The Practical Ed Tech Handbook

An overview of the Best Ed Tech Tools for K-12 Teachers.

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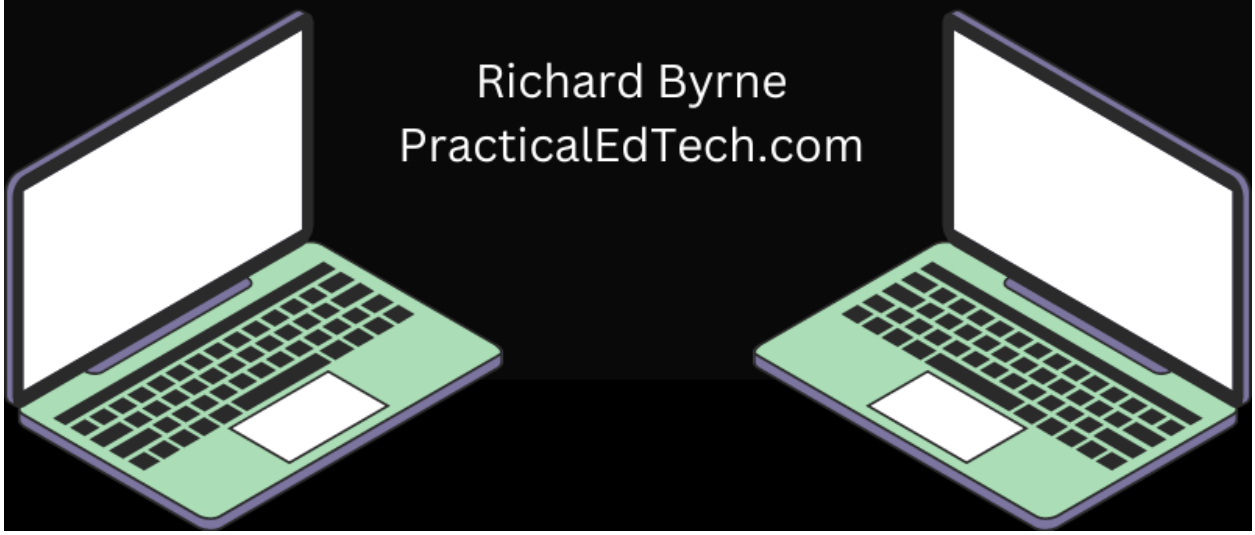

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Introduction

My view on using technology in the classroom is that it should in some way help teachers create memorable learning experiences for their students. That help can come in the form of streamlining a workflow so that I have more time to focus on the fun aspects of teaching, working with kids. That help can also come in the form of technology that enables students to do things that generations before them could not have done, like producing a video that is seen by thousands of people around the world.

This guide is designed to provide you with an overview of a selection of free web tools, websites, and mobile apps that have utility in nearly every K-12 classroom. In each section you will find more than one tool that can be used to reach the same ends. I like to present more than one option in each category because we all have different levels of access to computers and tablets, different school web filtering policies, and different needs for our students.

Why didn't you include X? I think you should include X? The danger of putting together a guide like this is that for every three tools I include there are probably three or ten others that are like it. The tools that I have included in this guide are ones that I have personally used with students and or in the many professional development workshops that I facilitate every year. I tend to gravitate to the tools that have the simplest user interfaces and those that I think a teacher can feel comfortable using with his or her students in a relatively short amount of time. To that end, throughout this guide you will find links to video tutorials on many of the tools that I've chosen to feature.

Where's all the Google Workspace stuff? I have a YouTube channel in which I've published more than five hundred Google Workspace tutorials. You can see that playlist at http://bitly.com/gafeplaylist.

Reusing this guide:
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I offer in-person and virtual professional development workshops. If you would like to have me come to your school or host virtual trainings, please send me an email at ***richardbyrne@freetech4teachers.com***

About me:

I'm best known for developing the award-winning blog Free Technology for Teachers. I've been invited to speak at events all over North America, Europe, Australia, Southeast Asia, and the Middle East. Since 2007 my work has focused on sharing free resources that educators can use to enhance their students' learning experiences. I'm currently a high school computer science teacher. In the past I've taught high school social studies and language arts, worked with preservice teachers at multiple universities, and taught continuing education courses for the Midwest Teachers Institute.

I'm a five time winner of the Edublogs Award for Best Resource Sharing Blog. I became a Google Certified Teacher in 2009. I've twice received Merlot Classics awards from the chancellor's office of the California State University. I've been a finalist for ACTEM's (Association of Computer Teachers and Educators in Maine) educator of the year award. And Tech & Learning Magazine named me one of their "people to watch."

In addition to my websites FreeTech4Teachers.com and PracticalEdTech.com I've written for a number of periodicals and been quoted for countless others. My print work includes a monthly column for *School Library Journal*, being contributing author to *What School Leaders Need to Know About Digital Technologies and Social Media*, and contributions to *Teacher Librarian*. With a background in history education it is only fitting that I live with my family in an old house in Maine.

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Communicating with students and parents.

When it comes to communicating with parents nothing can replace a good face-to-face meeting. Face-to-face meetings are not easy to schedule. Not every communication requires the intimacy of a face-to-face meeting. A phone call, a text message, an email, a blog post, or a social media post might be all that you need in order to convey your message. In this section we'll take a look at the best tools for digitally communicating with parents and students. As you read through this section, bear in mind that using a combination of the following tools and strategies will provide you with the best opportunity to reach all of your students and their parents.

Text Messaging/ SMS/ Push notifications:

People have a difficult time ignoring text messages and other push notifications that pop-up on their mobile phones. For that reason services that allow you to distribute messages in that manner are great for urgent news and reminders. It is also worth remembering that there are more homes with mobile phone subscriptions than homes with broadband subscriptions in the United States. [1] Therefore, you're statistically more likely to have a parent receive your text message than you are to have them receive an email.

Remind

Remind (http://remind.com), formerly known as Remind 101, is a great tool for sending important reminders to students and their parents. Through Remind students and their parents can sign-up to receive text messages on their mobile devices. You send the messages from your computer or mobile device without students or parents seeing your personal cell phone number. Like regular text messages that you might send to friends, you can attach files to messages that you send through Remind. Messages can be sent to individuals or sent to groups that you create in your Remind account.

In addition to text messages Remind offers the option to send audio messages up to fifteen seconds in length. Just like text messages, voice messages can be sent to individuals or to groups.

Stamps is one of the two options that Remind offers for students and parents to use to interact with the messages that you send to them. Students and parents can reply to your Remind messages by selecting one of four stamps to indicate that they have received your message and indicate if they need further clarification about your message.

Chat is the other option that Remind offers to students and parents to communicate with you. Remind Chat allows students and parents to reply with text to a teacher's messages. When I

[1] http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx

first heard about Remind Chat I was leery of it because I was concerned that students and parents would be messaging teachers at all hours of the day and expecting rapid responses. Remind alleviated that concern when I saw the "office hours" setting in the Remind chat service. "Office hours" in Remind Chat allows teachers to specify when they will allow chat messages to be sent and received. Teachers can also pause or stop chat exchanges at any time.

Seesaw Messages

Seesaw.me is best known as a digital portfolio service (more about that later in this guide). Seesaw includes an option for sending messages to students and parents. Messages can be sent to individuals or to groups. There is an option for parents to reply, but you can disable that option if you're worried about getting too many responses. A video overview of Seesaw's messaging option is provided at https://youtu.be/yynfnKOSFg0

ClassTag

ClassTag (http://classtag.com) lets you send email, push, and SMS/text announcements to parents. That's nothing unique. What is unique is that ClassTag will track whether or not those messages are opened and read by parents. If they're not opened and read, ClassTag will provide you with an option to print a flyer to send home. That flyer contains the same information as the electronic announcement.

Through the ClassTag marketplace teachers can get classroom supplies and other products as rewards for having a high level of engagement with parents through the ClassTag system.

A video overview of ClassTag can be watched at https://youtu.be/QWKUUOtdwsI

Email Management Tips

Like most people, I have a love-hate relationship with my email inbox. As soon as it gets close to empty, it fills up again. I'm sure you can relate.

