Teacher Manual

High School Technology

Book 1

by Ask a Tech Teacher

HIGH SCHOOL TECHNOLOGY

Book 1

GRADES 9-12

2019

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

Introduction

The educational paradigm has changed. Technology, once optional, is now granular to college and career preparation, blended into educational standards that expect students to:

- **evaluate print and digital media**
- **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 do educators teach the technology that allows students to achieve these standards?

This three-volume **High School Technology Curriculum** is a great start. It provides critical tech knowledge and skills that will make a difference in student learning and life. Lessons are designed to be self-paced, platform-agnostic, aligned with core subjects, and themed to the topics important to high school students.

All three volumes are project-based with wide-ranging opportunities for students to show their knowledge in the manner best fit to their communication style.

Each of the three volumes is stand-alone with a particular focus to help you choose which is best for your needs:

Book 1:   *Reviews the tech skills required for college and career.*

Book 1 (this book) is a perfect choice to establish comprehensive tech skills as students prepare for independent use and understanding in college or career. Depending upon how well-versed students are in technology, they move faster or slower through lessons, but with the confidence that they are learning critical skills.

"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

Book 2:   Applies learned skills to popular tech projects.

Book 2 is a perfect choice for students who have a solid background in tech skills and are interested in using it in projects like coding, robotics, writing ebooks, and others that apply to classes and interests. The overarching goal of Book 2 and 3 is to teach students to be problem solvers and independent thinkers prepared for whatever they face in the future.

Book 3:   Applies learned skills to more advanced projects.

Book 3 is a perfect choice for students who have a solid background in applying tech skills to projects and are looking for more advanced opportunities in Word certification, SketchUp, Engineering, Alice, and other tech-intensive topics. The overarching goal of Book 2 and 3 is to teach students to be problem solvers and independent thinkers so they are prepared for whatever their future holds.

What's in this Curriculum?

Lessons in these three volumes (this is the first of three—Book 2 and 3 are sold separately) may focus on coding, debate, engineering, financial literacy, Genius Hour, Google Earth, image editing, infographics, Internet searches, math, presentations, Photoshop, robotics, SketchUp, spreadsheets, visual learning, webtools, word processing, writing ebooks, and more. All books include three foundational topics that are considered critical to student technology success:

- *keyboarding*
- *digital citizenship*
- *problem-solving*
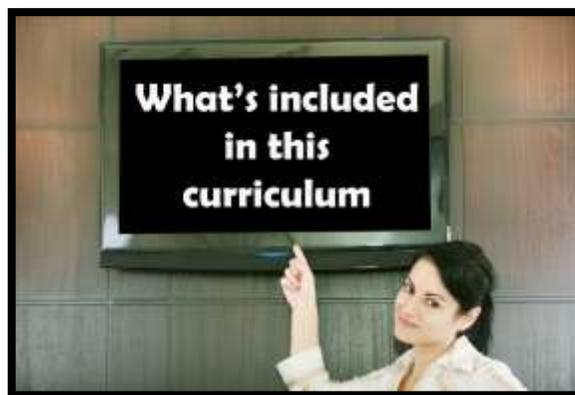
Included in each is 1) a Scope and Sequence which catalogues what is covered and in which volume, and 2) short articles on the curriculum's pedagogic foundation.

Each weekly lesson includes:

- *assessment strategies*
- *class exit ticket*
- *Common Core and ISTE alignment*
- *differentiation strategies*
- *educational applications*
- *essential question and big idea*
- *examples, rubrics, images, printables*

- *materials and preparation required*
- *problem solving for the project*
- *steps to accomplish goals*
- *supporting links*
- *time required*
- *vocabulary used*
- *warm-ups*

All except the 'steps to accomplish goals' can quickly be viewed on the first and last page of each lesson, providing a snapshot of what will be happening without digging through lots of pages. *Figures 1a-b* are screenshots from a sample lesson showing where these are in the lesson (zoom in if needed):

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

Programs Used

Of course, required webtools and programs will vary by the skill taught but we try to use what you normally would in your classes and/or what is freely available on the Internet. Check under '*Teacher Prep*' and '*Materials Required*' to see which are required.

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 earlier in the volume.*

How to Use This Book

This is the teacher manual for Book 1, 2, or 3 of the high school technology curriculum. Use it by itself to guide teaching or in conjunction with the companion student workbooks (sold separately). If there is a skill students don't know, take time to teach it. If it is a skill students have already learned (such as beginning word processing), expect students to transfer that knowledge to this class.

*Figure 2—Student Wkbks*
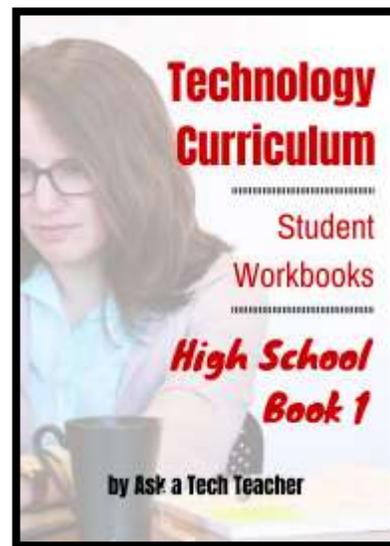
Here are hints on using this volume:

- Don't expect to finish all lessons in a year. Pick what works best for your unique group.
- You don't have to teach the lessons in any particular order, as you did if you used the K-5 technology curriculum. As in middle school, students learn based on themes.
- A lesson requires one week—two-to-three classes.
- There are five curricular themes—*Math, Productivity, Search and Research, Speaking and Listening, and Writing*. Pick one that applies to your students. Work through the lessons. Or, rather than working on a theme, mix and match lessons—pick what you want to cover.
- The first theme—*Integrated into all*—denotes lessons integrated into all other lessons.
- Lessons you'll want to complete regardless of the themes selected are:

  - o *#1   Introduction*
  - o *#2   Digital Tools*
  - o *#3   Digital Citizenship*
  - o *#4   Keyboarding*
  - o *#5   Problem Solving*
  - o *#23   Webtools*

- Personalize each lesson to your needs with 'Academic Applications'. These are suggestions for blending learning into your grade-level curriculum.
- Here are popular reasons to invest in student digital workbooks (sold separately):

  - o *Full-color projects are at student fingertips, complete with examples and directions (licensing varies based on plan).*
  - o *Links are embedded—no searching for the site or typing in addresses.*
  - o *EWorkbooks can be annotated.*
  - o *Students can work at their own pace, spiraling forward or back as needed.*

- Some lessons offer several activities that meet goals outlined in the Essential Question and Big Idea. Pick what works for your students.
- *'Teacher Preparation'* often includes chatting with the grade-level team to tie into their inquiry and/or offer targeted websites for early-finishers.
- If a link doesn't work, copy-paste it into your Internet browser. *A note: Links die. If a link doesn't work even after copy-pasting, email us**. We may have a work-around.*

- If there is no link, this means it was already provided.
- Check off completed items on the line preceding the step so you know what's finished. Use Adobe, Notable, Kami, Lumin, or any annotation tool that works on your device.
- Icons are used to denote the following activity:

  - *video*

  - *collaboration*

  - *an article for you*

  - *workbook material*

- Lessons expect students to develop 'habits of mind'. You can read more about Art Costa and Bena Kallick's discussion of these principles at http://habitsofmind.org, in *Figure 3 (zoom in if needed)*, and in the article at the end of Lesson #1. In a sentence: Habits of Mind ask students to engage in their learning, not simply memorize.

Figure 3—Habits of Mind
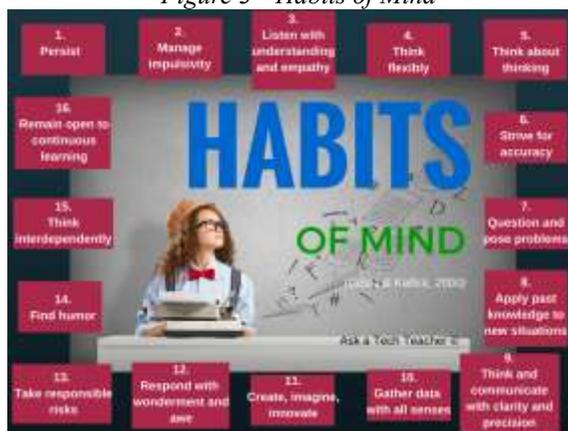
- Use as much tech as possible in your class. Make it adaptive, authentic, and agile. Encourage students to do the same whether it's a smartphone timing a quiz, a video posted to the class website, or an audio file. If you treat tech as a tool in daily activities, so will students.
- Always use lesson vocabulary. Students gain authentic understanding by your example.
- Expect students to back up their work. This can be to 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 facilitator not lecturer. Learning is accomplished by 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 problem-solving listed in the lesson but embrace all. This trains critical thinking and troubleshooting when you aren't there to help.
- Encourage student-directed differentiation. If the Big Idea and Essential Question can be completed in ways other than what is listed, embrace those.
- Every effort is made to accommodate a variety of digital devices. If the activity is impossible in a particular digital device (i.e., software doesn't run in Chromebooks), adapt the **Big Idea and Essential Question**—the skill taught and its application to inquiry—to your circumstances.

- **Need more help?** Email admin@structuredlearning.net or askatechteacher@gmail.com.

Here are useful pieces to extend this volume:

- *Student workbooks—allow students to be self-paced (sold separately)*
- *Digital Citizenship curriculum—if this is a school focus (sold separately)*
- *Keyboarding Curriculum—if this is a school focus (sold separately)*
- Ask a Tech Teacher.com—*find free lesson plans, tech tips, targeted websites, and lots more teacher resources.*

Who Needs This Book

You are the Tech Specialist, Coordinator for Instructional Technology, IT Coordinator, Technology Facilitator or Director, Technology Specialist, or tech teacher—tasked with preparing students for class tech needs. You have the drive to do this no matter roadblocks.

You are a homeschooler. You're not comfortable with technology but you're committed to providing the tools your children need to succeed. Just as important: Your children WANT to learn with these tools!

Figure 4--Tomorrow's Student
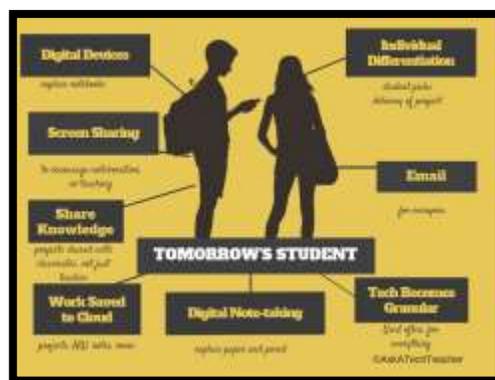
Use this book to prepare students for learning and life. To build **Tomorrow's Student** requires integration of technology with learning. We show you how.

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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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GRADE 9-12 TECHNOLOGY SCOPE AND SEQUENCE©

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

Intentionally deleted

Lesson #2—Digital Tools in the Classroom

Vocabulary	Problem solving	Skills
• *Annotation* • *Backchannel* • *Benchmark* • *Chrome* • *Cloud* • *Digital citizen* • *Digital portfolio* • *Digital tools* • *Domain-specific* • *Geek* • *Hashtag* • *Linkback* • *PDF* • *Plagiarism* • *Portal* • *Template*	▪ *I'm too young for Twitter (use class account)* ▪ *Avatar didn't show in my wiki page (ask a neighbor how they did it)* ▪ *My work disappeared! (Google Apps automatically saves—pull up revision)* ▪ *Teacher is busy and I need help (ask for peer support)* ▪ *Just give me a handout (Sorry, we learn through experience and collaboration)* ▪ *I can't find Evernote (find the 'elephant' on internet toolbar)* ▪ *I'm not fast enough decoding vocabulary (keep at it—it gets easier)* ▪ *I forgot my Evidence for the Evidence Board (write it down for the next time)*	*Blogging* *Backchannel* *Digital note-taking* *Hardware parts* *Avatars* *Annotating PDFs* *PDF annotation* *Class calendar* *Internet start page* *Digital portfolios* *Email* *Evidence Board* *Decoding vocab*
Academic Applications *Writing, research, online safety*	**Materials Required** *Back channel, hardware assessments, Student accounts, Evidence badges for Evidence board, links to training videos, student workbooks (if using)*	**Standards** *CCSS: WHST.9-10.7-9* *NETS: 1b, 4b*

Essential Question

How do I use technology to pursue education?

Big Idea

Students become aware of how tech enhances educational goals

Teacher Preparation

- Have copies of blogging agreement (if necessary).
- Have student hardware assessments (if needed).
- Integrate domain-specific tech vocabulary into lesson.
- Know whether you need extra time to complete lesson.
- Make sure all student accounts are active.
- Know which tasks weren't completed last class and whether they are necessary to move forward.
- Something happen you weren't prepared for? Show how you fix it with a positive attitude.

