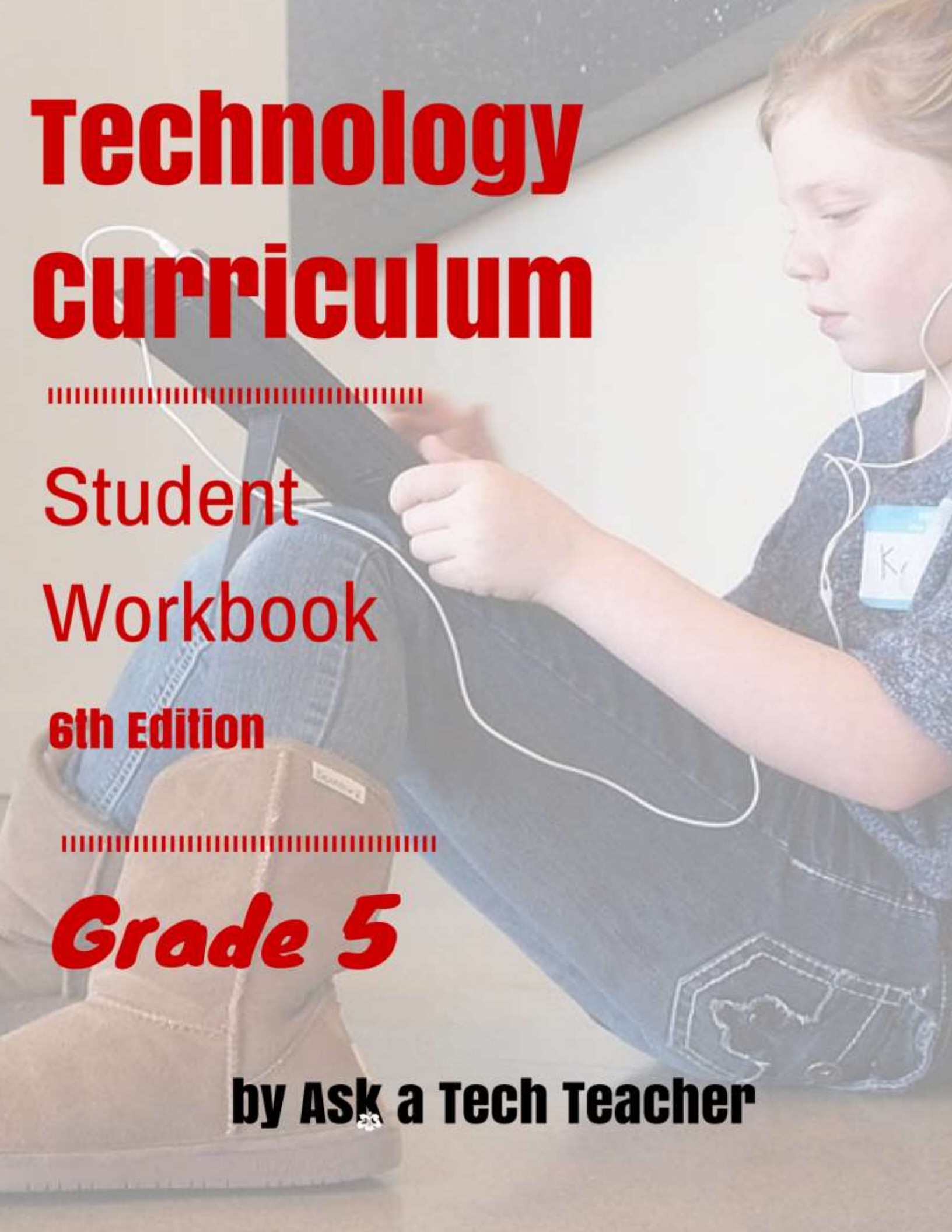

Technology curriculum

Student Workbook

6th Edition

Grade 5

by Ask a Tech Teacher

Technology Curriculum Student Workbook

Fifth Grade

Sixth Edition

By Ask a Tech Teacher©

Part Six of Nine in the SL Technology Curriculum

Sixth Edition 2016

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INTRODUCTION

This is the next step in an exciting journey that employs technology to enhance your learning. You won't be memorizing tools and struggling through new programs. You'll learn them as you use them—authentically, as part of classroom activities. Your goal: Make school easier, more relevant, and more in tune with how you learn. We're going to help. All you need to do is follow this workbook.

How much time will that take? Here's an estimate:

Grades K-2	***15-30 min. a week***
Grades 3-8	***30-60 min. a week***

Are you surprised you can learn so much in such a short time? Wait till you see how much fun it is! We give you lots of choices. You can even work with a friend, both of you on laptops, Chromebooks, iPads (sometimes) or desktops, Windows or Macs.

Follow the plan. Execute it faithfully. It works.

PROGRAMS YOU'LL USE

Programs used in this curriculum focus on those that serve the fullness of your educational journey. Free alternatives are included where possible:

General		K-2
Email	*Drawing tools*	*Productivity tools (Office, Google Docs)*
Google Earth	*Keyboard tools*	*Desktop publishing tools*
Web tools		*Photo editing tool(s)*

To become the person in *Figure 4* means you use technology as a learning tool. We'll show you how.

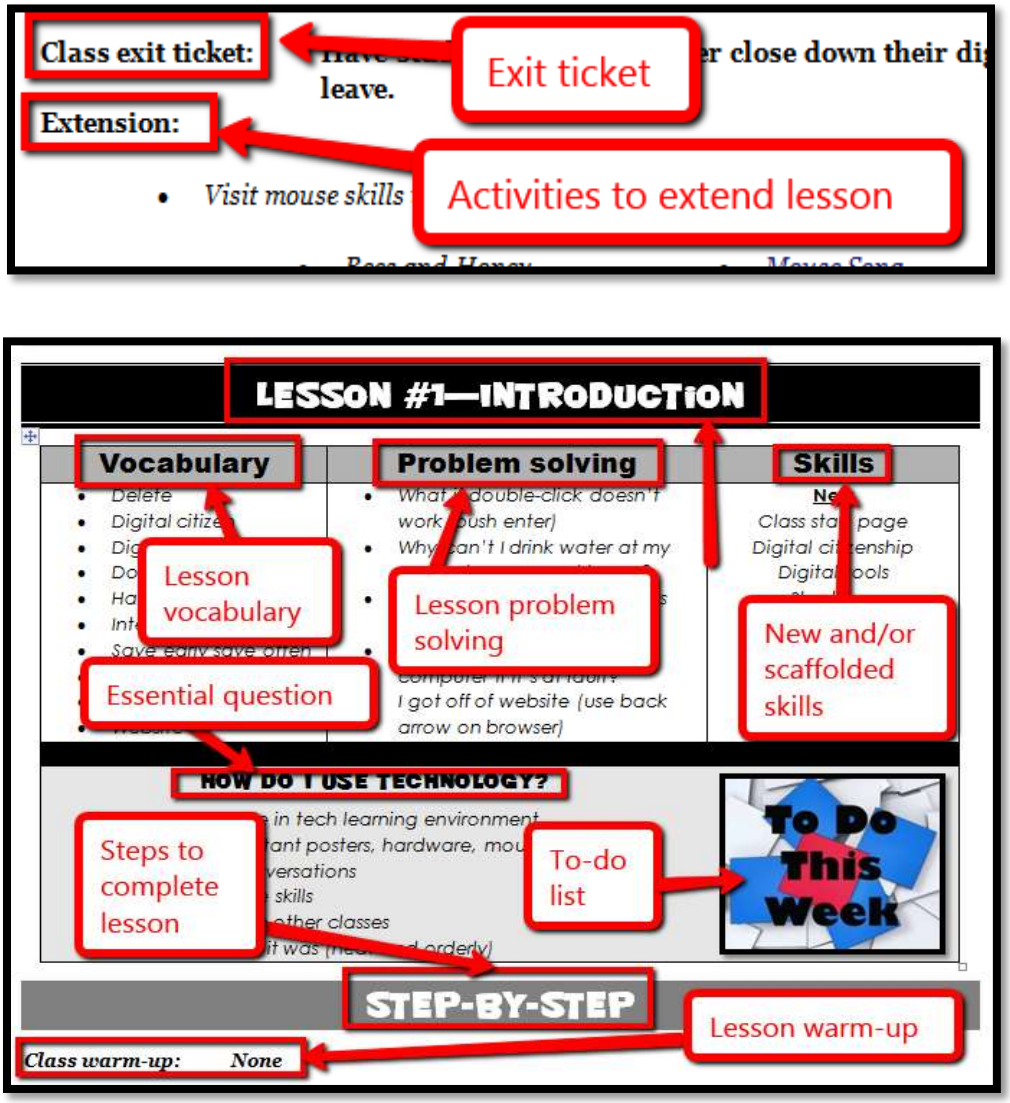
WHAT'S IN THIS WORKBOOK?

Each lesson includes:

- *activities to extend lessons*
- *class exit ticket*
- *class warm-up*
- *essential question*
- *examples, rubrics, images, printables*
- *problem solving*
- *skills—new and scaffolded*
- *steps to accomplish goals*
- *suggestions based on digital device*
- *supporting links*
- *to-do list*
- *vocabulary used*

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

Figure 1a-b—Detail of each lesson



How to use this book

Your teacher(s) (meaning the adults who direct your technology training) will work with you about forty-five minutes a week. You'll spend an additional fifteen-sixty minutes each week using tech skills—online, with software, teaching friends, for homework, or in class projects. If there is a skill you don't understand, get help, especially when you see it come up a second or third time. By the end of 8th grade, you'll have a well-rounded tech education that prepares you for college and career.