The current version of Gmail for consumer and education accounts is packed with helpful, time-saving features including canned responses, message snoozing, and follow-up reminders. An overview of all of those features is available in video form at https://youtu.be/v6j4XxLGIN4

Canned Responses AKA Message Templates is my favorite feature of the current Gmail user interface. Canned Responses lets you create and store messages to use and re-use whenever you're crafting a new email or replying to a message in your inbox. This is a tremendous time-saver at the beginning of a school year or semester when you find yourself repeatedly answering the same type of questions from students and or their parents.

Smart Reply is my second favorite feature of the current Gmail user interface. Smart Reply creates suggestions for replies to send to the messages in your inbox. This can be a real time-saver when your inbox is full of emails that only require a short response. I've been using Smart Reply since it came out and it has proven to be helpful for sending short replies to messages.

Nudging is another feature of the current Gmail UI that I like a lot. Nudging prompts you to reply to emails that you haven't responded to. Nudging also prompts you to follow-up on messages that you sent but didn't receive a reply to.

Gmail offers a confidential mode that you can use to make messages self-destruct at a specified time. That same feature lets you prevent recipients of your messages from forwarding them or printing them.

In addition to the aforementioned Gmail features there are some other tools that I have used for a few years to help me manage my email workflow.

Loom (http://useloom.com) is a Chrome extension that you can use to record screencast videos from your inbox. Making a quick screencast video is a great alternative to trying to write step-by-step directions to answer a request for tech help. Watch this video (https://youtu.be/5oK2rriyTI4) to learn how to use Loom in Gmail.

Mote (http://mote.com) is a Chrome extension that has become very popular in the last couple of years. With Mote installed in Chrome you can record voice messages right from the message composition window in Gmail. Your voice messages can be up to thirty seconds long, but you

can record and send multiple messages in the same email. A video demonstration of how Mote works can be seen at https://youtu.be/_WBgmeB1adg

Those who use Outlook as their primary email service can also create response templates. A short overview of how to do that can be watched at https://youtu.be/OCtv4t3TNnI and written directions are available at https://bitly.com/3CF1JCp

Creating classroom blogs and websites.

A classroom blog can serve as an online hub for all information about your classroom. You can use a blog to publish updates about your class, to distribute assignments, to post handouts, and share study guides and other reference materials. Of course, a blog is the ideal place to have students write reflections on things they've learned and for you to do the same.

Blogger is my preferred platform for building classroom blogs. It's free to use all of its features, it integrates into Google Apps for Education accounts, and it takes less than five minutes to create a blog through Blogger. A 90 page guide to using Blogger in school can be downloaded at http://bitly.com/ftblogger15. Within that guide you will find a glossary of blogging terminology, step-by-step directions for creating a blog, directions on adding third party content to your blog, and directions for using Blogger's mobile apps.

Edublogs (http://edublogs.org) is a popular alternative to Blogger. The biggest selling point of Edublogs is that it lets you manage your students' accounts. That can be a huge benefit to you as you won't need to spend classroom time on having your students create accounts and or reset their passwords. Edublogs is also designed entirely with students and teachers in mind which means you have many privacy and moderation controls that are not present in services like Blogger and WordPress.com. A chart comparing educational blogging services is available in this Google Document and is included below.

Regardless of the blogging platform that you choose to use, the secret to getting people to read your blog consistently is to update it consistently. That doesn't mean that you need to update it every day, but it does mean that you should update it on a regular schedule. A good, manageable schedule is a Sunday night/ Monday morning update about the week ahead and a Friday update about the week that was just completed.

	Blogger Blogger.com	**WordPress.com**	**Edublogs.org**	**WordPress.org**	**SeeSaw** seesaw.me
Technical knowledge required?	No	No	No	Yes, but many easy-to-follow tutorials are available.	No.
Manage students' accounts?	Yes, but only in Google Workspace for Education domains.	No	Yes.	Yes, but you are responsible for managing all aspects of the account.	Yes.
TOS states "13 or over?"	Yes. Exception for Google Workspace for Education.	Yes.	No	No, you manage all aspects of accounts.	No.
Offers native iPad and Android Apps?	No	Yes.	Yes. Through the WordPress app.	Yes.	Yes.
Supports embedding media from 3rd parties?	Yes.	Limited.	Yes.	Yes.	Limited.
Displays advertising?	No.	Yes. Ads can be removed for a fee.	No.	No.	No.
Custom domain mapping (use your own domain).	Yes. $10-20/year	Yes. $13-$26/year	Yes - for a fee.	Yes, it's your only option.	No.
Theme / layout customizations	Limited	Limited	100+ for free.	Unlimited.	Limited.

Blogging Activities You Can Do With Your Students

Whether your students are just learning how to type or they're aspiring journalists, there are lots of ways to use blogging as a classroom activity. Edublogs offers a nice directory of active classroom blogs. Take a look through that directory at theedublogger.com/check-out-these-class-blogs/ to find some good examples of how teachers are using blogs in all grade levels from Kindergarten through twelfth grade.

Before jumping into the activities that you could possibly do with your students, let's review some ground rules that you should establish with your students for publishing online. These ground rules can apply to any activity that involves online publishing, not just blog publishing.

1. Everything you publish on the classroom blog will be held to the same standard as things you do and say in the classroom.
2. Try to use your best spelling and grammar. (Side note, I try to refrain from correcting things like spelling and grammar on a public forum).
3. Keep comments polite and productive.
4. Refrain from publishing sensitive personal information.
5. Check with classmates before writing about them or posting pictures of them.

Check with your school's IT department as they may already have a set of guidelines for publishing blog posts and or use of students' images on public-facing forums like blogs or videos. If that is the case, review the guidelines to make sure you are in compliance with them and talk to your IT administration if you think there needs to be an exception or alteration made. It is also important to clearly communicate to students' parents why your students will be

blogging. In that communication to parents explain how you'll be using students' work as well as how you will protect students' privacy.

Blogging Activities for K-2
One of the best ways to use blogging with students of this age is to have students write a sentence or two about a picture. You could start the process by uploading a picture then having students write one comment about what they see or what they think about the picture. One of my favorite examples of this activity came from Jennifer Lefebvre who had her P1 (grade 1) students write about their class mascot which was a stuffed animal. Her students wrote about what the mascot did and what they did with the mascot.

In the fall of 2018 I worked with a second grade class that invited parents to participate in a modified blogging activity. The blog was established through Seesaw. Parents used the video recording function in Seesaw to record themselves reading books. Those recordings were then posted on the classroom blog for students to watch.

Blogging Activities for 3-5
I don't think you'll find a better example of using blogging with students of this age group than Linda Yollis' Classroom Blog (http://yollisclassblog.blogspot.com/). The blog has the tagline, "Third graders learning and sharing together." On the blog you'll find lots of examples of students blogging including "Family Blogging Month." During Family Blogging Month Mrs. Yollis invites parents, siblings, grandparents, aunts, and uncles to comment on the blog. The blog post announcing Family Blogging Month even includes a video from students about how to write quality blog comments.

It is at this age that many students are introduced to reading news and current events. A site like DOGO News is a good place to find age-appropriate articles for students to read. You can post links to these stories on your classroom blog then have students respond to the stories with comments of their own. Depending upon your students, you may need to include some discussion prompts with the articles that you post for your students to read.

Blogging Activities for 6-8
This is a great time to start letting students have a larger role in communicating information about their schools. Creating a student council blog is one way that you can give students that increased communication responsibility. Let them post daily or weekly announcements in text or video form. Have them write about the decisions that were made in the student council and how the decisions were made.

A blogging activity that I did with eleventh grade students that could easily be modified for middle school students is blogging as historical characters. Students in my U.S. History class wrote a series of blog posts in which they attempted to use the voices of delegates to the Continental Congress and the Constitutional Convention. After writing their blog posts they then had to respond in character to classmates' blog posts.

Blogging Activities for 9-12
By the time students reach high school they are capable of managing and maintaining their own blogs. In doing that students are creating portfolios of their thoughts and their work. You could have students create their own blogs that will serve as portfolios of their work done in your classroom or for the work they've done in all of their classes. What's important in doing this is that students should be writing more than just a simple "I did X." They should write about the process and what they learned through the process.

In 2019-20 my computer science students used Google Sites to write updates about the projects they were working on. This process forced them to stop and look at what they had done and what they still needed to do. Having them blog about their projects in progress also gave me the opportunity to see where I needed to interject into their project processes.