Assessment Strategies

- *Annotated workbook (if using)*
- *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 minutes**
Class warm-up: ***Test digital tool accounts while waiting for class to start***

_____Have neighbors check each other's mouse hold (see *Figure 6—zoom in if needed)*:

Figure 5—Mouse skills
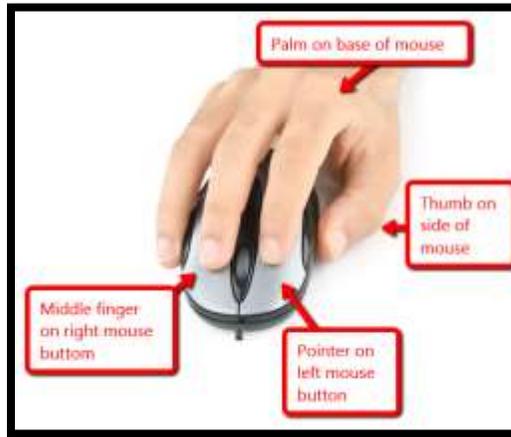
_____Review digital device hardware used in your school. Students should know the basic parts and whether they're input or output. There are assessments at the end of this Lesson. *Figures 8a-b* are completed worksheets (zoom in if necessary). These can be filled out in student workbooks or as formative assessments during classtime.

Figure 6a-d—Digital devices Quiz

_____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 (trick question: there isn't one)? Ask students where the microphone is on a PC or Chromebook. How about a charging dock?

Figure 7a-b—Parts of iPad, Chromebook
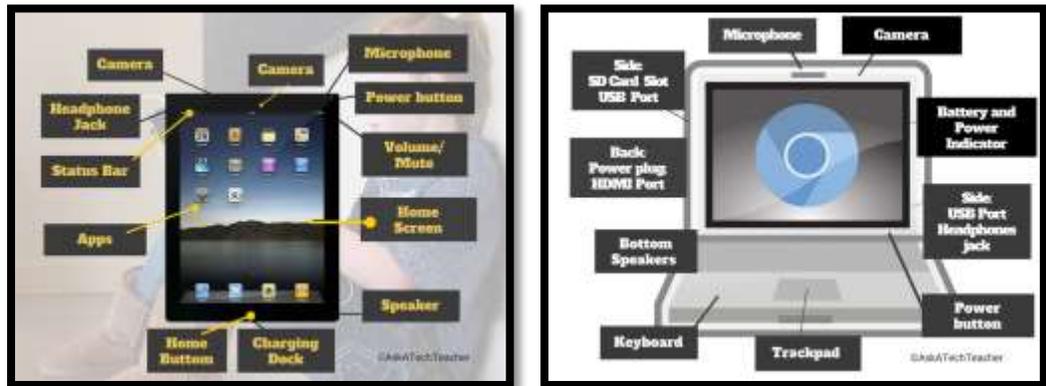
_____Discuss how understanding hardware helps to solve tech problems.

_____The following tools are discussed in this Lesson. Pick those that your students use and add others you have that aren't mentioned:

- *annotation tool*
- *avatars*
- *backchannel devices*
- *blogs*
- *class calendar*
- *class Internet start page*
- *class website*
- *digital note-taking*

- *digital portfolios*
- *drop box*
- *email*
- *Evidence Board*
- *Google Apps*
- *student websites*
- *student workbooks*
- *vocabulary decoding tools*

_____Adapt them to your digital devices (Chromebooks, PCs, Mac, iPads, or other).
_____Introduce, demo, and test. Dig deeper when necessary.

Student workbooks

_____If using student PDF workbooks that align with this volume, introduce them to students now. Show how to open them from their digital device, find rubrics and project samples, and annotate. Students can access links from within the PDF, see full-color images, circle back to review concepts or forward to preview upcoming lessons.

Annotation Tool

_____If using student workbooks, show students how to annotate their copy with the note-taking tool used in your school such as iAnnotate (*Figure 9a*), Notability (*Figure 9b*), or Adobe Acrobat (free—*Figure 9c*).

Figure 8a-c—Digital annotation tools
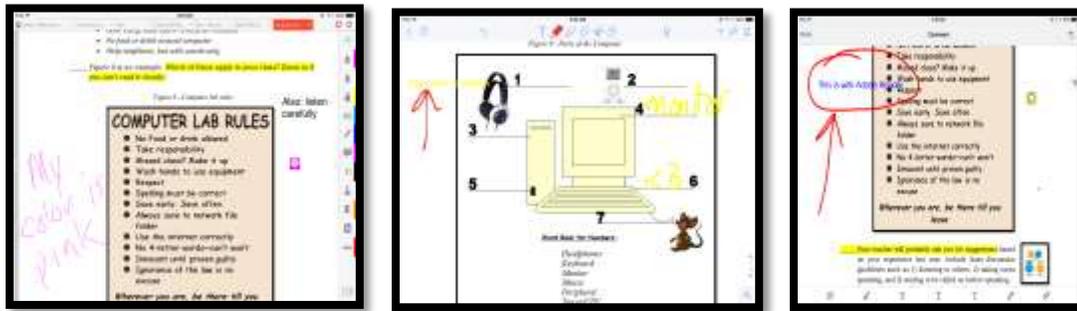
_____If students share the PDF with other students (for example, it's installed on a class digital device that multiple classes visit), show how to select a color that's different from other students.
_____Discuss screenshots. Often, students will annotate a page (say, a rubric) in their workbook, then send you 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 to take 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*

Avatars

_____Students create a profile picture with an avatar creator like (click for link or use your favorite):

- *Animal yourself*
- *Pickaface*

- *Storyboard That!*
- *Voki yourself*

Figure 9a-c—Avatars

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

Backchannel Devices

_____The 'backchannel' is communication not from the presenter. It encourages students to share their thoughts and ideas, even questions, during a lesson. Typically, the comments show up on the class screen, shared with all classmates, likely anonymously. Students read and respond. Teacher easily sees when students get/don't get a topic s/he is covering.
_____Popular backchannel options are:

- *Padlet — a virtual wall where students comment and respond; Figure 11a*
- *Socrative — a closed virtual room where students answer questions, take polls, and more; Figure 11b*
- *Twitter — a virtual comment stream organized by hashtags; private or public*

Figure 10a-b—Backchannel devices
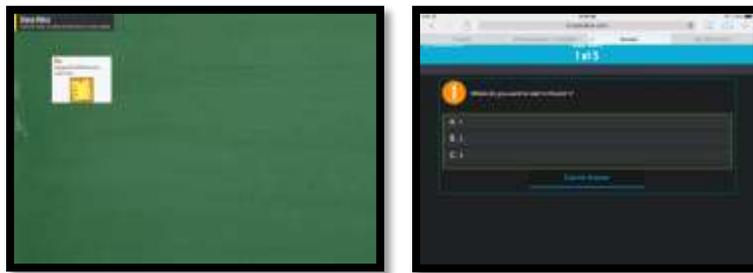
_____Why use backchannels? So you:

- *know what engages students and extend those ideas*
- *hear from shy students who need a classroom voice*
- *allow chatty students to ask as much as they want without dominating the class*

Blogs

_____Blogs are collections of short online articles that shsare ideas and garner feedback. With high school students, you are particularly interested in their facility to:

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

_____If you're a Common Core school, review **"13 Ways Blogs Teach Common Core"** at the end of the lesson.

_____In *Figures 12a-c*, notice how blogs incorporate text and images to discuss a topic:

Figure 11a-c—Student blogs

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

_____Blog design reflects student personalities with colors, fonts, and widgets. What students include will help you better understand their interests, 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 and intended audience*
- *working link(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, copyright where required*
- *occasional teamwork*

_____Before beginning, students sign an agreement similar to *Blogging Rules (Figure 13a—*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 12a—Blogging rules; 13b—rubric

_____Students can create blogs in [Wordpress](#), [Blogger](#), or a favorite you prefer.

_____Discuss blogging netiquette—like 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)*

_____Remind students to practice good keyboarding as they type the entry.

_____Once a month, students post an article that discusses an inquiry topic. Then, visit and comment on five classmate blogs.

_____Set account so you approve comments before they go live. If you find inappropriate messages, chat with students about how nasty comments shut down the conversation.

_____Occasionally throughout the year, use the Student Blogs Rubric *(Figure 13b—*full size assessment at end of lesson) to assess student progress.

Class Calendar

_____Class calendars can run 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 are going to be in charge of updating, demonstrate this.

_____If using Google Apps, students can embed the calendar into blogs or websites.

_____For Google Calendar training, visit [Google's comprehensive calendar training](#).

Class Internet Start Page

_____A *start page* is a webpage that opens with the Internet. It organizes critical content in a single location and curates links students will use.

Figure 13—Class Internet start page
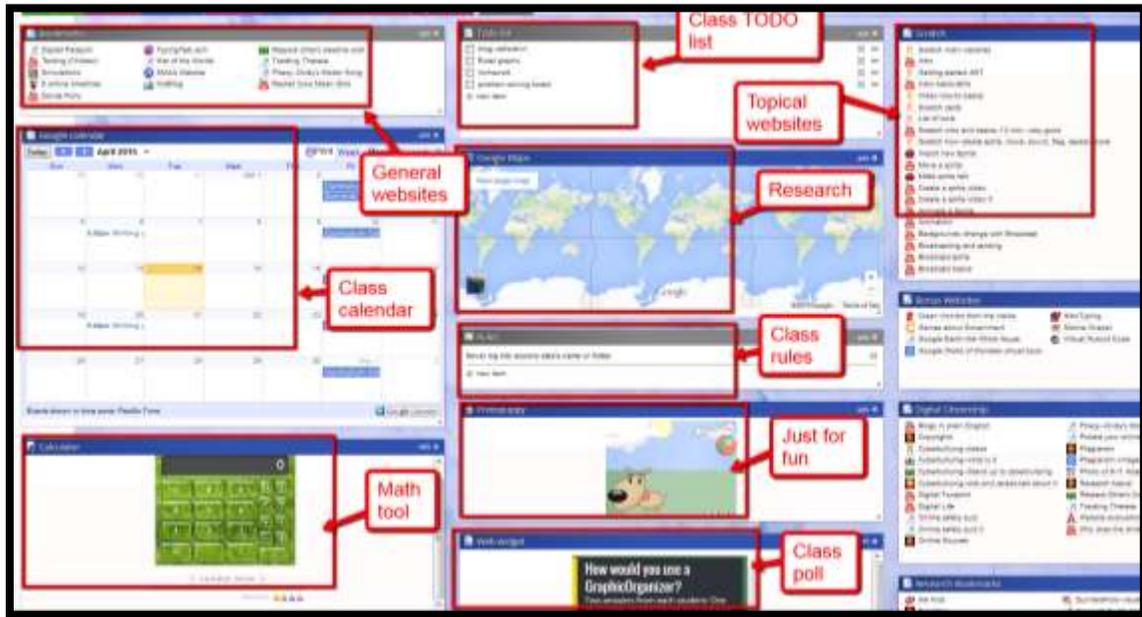
_____Include what students visit daily (i.e., guidelines, calendar, 'to do' list, typing websites, research locations, and calculator) as well as links specific to current project.

_____Mine also includes pictures of interest, rss feeds, weather, a graffiti wall, and a class pet. Yours will be different.

_____Suggestions: Protopage.com *(Figure 14),* Ighome, a collection site like Symbaloo *(Figure 15a),* Portaportal *(Figure 15b),* LiveBinders *(Figure 15c),* Diigo account, or class Evernote account.

Figure 14a-c—Class start page examples

_____Remind students that any time they visit the Internet, they must do so safely and legally. If you didn't discuss digital citizenship yet, take time right now to review it.

