons. Assess student effort, their attention to detail, their ability to transfer knowledge from earlier lessons to this one, their enthusiasm for learning, how often they tried-failed-retried, and that they completed the project. Let students know they will be evaluated on those criteria more than the perfection of their work.



Let students teach each other

There are many paths to success. Often, what works for one person is based on their perspective, personal history, and goals. This is at the core of differentiation: that we communicate in multiple ways—visually, orally, tactally—in an effort to reach all learning styles.

Even so, students may not understand. Our failure to speak in a language they understand will become their failure to learn the material. Don't let that happen. Let students be the teachers. They often pick a relationship or comparison you wouldn't think of. Let students know that in your classroom, brainstorming and freedom of speech are problem-solving strategies.

Don't be afraid to move the goal posts

Even if it's in the middle of a lesson. That happens all the time in life and no one apologizes, feels guilty, or accommodates your anger. When you teach a lesson, you constantly reassess based on student progress. Do the same with assessment.

But make it fair. Let students know the changes are rooted in your desire that they succeed. If you can't make that argument, you probably shouldn't make the change.

Success is as much serendipity as planning

Think of Velcro and post-it notes—life-changing products resulting from errors. They surprised their creators and excited the world. Keep those possibilities available to students.

Don't reward speed

Often, students who finish first are assigned the task of helping neighbors or playing time-filler games. Finishing early should not be rewarded. Or punished. Sometimes it means the student thoroughly understood the material. Sometimes it means they glossed over it. Students are too often taught finishing early is a badge of honor, a mark of their expertise. Remove that judgment and let it be what it is.

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Lesson #11 Word Certification

Vocabulary	Problem solving	Homework
<ul style="list-style-type: none"> • Attributes • Autocorrect • Endnote • Footnote • Hyperlinks • Indentation • Mail merge • Quick Parts • SmartArt • Themes • Versions • Views • Wordart 	<ul style="list-style-type: none"> • Doc says 'read only' (save under a different name) • What's the difference between save and save-as? • What is today's date? (Ctrl+;) • Can't find doc file (Start-search) • Right-click doesn't work (reboot) • I know the answers, but can't work fast enough on trial tests (make skills habits) • Don't know answer (Google it; use Help files, provided resources, teammates) • How do I add a footer or header? • How do I save as a different filename? 	<p>Review notes to prepare for project</p> <p>Watch all videos; prepare reflections; complete compare-contrast table; complete pre-test assessment</p> <p style="text-align: center;">Keyboard 45 minutes, 15 minutes at a time</p>
<p>Academic Applications research, writing, problem solving</p>	<p style="text-align: center;">Required Skills Intermediate MS Word, self-starter attitude</p>	<p style="text-align: center;">Standards CCSS: CCRA.W.6 NETS: 2b, 6a</p>

Essential Question

How do I learn enough about word processing to serve my education needs?

Big Idea

Know how to use word processing to produce and publish writing and present ideas efficiently.

Teacher Preparation/Materials Required

- Add Unit and Certification test date to class calendar.
- Have lesson materials online to preview lesson.
- Know whether you need extra time to complete lesson.
- Have student workbooks available (if using).
- Integrate domain-specific tech vocabulary into lesson.
- Ask what tech problems students had difficulty with.
- Know which tasks weren't completed last week and whether they are necessary to move forward.
- Something happen you weren't prepared for? Show students how you fix the emergency without a meltdown and with a positive attitude.

Assessment Strategies

- Previewed required material; came to class prepared
- Worked independently
- Used good keyboarding habits
- Annotated workbook (if using)
- Completed warm-up, exit ticket
- Completed MS Certification test (whether passed or not)
- Joined classroom conversations
- [tried to] solve own problems
- Decisions followed class rules
- Left room as s/he found it
- Higher order thinking: analysis, evaluation, synthesis
- Habits of mind observed

Steps

Time required: 360 minutes or more
Class warm-up: Keyboarding on the class typing program

Homework is assigned the week before this unit so students are prepared.