When I taught a current events course for eleventh and twelfth grade students I made them all editors on a group blog created with Blogger. Every week each student was responsible for posting a news article or video of interest to them along with their own commentary about their chosen article or video. All students were also responsible for commenting on their classmates' posts.

One more example of using blogs with high school students comes from my former colleague (now retired) Pam who used blogging as a publishing outlet for students in her high school journalism class. Obviously, anyone visiting the blog could read the students' stories. But Pam was able to give her students' work a bigger audience by getting a local newspaper to link to some of the stories. Those links provided students' with a far bigger audience than any printed school newspaper could have.

A Glossary of Blogging Terminology.
After years of leading workshops on blogging I have found that many people benefit from having a glossary of terms that they can refer to. Likewise, if you're blogging with your students it is helpful if there is a common understanding of the terminology used in your blogging activities. This is a glossary of terms that I created a couple of years ago for participants in my workshops.

Theme: WordPress and many other blogging platforms use "themes" to describe the look of a blog. The theme can include the color scheme and the layout of elements on the blog. Changing the theme does not change the content of your blog posts.

Template: Blogger and some other blogging platforms use the term "template" to describe the look of a blog. The template can include the color scheme and the layout of elements on the blog. Changing your template does not change the content of your blog posts.

Tag: Tags are applied to WordPress (Wordpress.com, Kidblog, Edublogs) blog posts to identify the key ideas or purpose of a post. Tags make it easier for people to search and find older posts on your blog. For example, if you write a post about your Revolutionary War lesson, tag it with "revolution" or "revolutionary war" so that at the end of the school year when you have 150 posts on your blog your students can quickly click on the "revolution" tag and jump to the post that has that label. It's a lot easier to locate older posts by tag than it is to click through archives by date.

Label: Labels are applied to Blogger blog posts to identify the key ideas or purpose of a post. For example, if you write a blog post about your Revolutionary War lesson plan, label it with "revolution" or "revolutionary war" so that at the end of the school year when you have 150 posts on your blog your students can quickly click on the "revolution" label and jump to the posts that have that label. It's a lot easier to locate older posts by label than it is to click through archives by date.

Tag Cloud and Label Cloud: Tag and Label clouds can be added to your blog's homepage to make it easy for visitors to see the tags or labels that you use, click on one of them, and jump to a list of all of the posts that have that particular label.

Categories: In WordPress-powered blogs you can use categories for broad descriptions of posts in addition to using tags. For example, on iPadApps4School.com I used the categories "pre-K," "elementary school," "middle school," and "high school." I assign each post to a category and use tags for describing the academic topic of the post. This way if someone visits my blog looking for math apps appropriate for elementary school, he or she can click on the "math" tag then click on the "elementary school" category to find all of my posts meeting that search criteria.

Embed: To display a video, slideshow, audio recording, Google Calendar, Google Map, game, and many other multimedia elements in a blog post you will use an embed code provided by a service hosting that media. Embedding media into a blog post does not make you the owner of it and as long as you follow the guidelines set forth by the hosting service you are not violating copyright by embedding something you didn't create. For example, when you find a video on YouTube that you want your students to watch you can embed it into a blog post and ask students to comment on the blog post. If the owner of that video decides to take it offline the video will no longer play through your blog post.

Embed Codes: An embed code is a piece of code, often HTML, that media hosting services like YouTube provide so that you can easily display the media that they host in your own blog posts. On some services an embed code will be clearly labeled as such next to the media you're viewing. On other services the embed code will be one of the options that appears when you click on the "share" option. YouTube, for example, currently requires you to open the "share" menu before you see the embed code option.

Widget: A widget is a small application that you can include in the posts and or pages of your blog. A widget could be a game, a display of Tweets, a display of RSS feeds, a tag cloud, a calendar, or any other application that offers an embed code.

Gadget: Gadget is the term that Blogger uses for a widget. A gadget and a widget do the same things.

Plug-in: A plug-in (sometimes plugin) is a small application that you can add to the software that powers your blog. Unlike widgets and gadgets plug-ins operate in the background and visitors to your blog will not see them working. A plug-in can add functions to your blog such as suggesting related posts to your visitors or detecting the type of device a visitor is using to view your blog then automatically displaying the mobile or desktop version of your blog's layout.

Post: "Post" can refer to an entry on your blog as in "a blog post." "Post" can also be used as a verb as in "I am going to post a new entry on my blog."

Page: A page on a blog is different than a post because a page is designed for static content. Pages are good for posting information that you want visitors to your blog to be able to quickly access. For example, my classroom blog had pages for curriculum outlines and review guides.

Permalink: Each blog post is assigned its own separate URL this is known as a permalink (permanent link). This URL is the one that you would share if you wanted someone to directly access a post rather than going to your blog's homepage then searching for the post.

Hosted Blog: A hosted blog is one whose software is maintained by a company for its users. Services like Blogger and WordPress.com are examples of services on which you can create hosted blogs. The advantage of using a hosted service is that you don't have to worry about installing software, software updates, server maintenance, or bandwidth capacity. The disadvantage of using a hosted service is that you don't have access to the servers hosting your blog, the service may limit some customization options (WordPress.com in particular does this), and if the service closes you will be looking for a new place to blog.

Self-hosted Blog: A self-hosted blog is one for which you own the blogging software, you install it on a server or shared server, and you are responsible for all technical maintenance and updates. The advantage of having a self-hosted blog is that you can customize it to your heart's content, you have access to the server(s) hosting your blog, and you can move your content from one hosting service to another if you choose. The disadvantage of a self-hosted blog is that you do have to feel somewhat comfortable installing the software on a server. Fortunately, most hosting companies have good tutorials on installing popular blogging software. Another disadvantage of self-hosting is that you are responsible for performing all updates and other maintenance tasks. This can be time consuming for new bloggers. Finally, to have a self-hosted blog you will have to buy a domain and pay a monthly or annual hosting fee for your blog.

Google Search Strategies

I'm often asked for recommendations on how to help students use Google more effectively in their research efforts. Whether you teach elementary school, middle school, high school, or college students these tips can be used by your students.

1. Not every question needs to be Googled.

- One of the bad habits that I see many students fall into when it comes to research is simply entering into Google the first thing that comes to mind. While this strategy can work, it often leads to a lot of time wasted on searches for information that students already have. Before embarking on a research project ask students to make a list of the things they already know about the topic they plan to research. Have them look in their notes to see if they already have information on the topic.

2. Search within a search result.

- One of the worst offenses students commit while conducting web searches is only glancing at the webpages they open from the search results page. Or worse yet, only reading the brief snippet that appears below the links in a search results page. The reason for this behavior that students often give is "it takes too long to read the whole page." To remedy this, teach your students to use "Control F" (Windows) or "Command F" (Mac) when they open a webpage from the search results page. Control F or Command F allows you to search within any webpage for any letter, word, or phrase. This also works for searching within PDFs and other documents that students may download during a web search.

3. Think like someone else.

- When formulating search phrases it can be helpful to think about the words that someone else might use to describe your topic, question, or problem. Try using those terms instead of your own. Learn more about this strategy in the short video available here https://www.youtube.com/watch?v=F9dBn3aK4rw&feature=youtu.be

4. Open the advanced search menu.

- The advanced search menu is often overlooked by students. It is found by opening the advanced menu that appears under the "tools" menu on the search results page. In that menu you will find tools for refining search results by file type, domain, language, and more. Here's a demo of how to refine search results according to date https://www.youtube.com/watch?v=bWSUJ-L_m8o

5. Search by domain.

- Limit search results to specific top-level domains or to a specific website. For example, if I wanted my search results to be limited to links from .edu sites, I would enter ".edu" in the domain limitation box.

6. Search by file type.

- Search by file type allows you to find results according to file format. Combine searching by file type .**ppt** or **.pdf** with searching by domain **.edu** or **.k12.me.us** to find PowerPoints or PDFs produced by students and teachers. (replace the .me in .k12.me.us with your state's two letter abbreviation to find slides and PDFs produced in your state).