Class website

_____Class websites serve as a general resource collection location for class information.

_____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:

- *Word processing program (for any digital device) – Figure 16a*
- *Notability (for iPads) – Figure 16b*

Figure 15a-b—Note-taking tools
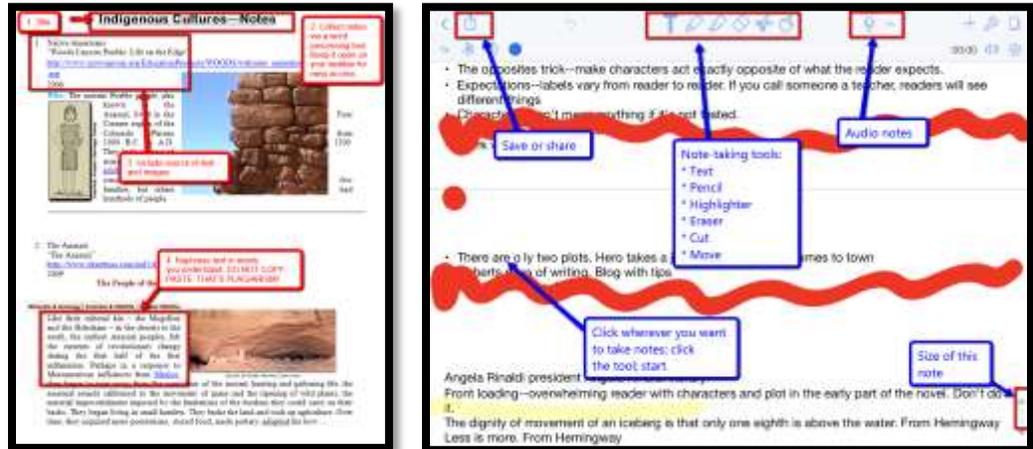
- *Google Apps – (for any digital device) — Figure 17*

Figure 16—Collaborative notes in Google Spreadsheets
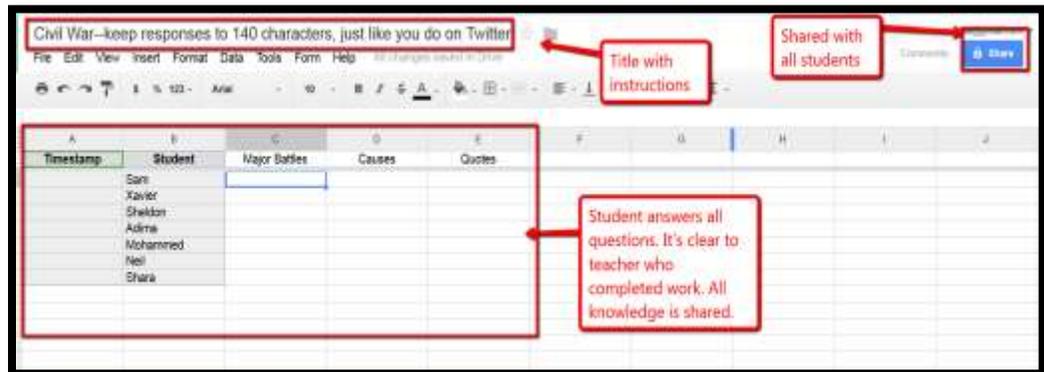
- *Evernote/OneNote (for most digital devices) — Figure 18a*
- *Twitter (for most digital devices) — Figure 18b*

Figure 17a-b –Digital notetaking tools
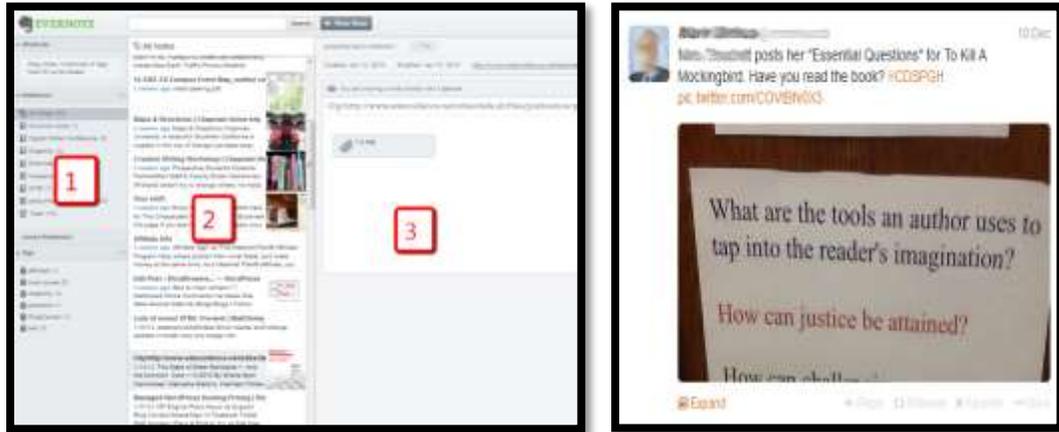
Digital portfolios

_____Discuss how Digital Portfolios are used to (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 that satisfy some or all of the above uses: 1) folders on school network, 2) fee-based programs, 3) cloud-based storage like Dropbox or Google Apps *(Figure 19b),* and 4) online collaborative sites like PBWorks.com.

_____Occasionally, use *Assessment* at end of this lesson to review student progress.

Figure 18a-b—Digital portfolio examples

Dropbox

_____If your school has this option, review it with students. If you don't, show students how they will be expected to submit classwork and/or homework.

_____An assignment drop box can be created through the school Learning Management System (LMS), email, Google Apps (through 'share' function)—even a Discussion Board.
_____If you have Google Apps (but not Google Classroom), create a drop box like *Figure 20*:

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

Figure 19—Dropbox
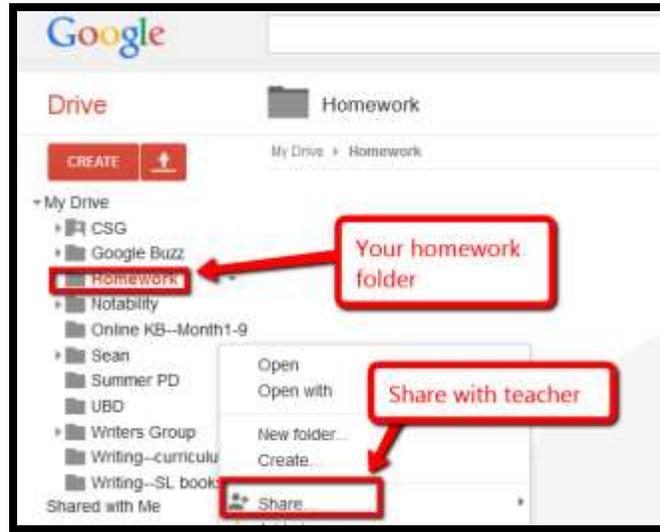
Email

_____Use web-based account such as Gmail (comes with GAFE and Google Classrooms).
_____Review **email** etiquette (*Figure 21*—full-size poster at end of lesson):

Figure 20—Email Etiquette

- *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.*

_____Clarify 'high priority' 'BCC', and 'CC'.
_____If you have GAFE or Google Classroom (with Gmail activated), review how to use email. Show students how to control settings so they don't get spam.

_____Let students (and parents) know that the email program used at home may not match the instructions you provided. Ask parents to show their children how to use the home-based email.

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

_____Email addresses are often required for online tools. If students don't have one, <u>try this work-around.</u>

_____Discuss 'spam'. What is it? Why is it sent? What should students do when it shows up in email?

_____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 22a*) is a bulletin board that celebrates student transfer of knowledge from tech class to home, friends, or other educational endeavors.

Figure 21a—Evidence Board; 22b—Badge

_____About once a month, students share how they use tech skills outside of your class. They will make a ten-second presentation to class, fill out a badge (like *Figure 23b*), and post it on the Evidence Board by their class. By year end, you want this collection to encircle the room.

Google Apps

_____To access Google Apps requires a Google account and starts at Google Drive. *Figure 23* is an example of what the Google Drive might look like:

Figure 22—Google Apps

_____There are many resources available for teaching how to use Google Apps. Check this list.
_____Give students time to explore Google Drive before moving on.
_____The most popular Google Drive 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 Forms (if available)*
- *Google Draw*

_____Review any of these you determine students should know.

Screenshots and Screencasts

_____Students will use screenshot tools, apps, or add-ons (depending upon your digital device), as well as screencasts (videos), to record information from their screen. More on this in the lesson on *Screenshots and Screencasts.*

Figure 23a—Screenshot; 24b—screencast
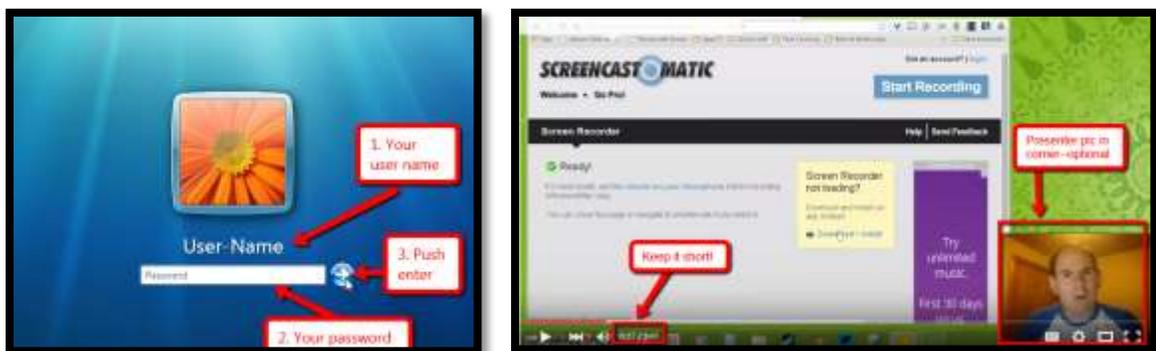
Student website

_____Most teachers will select either student blogs or websites, 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 education accounts. If your school doesn't have one, free websites can be created at Weebly, Wix, or blog accounts like Wordpress.

_____Websites should reflect student personalities with colors, fonts, and layout.

_____In general:

- *Website and article titles pull reader in.*
- *Articles review the topic, provide evidence with supporting links.*
- *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).*
- *Writing purpose is clear.*
- *Citations are included as needed.*
- *Occasional teamwork is exhibited.*

_____Occasionally (several times a grading period), assess websites based on the criteria in *Figure 25* (full size assessment at end of lesson):

Figure 24—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, is 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 is difficult to read due to formatting	**0 points** • Text is 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

Vocabulary Decoding Tools

_____Show students how to access the native apps or webtools on their digital devices that can be used to decode unknown vocabulary. Depending upon the device, these will be on the homepage, the browser toolbar, a shortkey, or a right click. Show students how to quickly look up words from any of their classes rather than skipping over content that includes the word. Let them practice with several of the words in this lesson's *Vocabulary* list.

_____If relevant, review Common Core's three tiers of vocabulary. How does this apply to them?

_____Decoding 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'*
- *Access an online dictionary like Merriam Webster*
- *Double-click the word on a webpage to uncover its definition (if you have a vocabulary browser app).*
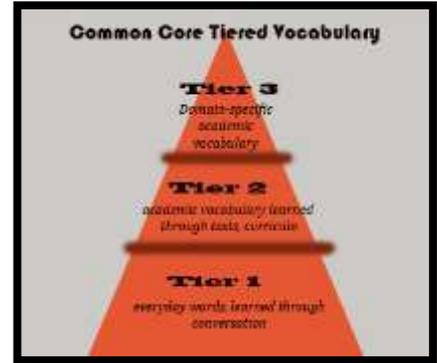
_____A note: Every chance you get, use technology to facilitate teaching. Lead by example. Students will see you use tech quickly and facilely and follow your good example. They want to use tech. Don't discourage them!

Class exit ticket: ***Students send a well-constructed email to a classmate (if students have email accounts) and reply to one they receive appropriately.***

Differentiation

- *Explore inside computer.*
- *Click here for how to use Padlet*
- *See article at end of Lesson on **Internet Start Pages**.*
- *What's PollDaddy? Watch this video.*
- *What's Evernote? Watch this video*
- *Many digital tools promote a paper-free classroom. See the article, **It's Time to Make Your Classroom Paper-free**, at the end of this lesson,*
- *For more Google Apps, try these (find more links here — http://bit.ly/1P8b2yv):*

    - *Hangouts: virtual meetings with classmates and teachers*
    - *Scholar: Research and analyze sources from books, websites, other*
    - *SketchUp: Create and explore 3D Models*
    - *Translate: Free online translation tool for any text*
    - *YouTube EDU: Access and view educational content*

Assessment 1—Parts of the computer

HARDWARE—PARTS OF THE COMPUTER

Student name: _____

*Name each part of computer hardware system. Label it as **INPUT** or **OUTPUT**.*
Spelling must be correct.