The curriculum map in *Figure 2* (zoom in if needed) shows what's covered in which grade. Where units are taught multiple years, teaching reflects increasingly less scaffolding and more independence on your part.

Figure 2—Curriculum Map—K-8

	Mouse Skills	Vocabulary - Hardware	Problem-solving	Platform	Keyboard	WP	Slide-shows	DTP	Spread-sheet	Google Earth	Search/ Research	Graphics/	Co-ding	WWW	Games	Dig Cit
K	☺	☺	☺	☺	☺					☺		☺	☺	☺		☺
1	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺		☺	☺	☺		☺
2		☺	☺	☺	☺	☺	☺	☺	☺	☺		☺	☺	☺		☺
3		☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺		☺
4		☺	☺		☺	☺	☺	☺	☺	☺	☺	☺	☺	☺		☺
5		☺	☺		☺	☺		☺	☺	☺	☺	☺	☺	☺		☺
6		☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺	☺		☺
7		☺	☺	☺	☺	☺			☺	☺	☺	☺	☺	☺	☺	☺
8		☺	☺	☺	☺	☺			☺	☺	☺	☺	☺	☺	☺	☺

Figure 3 is a month-by-month map. Highlight each topic with your annotation tool when you finish it.

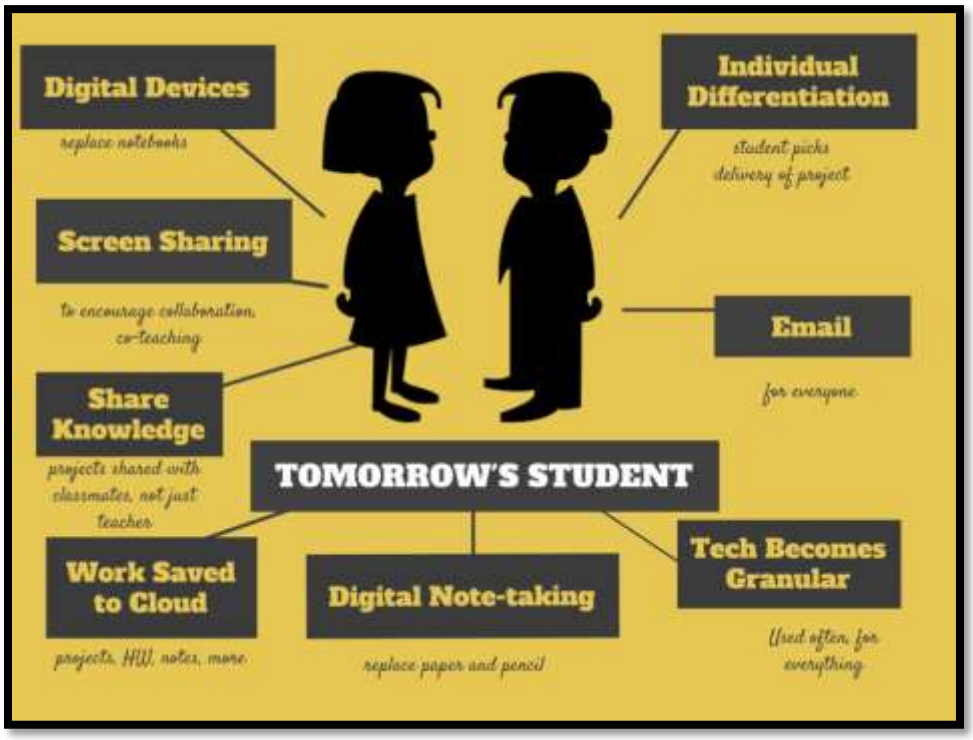
Figure 3—Curriculum Map—5th grade, month-to-month

	Sept *Wk1-4*	**Oct** *Wk5-8*	**Nov** *Wk9-12*	**Dec** *Wk13-16*	**Jan** *Wk17-20*	**Feb** *Wk21-24*	**March** *Wk25-28*	**April** *Wk29-32*
Blogs	x			x		x		
Class mgmt tools	x							
Coding/Programming		x						x
Collaboration						x	x	x
Communication	x							x
Computer etiquette	x							x
Critical thinking	x			x	x			x
DTP			x	x				x
Digital Citizenship	x							x
Google Earth						x		x
Graphics						x	x	x
Internet			x			x		x
Internet privacy	x					x		x
Keyboarding	x	x				x		x
Presentations								x
Problem solving	x	x	x	x	x	x	x	x
Publishing/sharing	x							x

Research			x					x
Spreadsheets					x			x
Visual learning		x	x	x	x			x
Vocabulary	x	x	x	x	x	x	x	x
Webtools	x	x				x		x
Word Processing	x	x				x		x

Here's where you're headed (*Figure 4*—zoom in if necessary):

Figure 4—Tomorrow's student



Here are a few hints on how this workbook will get you there:

- At your grade level, you'll probably have help from a teacher, parent, or another adult as you work. When you see a section for 'Notes' at the end of some lessons, this is where you add your thoughts, ideas, comments, and suggestions.
- Each lesson starts with a *warm-up* to get you back into tech.
- Each class ends with an *Exit Ticket* to wrap up learning.
- Lessons include *Extensions*, in case you get done early.
- Zoom in or out of workbook pages to get exactly the size that works for your needs. Don't worry if the PDF reader is at 80% or 120%. Set it to fit your learning style.
- If you have an idea on how to complete a lesson using a different tool, suggest it. Your teacher will probably be happy to accommodate you.
- You can work at your own pace, try skills, and ask for help when you need it. There's a lot of detail in the book to explain how to complete projects and lessons.

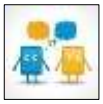
- Follow lessons in the order presented (grades K-5). Lessons introduce, reinforce, and circle back on concepts. Certain skills scaffold others so don't change the lesson order (except where noted otherwise—like *Coding*).
- You can use this workbook on the following digital devices:

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

Figure 5a-h—Digital Devices for workbooks

…at school or at home

Figure 6—Use workbooks at school or home

- Check with your teacher on which of these are available with your program license.
- Use lesson vocabulary in class and out. You gain authentic understanding by doing so.
- This icon  means there's a video to watch. **Be aware: Video links change**. Your teacher may replace the workbook link with others.
- This icon  means you'll work with a partner. Collaboration and working in groups is an important part of learning.
- This icon  means there is an activity that requires you to write something in the workbook. Your teacher will explain more.
- Focus on problems listed in each lesson, but embrace all that come your way. Be a risk taker.
- Check off items you finish (on the _____ in front of each task) so you know what you've completed. It's fine if you don't get everything done. Return to it when you finish a lesson ahead of time. Use an annotator like iAnnotate, Evernote, OneNote, Notability, or Adobe Acrobat. You can also use these tools to add notes to the lessons.

- Your teacher will assess your work based on the weekly 'To Do' list. Be sure you've completed items and submitted in the manner required.
- Remember: It takes five times with a skill to get it—

    - *First:* *you hope it'll go away*
    - *Second:* *you try it*
    - *Third:* *you remember it*
    - *Fourth:* *you use it outside of class*
    - *Fifth:* *you teach a friend*

Figure 7—Tech use plan

- When you finish each lesson, transfer knowledge to projects at school, home, the library, a club—wherever you use digital devices.
- At the end of each tech session, leave your station as you found it—organized and neat.
- You'll find a lot of links in this ebook, but know this: **Links die.** If a link doesn't work, try a different one (if there are options). If that doesn't work, contact your teacher or ask us at Ask a Tech Teacher (with teacher permission). We'll help.

Typical Lesson

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

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

Figure 8—Keep lessons in order

Here's how a lesson will run in **the tech lab**:

- Find a **written schedule** for the day on class screen:

    - *Warm up*
    - *Main activity*
    - *Exit ticket*

    Start with the warm-up when you arrive to class.
- Complete **Board presentations** (grades 3-8).
- Occasionally, review/introduce skills.
- If starting a **new project, your teacher will review it**. If you're in the middle of one, you'll get the balance of class to work towards completion.
- Before leaving, **complete the class exit ticket**.

In your grade-level classroom, your teacher will scatter the lesson pieces above throughout the week:

- ***3-10 minutes for the class warm-up****—at the start of the week*
- ***10-15 minutes keyboarding practice****—any day*
- ***10-15 minutes Board presentations****—any day*
- ***15-35 minutes for the project****—any day*
- ***2-3 minutes for class exit ticket****—to reinforce learning*

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About the Author

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 website articles help thousands of teachers, homeschoolers, and those serious about finding the best way to maneuver the minefields of technology in education. They have published hundreds of ebooks, workbooks, articles, and have materials shared throughout the world.*

TABLE OF CONTENTS

TABLE OF IMAGES

TABLE OF ASSESSMENTS

LESSON #2 DIGITAL TOOLS IN THE CLASSROOM

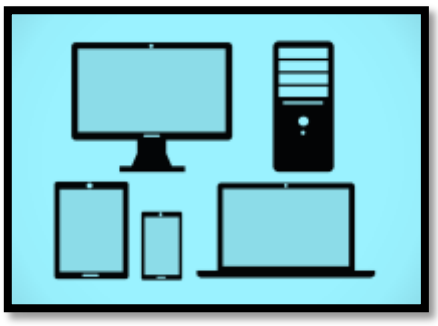
Vocabulary	Problem solving	Skills
• *Benchmark* • *Blog* • *Bounce back* • *Ctrl+F* • *Digital portfolio* • *Dropbox* • *Email* • *GAFE* • *Log in* • *Peripheral* • *Protocol* • *Shortkey* • *Warm-up*	• *I forgot my log-in (where did you record it?)* • *I gave my log-in to a friend* • *I used someone else's log-in* • *Email bounced back (resend from 'sent' file after checking address)* • *How do I search (Ctrl+F)* • *I can't remember where a tool is on the toolbar (use shortkey)* • *I forgot the Exit Ticket* • *Computer doesn't work (how have you solved this in the past?)* • *Dropbox didn't 'send' (it shares)*	**New** *Student blogs* *Class calendar* *Student dropbox* *GAFE* **Scaffolded** *Digital citizenship* *Digital portfolios* *Email* *Important keys* *Class website* *Screenshot*

HOW DO I USE DIGITAL TOOLS TO LEARN?