7. Try Google Scholar.

- Google Scholar to find academic, peer-reviewed articles on your topic. Often these are articles that you would not find in typical Google search. Google Scholar is also useful for finding court rulings and patent filings. A video overview of Google Scholar is available at https://youtu.be/-T3ZQbDw4GE

8. Set Google alerts and Google Scholar alerts.

- Go to https://www.google.com/alerts to create alerts for specific search terms. When new information related to your topic is available, it will be emailed to you. Google Scholar also has an alerts function. Watch the video at https://youtu.be/o3U30CSUnMI to learn how to create Google Scholar alerts.

9. Search Google Books & Newspapers

- Google Books (https://books.google.com/) indexes millions of books and periodicals that you can search within. Many books and periodicals are available to read online for free. The Google News Newspaper Archive (https://news.google.com/newspapers) has digitized hundreds of old newspapers that you can search through.

10. Remember that Google isn't the only search engine.

- Most schools and local libraries have access to databases that are not indexed by Google and or are not accessible without the subscription fee that your school or library pays. Ask the librarian for assistance in accessing those databases. Additionally, you'll find that other commercial search engines like Bing and DuckDuckGo may uncover resources that you overlooked when just relying on Google. Wolfram Alpha is a great search tool for students who need help locating statistics, solutions to math problems, or brief fact sheets like those demonstrated in the video at https://youtu.be/fmhj86g8jII

Digital Citizenship

Whether our students are in Kindergarten or high school before we send them out on the web, we should be teaching them digital citizenship.

Common Sense Education (often referred to as Common Sense Media) offers an extensive set of free lesson plans for teaching digital citizenship to all K-12 students. The lesson plans are listed by grade level on Common Sense Education's Digital Citizenship Curriculum homepage (https://www.commonsense.org/education/digital-citizenship/curriculum) As is to be expected Common Sense Education's series of lesson plans include videos and instruction about privacy and what to share or not share online. What I like about Common Sense Education's curriculum is that beginning with Kindergarten and running through twelfth grade there are lesson plans under the heading of "media balance & well being." Those lessons get beyond the nuts and bolts of digital citizenship by making students think about how their media choices and media use affect them and others.

Planet Nutshell's Net Safe series (https://planetnutshell.com/netsafe/) contains eighteen episodes covering topics like protecting personal information, responsible posting of pictures, and mobile location privacy. The videos are labeled with grade levels. Below each grade level label you will find a summary of the key points of each video.

Elementary School Resources

Book Creator partnered with Common Sense Media to create a series of three free eBooks about digital citizenship. The first book in the series is for 5-8 year old students to learn about digital safety by singing along to some songs. The second book is for 8-10 year olds to learn about taking responsibility for how they act toward others online. The third book is for 9-11 year olds to learn about the risks of making friends online.

Ruff Ruffman: Humble Media Genius (http://pbskids.org/fetch/ruff/) is a PBS Kids online series of videos and online quizzes designed to help elementary school students understand the importance of things like online privacy, safe texting behaviors, and managing screen time. The series also includes a section on how to conduct internet searches and how to tell the difference between what is an advertisement on a webpage and what is useful information. (https://pbskids.org/fetch/ruff/find-what-you-want/).

Be Internet Awesome (https://beinternetawesome.withgoogle.com) is Google's Internet safety curriculum. The Be Internet Awesome site features a game called Interland. The game is set in a virtual world that students navigate by correctly answering questions about Internet safety. The graphics of the game are great and there are some elements in which students navigate, but there is also a heavy reliance on multiple choice questions in the game. The Interland game can be distributed through Google Classroom. G Suite administrators can push the game to the taskbar on managed Chromebooks. There is a 98 page PDF containing lesson plans on each concept in the Be Internet Awesome curriculum that teachers can download for free. The

curriculum is based on five concepts: *Share with care, Don't fall for fake, Secure your secrets, It's cool to be kind, When in doubt, talk it out*.

Middle School / High School Resources

Google's Applied Digital Skills website includes a whole section of lesson plans for teaching digital citizenship skills. You'll find that section at https://bitly.com/37HgZ3i or by simply going to https://applieddigitalskills.withgoogle.com/c/en/curriculum.html then scrolling down the page to select the digital citizenship category. There is an activity from that category that is great for starting the school year on the right foot. That activity is called Identifying Cyberbullying and you can find the directions at https://bitly.com/2VTcno3. In the activity students collaboratively create a Google Document outlining the traits of cyberbullying and steps to take to combat cyberbullying.

It takes practice and patience to be able to disagree with someone in a civil manner. That is why the folks at School of Thought (https://www.schoolofthought.org/) created The Rules of Civil Conversation (https://therulesofcivilconversation.org/). It is a website designed to help visitors better understand how to hold a civil conversation in the face of differing opinions. One of the resources on the site is a set of posters outlining eight rules of civil conversation. These posters can be downloaded for free and printed for display in your classroom. (There is also an option to buy printed versions).

Microsoft's Educator Center offers a short, free course on digital citizenship. The course, available at https://bitly.com/3lVoY5k, is designed to be completed by teachers who will then utilize the resources included in the course to develop their own digital citizenship lessons. Some of the resources included in the course include printable infographics, PowerPoint presentations, and handouts on topics like digital footprints and information literacy.

Everfi offers a series of six free online activities designed to help middle school students develop good digital citizenship habits. These activities are best described as interactive cartoons that teach students skills like balancing screen time with offline time, online account security habits, recognizing the permanence of online publishing, and evaluating the credibility of information found online. All six activities are part of the free course that Everfi offers at https://everfi.com/courses/k-12/digital-literacy-wellness-safety/

Checkology (https://get.checkology.org/) is a service that is designed to help students develop fact-checking skills. Checkology's free version offers four interactive modules for students to complete. Each of the modules is composed of between twenty and forty-seven instructional video clips and interactive comprehension checks. The four modules are titled Info Zones, Democracy's Watchdog, Practicing Quality Journalism, and Misinformation. As you might

expect, the contents of the modules get progressively more difficult as each section is completed.

Bad News (https://getbadnews.com) is a website that offers simulations that show visitors how misinformation is spread through social media. Bad News is available in two versions. The regular version is intended for those who are high school age or older. Bad News Junior is appropriate for middle school and older elementary school students. The difference between the two versions is found in the news topics that are used in the simulations.In both versions of Bad News players work through a simulation in which they attempt to build a Twitter following by spreading misleading news stories. (I must emphasize that there are no real Tweets sent and you don't even have a Twitter account to play Bad News). Through the simulation players learn how headlines, memes, and Tweets are designed to manipulate people and prompt reactions from them. The simulation also shows players how Twitter bots are used. There are six distinct sections of Bad News. At the end of each section players are awarded a badge signifying that they have learned about the manipulation techniques associated with trolling, impersonation, discrediting, polarizing, emotional manipulation, and conspiracy theories.

Creating and Protecting Strong Passwords

One of the best ways to protect your online identity is to create strong passwords containing unique characters. Creating a strong password is the first step in securing your online accounts. Google offers good advice in this video https://www.youtube.com/watch?v=0RCsHJfHL_4

Sometimes it's difficult to think of new strong passwords. When you're having a mental block thinking up a new password try using Wolfram Alpha to come up with a new password. To do this simply go to WolframAlpha.com then type in “password.” Then a random eight character password will be shown to you.

Whenever it is offered as an option, it is a good idea to use two-step or two-factor authentication on the online services you use. Google, Dropbox, Box, and many other cloud services offer this option. Two-step authentication means that just entering one password isn’t enough to log into a service. Learn about Google’s two-step authentication in this video https://youtu.be/zMabEyrtPRg and read about it in detail at http://bitly.com/ftgtwostep

Common Craft offers some excellent videos on crafting strong passwords (https://www.commoncraft.com/video-secure-passwords-explained-common-craft) , understanding why creating a strong password isn’t enough to stay safe online (https://www.commoncraft.com/video/account-security), and how to protect your mobile phone from hacking (https://www.commoncraft.com/video/mobile-safety-security).

Email Etiquette Tips

Part of helping our students become good digital citizens is helping them learn how to write an email to a teacher, a potential employer, or anyone else who isn't a friend. That's why at the start of the school year I like to review email etiquette with students.