1 _____

2 _____

3 _____

4

5 _____

6

7 _____
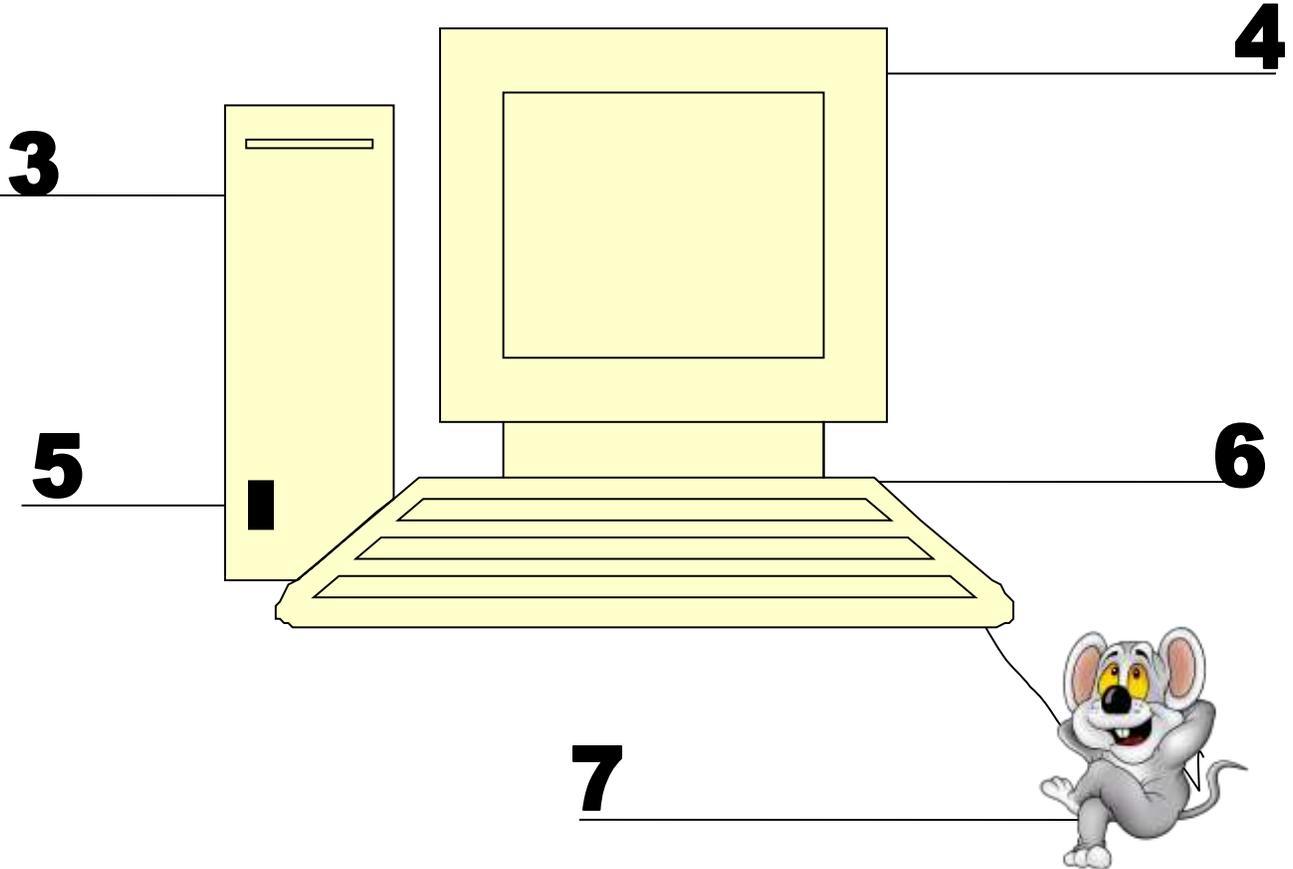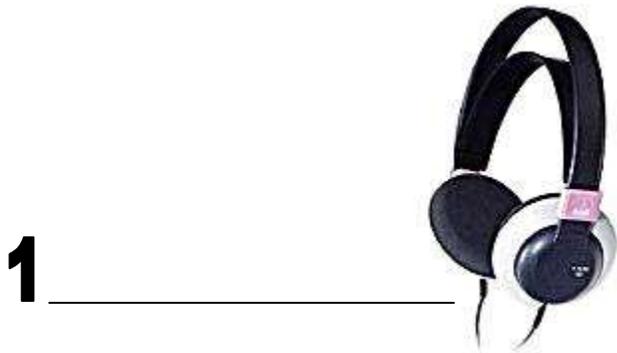
Assessment 2—Parts of the smartphone

HARDWARE—PARTS OF THE SMARTPHONE

Adapt this to your needs
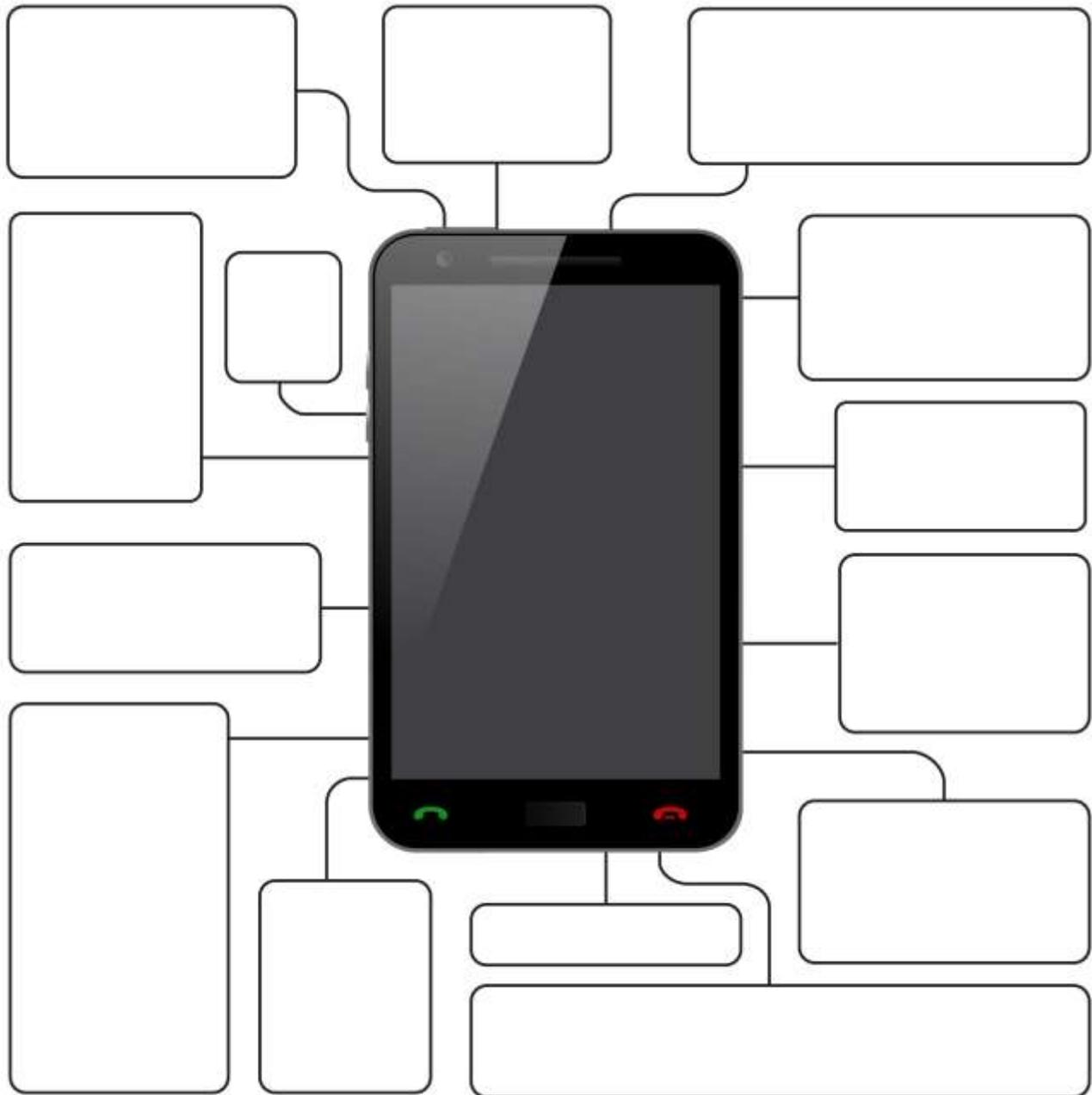
Parts of an iPad

©AskATechTeacher

Parts of a Chromebook

©AskATechTeacher

Microphone
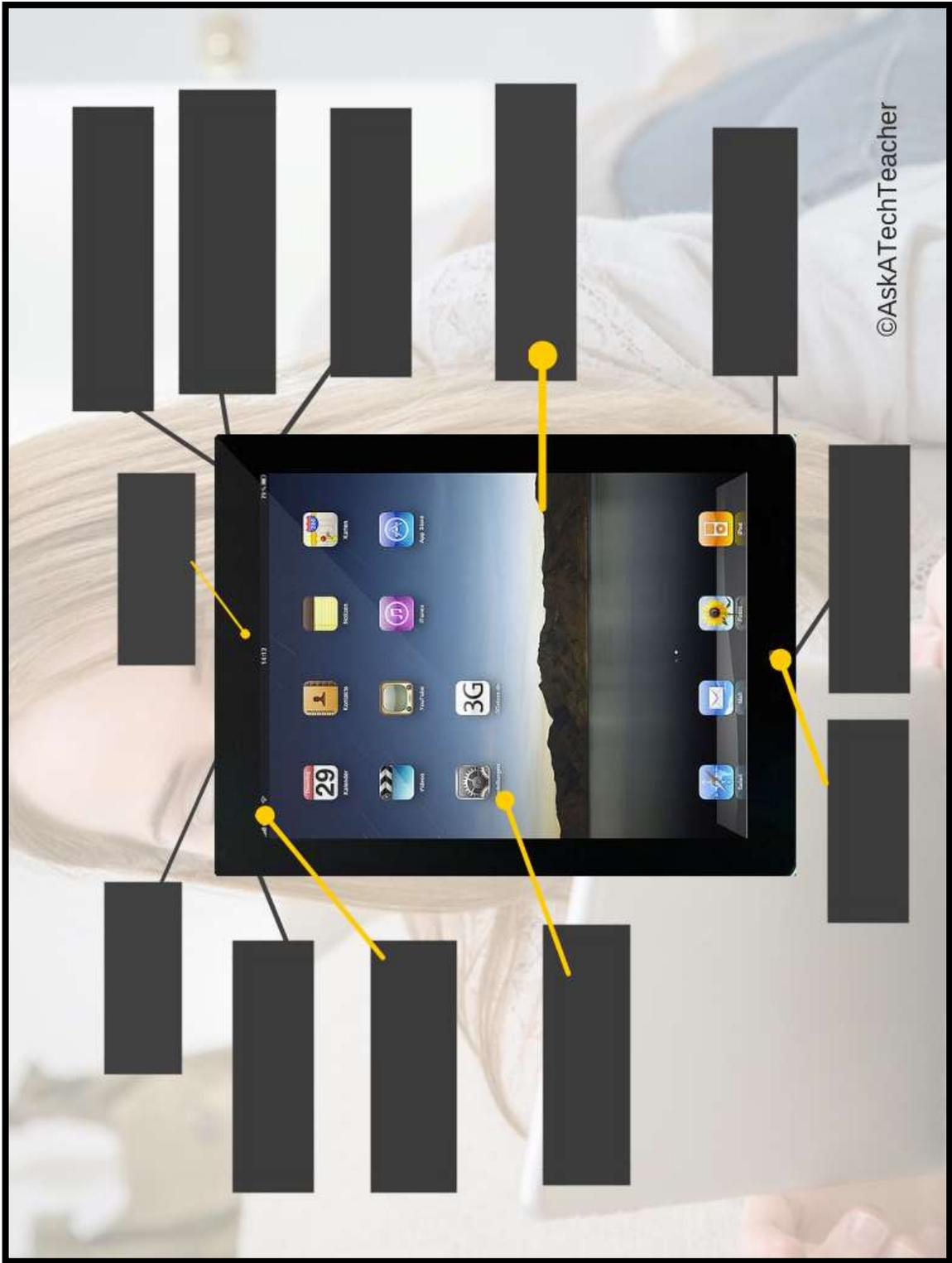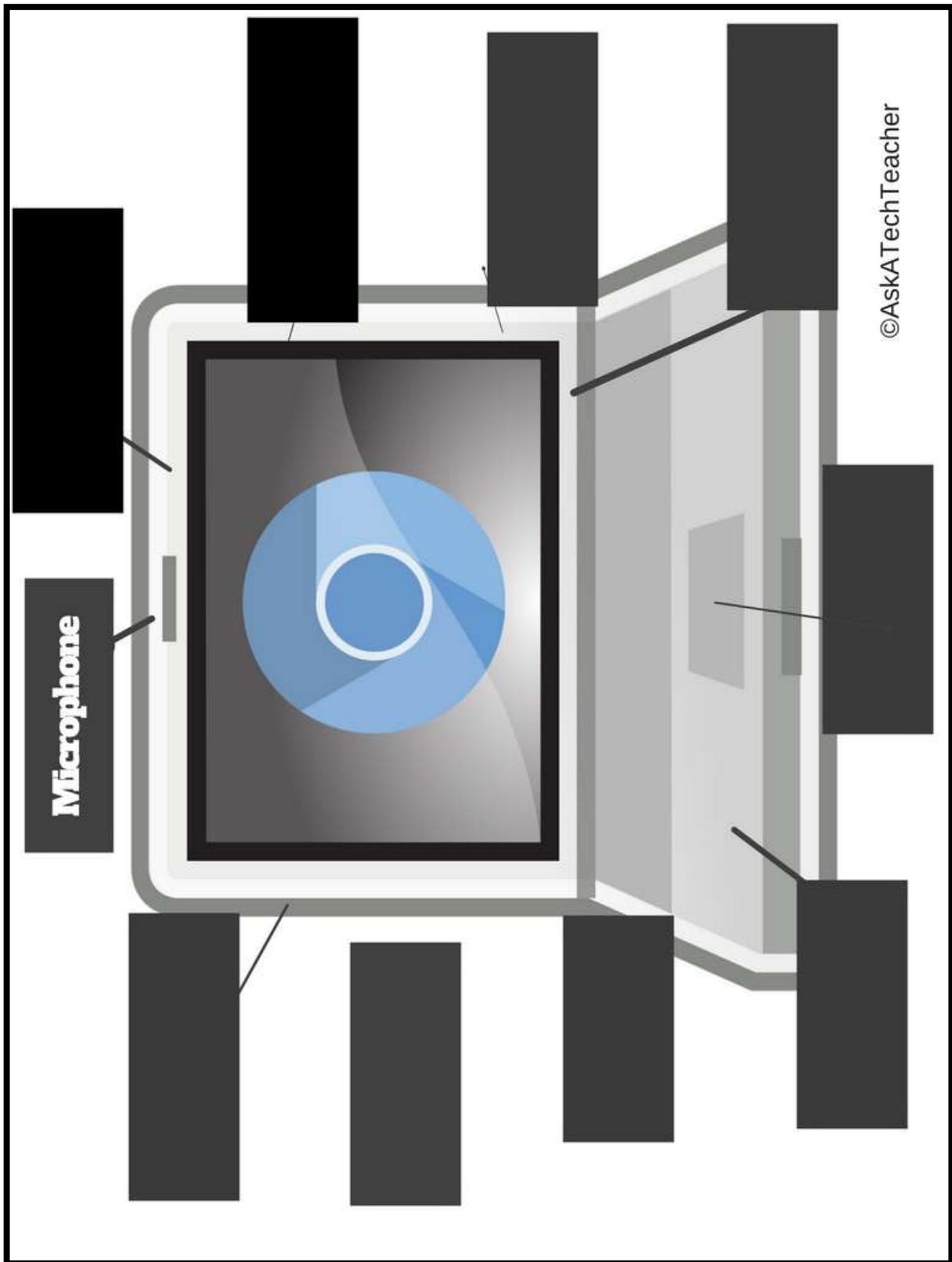
Assessment 5—Student blogging agreement