- *Completed hardware guide*
- *Filled in UN/PW list*
- *Joined classroom conversations*
- *[tried to] solve own problems*
- *Completed exit ticket*
- *Successfully annotated workbook*
- *Decisions followed class rules*
- *Joined class conversations*
- *Left station as it was (neat and orderly)*

STEP-BY-STEP

Class warm-up: ***None***

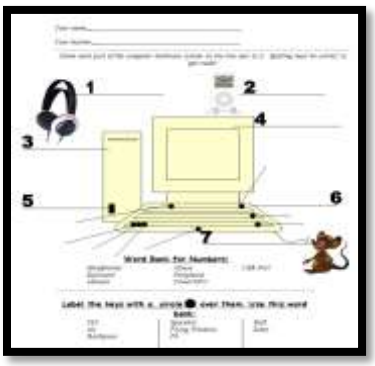


_____Review computer parts. *Figures 16a-c* are parts of a variety of digital devices. Find the listed parts on your school device (full-size copy at the end of the lesson to use for a study guide and testing) in preparation for upcoming assessment. For example, if you use iPads, where are the 'headphones' on this device? Or the mouse? How about the USB Port (there is none)? Where is the iPad microphone (see *Figure 16b*) on, say, the PC or Chromebook (*Figure 16c*)? How about the charging dock? If you use smartphones, see assessment at end of lesson.

_____As you review the parts of your digital device, write the answers into the assessments (at the

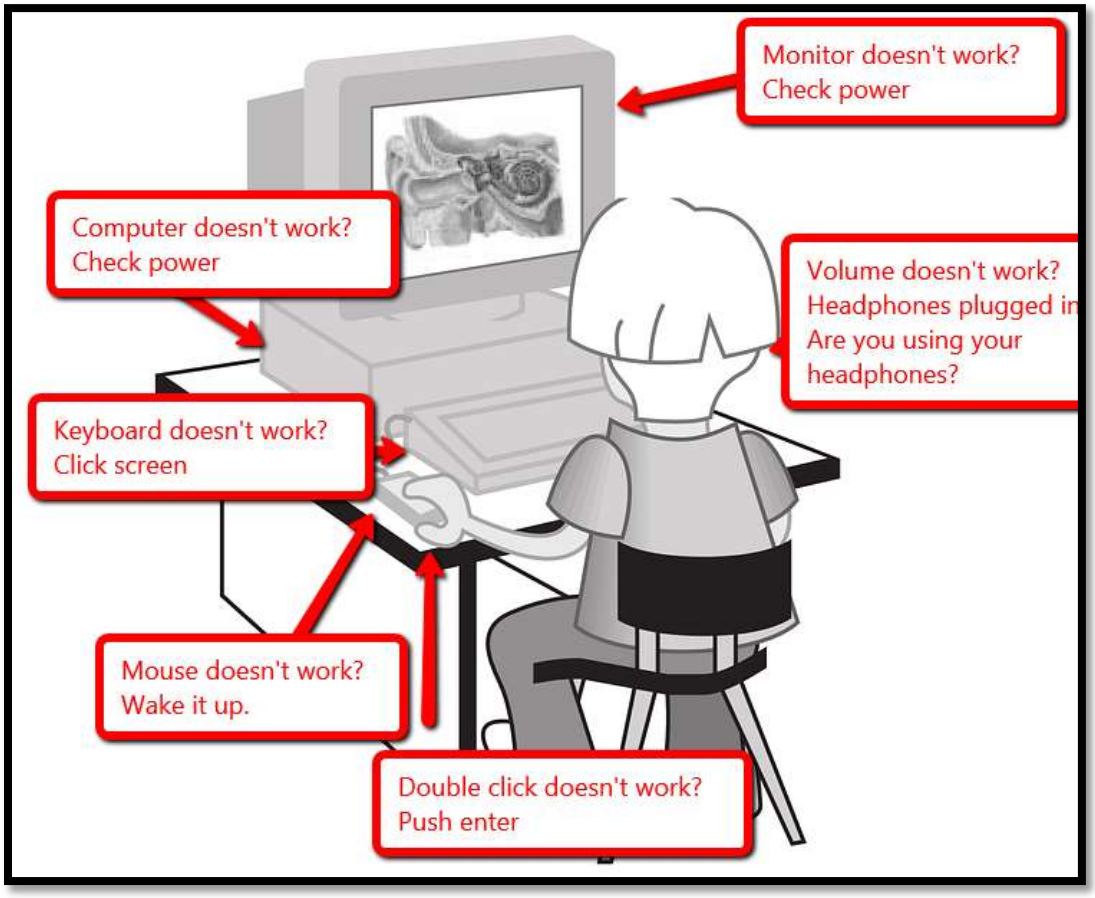
end of this lesson) as a study guide.

Figure 9a—Parts of computer; 16b—iPad; 16c—Chromebook



_____Discuss how understanding your digital device's hardware helps solve tech problems (*Figure 17*—zoom in if needed). More on this later.

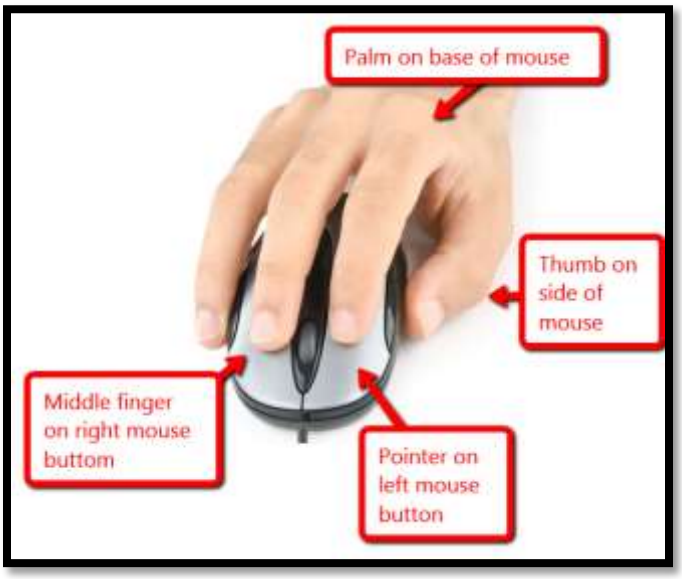
Figure 10—Hardware-related problems and solutions



_____Adopt the mindset that you will **always try to solve your own problems**. This will be discussed in depth in the *Problem Solving* lesson.

_____Check your neighbor's mouse hold. Does it match *Figure 18* (zoom in if needed)?

Figure 11—How to hold mouse



_____Discuss **digital citizenship**. You'll cover it in depth in a future lesson and circle back on topics throughout the year.

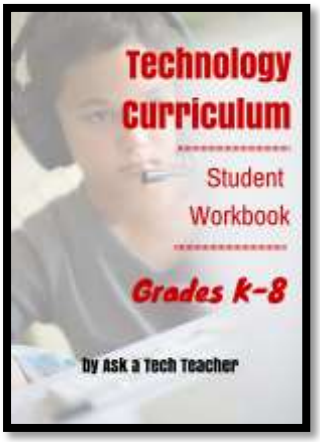
_____This lesson will cover the following topics (adapted to your digital device):

- *annotation tool*
- *class calendar*
- *class Internet start page*
- *class website*
- *digital portfolios*
- *email*
- *Google Apps*
- *journaling*
- *log-ins*
- *screenshot tool*
- *student blogs*
- *student dropbox*
- *student workbooks*
- *vocabulary decoding tools*
- *webtools*

Student workbooks

_____Your teacher will introduce your **student technology workbook**. It includes:

- *assessments*
- *links to websites you'll be using*
- *links to digital tools used in class*
- *a place to take notes*
- *full-color samples of projects*
- *checklists for activities*
- *extras to extend learning*
- *the ability to circle back on concepts already covered or spiral forward if you want to preview upcoming material*



_____Experiment with as many of these as you have time for.

Annotation Tool

_____Your teacher will show you how to write in your workbook with an **annotation tool** such as iAnnotate for iPads and Chromebooks (*Figure 19a*), Notability for iPads (*Figure 19b*), Notable for Chromebooks, Adobe Acrobat (*Figure 19c*), or another tool available in your school.

_____Your teacher will review options available in the annotation tool such as:

- *highlighting*
- *text and freeform notes*
- *screenshots*
- *sharing/collaborating*

_____If you're sharing a PDF (for example, it's loaded on a computer that multiple classes use), select a personal color that's different from other students.