Every year for the last few years I've shared a video from *Next Vista for Learning* titled Emailing Your Teacher, With Captain Communicator (http://www.nextvista.org/emailing-your-teacher-with-captain-communicator/). It is still my favorite video for illustrating the importance of using a proper greeting and closing when emailing a teacher. It's cute, it's effective, and it's only 90 seconds long. I also share a couple of email etiquette reminders posters with students and teachers. One of those posters is pictured below. Both posters can be found at https://practicaledtech.com/2021/08/26/a-video-and-posters-of-email-etiquette-tips-for-students/

Email Etiquette

It always helps to be polite.

Write a brief description in the subject line.

Use a proper greeting like, "Hi Mr. Byrne" or "Dear Dr. Reese."
Use a closing like, "Thank you" or "Sincerely."

Use proper spelling and grammar. A squiggly line under a word means something isn't right.

Before using "reply all" ask yourself if everyone needs to read your reply.

Be patient. Your teachers might not check their email on the weekends or late at night.

Seven styles of classroom video projects

The process of creating and publishing videos can be a great way to get students excited about researching, storytelling, and sharing their work with an audience. For teachers who have never facilitated video creation projects in their classrooms, choosing the right style of video and the right tools can be a bit confusing at first. To help bring clarity to the styles and tools, I have a rather simple outline that I use in my video creation workshops.

Project style #1 - One-take videos:
These are videos that are shot using the camera built into a mobile phone or tablet. You might also use the camera in a laptop for these types of videos. The purpose of a one-take video is to quickly record a short observation, to record a short message, or to capture an important moment like students making observations during a science lab. Generally, these videos should be less than sixty seconds.

One-take videos can be uploaded just as they are to YouTube, Vimeo, Instagram (depending on the length of the video), your classroom blog, Google Drive, Dropbox, or any number of online hosting services. If you use the YouTube or Instagram mobile app (available for Android and iOS) you might trim the beginning or end of the video to remove dead space in it or apply a color filter to it, but that will be the extent of the editing that is done before the video is shared.

There is not a product that has done more to popularize one-take videos in classroom settings than Microsoft Flip (formerly known as Flipgrid) (https://info.flip.com/). The basic idea behind Microsoft Flip is that it enables you to post a video prompt and then have your students respond through video by using the webcams in their laptops or through the cameras on their smartphones or tablets. All responses are collected and displayed in a grid format. You can choose to respond to your students' videos in video form or in text form. You can also allow students to respond to their classmates' videos. Watch this video (https://www.youtube.com/watch?v=fM9PJVLigOc) for an overview of how to get started using Microsoft Flip. A playlist of more than a dozen tutorials is available at https://www.youtube.com/c/RichardByrne/search?query=flipgrid

Project Style #2 - Audio slideshows
These are videos that are built upon a series of still images combined with a soundtrack of either music or spoken words. Summarizing the highlights of an event, summarizing the key points in a story, and summarizing the results of a research project are all common purposes for creating audio slideshows. You will also find this style of video used to give step-by-step directions for a process. This style of video is typically less than three minutes long.

Canva (http://canva.com) is a graphic design tool that I've used for years to create graphics for blog posts and social media posts. In the last year I've started to use it more and more for developing presentations and creating short videos. Canva offers a library of music that you can

easily incorporate into your presentations. Those presentations can then be exported as video files to play wherever you like. Watch the short video found at https://youtu.be/HguHXjS1tNA to learn how to create an audio slideshow video in Canva. You can also use Canva to record yourself talking while presenting your slides. A demonstration of that simple process is available at https://youtu.be/v5dnLGyXib4

Narakeet (https://www.narakeet.com/) is a service that lets you upload slides and have them converted into a video that is automatically narrated for you. You can choose from about twenty voiceover options, adjust the speed of the voiceover, and choose to have captions automatically added into your video. To use Narakeet you must have your slides in PPTX format. Fortunately, all of the popular slideshow creation tools including Canva and Google Slides let you export your presentations as PPTX files. When you upload your PPTX file to Narakeet your speaker notes are used as the basis for the narration that is created for your video. When your video is completed you can download it as an MP4 file that can be used anywhere that you typically share videos. Video demonstrations of how to use Narakeet with PowerPoint, Google Slides, and Keynote can be seen at https://bitly.com/3yMDzDw

Animoto (http://animoto.com) was the first tool to popularize creating this style of video. Animoto can be used in a web browser on your laptop or Chromebook. Android and iOS apps are also available from Animoto. To create an audio slideshow through Animoto you simply need to upload ten to fifteen pictures then choose the soundtrack that you want to hear as the images are displayed. Within Animoto there is an extensive gallery of free music that you can use if you don't have music of your own to upload. Animoto does allow you to add some limited text to your slideshow video. A variety of frame and transition themes are offered by Animoto. Some of those themes are free and others are only available to subscribers to Animoto's premium service.

The shortcoming of Animoto's audio slideshow creator is that you have very limited control over the timing of transitions in your video. So if you want to narrate the slideshow rather than just play music you will have to try another tool. On an iPad Shadow Puppet Edu and ShowMe are good apps to use to create audio slideshows. WeVideo is a good browser-based as well as Android option. (Explain Everything is also a good Android and iPad option, but it is not free). For desktop creation of audio slideshows iMovie and Windows Movie Maker are good choices.

Typito (http://typito.com) is a good tool for creating simple videos. Typito is designed for making audio slideshows like those you might have made in the old YouTube photo slideshow tool. To get started on Typito you upload a picture or a video clip and then add a title for your project. After the initial file is uploaded you can upload more images and video clips. You can control how long each item is displayed in your video. Typito provides many options for placement of text over your images and videos as well as the style of the text that you use in your video. Finally, you can upload your own audio or use some of the music provided in the Typito library. Finished Typito videos can be downloaded to your computer, uploaded directly to your YouTube account, or shared via social media.

Project Style #3 - Whiteboard/ Screencast Instructional Video
This style of video is what you will find on places like Khan Academy. This style is used for explaining and demonstrating how to solve problems, how to use a piece of software, providing a walk-through of a timeline or flowchart, or to simply narrate a set of slides. This style of video is often made by teachers for the purpose of instruction to students. There is value in flipping that model to have students create instructional videos through which they model their knowledge of a process or topic.

In June of 2022 Google added some new Chromebook features for teachers and students. One of those features is a screencast recording tool that is built into Chrome OS. With this tool you can record all of your screen or part of your screen. If you like to include your webcam in screencasts, you can do that with the built-in recorder in the latest version of Chrome OS. The recorder includes some handy tools for drawing on your screen while recording. The best aspects of the built-in screencasting tool are that recordings are automatically saved in Google Drive and recordings are automatically transcribed for you. Watch https://youtu.be/WVm60mlAQZ0 to see an overview of how to record a screencast on your Chromebook.

Microsoft Flip includes a feature that lets teachers and students create whiteboard videos. This feature can be used in conjunction with all of the other features of Microsoft Flip's recording tools including stickers, emojis, and trimming the beginning and end of videos. As a teacher you can record and post a whiteboard video for your students and have them reply with whiteboard videos of their own. A demonstration of how to use the whiteboard feature in Microsoft Flip is available in this video https://youtu.be/inEBYkYIs24

To record your screen on a MacBook you can simply open QuickTime Player then choose "New Screen Recording" from the File drop-down menu.

There are lots of tools for creating screencast videos on a Windows computer. Screencast-O-Matic (http://screencast-o-matic.com) is the tool that I use on a regular basis for creating screencasts on both my Windows laptops and on my MacBook. You can launch it from your web browser and use it for free. It will let you capture your webcam while simultaneously capturing your screen. Screencast-O-Matic also offers a premium option for about $25/year. The premium option includes longer recording time, removal of watermark, editing tools for cutting and trimming videos, background music options, and tools for making green screen videos.

Loom (http://bit.ly/2x3FyXV) is a free screencasting tool that works on Chromebooks, Macs, and Windows computers. Loom is a Chrome extension. With Loom installed you can record your desktop, an individual tab, and or your webcam. That means that you could use Loom to just record a webcam video on a Chromebook. Of course, that also means that you can use Loom to record your webcam while also recording your desktop.

Screencastify (http://bitly.com/1R3YSlM) is a popular choice for creating screencasts on Chromebooks as well as on Windows and Mac computers. There are two features of Screencastify that are worth noting. First, you can draw on your screen while talking and recording. That feature is great for making short math instructional videos. Second, you can have your Screencastify recordings automatically saved in Google Drive and directly post them on Google Classroom.