Blogging Rules

(adapted from Academy of Discovery)

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

Assessment 6—Blog grading rubric

Student Blog Rubric

Adapted from University of Wisconsin-Stout

Evaluation scale:

Exemplary:	*32-36 points*
Proficient:	*28-31 points*
Partially Proficient or Incomplete:	*< 28 points (resubmit)*

CRITERIA	Exemplary	Proficient	Partially	Incomplete	PTS
Relevance of Content to Students and Parents	**9 points** ▪ *Content has useful information* ▪ *Content is clear, concise; points readers to up to date resources.* ▪ *Blog is updated frequently*	**6 points** ▪ *Content points readers to quality resources, is 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 is difficult to read due to formatting*	**0 points** ▪ *Text is 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

Assessment 7—Website grading rubric

Student Website Rubric

Adapted from University of Wisconsin-Stout

Evaluation scale:

Exemplary:	*32-36 points*
Proficient:	*28-31 points*
Partially Proficient or Incomplete:	*< 28 points (resubmit)*

| CRITERIA	Exemplary	Proficient	Partially	Incomplete	PTS
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, is 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 is difficult to read due to formatting	*0 points* ▪ Text is 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

Assessment 8—Digital portfolio rubric

Digital Portfolio Rubric

CATEGORY	Exemplary	Proficient	Developing	Unsatisfactory	RATING
Selection of Artifacts	All artifacts and work samples are clearly and directly related to the purpose of portfolio.	Most artifacts and work samples are related to the purpose of the digital portfolio.	Some of the artifacts and work samples are related to the purpose of the digital portfolio.	None of the artifacts and work samples is related to the purpose of portfolio.	
Reflections	All reflections clearly describe growth, achievement and accomplishments, and include goals for continued learning (long and short term).	Most reflections describe growth and include goals for continued learning. It is clear student put thought and consideration into writing.	A few of the reflections describe growth and include goals for continued learning. It is not clear student put thought into his/her writing.	None of the reflections describes growth and does not include goals for continued learning. It is clear student put little thought into these writings.	
Use of Multimedia	Photographs, graphics, audio and/or video files enhance understanding of concepts, ideas and relationships, create interest, and are appropriate for chosen purpose.	Most of the graphic elements and multimedia contribute to understanding concepts, ideas and relationships, enhance the written material and create interest.	Some of the graphic elements and multimedia do not contribute to understanding concepts, ideas and relationships.	None of multimedia contribute to understanding concepts, ideas and relationships. The inappropriate use of multimedia detracts from content.	
Documentation & Copyright	All images, media and text follow copyright guidelines with accurate citations. All content throughout portfolio displays appropriate copyright permissions.	Most images, media and text created by others are cited with accurate, properly formatted citations.	Some images, media or text created by others are not cited with accurate, properly formatted citations.	No images, media or text created by others are cited with accurate, properly formatted citations.	
Ease of Navigation	Navigation links are intuitive. The various parts of portfolio are labeled, clearly organized and allow reader to easily locate an artifact.	Navigation links generally function well, but it is not always clear how to locate an artifact or move to related pages or different section.	Navigation links are confusing and it is often unclear how to locate an artifact or move to related pages or section.	Navigation links are confusing, and it is difficult to locate artifacts and move to related pages or a different section.	
Layout and Text Elements	Digital portfolio is easy to read. Fonts and type size vary appropriately for headings, sub-headings and text. Use of font styles (italic, bold, underline) is consistent and improves readability.	Digital portfolio is generally easy to read. Fonts and type size vary appropriately for headings, sub-headings and text. Use of font styles (italic, bold, underline) is generally consistent.	Digital portfolio is often difficult to read due to inappropriate use of fonts and type size for headings, sub-headings and text or inconsistent use of font styles (italic, bold, underline).	Digital portfolio is difficult to read due to inappropriate use of fonts, type size for headings, subheadings and text, and font styles (italic, bold, underline).	
Captions	All artifacts are accompanied by a caption that clearly explains importance of item including title, author, and date.	Most artifacts are accompanied by a caption that clearly explains importance of item including title, author, and date.	Some artifacts are accompanied by caption that explains importance of item including title, author, and date.	No artifacts are accompanied by a caption that explains importance of item.	
Writing Mechanics	There are no errors in grammar, capitalization, punctuation, and spelling.	There are few errors in grammar and spelling. These require minor editing and revision.	There are four or more errors in grammar and spelling requiring editing and revision.	There are more than six errors in grammar and spelling requiring major editing and revision.	

Askatechteacher©

EMAIL ETIQUETTE

1. Use proper formatting, spelling, grammar
2. CC anyone you mention
3. Subject line is what your email discusses
4. Answer swiftly
5. Re-read email before sending
6. Don't use capitals—THIS IS SHOUTING
7. Don't leave out the subject line
8. Don't attach unnecessary files
9. Don't overuse high priority
10. Don't email confidential information
11. Don't email offensive remarks
12. Don't forward chain letters or spam
13. Don't open attachments from strangers

<u>Which Internet Start Page is Best?</u>

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

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

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

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

Here are the ones I looked at:

Symbaloo

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

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

Ustart

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

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

Protopage

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

- *oft-used websites*
- *themed collections of websites*
- *a To Do list*
- *an interactive map*
- *a calculator*
- *a calendar of events*

- *edit-in-place sticky notes*
- *pictures of interest*
- *rss feeds of interest*
- *weather*
- *news*
- *widget for polling the class (Padlet)*

In addition, the Protopage folks are helpful. Whenever I have a problem (which is rare), they fix it quickly.

If you're looking for more details on how to set up a Protopage start page, here's a longish video with lots of details on setting up your Protopage Internet start page.

13 Ways Blogs Teach Common Core

If you aren't blogging with your students, you're missing one of the most effective tools available for improving student literacy and math. Blogs are easy to use, fun for students, encourage creativity and problem-solving, allow for reflection and feedback, enable publishing and sharing of work, and fulfill many of the Common Core Standards you might be struggling to complete. Aside from math and literacy, Common Core wants students to become accomplished in a variety of intangible skills that promote learning and college and career readiness. Look at these 13 benefits of blogging and how they align with Common Core:

1. **provide and get feedbac**k—building a community via comments is an integral part of blogging. If you didn't want feedback, you'd publish a white paper or submit work the old fashioned hard copy way. When students publish their ideas in blogs, other students, teachers, parents can provide feedback, join the conversation, and learn from the student.
2. **write-edit-review-rewrite**—teachers don't expect students to get it right the first time. Part of the writing process is revising, editing, rewriting. This is easy with blogs. Students publish a topic, collect comments, incorporate these ideas into their own thinking, and then edit their post.
3. **publish**—the idea that student work is created for a grade then stuffed away in a corner of their closet is disappearing. Current educators want students to publish their work in a way that allows everyone to benefit from the student's knowledge and work. There are many ways to do that—blogs are one of the easiest.
4. **share**—just like publishing, students no longer create for a grade; they share with others. Blogs allow for sharing of not only writing, but artwork, photography, music, multimedia projects, pretty much anything the student can create.
5. **collaborate**—blogs can easily be collaborative. Student groups can publish articles, comment on others, edit and rewrite. They can work together on one blog to cover a wider variety of topics and/or make its design attractive, appealing and enticing to readers.
6. **keyboarding**—blogs are small doses of typing—300-500 words, a few dozen for comments. This is an authentic opportunity to practice the keyboarding skills students will need for Common Core Standards.
7. **demonstrate independence**—blogs are about creativity. No two are alike. They offer lots of options for design and formatting so students can tweak it to their preference. Because they are open 24/7, students can do blog work when it suits them, not in the confines of a 50-minute class.
8. **build strong content knowledge**—blog posts can be drafted as the student collects information, posted when the student is ready. Links can be included to provide evidence of student statements, as well as linkbacks for reference and deeper reading for interested students.
9. **respond to the varying demands of audience, task, purpose, and discipline**—Students can create their work in whatever digital tool fits the audience, task, purpose they are focused on, and then embed it into their blog post. This is possible even in a simplified blogging platform like Kidblog. Most online tools (such as Voki, Wordle, and Tagxedo) provide the html codes that can be easily placed in

the blog post. Then, the student at their option can focus on presenting their ideas as music, art, photos, text, an infographic, a word cloud—whatever works for their purposes.

10. **comprehend as well as critique**—student bloggers are expected to critique the posts of others by thoroughly reading the post and commenting based on evidence. If the reader doesn't understand, they ask questions in the comments. This insures that when they evaluate the post, they have all the information required to reach a conclusion.

11. **value evidence**—blogs make it easy to provide all the necessary evidence to support a point of view. Students can link back to sources to provide credit and link to experts to provide credibility for statements. In fact, in the blogosphere, good bloggers are expected to do this as a means of building credibility for opinions they write

12. **use technology and digital media strategically and capably**—certainly blogs are great for writing, but they're also excellent as digital portfolios to display student work developed in a variety of places. Students pick the technology that fits what they're expected to accomplish in a class, then publish it to the blog. Have you seen the movies students put together on a topic? Some are amazing.

13. **understand other perspectives and cultures**—blogs are published to the Internet. Even private blogs are accessed by many more people than possible with a hand-written paper. Students write knowing that people of all cultures and perspectives will read their material, knowing they can add comments that share their beliefs. This encourages students to develop the habit of thinking about *perspective* as they write.

Don't try all of this at once. Spiral into it. Let student blogging grow with their intellectual skills.