- _____ Any questions from homework? Expect students to review unit and come to class prepared.
- _____ Use backchannel program like Today’s Meet or Socrative_ to determine student understanding and where you might offer assistance.
- _____ Any questions on keyboard homework?
- _____ Define ‘word processing’? Name word processing programs (such as Word, Word Perfect, Google Docs, Open Office, Notes, and Text). Why is it important to be able to use them to:

- *Communicate ideas effectively to multiple audiences with a variety of media?*
- *Know what tasks are best suited to word processing as opposed to presentation programs, desktop publishing, or spreadsheets?*
- *Produce/publish writing and present relationships between ideas (Common Core)?*
- *Integrate information from different media to develop a coherent understanding of a topic (from Common Core)?*
- *Write routinely for a range of tasks, purposes, and audiences (from Common Core)?*

_____ *Figure 67 is a sample evaluation of the major differences between slideshows, word processing, spreadsheets and the collective category of ‘desktop publishing’. This includes a wide variety of tools, not just the four that we usually think of as delivering these goals. For example, ‘word processing’ includes not just the programs mentioned above, but forums, Discussion Boards, some blogs—any tool that delivers the message primarily with text.*

_____ *You can review these traits or use this table in conjunction with Figure 68:*

Figure 37—Compare-contrast productivity tools I

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

_____ *Figure 68* is an incomplete copy of *Figure 67* that's also in the workbooks (if you're using these). Working with a partner, give students time to complete the blank cells, and then go over the completed copy on the class screen. Would students add any other categories?

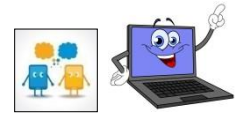


Figure 38—Compare-contrast productivity tools II

Element	Presenta- tion	Word Processing	Spread- sheets	DTP
Purpose				
Basics				
Sentences				
Content				
Use				
Presentation				
What else				

_____ Any questions on preparing for this Certification? The lesson is self-directed. The test will be scheduled at student's convenience.

_____ Primary skills addressed are:

- *attributes*
- *auto-correct*
- *comments*
- *endnotes*
- *fonts*
- *footers*
- *footnotes*
- *headers*
- *hyperlinks*
- *images*
- *indentation/tabs*
- *mail merge*
- *navigate and search*
- *page setup settings*
- *protection*
- *Quick Parts*
- *save*
- *shapes,*
- *share documents*
- *SmartArt*
- *spacing settings*
- *spell/grammar check*
- *table of contents*
- *tables*
- *templates*
- *text boxes*
- *themes*
- *versions*
- *Views*
- *WordArt*

_____ Here are some test-taking hints:

- *Tests are skills-based and take place in a simulated application environment.*
- *Most questions have multiple tasks; the exam is assessed on outcome and clicks.*
- *Users should be able to locate and utilize key features.*
- *Questions are not worded to be tricky or misleading.*

- *Be well versed in MS Word, persistent in finding answers.*
- *Test takes about 90 minutes.*
- *Skip questions you are not sure of. Return to them at the end of the test.*
- *Keep track of time.*
- *Do not over-think questions.*
- *Stick to the literal.*

_____ Students will use as much class time as you can make available to prepare for test using an MS-approved prep website such as:

- *Certiport (<http://bit.ly/1OwOjJJ>)*
- *Lynda.com*

_____ Training takes approximately five hours. Students can study in groups.

_____ Besides class time, students should use homework time to prepare.

_____ Before taking certification, students design and take a practice test using a digital tool, such as:

- *Flippity—create Jeopardy-style quiz*
<http://flippity.net/QuizShow.asp>
- *PuzzleMaker—crosswords and more (Assessment 17)*
<http://bit.ly/1T8qCIN>
- *StudyBlue*
<https://www.studyblue.com/>
- *Kahoot—compete in teams*
<https://getkahoot.com/>

Assessment 4—MS Word certification study guide

MS Word Certification

P A T T R I B U T E S . S T N E M M O C
 Y A Q S G N I T T E S G N I C A P S P B
 S Y G N A V I G A T E A N D S E A R C H
 M H W E M S M . L T S F O O T N O T E S
 A J A Q S S E S S K R K T A B Z T . K K
 I N P R W E H T N N Z A B A I Y S R X K
 L Z O E E A T I A X O L T N B E V T Z N
 M D I I P D L U S L E I D R M L C T J P
 E V S E T R O R P O P E S E A E E S K V
 R N S E E C E C F S N M H R R M T S L P
 G , S P X D E C U T E T E R E R S W Z P
 E S Y E A O O T A M D T O T A V O J R N
 S H R E T N B T O K E C T P M R Z M L Y
 M E H E T O I T L R T N K I D S T N O F
 S Y G E T O N L X O P C T A N L Z V Z T
 D A N A N O E D T E I G R S T G M B Y W
 Y T V D M P O U N U T T T N . G S R V Y
 S L N E S I A F Q E B J Z Q Z Y Z . T Q