Seesaw is my go-to tool for making digital portfolios. I like it because it's a versatile platform that can be used for more than just portfolio creation. You can use it as a blog, use it to share announcements with parents, use it to distribute assignments, and you can use it to create whiteboard videos. In fact, there are a couple of ways that you and your students can create whiteboard videos in Seesaw. Both of those methods are outlined in this video: https://youtu.be/YvsaeMhsnh0

Project Style #4 - Animated Videos

Creating animated videos is a great way for students to bring a story to life. They can create animations for stories they've created or for stories they've read.

ChatterPix Kids (https://bitly.com/2Xuf9Bj) is one of my favorite digital storytelling apps for elementary school students. It is a free app that students can use to create talking pictures. To use the app students simply open it on their iPads or Android devices and then take a picture. Once they've taken a picture students draw a mouth on their pictures. With the mouth in place students then record themselves talking for up to thirty seconds. The recording is then added to the picture and saved as a video on the students' iPads or Android devices. Demonstrations of how to use the iOS and Android versions of ChatterPix Kids can be seen at https://bitly.com/3CO9rKo

Wick Editor (https://www.wickeditor.com/) is a free tool for creating animations in your web browser. Wick Editor doesn't require you to register or sign into any kind of account in order to use it. Simply head to the website and click "launch web editor" to get started. The editor itself doesn't have a lot of text or menus to tell you what exactly the features are or where they're found. You kind of have to just click and try things. That said, the tutorial video (https://youtu.be/pAsrXT8KIrI) found on the Wick Editor homepage will show you everything you need to get started. Some of the highlights of Wick Editor include an onion-skinning feature that lets you work on one frame of your animation while viewing the previous frame, a wide variety of drawing tools, and options for uploading and or recording audio to include in your animated video.

PowToon (http://powtoon.com) is similar to Animaker. It has been a popular platform for creating animated videos for many years. In PowToon students create animated videos on a scene-by-scene basis through a series of slides. Students can choose background scenes,

characters, and scene objects from a huge media gallery. After configuring the scenes of their stories, students can record voiceovers or play music in the background.

Last fall Canva launched a complete online video editing studio. One of the many features of the video editor is the ability to edit and combine stock animation clips within the frames of a larger video project. Canva offers a large collection of free animated GIFs and animated video clips to add to your projects. You can trim those clips, combine them, and duplicate them in Canva's video editor. Doing that provides an easy way to make an animated video. The video editor will also let you add audio to accompany the animations that you combine in Canva. Watch this video to learn how to make an animated video in Canva https://youtu.be/ierl40xpwf0

Simpleshow Video Maker (https://videomaker.simpleshow.com/) is a good tool for creating Common Craft style explanatory videos. The best aspect of Simpleshow Video Maker is the emphasis that the developers have placed on storyline planning and development. One of the best things about Simpleshow Video Maker is that students have to write a script on Simpleshow Video Maker before they can begin to use the video editing tools. Watch a demo video at https://www.youtube.com/watch?v=MTfZ1SN-LiY

Scratch (http://scratch.mit.edu) allows students to program animations, games, and videos through a visual interface. Students create their programs by dragging together blocks that represent movements and functions on their screens. The blocks snap together to help students see how the "if, then" logic of programming works.

Slides+Transitions+Screencasting = Animated Video. Google Slides, PowerPoint, and Keynote all have transition and animation tools that students can use to animate movements of clipart. Have students create a set of slides that utilize the animation tools. Then have them record the animations while they narrate and record the presentation with a screencasting tool like Screencastify or Screencast-o-Matic. That process is demonstrated in this video https://youtu.be/7GMZJXMnRjE

Project Style #5 - Stopmotion & Time-lapse Videos

Creating stopmotion videos is a good way for students to see how a story develops frame-by-frame. Think about the process of making a claymation film. That process requires students to plan each part of a story by positioning the clay figures for each scene. I have had students use this process with paper cutouts instead of clay. The videos on CommonCraft.com provided my inspiration for having students create stopmotion videos featuring paper cutouts in place of clay.

Time-lapse videos offer a fantastic way for students to record and then see how a lengthy process occurs. Capturing the process of osmosis provides a good opportunity to use time-lapse videography. Take that standard osmosis demonstration of placing a raisin in a

beaker of water and capture it with a timelapse video tool. When you're finished capturing the process you will have a short video that will show students the stages of the raisin swelling.

Cloud Stop Motion (https://cloudstopmotion.com/) is a browser-based tool for creating short stop motion videos. You can try Cloud Stop Motion without creating an account. That said, I'd recommend creating a free account because without one your video has to be so short that you really can't get a sense for how all of the tools work. Once you've created your account you should enable your webcam so that you can use it to capture pictures of objects that you place in front of it. Taking a series of pictures is as simple as clicking the camera icon in the video editor. Your pictures are automatically added to the editor in the sequence in which you took them. You can also connect an external camera to capture and import images into your project. After adding images to your project you can upload sounds, record sounds, or select sounds from the gallery provided by Cloud Stop Motion. You can also add text and title screens to your project. When all of the media for your project is in place you can preview your video by hitting the play button. If you don't like any element of the video, you can go back and edit it out. Adjusting the frames per second is a simple edit that you can make in the Cloud Stop Motion editor. A demo of Cloud Stop Motion is available at https://youtu.be/Gx4quJdvFSI

OSnap (http://bit.ly/ftosnap) is an iPad app (available in a free version and a paid version) that you can use to create stop motion and timelapse videos. The app is quite easy to use. To create a video with the OSnap app you simply need to start a project and take a series of still pictures using your iPad's camera. Then adjust the number of frames per second to edit your video. If you want to, you can add a soundtrack to your video by selecting audio files that are stored on your iPad. You can go back and edit your videos by removing images and from the project at any time. Completed projects can be stored on your iPad, uploaded to YouTube, or shared via email.

Project Style #6 - The Documentary/ Feature Film

These are the longest video projects in a classroom. Students will create videos of five minutes or more to tell a fiction or nonfiction story. While any of the previously mentioned project styles could be stretched to five minutes, generally they're better kept to shorter lengths. The typical project over five minutes is going to be a documentary style, news report, or telling of a long fiction story with live action. For Mac users, iMovie is the go-to tool for these projects. Windows users will lean toward Windows Movie Maker. On a Chromebook, WeVideo is your best option for editing documentary/ feature film projects.

Adobe Express (formerly known as Adobe Spark) (https://www.adobe.com/express/) offers a great option for creating a video that falls somewhere between the categories of audio slideshow and feature film. Adobe Spark lets students create videos based on images and videos that they upload or select from its integrated search option. Students can also draw and type on slides in Adobe Express. The best part of Adobe Express is that students can record their own narration directly over each frame of their videos. To record narration students simply

hold down the microphone icon in the editor and start talking. The video available at https://youtu.be/q0__21keSAg provides an in-depth overview of how to use Adobe Express to create videos.

Type Studio (https://typestudio.co/) is a video editing tool that when I used it for the first time I actually said aloud, "Whoa! That's Awesome!" What made me say that was using the editor to clip a section of video. With typical video editing tools you have to drag and select a section to delete it or enter time stamps of a section to delete it. In Type Studio I simply selected a few words from the transcript of my video and hit the delete key on my keyboard to remove a section of my video. Type Studio creates a transcript for you when you upload your video into their editor. Depending on the length of the video this can be just a few minutes or can be quite a bit longer than that. Once the transcript is created it appears in your Type Studio editor alongside your original video. Then to cut a section of your video all you have to do is select the words or sentences you want to remove and Type Studio will remove the corresponding section of the video itself. A short video demonstration of Type Studio is available at https://youtu.be/oJ-c2H_lpvw

WeVideo (http://wevideo.com) offers the most features of any of the tools featured in this section. It is an online video creation tool that I have written about many times over the last few years. WeVideo offers templates that new users can follow to create their first videos. Advanced WeVideo users can skip the templates, use the full editor, and apply themes to their videos by choosing them from the themes menu in the editor. In the video editor you can upload your own media clips or use stock media clips to produce your video. WeVideo's Google Drive app allows you to save all of your video projects in your Google Drive account. WeVideo also offers an Android app and an iPhone app that students can use to capture images and video footage to add to their projects.