Basics of Posts

Blogs used to be too cutting edge for pedestrian rules like grammar and spelling. That's not true anymore. Before students write their first post, remind them:

- *make content pithy*
- *use correct spelling and grammar*
- *avoid slang*
- *appeal to readers with content and design*
- *interact with readers via questions in the blog and answering comments*
- *avoid mistakes, redundancies, jerky flow by proof reading*

Blogs are everything you want in a school activity—student-centered, independent, supportive of problem solving and creative thinking, transferable to many classes and home activities. If you have questions, add them to the comments. I'll see if I can help.

It's Time to Make Your Classroom Paper-free

Each year, the world produces more than 300 million tons of paper. According to the U.S. Environmental Protection Agency, paper typically found in a school or office environments such as copier paper, computer printouts, and notepads, comprise the largest category. Mitigating the use of paper has long been a goal for schools. Every year, a prodigious number of lesson plans center around dwindling rainforests, the shrinking world forests, and the ever-growing waste associated with paper.

Now, beyond the moral and ethical persuasiveness of a paperless classroom, there is compelling evidence that the time is right to eliminate paper from the classroom:

- **the high cost of printing**: Yale University noted that *Every 2.5 minutes, a ream of paper was ordered.* No surprise that schools who go paperless experience huge savings in the cost of buying and repairing printers as well as the investment in all the fancy printing papers required for newsletters, class projects, announcements, and more. Who would argue about investing these vast savings in faculty salaries, student services, or reduced tuitions?
- **reduced waste:** Most of those tons of paper end up in the trash. We want them to be recycled but studies show that despite best efforts, about half of used paper isn't. Schools who replace paper with a digital distribution of newsletters, announcements, homework, and anything else possible may not increase recycling but do dramatically reduce the amount of paper they use. The results? Among schools who push digital over paper, most report that only about 5% of their usual amount of paper ends up in the trash. Who wouldn't love that number?
- **saves time:** Every teacher knows how much time they spend copying, stapling, sorting, and then searching for lost documents. An increasingly-popular alternative is to upload a document to the computer, server, or cloud and push it out electronically. No copying, stapling, sorting, or losing templates. No last-minute "I forgot to print this". Yes, digital files do get lost but that's a story for another time.
- **increased organization:** All those permission slips, AUPs, and exams can be curated into a digital file folder that is backed up automatically and never lost ("never" being a fungible sort of word). Teachers no longer find themselves frantically searching for misfiled records or the approvals required before a field trip. Instead, they access the digital file folder. If it's not there, most of the time, a universal search on the school server will find the document. Anecdotal experiences (no studies yet on this topic) indicate that teachers who file digitally rather than in paper file folders lose fewer documents.
- **security**: Digital files aren't lost to floods or fires. Even if the server crashes or corrupts, every school I know has backups. No data is lost; just the equipment.

Here are four approaches to removing paper from your classroom:

Digital whiteboard

A **digital whiteboard** is when you project an online whiteboard to your class screen and then use it as you would the one that hangs on the wall in your room. Some teachers wonder why they would do that. It isn't available when the computer

is off; it requires set-up; and what if you want to write a formula? In truth, today's digital whiteboards are much like your traditional board. You have a variety of pens, colors, and shapes. You can easily insert images to support the lesson. You can project a website that ties in with your teaching. Probably the best reason to use the digital version of a whiteboard is that everything you write on it can be saved and pushed out to student 1:1 devices, LMSs, or digital portfolios.

Popular choices range from *free to fee* and *may or may not require a log-in*. Many LMSs (like Canvas) have built-in versions available alongside other classroom management tools.

Ebooks

Assigning a book to your class that everyone must then purchase is not only expensive, it's inequitable. For some, those costs challenge a family budget. If you have a book you want students to read, check to see if it's available on one of the many online free libraries and let students know they can use it there. Ebooks have no concern about the "latest edition" because they're automatically updated. Ereaders are often free from the ebook provider (like Kindle) and PDFs can be read on almost every platform.

LMS

Most LMSs (Learning Management Systems) make it easy to trade paper for digital. The good news: Most schools now use LMSs be they Google Classroom, Canvas, or another. Through your LMS, you'll find it easy to:

- digitally create and push out assignments
- digitally submit homework
- post announcements, newsletters, and class newspapers
- hold classroom discussions where students share ideas and research

If you're new to an LMS, start with these four activities. Check back next year and I'll have more ideas for you.

Online exams

Exams used to be pages of black-and-white paper. There was limited space to write an answer. The test might be two-sided and good grief — don't forget that second side! If you make a mistake and your eraser wasn't up-to-snuff, the teacher might not realize you knew the answer. The final indignity: If your lead broke — or the entire pencil — it could ruin everything.

Now, exams are increasingly online. That means you access them from the Internet (or a dedicated server). Space for an answer isn't limited to a little square with lines on it, and erasures are a simple backspace. If the computer stops working (akin to a broken pencil), the teacher fixes that for you. With a minimal amount of set-up time, almost any quiz can be offered digitally. If you haven't tried this before, look into Google Forms and Socrative. You'll be surprised and happy.

Online exams require no print and no day-ahead preparation. Because there is so much variety in these, they can be formative or summative and pretty much everything in between.

Lesson #3—Digital Citizenship

Vocabulary	Problem solving	Skills
• *Avatar* • *Cyberbullying* • *Cyberstalking* • *Digital citizen* • *Flaming* • *GPS* • *Netiquette* • *Plagiarism*	• *Can't find answer (did you try all options?)* • *Internet toolbar disappeared (click 'full screen mode')* • *I don't want parents to know where I am (why?)* • *Online's anonymous! Why do I have to follow so many rules? (do the right thing when no one's watching)*	*Social media* *Speaking and listening* *Problem solving* *Keyboarding* *Digital citizenship*
Academic Applications *research, digcit*	**Materials Required** *Digital citizenship sites/videos, student workbooks (if using)*	**Standards** *CCSS: CCRA.L.6* *NETS: 2a-d*

Essential Question

How should I act in the virtual neighborhood? What are the differences from my physical neighborhood?

Big Idea

Just as in the physical world, the digital world bestows rights and requires responsibilities.

Teacher Preparation

- Ask what tech problems students had difficulty with.
- Talk with the grade-level team to tie into conversations about using the internet.
- Integrate domain-specific tech vocabulary into lesson.
- Know whether you need extra time to complete lesson.
- Collect words students don't understand for Speak Like a Geek presentations (if doing this Lesson).
- Know which tasks weren't completed last class and whether they are necessary to move forward.
- Something happen you weren't prepared for? Show students how you fix it without a meltdown and with a positive attitude.

Assessment Strategies

- *Worked independently*
- *Used good keyboarding habits*
- *Completed warm-up, exit ticket*
- *Joined classroom conversations*
- *[tried to] solve own problems*
- *Decisions followed class rules*
- *Left room as s/he found it*
- *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, paying attention to posture**

_____**Required skill level: Basic understanding of digital rights and responsibilities**

_____Before beginning, open backchannel on class screen to track student comments. Show students how to access it on their devices.

_____Discuss what it means to be a good digital citizen? Why is this important if no one knows who you are? Must you be honest if you're anonymous? Who does it hurt?

_____What does the quote in *Figure 26* mean—by John Wooden, legendary football coach?

Figure 25—Personal responsibility quote
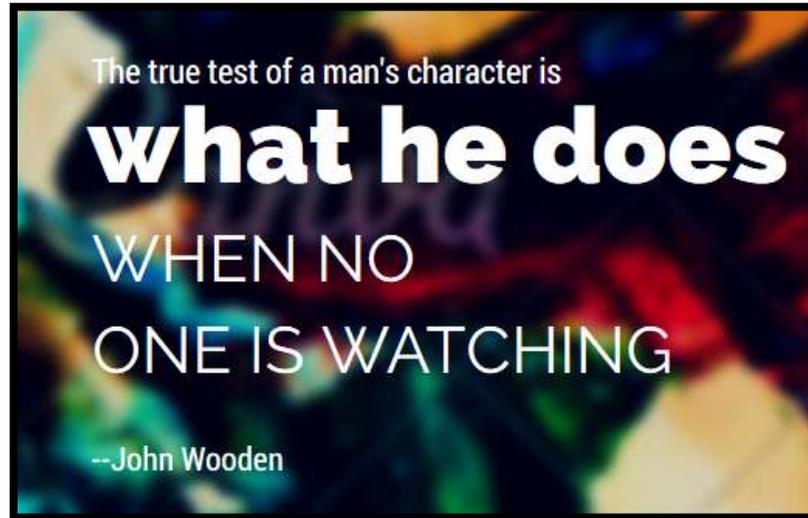
_____Throughout the school year when relevant, discuss the topics listed below. If you haven't covered a topic before, spend more time on it. Where possible, let students lead the discussion, set the pace, and ask questions. Be prepared to spend extra time and adapt to students as needed.

_____Preview the topics to be sure they're appropriate for your unique student group.

_____*Note: All links are included in the student workbooks, if you use them.*

Cyberbullying

_____Expand last year's discussion with http://bit.ly/1ke3T2Q or http://bit.ly/1QEWbJn. Review statistics in Think Time: How Does Cyberbullying Affect You.

_____Watch and discuss You Can't Take it Back. What precautions can students take to insure they are kind and supportive online?

_____If students have blogs, with this discussion fresh, have them comment on classmate blogs. Include a compliment, suggestion, or question. Keep conversation on topic and relevant.

Digital Communications

_____This includes email, blog comments, texting, cell phones, and discussion forums. Many of these topics are discussed in other sections.

_____Discuss **texting** (**see article at end of lesson**). Watch and discuss one of these:

_____Is it rude to **text** around other people? Watch and discuss one of these videos:

- *It can wait — video showing simulation of driver distracted by texting*
- *Texting etc–Chicken Road YouTube*
- *Safe texting–video*
- *Texting–a game that gauges your distraction while driving and texting*
- *Texting While Walking–from the NYT, a video op-ed*
- *The Last Text –video*
- *The Unseen — video simulating distracted driver*
- *Wait for it — very sad video about texting and driving*

_____Is it rude to text around other people?

_____Does your school allow cell phones? What are the reasons to have one?

- *stay in touch with parents*
- *for emergencies*
- *so parents know where students are (via GPS)*
- *to collaborate and share*

_____What are reasons students shouldn't?

_____How many student parents try to control cell phone use by:
- *limiting their time on it*
- *limiting plan*
- *having them share in cost*
- *set up text-free zones, like dinner*
- *???*

_____Does this work? What else might? Discuss student responsibilities with cell phones, including:

- *don't overuse them; don't over-text*
- *don't let them interfere with classwork*
- *don't use them for academic dishonesty*
- *don't use them for cyberbullying; don't share inappropriate information*

_____Watch and discuss http://www.schooltube.com/video/31ce0fcb83a64139af1f/. Kids who walk with heads down as they text, talk, or play games aren't paying attention to their surroundings.

Digital footprint

_____What is a 'digital footprint'? Have students Google their names to discover their digital footprint.

_____Watch and discuss these videos:

- *What's a digital dossier*
- *Digital Footprint*
- *Digital Life 101*

Digital Law and Plagiarism

_____Some people want to share their work and collaborate with others to create bigger and better things. Watch and discuss Wanna Work Together about Creative Commons licensing.

_____Watch and discuss A Fair(y) Use Tale about digital security, copyrights, and fair use.

_____What does '**plagiarism**' mean? Why give credit to original authors/artists? What can/can't be 'borrowed' from online sites? Discuss image copyrights, fair use, and public domain.What are repercussions of 'plagiarism'?

_____Watch this Plagiarism video

_____Discuss **copyright law**. Review summation in *Figure 27 (zoom in if needed)*. What are consequences of infringing copyrights?

Figure 26—Digital law—rephrased

The law states that works of art created in the U.S. after January 1, 1978, are automatically protected by copyright once they are fixed in a tangible medium (like the internet) BUT a single copy may be used for scholarly research (even if that's a 2nd grade life cycle report) or in teaching or preparation to teach a class. Askatechteacher©

_____Discuss how to cite a website. Visit EasyBib or Citation Machine.

Digital privacy

_____Watch and discuss 6 Degrees of Information. How easy it is to find about anyone through crumbs left online.

_____Watch and discuss the online life of a photo posted by an unknowing student.

_____Watch Eduardo when he posts pictures he considers innocent—Two Kinds of Stupid.

_____Discuss use of avatars to protect online privacy. For more, see lesson on *Webtools*.

_____Expand discussion into Online Reputations. Watch and discuss http://bit.ly/1sFIPzG.

_____Wrap up with a discussion on hacking and privacy. Kids 'hack' game codes. Talk about this. Should they do it? Is it a victimless crime? What other issues should they consider? What is the difference between 'hacking' and 'cracking'? Black Hat and White Hat?