Figure 12a—Notability; 19b—Acrobat; 19c—iAnnotate

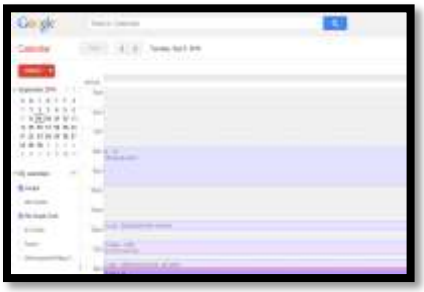
Class Calendar

_____Your teacher will post a **digital class calendar** that tracks due dates, class events, and other important information. It might be created in Google Calendar (*Figure 20a*), Office 365, a Padlet template (*Figure 20b*), MS Publisher (*Figure 20c*), or another option. If possible, s/he'll embed it into the class website. It might also be possible to embed it into your student blog so that it auto-updates. Check with your teacher on that possibility.

_____Volunteer to demonstrate how to edit the calendar by adding homework.

_____Volunteer to add events to the calendar for one month. Start with next week's Hardware quiz. Or, your teacher may allow all students to do this. If so: Contribute responsibly to the class calendar.

Figure 13a—Class calendar in Google; 20b—Padlet; 20c—DTP



Class Internet Start Page

_____A **class Internet start page** is a website that comes up when you open the Internet. It organizes critical content in a single location and curates links you will use during class.

Figure 14—Class Internet start page

_____Remember: Any time you visit the Internet, do so safely and legally. If you didn't discuss digital citizenship in K-4, your teacher will take time right now to review it.

Class Webtools

_____**Class webtools** are programs accessed directly from the Internet. They aren't on the digital device you use at school. In fact, if you don't have an Internet connection, you won't be able to use them. The biggest reason educators and students like webtools is that they can be used anywhere. That means if you start a project at school, you can finish it at home—no problem.

_____There are a wide variety of webtools that you will use this year to complete projects which may include:

- *online math program (i.e., Khan Academy)*
- *digital keyboarding program (i.e., Type to Learn, Typing Web)*
- *avatar creator for digital citizenship*
- *badge to assess progress*
- *digital storytelling*
- *reading library (like Subtext)*

_____Log into all of your class webtools right now to make sure there are no problems.

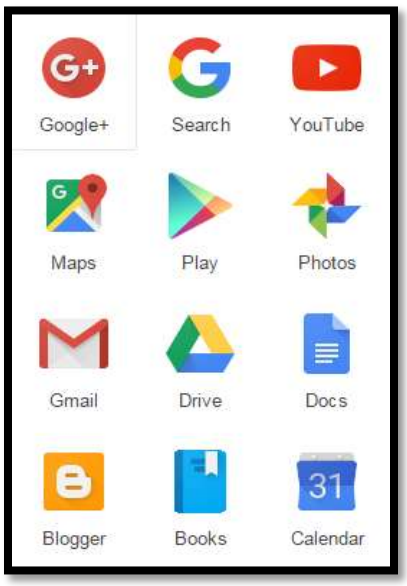
Class website

_____Your teacher may have a **class website** to track class activities, keep parents in the loop, and embed sharable projects, i.e., Tagxedos and Animotos. Your teacher will let you know where that is and how to access it.

Google Apps

_____**Google Apps for Education** is a suite of basic tools that you will use for class projects. It may include:

- *Gmail (for email)*
- *Google Drive and associated apps*
- *Cloud storage*
- *Google Calendar*
- *YouTube*



_____Everything created in Google Apps is backed up instantly in the Cloud. Importantly, it enables collaboration and sharing.

_____Your teacher will show you how to use your account including how to log in, access the Drive, and share documents with others.

Log-ins

_____Volunteer to teach classmates how to **log into digital devices and tools** using user name and password (*Figure 22*—zoom in if needed)—as a review of last year's lessons:

Figure 15—How to log in

_____Digital tools that might require a log-in include:

- *class etextbooks*
- *keyboarding program*
- *class website (with grades)*
- *class math and/or reading program*
- *online webtools*

_____Track these log-ins using a method that works for you, such as:

- *Keep a physical copy by your seat or in your personal binder.*
- *Keep a digital copy in your digital portfolio.*
- *Take a snapshot of it to keep on your digital device for quick reference.*

_____Or, you might do this digitally using *Figure 23*:

Figure 16—Track UN and PW

User Name/Passwords		
PROGRAM	UN	PASSWORD
Keyboarding Program		
Math Program		
Computer		
Class wiki		
Add'l		

_____Test the log-in for as many of your digital accounts as possible. As you do so, write the UN and PW into *Figure 23* with your annotation tool. Ask for help if you get stuck.

Journaling

_____If you will be **journaling**, your teacher will show you which digital tool you'll use. It might be My Journal, Penzu, a word processing program, or your blog.
_____Take time to log into your journaling tool and test it out.

Screenshot Tool

_____Often, you will annotate an assessment, rubric, or checklist in this workbook. You can save your work with a screenshot tool that takes a snapshot of the screen and allows you to save it to your digital portfolio. Depending upon your digital device, you might use 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*

Student blogs

_____Student blogs (*Figure 24*) are personal online sites where you discuss classwork, collaborate with peers, upload projects, and more. Your teacher will show you where these are located and how to access them. You will also be encouraged to personalize them with favorite colors, fonts, and widgets.

_____In general, each blog post requires:

Figure 17—Student blog

- *a title that pulls the reader in*
- *a review of what readers can expect*
- *tone/voice that is consistent throughout all articles—conversational, knowledgeable, friendly—and that fits this type of writing and the intended audience*
- *working links that support the topics*
- *at least one media to support each article (picture, video, or sound)*
- *an understanding of the target audience*
- *an understanding of the writing purpose*
- *citations—authors name, permission, linkbacks, and copyright*
- *occasional teamwork*

_____Several times during the grading period, your teacher will assess your blogs based on the above criteria or criteria set out in a separate document.

_____See lesson on '*Student Blogs*' for more detail.

Student digital portfolios

_____**Digital Portfolios** are locations where you store your work. This means when you're looking for a document, you need only go to this one location to find it.

_____Some digital portfolios are Internet-based, others on a dedicated server that's accessed through the school. Your teacher will tell you which of these two options applies to your portfolio.

_____Purposes of the digital portfolio include:

- *interact, collaborate, and publish with peers*
- *contribute to project teams*
- *edit or review work in multiple locations*
- *submit class assignments*

_____Practice uploading something to your digital portfolio.

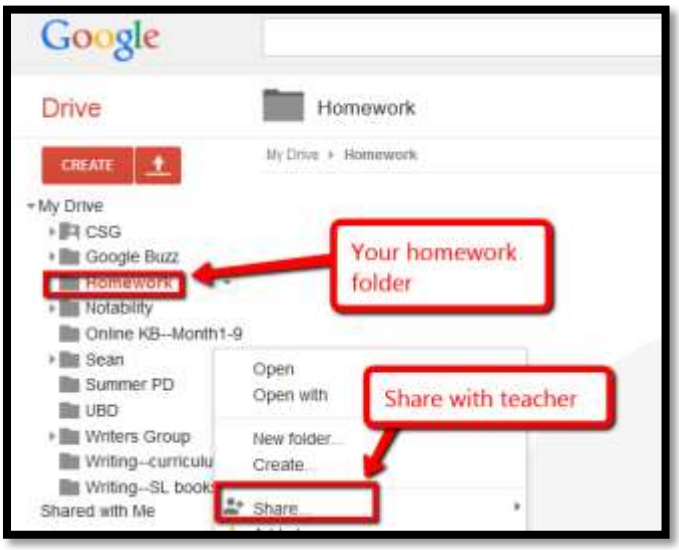
Student dropbox

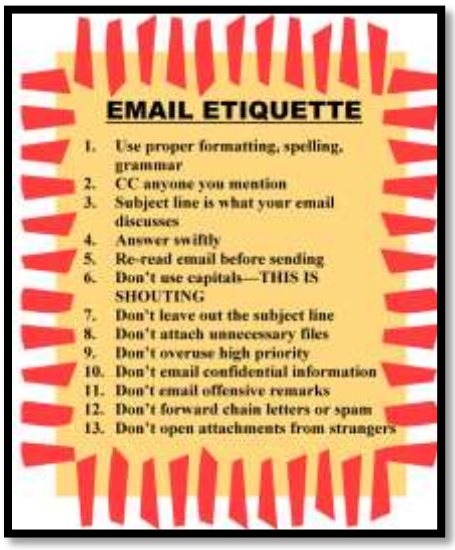
_____A **dropbox is a digital location** where you can submit homework or class assignments. If you have this option, your teacher will review it with you.

_____If you have Google Apps, you can create one as follows (*Figure 25a*—zoom in if needed):

- *Create a folder called 'Homework' and share it with your teacher.*
- *Submit work by copying it to that folder so your teacher can view and comment.*

Figure 18a—Homework dropbox; 25b—email etiquette





Student email

_____Your teacher will review **how to email** (if you will be using email):

- If you are a GAFE school, Gmail comes with this. Your teacher will explain where to find it and how to use it.
- If you're expected to use your home-based email account or parents, your teacher will ask you to send her/him an email to verify your address.