Project Style #7 - Green Screen Videos

Turn on your favorite local news television station and you're going to find green screen video in action. The most common use is during the weather forecast when the meteorologist appears to be pointing at a map. Creating green screen videos used to be difficult. Today, just about anyone can do it on any modern computer.

Through the use of green screen editing students can virtually appear in front of almost any landmark, appear on stage in front of an audience, or any just about any other place that they have a picture or video of. Creating green screen videos is a fun way for students to share what they've learned through research about a place or event. Making green screen videos is also a great way for kids to make their own weather forecast and newscast videos.

When it comes to making green screen videos in classrooms there are really only two tools that I recommend today. Those are iMovie and WeVideo. If your students have access to Macs or iPads, go with iMovie. Otherwise, WeVideo is a great choice for making green screen videos on

Chromebooks and Windows computers. This video will show you how to make a green screen video with iMovie https://www.youtube.com/watch?v=4mJij3WCN1c and this video will show you how to make a green screen video with WeVideo https://www.youtube.com/watch?v=kjLx61V14_0

Materials and Tips for Making Green Screen Videos

- Your live action needs to be recorded in front of a green screen. You can purchase screens specifically made for this purpose or do what I do and head down to your local Walmart and purchase a queen size green bed sheet.
    - If you do choose the green bed sheet option, make sure you stretch the sheet tightly enough to remove any wrinkles.
- When it comes to lighting, the goal is to remove any shadows and cast an even light on the person in the video and on the screen itself. Again, you can buy lighting kits made specifically for this purpose or use a couple of cheap clamp-on lights from your local hardware store.
- Whenever possible try to have students use images and video clips that are in the public domain as the background for their videos. Pixabay and Pexels offer large collections of public domain videos and pictures.

Creating & Distributing Flipped Video Lessons

Year after year EDpuzzle (http://edpuzzle.com) remains at the top of my list of recommended tools for creating flipped video lessons. It is a neat tool that allows you to add your voice and text questions to educational videos. On EDpuzzle you can search for educational videos and or upload your own videos to use as the basis of your lesson. In your EDpuzzle lessons you can make it a requirement for students to answer a question before moving forward in the video. EDpuzzle has an online classroom component that you can use to assign videos to students and track their progress through your video lessons. EDpuzzle's Chrome extension (http://bitly.com/edpzext) enables you to save YouTube videos directly to your EDpuzzle account. This means that instead of having to search within EDpuzzle for videos you can simply browse YouTube like you normally do then just click the EDpuzzle extension to save the video. Once a video is saved you build your questions around it. Learn how to use EDpuzzle by watching the video at http://bitly.com/edpzzle

Blendspace (http://blendspace.com) makes it easy for teachers to organize and share educational materials in a visually pleasing format. On Blendspace you can arrange videos, links, images, and files around any topic of your choosing. Blendspace has built-in search tools so that you do not have to leave your Blendspace account in order to locate resources. When you share a set of Blendspace materials with your students they can give you feedback to show that they understand the materials or they can ask questions about the materials. You can also see if your students actually looked at all of the materials that you have shared with them. Using Blendspace can be a good way to create and deliver flipped lessons.

ClassHook (https://www.classhook.com/) is a service that helps you locate video clips to use in your classroom. ClassHook's best feature is being able to search for video clips according to subject and topic. Most of the video clips that you'll find on ClassHook come from well-known television shows and movies. ClassHook has two features that are helpful in creating lessons based on video clips. Pause Prompts are time-stamped questions that you add to video clips in ClassHook. When you're showing a video to your class, the questions you've written as Pause Prompts will automatically pop-up at the timestamp you've specified. The video will stop and the question will appear full-screen in its place. You can then have a discussion with your students about the prompt.

ClassHook Live Discussions builds upon Pause Prompts by incorporating an online response element for your students. When a Pause Prompt is reached you can have your students respond online as well as by speaking in class. Live Discussions generates a link and QR code for students to follow to land on a response page where they can answer the questions in the Pause Prompts. You'll be able to see their responses in your ClassHook teacher account.

Audio Recording & Publishing

Anchor (http://anchor.fm) is a simple and free platform for recording, editing, and distributing podcasts. Recording on Anchor can be as simple as just holding down the record button on your phone or on your laptop and then releasing it when you're done talking. Anchor lets you upload external audio files to include in your podcast. Finally, if you want to distribute your podcast to Apple Podcasts (iTunes), Google Podcasts, Spotify (Anchor's parent company) or any other large podcast networks, Anchor simplifies that process for you. Watch the video at https://www.youtube.com/watch?v=8NfKlcP_Yxg&t=5s to learn how to publish a podcast through Anchor.

Soundtrap (http://soundtrap.com) is a fantastic tool for creating music online. The cool thing about Soundtrap is that students can use virtual instruments to create music or they can record themselves playing music on an instrument and then use that recording in conjunction with the virtual instruments in the Soundtrap environment. What makes Soundtrap stand-out from the crowd is its collaboration options. Click the "collaborate" tab in the Soundtrap editor to invite others to create music with you. Soundtrap will work in the Chrome web browser on a laptop, iPad, Chromebook, and Android tablet. In my workshops I often describe Soundtrap as Google Docs for music.

I've been using Vocaroo (http://vocaroo.com/) for more than a decade. It's incredibly simple to use. Just head to the site, click the record button, and start talking. When you're finished recording, hit the stop button. You can listen to your recording before downloading it as an MP3. If you don't like your recording you can create a new one by just refreshing the Vocaroo.com homepage and starting again.

Online-Voice-Recorder.com offers the same simplicity of Vocaroo plus a couple of features that I've always wished Vocaroo had. One of those features is the ability to pause a recording in progress and resume it when I want to. The other feature is the option to trim the dead air at the beginning and end of a recording.

Twisted Wave (https://twistedwave.com/online) offers many more features than either of the tools mentioned above. But at its most basic level you can still just head to the site, launch the recorder, start talking, and then export your recording as an MP3 all without creating an account on the site. TwistedWave's audio editing tools include options for fade-in, fade-out, looping, sound normalization, and pitch adjustments. The editor also includes the typical track clipping tools that you would expect to see in an audio editing tool. For those who are looking for a way to save audio directly into Google Drive, Twisted Wave offers that capability.

Twisted Wave, Vocaroo, and Online-Voice-Recorder.com are demonstrated in the short video available at https://youtu.be/gEXgQ55vNIE

Backchannels & Formative Assessment

Backchannels, polling services, and quiz tools provide good ways to hear from all of the students in a classroom. These kinds of tools allow shy students to ask questions and share comments. For your more outspoken students who want to comment on everything, a feedback mechanism provides a good outlet for them too.

For nearly a decade TodaysMeet was my go-to tool for creating an online backchannel chat for my students to use. It shut down in the middle of 2018. A few months later Yo Teach! (https://yoteachapp.com/) was developed by The Hong Kong Polytechnic University's Pedagogic and Active Mobile Learning Solutions project as an alternative to TodaysMeet. Here's a video overview of how it works https://www.youtube.com/watch?v=EpDksD0NTSE

Classroomq (https://classroomq.com/) is a tool that I've described a few times as a bit like a digital deli counter ticket system for your classroom. Classroomq provides you with a simple webpage on which your students can indicate that they need help and state the problem/question with which you can help them. Classroomq shows you a list of the students who have asked for help and their questions. You then digitally cross-off their names as you address their questions. Classroomq will provide you with a record of which students asked for help and the questions they may have asked. Here's a video of Classroomq in action: https://youtu.be/EInW1f2Di-8

Quizalize (https://app.quizalize.com) is a great teaching tool that I've used and written about since 2015 when it differentiated itself from the market by being the first classroom quiz game tool that offered an option to have your students play your quiz game as an in-classroom group activity or at-home activity. In August of 2022 Quizalize launched another new feature that is useful, exciting, and different from what other classroom quiz platforms offer. That feature is called Quizalize Games. Quizalize Games let you take any of your quizzes and quickly turn them into six different video games. Watch the following video to see how it works: https://youtu.be/ZR2sWWIIUQE