Digital rights and responsibilities

_____What are 'digital rights and responsibilities'? Most students come up with 'rights'—access to internet, use of information, creation of documents to be published and shared, freedom of expression—but what are 'responsibilities' of a digital citizen? Help students come up with:

- *Don't share personal information. Don't ask others for theirs.*
- *Be aware of your cyberspace surroundings. Act accordingly.*
- *As in your community, be kind to others. Anonymity doesn't protect you.*
- *If someone is 'flaming' another, help stop it within your abilities.*

_____Review rights and responsibilities inherent to using resources from virtual world.
_____Watch this YouTube video.

Digital search and research

_____*Discussed in lesson on Internet Search and Research.*

Fair use, Public domain, Image Copyright

_____*Discussed in lesson on Images.*

Internet safety

_____Discuss password guidelines and rules. Remind students they never share passwords.
_____Watch and discuss Broken Friendship .
_____Ask students how they protect passwords and online safety on the Internet.
_____What's the difference between 'http' and 'https'? How important is this security?

Netiquette

_____What is '**netiquette**'? Discuss the list of criteria in *Figure 28*. Zoom in if necessary.

Social Media

_____Discuss **Twitter** (see **article at end of lesson**)—watch https://youtu.be/abgRCmkm6No.

_____Break into groups and discuss **FB, YouTube, Pinterest,** and other social media. What are the challenges of so much openness? Then share group conclusions with the class and share individual thoughts via a blog post or class Twitter feed. Thoughts should be objective, on-point, with domain-specific language appropriate to the task, audience, and purpose.

Class exit ticket: **Tweet on class Twitter account (or add a comment to class blog) about how the student stays safe online.**

Figure 27—Netiquette Rules

Netiquette Rules
- Be human
- Follow the same rules of behavior you follow in real life
- Be aware of your digital footprint
- Share your knowledge
- Help keep 'flame wars' under control
- Respect other's privacy
- Be forgiving of other's mistakes

Differentiation

- *Assign a student to enter classwork and homework due date into class calendar.*
- *Full digital citizenship curriculum for K-8 available here.*

<u>11 Ways Twitter Improves Education</u>

A teacher must communicate with students in a way they will hear. Twitter might be perfect for your class.

Twitter can easily be dismissed as a waste of time in the elementary school classroom. Students get distracted. They might see inappropriate tweets. How does a teacher manage a room full of Tweeple?

But, you've read a lot about Twitters usefulness in writing skills and sharing information so you—of the Open Minded Attitude—want to try it. Here's ammunition for what often turns into a pitched, take-sides verbal brawl as well-intended educators try to reach a compromise on using Twitter (in fact, many Webtools—blogs, wikis, discussion forums, and websites that require registrations and log-ins—can be added to the list) that works for all stakeholders:

<u>You learn to be concise</u>
Twitter gives you only 280 characters to get the entire message across. *Letters, numbers, symbols, punctuation and spaces all count as characters on Twitter.* Wordiness doesn't work. Twitter counts every keystroke and won't publish anything with a minus in front of the word count.

At first blush, that seems impossible. It's not. It challenges students to know the right word for every situation. People with a big vocabulary are at an advantage because they don't use collections of little words to say what they mean. All those hints from English teachers about picture nouns and action verbs and getting rid of adverbs and adjectives take on new importance to the Twitter aficionado.

<u>Twitter isn't intimidating</u>
A blank white page holds hundreds of words, demanding you fill in each line margin to margin is intimidating. 280 characters aren't. Anyone can write 280 characters about a topic. Students write their 280 characters and more, learn to whittle back, leave out emotional words, adjectives and adverbs, pick better nouns and verbs because they need the room. Instead of worrying what to say on all those empty lines, they feel successful.

<u>Students learn manners</u>
Social networks are all about netiquette. People thank others for their assistance, ask politely for help, and encourage contributions from others. Use this framework to teach students how to engage in a community— be it physical or virtual. It's all about manners.

<u>Students learn to focus</u>
With only 280 characters, you can't get off topic or cover tangential ideas. You have to save those for a different tweet. Tweeple like that trait in writers. They like to hear the writer's thoughts on the main topic, not meanderings. When forced to write this way, students will find it doesn't take a paragraph to make a point. Use the right words, people get it. Consider that the average reader gives a story seven seconds before moving

on. OK, yes, that's more than 280 characters, but not much.

Here's an idea: If you must get into those off-topic thoughts, write them in a separate tweet.

Students learn to share

Start a tweet stream where students share research on a topic. Maybe it's Ancient Greece. Have each student share their favorite website (using a #hashtag — maybe #ancientgreece) and you've created a resource others can use. Expand on that wonderful skill learned in kindergarten about sharing personal toys. Encourage students to RT (retweet) posts they found particularly relevant or helpful.

Writing short messages perfects the art of "headlining"

Writers call this the title. Bloggers and journalists call it the headline. Whatever the label, it has to be cogent and pithy enough to pull the audience in and make them read the article. That's a tweet.

Tweets need to be written knowing that tweeple can @reply

This is a world of social networks where people comment on what you say. That's a good thing. It's feedback and builds an online community, be it for socializing or school. Students learn to construct their arguments expecting others to respond, question, and comment. Not only does this develop the skill of persuasive writing, students learn to have a thick skin, take comments with a grain of salt and two grains of aspirin.

#Hashtags develop a community

Create #hashtags that will help students organize their tweets—#help if they have a question, #homework for homework help. Establish class hashtags to deal with subjects you want students to address.

Students learn tolerance for all opinions

Why? Because Tweeple aren't afraid to voice their thoughts. They only have 280 characters—so they spit it right out. Because the Twitter stream is a public forum (in a classroom, the stream can be private, visible to only class members), students understand what they say is out there forever. That's daunting. Take the opportunity to teach students about their public profile. Represent themselves well with good grammar, good spelling, and well-chosen tolerant ideas. Don't be emotional or spiteful because it can't be taken back. Rather than shying away from exposing students to the world, use Twitter to teach students how to live in it.

Twitter, the Classroom Notepad

I tried this out after I read about it through my PLN. Springboarding off student engagement, Twitter can act as your classroom notepad. Have students enter their thoughts, note, and reactions while you talk. By the time class is done, the entire class has an overview of the conversation with extensions and connections that help everyone get more out of the inquiry.

Twitter is always open

Inspiration doesn't always strike in that 50-minute class period. Sometimes it's after class, after school, after dinner, even 11 at night. Twitter doesn't care. Whatever schedule is best for students to discover the answer, Twitter is there. If you post a tweet question and ask students to join the conversation, they will respond in the time frame that works best for them. That's a new set of rules for classroom participation, and these are student-centered, uninhibited by a subjective time period. Twitter doesn't even care if a student missed class. S/he can catch up via tweets and then join in.

<u>Will Texting Destroy Writing Skills?</u>

Across the education landscape, student text messaging is a bone of contention among teachers. It's not an issue in the lower grades because most K-5 schools successfully ban cell phones during school hours. Where it's a problem are grades 6-12, when teachers realize it's a losing battle to separate students from their phones for eight hours.

The overarching discussion among educators is texting's utility in providing authentic experiences that transfer learning from the class to real life. Today, I'll focus on a piece of that: Does text messaging contribute to 1) shortening student attention span, or 2) destroying their nascent writing ability

Let's start with attention span. TV, music, over-busy daily schedules, and frenetic family life are likely causes of a student's short attention span. To fault text messaging is like blaming the weather for sinking the Titanic. Texting has less to do with the inability to spit out a full sentence than a student's 1) need for quickness of communication, 2) love for secrecy, and 3) joy of knowing a language adults don't.

What about writing? In the thirty years I've been teaching everyone from kindergarteners to college, I can tell you with my hand on a Bible that children are flexible, masters at adjusting actions to circumstances (like the clothes they wear for varying events and the conversations they have with varying groups of people). There is no evidence to support that these elastic, malleable creatures are suddenly rigid in their writing style, unable to toggle between casual texting shorthand with friends and a professional writing structure in class.

In general, I'm a fan of anything that encourages student writing, and there are real benefits to giving students the gift of textual brevity rather than the stomach-churning fear of a five-paragraph structured essay. I've done quite a few articles on the [benefits of Twitter's 280-character approach](#) to writing and my teacher's gut says the same applies to text messaging. Truth, studies are inconclusive. Some suggest that because young students do not yet have a full grasp of basic writing skills, they have difficulty shifting between texting's abbreviated spelling-doesn't-matter language and Standard English. But a [British study](#) suggested students classify 'texting' as 'word play', separate from the serious writing done for class so it results in no deterioration of writing skills. [Yet another study](#) found that perception of danger from texting is greater than reality: 70% of the professionals at one college believed texting had harmful effects on student writing skills. However, when analyzed, the opposite was true: Texting was actually beneficial.

It's interesting to note that texting can be a boon to children who struggle with face-to-face situations. These 'special needs' students flourish in an environment where they can write rather than speak, think through an answer before communicating it, and provide pithy conversational gambits in lieu of extended intercourse. In the texting world, socially-challenged children are like every other child, hidden by the anonymity of a faceless piece of metal and circuits.

To blame texting for student academic failures is a cop-out by the parents and teachers entrusted with a child's education. Treated as an authentic scaffold to academic goals, teachers will quickly incorporate it into their best-practices pedagogy of essential tools for learning.

<u>Teaching Digital Rights and Responsibilities</u>

Teaching used to be based on textbooks used by millions nation- or worldwide. They took an entire school year to finish leaving little time for curiosity or creativity. Some subjects still do fine with that approach because their pedagogy varies little year-to-year.

In my classes, though, that's changing. I no longer limit myself to the contents of a textbook written years, sometimes a decade, ago. Now, I'm likely to cobble together lesson plans from a variety of time-sensitive and differentiated material. Plus, I commonly expect students to dig deeper into class conversations, think critically about current event connections, and gain perspective by comparing lesson materials to world cultures. That, of course, usually ends up not in a library but on the Internet.

Before I set them loose in the virtual world, though, I teach them the "rules of the Internet road" because make no mistake: There are rules. The Internet's Wild West days are fast disappearing, replaced with the security offered by abiding to a discrete set of what's commonly referred to as **"digital rights and responsibilities"**. It boils down to a simple maxim:

> *With the right to discover knowledge comes the responsibility to behave well while doing so.*

The privileges and freedoms extended to digital users who type a URL into a browser or click a link in a PDF or scan a QR Code require that they bear the responsibility to keep the virtual library a safe and healthy environment for everyone.

Digital Rights

Most people if asked could easily name the benefits of the Internet:

- *Everyone can speak their mind knowing they'll find like-minded individuals.*
- *Privacy is ensured by its vastness. Think about living in the desert — who could ever find you there? It's that sort of vastness.*
- *As a creator, you can expose a world of people to your creations to purchase or just spread the word.*
- *You can find any information you want just by typing in search terms and slogging through the multitude of hits.*
- *You can create an online persona that doesn't include your faults, lousy personality, or mistakes.*

These rights are so pervasive to our daily activities that many consider them to be inalienable, not unlike those laid out in the UN's Universal Declaration of Human Rights. To these folks, disconnecting people from the Internet is a violation of international law and tramples all over an individual's human rights.

Digital Responsibilities

But there are two faces to this digital coin: Inalienable or not, they require great responsibilities. Some think the Internet's lawlessness (because no world authority holds legal authority over the world wide web) precludes cultural

norms like kindness, morality, and ethics. After all, if you purchase porn from a third-world nation where it's legal to sell, who's going to enforce what law?

That's where I teach my students that **with rights come responsibilities**. Think of the Internet as having comparable expectations to a neighborhood:

- *Act the same online as you'd act in your neighborhood.*
- *Don't share personal information. Don't ask others for theirs. Respect their need for privacy.*
- *Be aware of your surroundings. Know where you are in cyberspace. Act accordingly.*
- *Just as in your community, if you are kind to others, they will be kind to you.*
- *Don't think anonymity protects you—it doesn't. You are easily found with an IP address. Discuss what that is.*
- *Share your knowledge. Collaborate and help others online.*

[Information Security Education and Awareness](#) posits these **Ten Commandments for computer use**:

- One shall not use a computer to harm other people.
- One shall not interfere with other's computer work.
- One shall not snoop around in another 's computer files [and will keep one's own data safe from hackers].
- One shall not use a computer to steal [or plagiarize].
- One shall not use a computer to bear false witness [or to falsify one's own identity].
- One shall not copy or use any materials for which one has not paid.
- One shall not use other's computer resources without authorization or proper compensation.
- One shall not appropriate other's intellectual output [and will legally download all material like music and videos].
- One shall think about social consequences of the program written or of the system designed.
- One shall always use a computer in ways that respect one's fellow humans [and report bullying, harassing, and identify theft when possible].