_____If you used email last year, volunteer to review the basics—*to, cc, subject line, body of email, attachment, urgent.*

_____Discuss rules on **email poster** (zoom in on *Figure 25b* if necessary). Do you have other suggestions?

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

_____It is your responsibility to 1) spell address correctly, 2) notice when email 'bounces', and 3) resend if necessary. What should you do to verify that your email was delivered?

Vocabulary Decoding Tools

_____When you find a word you don't understand, use your **digital vocabulary decoding tool** to determine its meaning. Your teacher will show you how to access the native app or webtool on your digital device that is used for this purpose. Depending upon the device, these will be on the homepage, the browser toolbar, a shortkey, or a right click.

_____Options for dictionary tools include:

- *Kids Wordsmyth*
- *Merriam-Webster for Kids*
- *Picture Dictionary*
- *right click on a word in MS Word and select 'Look up'*
- *right click in Google Apps (i.e., Google Docs) and select 'research'*
- *dictionary created by students in prior years—they find a word they don't understand, add it with a definition to a webpage you've set up for that purpose (maybe on the class blog or website)*

_____Test this tool. Notice how quickly it can look up words. Practice with several of the words in this lesson's *Vocabulary* list.

_____Attempt to access all school digital tools before leaving.

Class exit ticket: **Send an email to your teacher listing the top three digital tools you are excited to use.**

Extension:

- *Volunteer to add hardware quiz to class calendar.*
- *Volunteer to add keyboarding quiz to class calendar.*

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

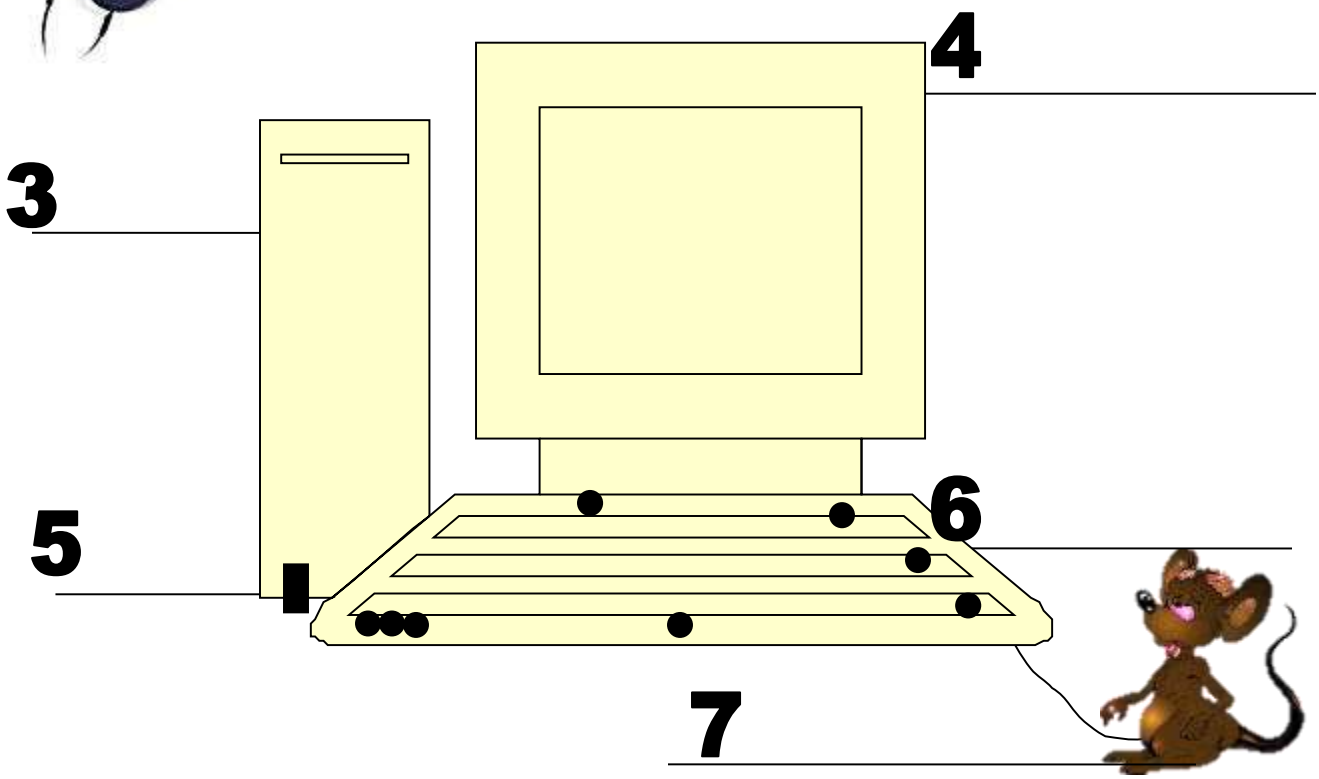
Assessment 1—Parts of the computer

HARDWARE—PARTS OF THE COMPUTER

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

1 _____

2 _____



3 _____

4 _____

5 _____

6 _____

7 _____

Word Bank:

Headphones	*Mouse*	*USB Port*
Keyboard	*Peripheral*	
Monitor	*Tower/CPU*	

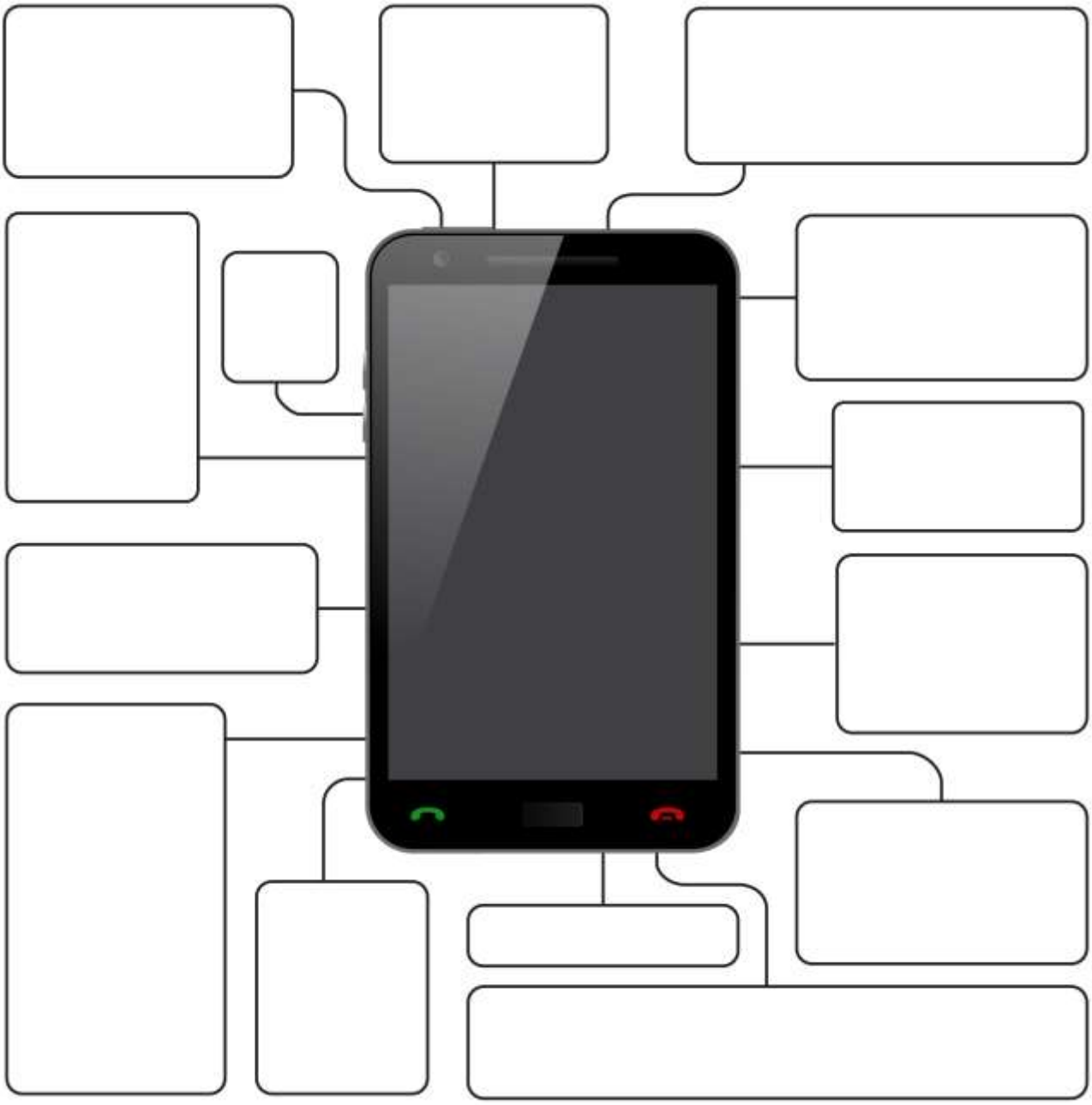
Label the keys with a circle ● over them. Use this word bank:

Ctrl	*Spacebar*	*Shift*
Alt	*Flying Windows*	*Enter*
Backspace	*F4*	

Assessment 2—Parts of the smartphone

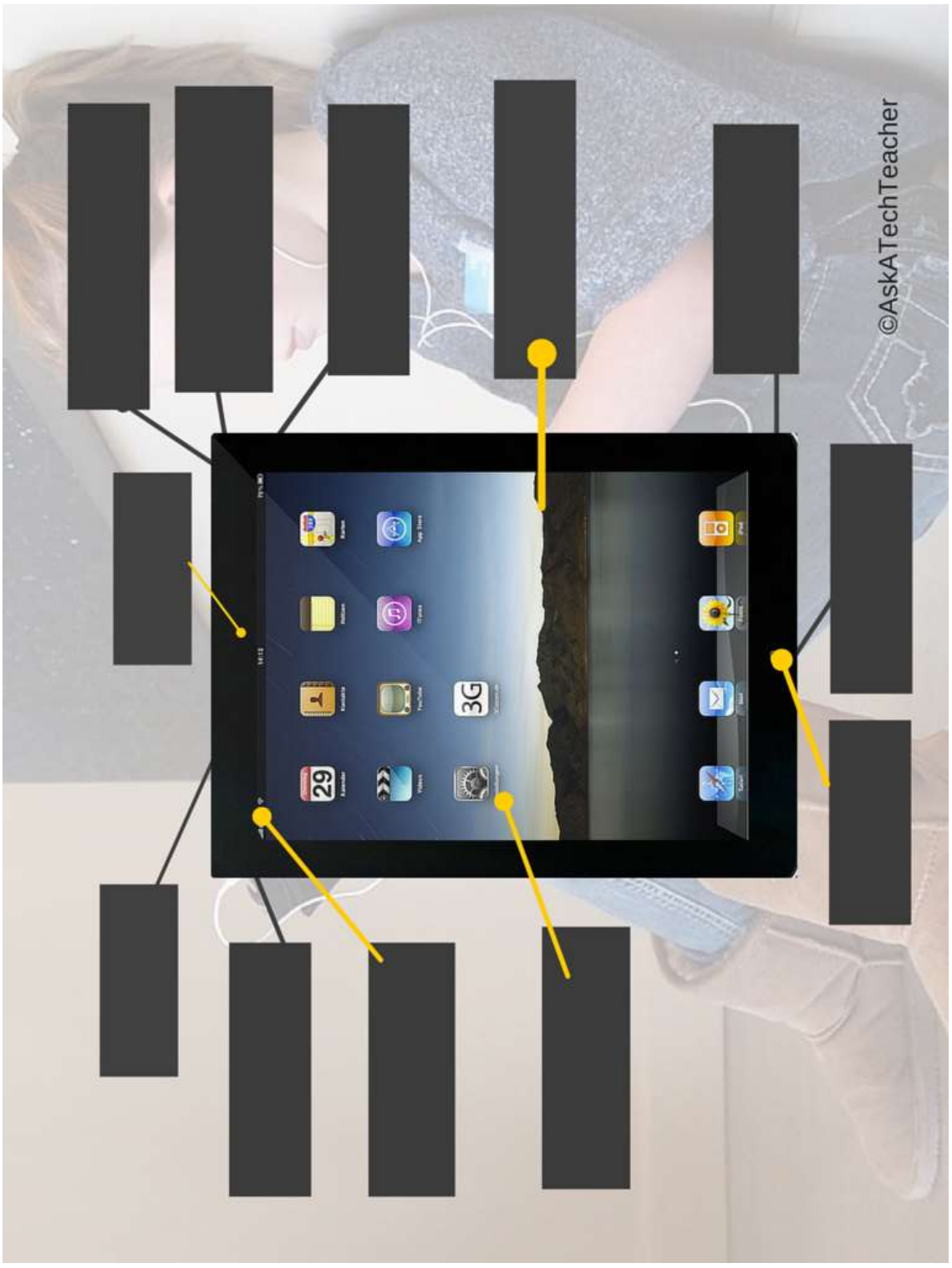
HARDWARE—PARTS OF THE SMARTPHONE

Adapt this to your needs

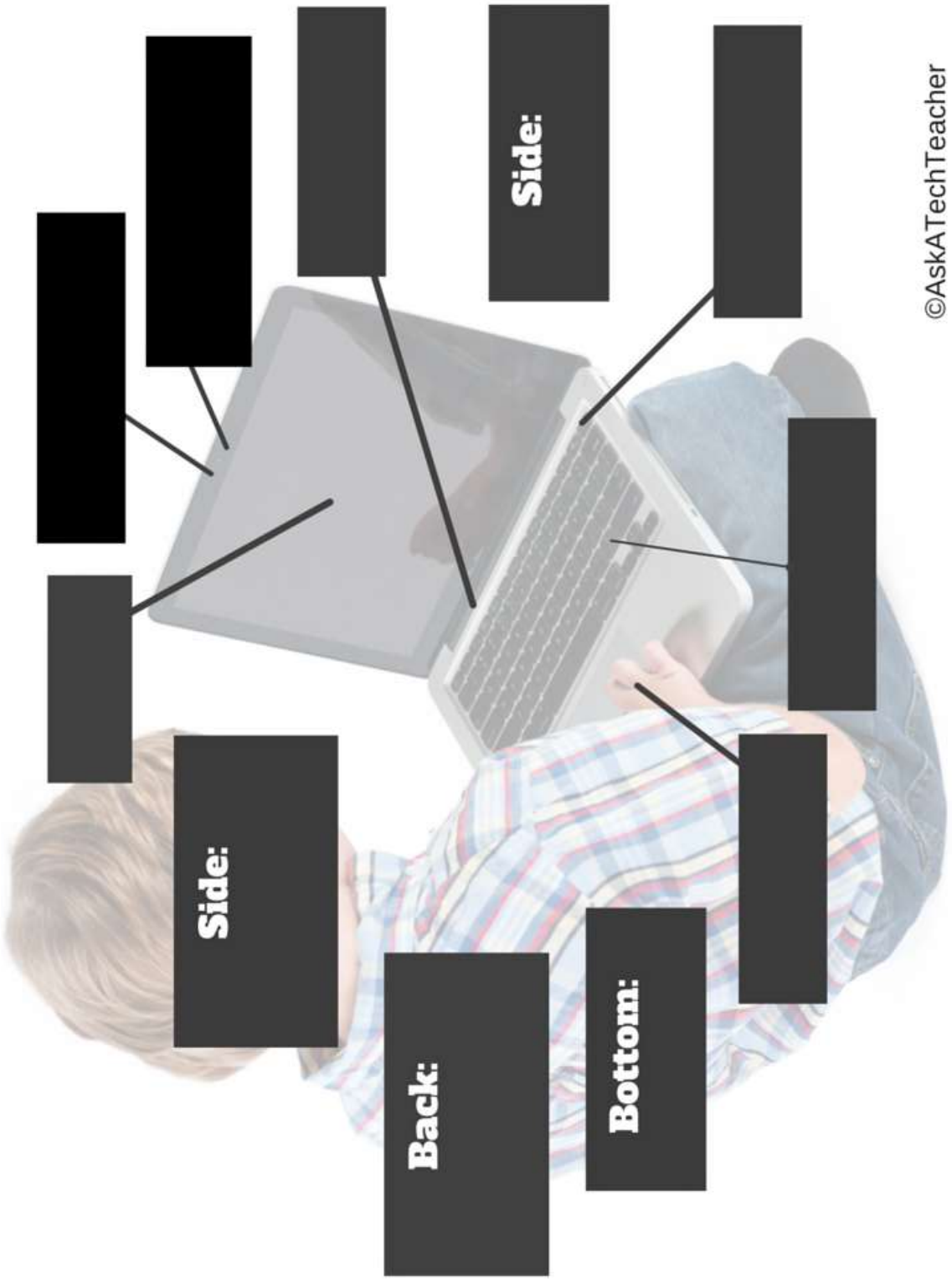


Assessment 3—Parts of an iPad

Parts of an iPad



Assessment 4—Chromebook parts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LESSON #5 ORGANIZING IDEAS

Vocabulary	Problem solving	Skills
• *Alignment* • *Bullets* • *Citations* • *Heading* • *Icons* • *Indent/exdent* • *Monitor* • *Mulligan* • *Outline* • *Shift+tab* • *Title*	• *What is today's date (check clock in lower right corner or use shortkey)* • *I can't find my word processing program (if it's software, use Search field)* • *I got out of outline (backspace to the last bullet and push enter)* • *What's the difference between a heading and a title?* • *Can't get outline to work (try shortkeys)* • *Computer crashed (save early save often)*	**New** *Brainstorming* *Mindmapping* **Scaffolded** *Outlining* *Keyboarding* *Speaking/listening* *Digital citizenship*

HOW DO I ORGANIZE INFO EFFICIENTLY?

- *Completed project*
- *Followed directions*
- *Signed up for Board*
- *Completed warm-up, exit ticket*
- *Successfully annotated workbook*
- *Decisions followed class rules*
- *Joined class conversations*
- *Left station as it was (neat and orderly)*

STEP-BY-STEP

Class warm-up: ***Keyboard homerow in Popcorn Typer or another typing tool that concentrates on one row at a time***

_____Ask if your teacher will play music while you keyboard. This will establish a typing rhythm that makes it easier to pace your fingers.

_____**Review Hardware Quiz**. Remember Mulligan Rule.

_____Today you will take the **Important Keys quiz**. Using the template in the keyboarding lesson, fill it out with your annotation tool working with a partner. You get only 5-10 minutes because you should know these keys.