- _____ Get a list of exam locations here: <http://bit.ly/1I1Ha4H>.
- _____ Have websites on class start page that tie into inquiry for those who finish early.
- _____ Best practices include:

- *use time wisely*
- *relate certification to college and career opportunities*
- *be self-motivated*

Class exit ticket: *Take part of a study quiz (like Assessment 17) designed by a classmate. Or, fill out the sample in the student workbook (if using).*

Differentiation

- *Extend this Unit to a full grading period, depending upon interest level at school.*
- *Use class digital note-taking tool to collect notes on prep materials for certification exam.*
- *Access free [online Word training \(http://www.gcflearnfree.org/word2010\)](http://www.gcflearnfree.org/word2010).*
- *Practice on MS 360 if available so students get used to taking tests online.*
- *Reflect in blog on achieving MS Certification. Was it important? Did student learn a lot? If they didn't pass, what happened? Student is graded NOT on whether they got certified, but the process followed in pursuing it.*
- *K-8 Keyboard Curriculum available in [K-8 Keyboard Curriculum \(http://bit.ly/1VJJwLH\)](http://bit.ly/1VJJwLH).*



Classroom Posters

- 1. 10 Steps to Become a Better Geek**
- 2. 15 Ways to Get Your Geek On**
- 3. Copyright Law**
- 4. Digital Neighborhood**
- 5. Email etiquette**
- 6. Flipped Classroom**
- 7. Here's What We've Done**
- 8. How to Save—4 Ways**
- 9. How to solve problems**
- 10. I Can't Find My File**
- 11. Keyboarding—why?**
- 12. Netiquette Rules**
- 13. Popular Shortkeys**
- 14. Shortkeys—Chromebook**
- 15. Shortkeys—Internet**
- 16. Shortkeys—iPad**
- 17. Shortkeys—PCs**
- 18. Steps for Internet Research**
- 19. What's a Mulligan**

Posters Intentionally deleted



Which book?	Price
<i>K-8 Tech Textbook (each grade level—print, digital, or both)</i>	<i>\$32.99/25.99//53.08 + p&h</i>
<i>K-8 Student tech workbooks (with video, teacher manual)</i>	<i>\$199 per grade level</i>
<i>35 More Projects for K-6 (aligned w curriculum—digital only)</i>	<i>\$31.99/25.99/52.18 + p&h</i>
<i>55 Tech Projects—Volume I, II, or both (digital only)</i>	<i>\$18.99/\$32.49 + p&h</i>
<i>K-8 Keyboard Curriculum (print, digital, or both)</i>	<i>\$25.99-\$64</i>
<i>K-8 Student keyboarding wkbks (with video, teacher manual)</i>	<i>\$199 per grade level</i>
<i>K-8 Digital Citizenship Curriculum</i>	<i>\$29.95/25.99/50.38 + p&h</i>
<i>K-8 Common Core Lessons</i>	<i>FREE-\$48.55 + p&h</i>
<i>Pedagogic Articles</i>	<i>\$6.99 (digital only)</i>
<i>K-8 Tech Scope and Sequences (Word doc)</i>	<i>\$9.99 each (digital only)</i>
<i>Posters for the Tech Lab</i>	<i>\$2.99 each (digital only)</i>
<i>16 Holiday Projects</i>	<i>\$4.99 (digital only)</i>
<i>98 Tech Tips From Classroom</i>	<i>\$9.99 (digital only)</i>
<i>Classes (certificate and college credit)</i>	<i>\$260-\$450</i>
<i>Project-based learning (lesson plans)</i>	<i>\$1.99 each on varied topics</i>
<i>New Teacher Survival Kit (K-5)</i>	<i>\$360 and up (+ p&h)</i>
<i>New Teacher Survival Kit (K-6)</i>	<i>\$380 and up (+ p&h)</i>
<i>New Teacher Survival Kit (6-8)</i>	<i>\$330 and up (+ p&h)</i>
<i>Homeschool Tech Survival Kit</i>	<i>Starts at \$99.00</i>
<i>Bundles of lesson plans</i>	<i>\$7.99 and up</i>
<i>Mentoring (1 hr. at a time)</i>	<i>\$50/hour and up</i>
<i>Year-long tech curriculum help (via wiki)</i>	<i>\$145</i>
<i>Consulting/seminars/webinars</i>	<i>Call or email for prices</i>
Total	

**Fill out this form (prices subject to change).
Email Zeke.rowe@structuredlearning.net.
Use PayPal, Amazon, TPT, pre-approved district PO
Questions? Contact Zeke Rowe**



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Education Community*