For the rest of this article, [visit this link](#)

Lesson #5—Problem Solving

Vocabulary	Problem solving	Skills
• *Backchannel* • *Cerebral* • *Context* • *Delineate* • *Mulligan* • *Sequence* • *Shortkeys* • *Strategic*	• *I can't solve problem (what strategies have you tried?)* • *I don't like the reflection method I picked. (why?)* • *Sign-up website doesn't work (use your problem-solving strategies)* • *Did poorly on assessment (Mulligan Rule)*	*Speaking and listening* *Problem solving* *Keyboarding* *Digital citizenship*
Academic Applications *math, other academic topics*	**Materials Required** *Backchannel device, class calendar (updated)*	**Standards** *CCSS: Stds for Math.Practice* *NETS: 4a, 5c*

Essential Question

How does tech help problem solving and logical thinking?

Big Idea

Problem solving is challenging and cerebrally-stimulating.

Teacher Preparation

- Integrate domain-specific vocabulary into lesson.
- Ensure required links are on student digital devices.
- Ask what tech problems students had difficulty with.
- Have Problem-solving Board sign-up available.
- Something happen you weren't prepared for? Show how you solve it.
- Know which tasks weren't completed last class and whether they are necessary to move forward.
- Review *"How to Teach Students to Problem Solve"* and *"How to Teach Critical Thinking"* at the end of the lesson.

Assessment Strategies

- *Annotated workbook (if using)*
- *Signed up for Board*
- *Worked independently*
- *Completed warm-up, exit ticket*
- *Joined classroom conversations*
- *[tried to] solve own problems*
- *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 integrated into many lessons—not a stand-alone. Students learn to consider themselves 'problem solvers'.

_____**Required skill level: Enthusiasm for thinking and problem solving.**
_____Discuss Problem Solving. This life skill transcends a subject.
_____Discuss what it means to be a 'problem solver'. Who do students
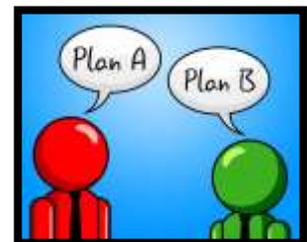
go to when they need a problem solved? Parents? Do students believe that person gets it right more often than others? Would they believe most people are wrong half the time?

_____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):

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

_____Discuss 'Big Idea': Is problem solving 'cerebrally-stimulating? Is it fun? Why or why not? Discuss great quotes in *Figure 36* (zoom in if necessary).

Figure 28—Problem-solving quotes
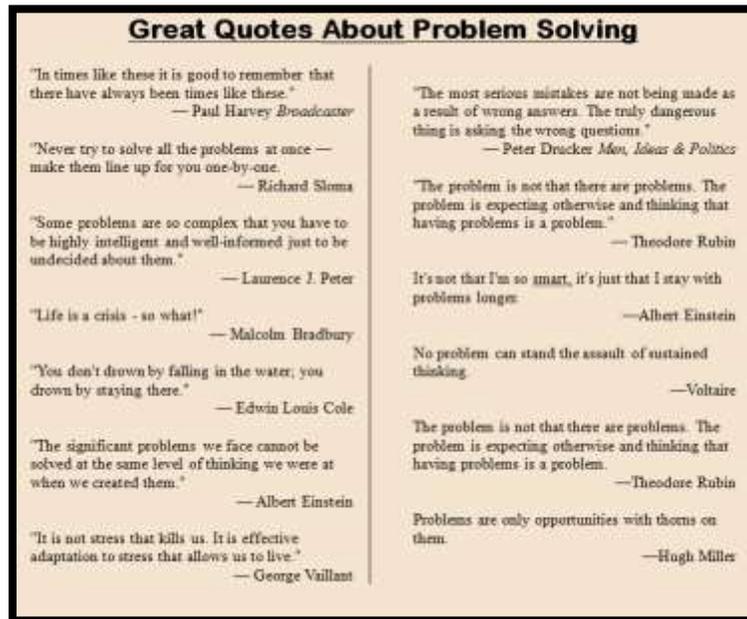
_____Discuss shortkeys. How are they problem solving? Demonstrate this by asking students to tell you how to perform a skill. Is it easier to share the shortkey?

_____Discuss problem-solving strategies:

- *Act out a problem*
- *Be aware of surroundings*
- *Break a problem into parts*
- *Distinguish between relevant and irrelevant information*
- *Draw a diagram*
- *Guess and check*
- *Never say 'can't'*
- *Notice the forest and the trees*
- *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*
- *Use what has worked in past*
- *Work backwards*

_____See *Figure 37* for list of problem-solving strategies (zoom in if necessary):

Figure 29—How to solve a problem

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_____When students face a problem, use problem solving strategies 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 sign up to 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. This list might include:

Figure 30—Common tech problems

Problem	
My browser doesn't work	I can't find a tool
Browser toolbar missing	My screen is frozen
The website doesn't work	I'm worried about security
The document is read-only	Can't find Bold, Italic
Double click doesn't work	Can't find the program
I can't find XXX on page	Internet toolbar's gone
Program disappeared	My computer doesn't work
Erased my document	My programs are gone

_____Students sign up via a Padlet wall embedded into the class start page, SignUp Genius, a shared spreadsheet or another method that works for you.

Figure 31a-b—Problem-solving Board sign-ups

_____Review digital rights and responsibilities before using the internet search functions.
_____Here's how the Problem-solving Board works. Students:

- *Select presentation date.*
- *Select problem to teach classmates.*
- *Get solution from tech tools, online resources, family, friends, or teacher as a last resort.*
- *Teach classmates how to solve problem.*
- *Take questions. Audience is responsible for making sure speaker makes sense.*

_____Students can get answers through:

- *Help files*
- *Google Searches*
- *family and friends*
- *online resources like age-appropriate videos*
- *other resources*

_____Students must come prepared, having researched material. They may use visual displays to clarify information, such as screenshots, screencasts, and other graphics.
_____Entire presentation takes about three minutes. *Figure 40 (Assessment at end of lesson)* is a sample rubric you can fill out from your iPad.

Figure 32—Problem-solving Board rubric

_____Students should own these tech problems by end of class.

Analysis of authentic problem-solving skills

_____During the grading period, student must identify five problems they faced in any part of their life—home, school, or personal—and what problem-solving strategy they used to solve it.
_____Here's how this works:

- *Student records 5 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 14) that you created and share. It tracks common solutions they used. They must have 5 of these during grading period:*

Assessment 9—Problem solving authentic data

_____At the end of the class, share collected data with students.
_____Throughout class, check for understanding.

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

Differentiation

- *Have one student create the Problem Solving Google Form to track class results.*
- *Add 'other' to the poll and let students share their own unique strategy with classmates.*
- *Add homework or classwork due date to class online calendar for each month.*

Assessment 10—Problem-solving Presentation Assessment

Problem Solving Presentation Assessment

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

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:
   o *people who don't like the product*
   o *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.*
   o *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 8—Teach Critical Thinking

How to Teach Critical Thinking

There's a reason why the brain uses 25% of the calories you eat: Thinking is hard work. Subjects like math and science — the ones only "smart" kids do well in — demand that you find patterns, unravel clues, connect one dot to another, and scaffold knowledge learned in prior lessons. Worse, you're either right or wrong with no gray areas.

Wait. Where have we heard those characteristics before? In games! Do these descriptions sound familiar (or ask your game-playing students)?

Take the helm of your own country and work together with others to solve international problems!

Manage your city so it's energy efficient and sustainable.

Solve a mysterious outbreak in a distant tropical jungle and save the scientists.

All torn straight from the taglines of popular games. Kids love playing games, leveling up, and finding the keys required to win. They choose the deep concentration and trial-and-error of gameplay over many other activities because **figuring out how to win is exciting**. So why the disconnect among teachers and parents when applying gameplay to learning?

Surprisingly, all you need is one simple mindshift to do this: **Create a classroom environment where thinking isn't considered work**. Don't say science and math are hard. Don't jump in to solve problems. Let students thrill with the excitement of finding their own solutions. The great thinkers of our time understand that **everyone is capable of finding solutions**:

"Failure isn't falling down; it's not getting up."— Mary Pickford

"No problem can withstand the assault of sustained thinking."— Voltaire

"Life is a crisis. So what?"— Malcom Bradbury

I've discussed problem-solving before (see *How to Teach Students to Solve Problems*). Today, I want to share five favorite websites that turn the deep-thinking required for solving problems into fun:

60-second Adventures in Thought

by Open University

Can a cat be both alive and dead (Schrödinger's Cat)? How does a tortoise beat Achilles in a race? What do the secrets of GPS have to do with relativity? 60-second Adventures in Thought are six sixty-second videos on "thought experiments" that have changed the world. Thought experiments, made famous by both the ancient Greeks and Albert Einstein, are carried out only in the imagination. They start with "What if" and proceed to prove/disprove a hypothesis without raising a pencil. The six you'll find on this website are the most famous, covering subjects

like time travel, infinity, quantum mechanics and artificial intelligence humorously and mind-blowingly. Voiced by comedian David Mitchell, they will not fail to enthrall students.

The Crossing

by Ramon Vullings and Igor Bytterbier

The Crossing *is a video showing how a society of nearlings tries, fails, and tries again to cross a chasm. It's easy-to-follow, less than two minutes, and humorous. The moral is the nearlings' tenacity; They just won't give up. BTW, a **nearling** is a positive word for something that was done with the right intentions but has yet to lead to the right results. Think 'nearly' and you've got it.*

How to Critically Think

George Polya presented by the Mathematical Association of America

George Polya *is the most brilliant unknown mathematician to ever live. When he became frustrated with the process of memorizing and regurgitating, he published a book called* How to Solve it *(1945) to share his four-step process to solve problems. This one-hour [quite old] wildly-famous video shares his discussion of that method. It validates what many teachers already teach, the problem-solving steps included in Common Core, as well as how most of us intuitively set out to solve a problem. I'll give you a hint: Where many of us go wrong is we give up too soon.*

Inference Riddles

by Phil Tortuga

Phil Tortuga's inference riddles *are designed to provide students with a fun and engaging activity to practice **inference and prediction** at a variety of skill levels. In this online game, players make guesses based on clues provided by the website. When players think they know the answer, they type it in a dialogue box provided on the website and check to see if they're right.*

Quandary

by MIT

Quandary *is MIT's free, award-winning space-themed online game that requires decision-making, critical-thinking, perspective-taking, and ethical evaluation to make decisions that can save a dying planet. To do so requires you solve the problems that threaten to end this world. The trick is to separate fact from fiction, assess varied viewpoints, and make ethical decisions that are best for all world citizens. Once you've made a decision, you can see how it plays out in this virtual world.*

<div align="center">***</div>

To me, problem-solving is one of life's great highs. I love the feeling of getting it right, especially after failure. If you struggle with students who give up too quickly, these five online sites are perfect.

Which book	Price (print/digital/Combo)
K-8th Tech Curriculum (each)	*$25.99-32.99 + p&h*
K-8 Combo (all 9 textbooks)	*$210-450 + p&h*
K-8 Student workbooks (per grade—tech or kb)	*$199 and up; license for room/school/district*
HS Technology Curriculum Bk. 1-3	*$25.99 and up*
35 K-6 Inquiry-based Projects	*$31.99/25.99/52.18 + p&h*
55 Tech Projects—Vol I,II, Combo	*$18.99 /$35.38–digital only (free shipping)*
K-8 Keyboard Curriculum—3 options	*$20 and up + p&h*
K-8 Digital Citizenship Curriculum	*$29.95/25.99/50.38 + p&h*
CCSS—Math, Language, Reading, Writing	*$26.99 ea/80 for 4–digital only (free shipping)*
K-5 Common Core Projects	*$29.95/23.99/48.55 + p&h*
Themed webinars	*$8-30*
PD classes (online—for groups)	*$795*
Tech camp for kids	*$179 + p&h*
College credit classes (online)	*$497 and up*
Digital Citizenship certificate class	*Starts at $29.99*
Mentoring (30 min. minimum)	*$50/session*
Consulting/seminars	*Call or email for prices*
169 Tech Tips From Classroom	*$9.99 (digital only)*
PBL lessons—singles	*$1.99 and up*
Bundles of lesson plans	*$4.99 and up (digital only)*
Tech Ed Scope and Sequence (K-6 and 6-8)	*$9.99 and up (digital only, Word format)*
New Teacher Survival Kit	*$285-620+ p&h*
Homeschool Tech Survival Kit	*$99 + p&h*
Classroom tech poster bundles	*Start at $9.99*

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