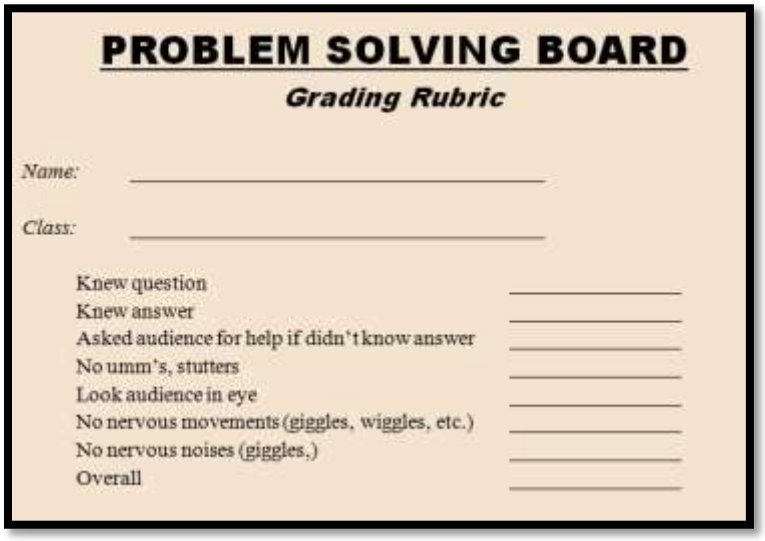
_____Grading is the same as the speed/accuracy quiz.

_____Done? Ask **questions about homework** if any. The full year of homework is in the back of this workbook.

_____Start **Problem-solving Board** today. You stand in front of class, share your problem and at least one solution, and take classmate questions. Follow class speaking and listening expectations. As you present, your teacher will use *Figure 40* as an assessment—zoom in if needed:

Figure 19—Keyboard keys quiz

Figure 20—Problem-solving board rubric



PROBLEM SOLVING BOARD

Grading Rubric

Name: _____

Class: _____

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

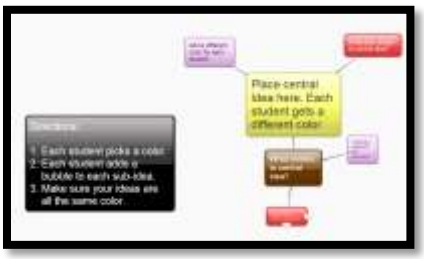
_____Any evidence of learning to post on Evidence Board?
_____Discuss the importance of organizing thinking. How have you done this in the past?
_____This lesson discusses two ways:

- *brainstorming and mindmapping*
- *outlining*

Brainstorming and mindmapping

_____Your teacher will review the concepts of 'brainstorming' and 'mindmapping'—a collaborative visual approach to thinking through and presenting ideas. Brainstorming is a great way to prewrite. It will help you come up with many topical ideas.
_____Here are examples of mindmaps you may have created between kindergarten and 4th grade if you used the SL curriculum (*Figures 41a-c*):

Figure 21a—Kindergarten; 41b-c—1st grade



_____This year, you create a mindmap or brainstorm a topic in small groups. Here are basic rules:

- *There are no wrong answers.*
- *Get as many ideas as possible.*
- *Record all ideas.*
- *Do not evaluate ideas presented.*
- *Build new ideas on those of others.*
- *Stress quantity over quality.*

_____General steps for brainstorming:

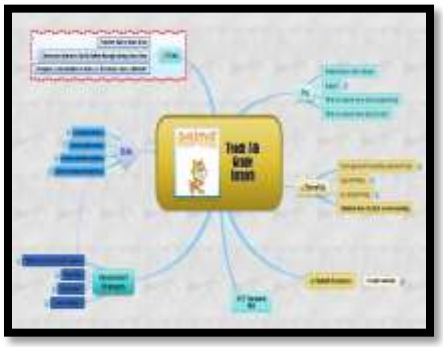
- *Sit in a comfortable group.*
- *Add the central idea to the middle of the page. Include image if possible.*
- *Add ideas that support the theme. Don't worry if contributions don't seem 'big'—they'll find a home later as a sub-idea, connected to another.*
- *All ideas down? Now drag ideas around to connect topics that relate.*
- *If possible, edit connectors to be fatter for main ideas and thinner for sub ideas. This enables the mind to subconsciously visually categorize ideas.*
- *Add emphasis where needed with color, images, fonts, and/or size (if available).*

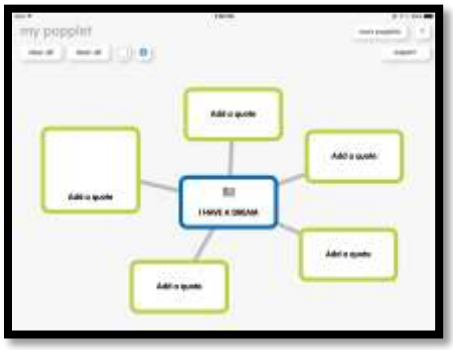
_____There are lots of online mindmapping tools:

- SpiderScribe – *Figure 42a*
- MindMaple – *Figure 42b (download; iOS)*
- Popplet – *Figure 42c (iPad app)*
- Bubbl.us – *Figure 41c*
- Google Draw – *Figure 41a*

_____Your teacher will demonstrate the selected program on the class screen to while follow on your digital device. When s/he finishes, you'll work in a small group to complete your own mindmap.
_____The topic you map may be a book being read, a historic event, or a mathematical concept.

Figure 22a—SpiderScribe; 42b—MindMaple; 42c—Popplet





Outlining

_____Discuss outlining. Here's what you want to understand:

- *It encourages a better understanding of a topic.*
- *It promotes reflection on a topic.*
- *It assists analysis of a topic.*

_____Open your word processing program while your teacher does that on the screen. Put heading at top (name, teacher, and date). What's the purpose of the heading? Add the date with shortkey.
_____If you don't use MS Word or Google Docs on your digital device, try:

- *OneNote—software, a web app, or an iPad app*
- *Oak — a plain text online outliner stored on local drive*
- *Workflowy – online outliner (Figure 43c)*

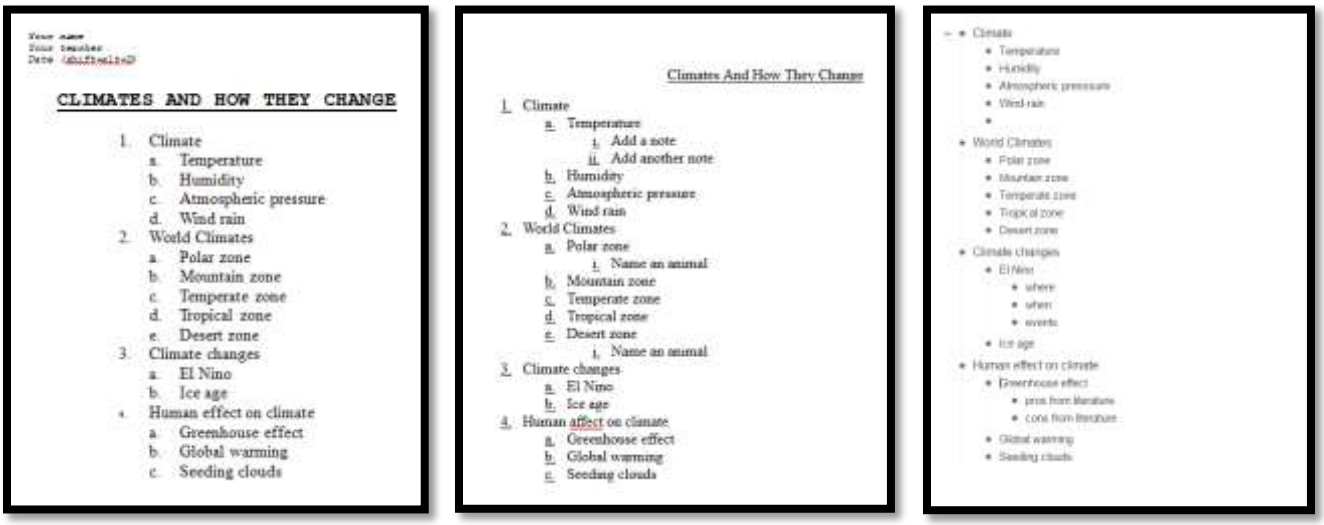
_____If these don't work on your Chromebook, try:

- *Outliner of Giants*

_____If you're an iPad school, try one of these:

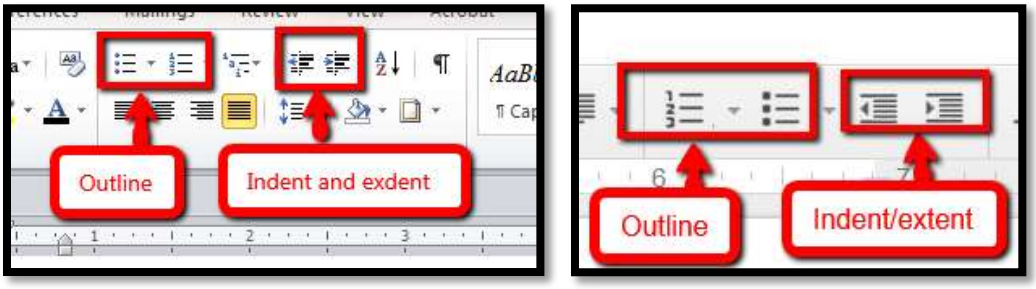
- *The Google Docs or MS Word app*
- *Quicklyst – quick notes and list on iPads*
- *OmniOutliner – for iPads and online*

Figure 23a——Outline in Word; 43b—Google Docs; 43c—Workflowy

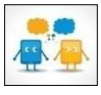


_____Any time you go online, remember to do so safely.
_____Center title beneath heading. What's the purpose of a 'title'?
_____Adapt for the toolbar in the word processing program you use. In MS Word and Google Docs, use: 1) bullet or numbered list, 2) indent—push text to right (subpoint), and 3) exdent—push text to left (more important point). See *Figures 44a-b (*in MS Word and Google Docs*)*:

Figure 24a—How to outline in MS Word; 44b—Google Docs



_____Or, use tab to indent and Shift+tab to exdent (for Word and Docs)—I like this better.
_____Outline chapter headings and subheadings. Summarize and/or paraphrase relevant points.
_____Once completed (*Figure 43a-c*), work with a neighbor to add information by editing the outline. Use data from print/digital sources, class discussion, and personal experience. Note source where relevant.



_____Remember: Every time you use computers, practice keyboarding skills.
_____Remember: Save early save often. Why? How often?

_____Save (or save-as? Which is right for this situation) with your last name in the file name. Close with Alt+F4.

_____Review how to save (*Figure 45*—zoom in if needed):

Figure 25—How to save your file

_____Why include your name in the file name when saving? Your teacher will demonstrate a search for a student document. See how their files show up even if not saved to their digital portfolio. Putting the last name in file name makes it harder to lose work.

Class exit ticket: **Share or email outline to your teacher.**

Extension:

- *Volunteer to add Board presenters to class calendar.*
- *Volunteer to add the Blank Keyboard quiz to class calendar.*
- *Visit the class Internet start page for websites that tie into classwork.*

LESSON #9 CODING: HOUR OF CODE

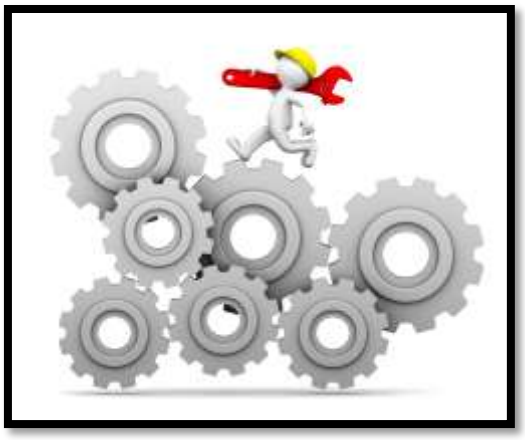
Vocabulary	Problem solving	Skills
• *Coding* • *Debug* • *Hotkey* • *Hour of code* • *If-then* • *Macro* • *Programming* • *Sequence* • *Shortkey* • *Symbolism*	• *I don't know how to use the programming tool (experiment; be a risk-taker)* • *I don't like coding (why? What exactly don't you like about it?)* • *My partner does lots of the work (that's OK if you do your part also)* • *I tried to debug my program, but it didn't work (start at the beginning and work through it one step at a time)*	**New** *Coding/programming* *Macros* *Hotkeys* *Programming shortkeys* **Scaffolded** *Problem solving* *Coding*

HOW DO I USE PROGRAMS I'VE NEVER SEEN?

- *Anecdotal*
- *Completed exit ticket*
- *Worked well with partner*
- *Completed one hour of coding*
- *Successfully annotated workbook*
- *Decisions followed class rules*
- *Joined class conversations*
- *Left station as it was (neat and orderly)*

STEP-BY-STEP

Class warm-up: ***None***



_____Because this lesson is devoted to coding, you'll skip presentations and conversations about the Evidence Board. You'll return to those next week.

_____Discuss critical thinking, problem solving. Does this apply to, say, games you like playing?

_____The reason your teacher embraces coding is simple: **It teaches critical thinking.** Discuss these concepts:

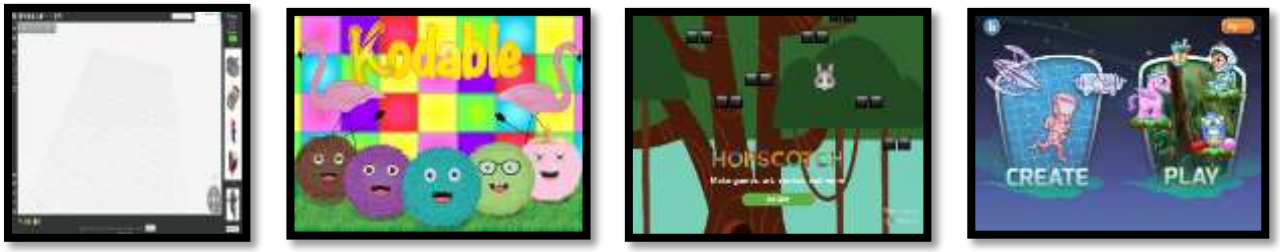
- *abstraction and symbolism–like toolbars, icons, numbers*
- *creativity–solutions no one else has*
- *debugging–write-edit-rewrite; when you make a mistake, look at what happened and fix where it went wrong*
- *if-then thinking–actions have consequences*
- *logic–go through a problem from A to Z*
- *sequencing–know what happens when*

_____Most people—students and adults—think programming looks like *Figure 62a* when it actually looks like *Figure 62b*: People think programming is so complicated, only Really Smart people can accomplish it. Actually, all it takes is logic and patience.

Figure 26a-b—What programming feels like vs. what it is

_____Do you remember coding activities from previous years? *Figures 63a-d* are from kindergarten through fourth grade (if you followed the SL curriculum):

Figure 27a-d—Coding from previous years



_____December will host the **Hour of Code**, a one-hour introduction to coding and programming, how intuitive it actually is, and why you should love it. It's designed to demystify "code" and show that anyone can learn the basics to be a maker, a creator, and an innovator.

_____This unit may be done individually or in small groups.

_____There are four activities in this lesson plan. Your teacher may do one or more, depending upon how much time you have:

- *program macros*
- *program shortkeys and hotkeys*
- *follow an online Hour of Code lesson plan*
- *visit miscellaneous websites*

_____ If you did one of these last year, your teacher will probably pick a different one this year.

Program Macros

_____By fifth grade, you appreciate technology for how it can speed up class projects. You seek out ways to use it to make your educational journey easier. A great activity that makes use of pre-programming skills is creating macros.

_____Macros are a series of steps that you program into a shortkey: A few keystrokes perform multiple actions.

_____Macros go with the computer. If you change seats, you must recreate the macro.

_____This skill is popular as an easy way to add MLA headings (or whichever standard your school uses) and document closings.

_____Here are basic steps for MS Word (your teacher will adapt them to the digital device you use):

1. *Click **View - Macros - Record Macros**.*
2. *Specify a name for the macro.*
3. *Choose whether it should be a keyboard shortcut or a button.*
4. *Once you click **OK**, you will notice your mouse looks like a cassette tape, indicating that anything you click will be part of the macro. Click all elements you would like to be part of your macro.*
5. *Stop recording by clicking **View - Stop Recording**.*

_____*Figure 64* is a video (click to visit):

Figure 28—How to create a macro

Program Shortkeys and Hotkeys

_____Shortkeys (keyboard shortcuts) and hotkeys are similar to macros, but for a shorter series of actions—often for opening a program.

_____Creating a shortkey will quickly become a favorite of yours.

_____As with macros, shortkeys go with the computer. If you change seats, you must recreate the shortkey.

_____Adapt the following directions to the device you use. These are for the windows platform:

- *Go to Start; right click on the desired program.*
- *Select 'properties'; click in 'shortcut'.*
- *Push key combination you want to use, say, Ctrl+Alt+S.*
- *Save.*

_____Watch this video:

Figure 29—How to create a shortkey

_____If you are an iPad school, you call them 'hotkeys':

- *Go to Settings > General Settings > Keyboard Settings.*
- *Scroll down and click "add new shortcut."*

_____Another great way to add shortkeys is with Auto Hotkeys. This program must be downloaded to each computer and doesn't yet have education accounts, but may be perfect for you.

Follow one of the free online Hour of Code programs

_____Websites like Code.org offer full lesson plans for Hour of Code. This is the easiest way to get involved in programming as they do all the planning for you. This may be exactly what you need.
_____Before visiting the website, review digital citizenship–especially privacy and safety.

Miscellaneous websites

_____For general coding activities, here are some great websites:

- Build with Chrome–kind of like Minecraft, more like Google Earth Warehouse; use virtual Lego blocks to build in your browser
- **Spreadsheets**–code the spreadsheet with color to reveal a secret picture. This is similar to what you did in kindergarten (if you used the SL curriculum)
- Khan Academy Computer Science
- Lego Digital Designer
- Scratch
- Snap!—runs in your browser
- Tinkercad–3D modeling–fee–perfect for 3D printing
- Wolfram Alpha widgets

_____Here are apps that take coding to an iPad if you're a 1:1 iPad school:

- App Inventor
- Cargo-Bot
- Codea (Perfect for Intermediate+)
- Hopscotch (more complicated than Kodable)
- Move the Turtle– iPad programming for middle school

_____Before going online, review digital citizenship –especially privacy.

Class exit ticket: **Send your teacher a screenshot of what you programmed.**

Extension: **Volunteer to post Hour of Code on class calendar.**

MORE FROM STRUCTURED LEARNING

If you're looking for other student workbooks that accompany the K-8 technology curriculum, try these:

Ask your teacher how you can use this ebook on:

IPads… PCs… iMacs… Laptops… Macbooks… Netbooks… Chromebooks… Smartphones… At home