Kahoot (http://getkahoot.com) is a service for delivering online quizzes and surveys to your students. On Kahoot you create a quiz or survey that your students respond to through any device that has a web browser. Your Kahoot questions can include pictures and videos. As the teacher you can control the pace of the Kahoot quiz or survey by imposing a time limit for each question. As students answer questions they are awarded points for correct answers and the timeliness of their answers. A scoreboard is displayed on the teacher's screen. Students do not need to have a Kahoot account in order to participate in your activities. To participate they simply have to visit Kahoot.it then enter the PIN code that you give to them to join the activity. Kahoot games can be played in your classroom or you can assign them to be played at home as "challenge" activities. A set of Kahoot tutorials is available at https://www.youtube.com/user/rbyrnetech/search?query=kahoot

Formative (http://goformative.com) provides you with a place to create online classrooms. Your students join your classroom by entering the assigned class code after registering on the Formative website. Once your classroom is established you can begin distributing assignments to students. Assignments can be as simple as one question exit tickets like "what did you learn today?" to complex quizzes that use a combination of multiple choice, short answer, and true/false questions. You can assign point values to questions or leave them as ungraded questions. You can also enable or disable instant feedback for students. When you give an assignment to students through Formative you can watch their responses in realtime. The best feature of Formative is the option to create "show your work" questions. "Show your work" questions enables students to draw responses and or upload pictures as responses to your questions. When you use this question type students will see a blank canvas directly below the question. On that canvas they can draw and or type responses.

GoSoapBox (https://www.gosoapbox.com/) allows you to have your audience respond to questions through their laptops, tablets, and phones. Polls and Discussion in GoSoapBox are the meat and potatoes of the service. The Polls tool allows you to survey your audience by having them select an answer choice in response to a question. The Discussions tool allows you to have audience members reply to open-ended questions. One of the simplest yet effective survey options in GoSoapBox is a tool called a Confusion Meter. The Confusion Meter allows members of your audience to simply say, "yes, I get it" or "no, I don't get it." The Confusion Meter, like all of the GoSoapBox survey tools, can accept anonymous feedback. You can use the Social Q&A tool in GoSoapBox to have students submit their questions to you. Students can see each other's question submissions and vote them up if they want to.

Padlet

Padlet (http://padlet.com) is a great tool that I frequently use in my workshops for the purposes of gathering feedback from attendees and having attendees share digital creations they made during a workshop. One of the reasons that I like it so much is that it is easy to use. I also like it because it can be used for a bunch of purposes. A playlist of Padlet tutorials can be found at http://bitly.com/ftpadlet

Padlet as a simple blogging platform:
Padlet walls can be arranged in free-form, grid, or stream layouts. Creating a Padlet page in the stream format could be a good way to create a simple, collaborative blog for students. You could create the page, select "stream" format, and make the page accessible for students to write short posts on. Their posts could include images and videos. If you want to, you can password protect your Padlet pages and moderate messages before they appear on your Padlet page.

Padlet for group research and discussion:
A few years ago I showed my special education students a short (18 minutes) video about cultural changes that took place in the US during the 1920's. After the video we discussed what

they saw. Then I had students search online for other examples of cultural change in the 1920's. When they found examples they put them onto a Wallwisher wall that I projected onto a wall in my classroom. The wall started with just text being added to the wall and quickly progressed to YouTube videos being added to the wall. Once every student had added a video to the wall we stopped, watched the videos, and discussed them.

Padlet as a showcase of your students' work:
If your students are creating digital portfolios, creating slideshows, or producing videos you could use Padlet to display all of your students' best work on one page. Create the wall, call it something like "my best work this year," and have your students post links to their works.

Plickers

Plickers (http://plickers.com) is the ideal polling/ informal assessment tool for classrooms in which not every student has a computer or tablet to use. Plickers uses your iPad or Android tablet in conjunction with a series of QR codes to create a student response system. Students are given a set of QR codes on large index cards. The codes are assigned to students. Each code card can be turned in four orientations. Each orientation provides a different answer. You can ask questions verbally or project them on a screen for students to see. When you're ready to collect data, use the Plickers mobile app to scan the cards held up by your students. Plickers will show you a bar graph of responses. Responses can also be saved in your online Plickers account.

For the 2020-21 school year Plickers has introduced an elearning mode. The elearning mode assigns to each student his/her own unique link that they can use to respond to any prompt that you share in your Plickers classroom. The nice thing about the elearning mode is that it can be combined with the classic version of Plickers. In other words, you can have some students participating by using Plicker cards in your classroom while at the same time some students are participating by using their elearning links on their computers at home.

Three ideas for using Plickers in your classroom:
1. Quickly taking the pulse of the class. Ask your students, "do you get this?" (or a similar question) and have them hold up their cards to indicate yes or no. You can do this with a saved class or a demo class in the app.

2. Hosting a review game. Create a series of questions in your saved Plickers classroom. To conduct the review, have students hold up their cards to respond to each question. Every student gets to respond at the same time and you get to see how each student responded. This is an advantage over many review games in which only the first student to respond has his or her voice heard.

3. Take attendance. In a saved Plickers class each student has a card or URL assigned to him or her. At the start of class just have them hold up their cards to check-in.

Creating Digital Portfolios

Over the course of the school year our students create some fantastic digital products. Building a digital portfolio is a great way for students to look back at everything they've done and organize their works into a cohesive package. The following six tools are good for creating digital portfolios.

Seesaw (http://web.seesaw.me/) is a free service designed for creating digital portfolios on iPads, Android tablets, and Chromebooks. Students can add artifacts to their portfolios by taking pictures of their work (in the case of a worksheet or other physical item), by writing about what they've learned, or by shooting a short video to record something they have learned. Students can add voice comments to their pictures to clarify what their pictures document. To get started with Seesaw, create a free classroom account. Students join the classroom by scanning a QR code (you will have to print it or project it) that grants them access to your Seesaw classroom. As the teacher you can see and sort all of your students' Seesaw submissions. Seesaw allows parents to create accounts through which they can see the work of their children. As a teacher you can send notifications to parents when their children make a new Seesaw submission. Visit http://bitly.com/ftseesaw to watch a series of tutorials about Seesaw.

Student Stories is ClassDojo's (https://www.classdojo.com/studentstories/) digital portfolio tool that allows students to submit work to be displayed in what is called a ClassDojo Class Story. You moderate your students' submissions before anyone can see them. Student Stories includes options for video uploads, image annotation, audio recording, video capture, and text notes. Student Stories is available in iOS and Android apps as well as for use in your web browser.

FreshGrade (http://freshgrade.com) is a digital portfolio service that is popular in some schools that I have worked with in the past. The service allows teachers and students to create portfolios containing video and audio files, pictures, and text files. Teachers using FreshGrade can create and manage accounts for their students. From their dashboards teachers can assign tasks to students and see the work that students complete. A nice end-of-the-year aspect of FreshGrade is the option to create a slideshow of highlights of a student's portfolio. That slideshow can be shared directly to parents.

Book Creator (http://bookcreator.com) is an excellent tool for creating multimedia ebooks. It's available to use as a mobile app and in the Chrome web browser. Students can use Book Creator to create an ebook that shows examples of their best videos, their best written work, and images of their work. Book Creator offers a new digital portfolio template for students. That template can be found at https://bitly.com/3jRMdul. A video overview of Book Creator for Chrome can be seen at https://youtu.be/wlfooQcV75Y

Google Sites can be a good option for making digital portfolios in middle school and high school settings in which Google Workspace is already being used. For example, my computer science students maintain individual Google Sites on which they write about and post pictures of their projects. Some students are including unedited video clips as well. In my ninth grade classes I had them all organize their sites in the same format with pages for every month of the school year. I'm letting my sophomores (most of them), juniors, and seniors organize their sites a little more loosely because they have bigger, but less frequent projects than my freshmen have to complete. Here's an overview of how to create a website with Google Sites https://youtu.be/EPzJzAScdKQ

Spaces (https://spacesedu.com/) is a digital portfolio tool that launched in early 2021. It offers some unique features that teachers and students will like. Not the least of these features is a group portfolio function that is best described as providing asynchronous breakout rooms. Spaces offers three ways for you and your students to share materials and interact with each other. These three ways are referred to as "Class Spaces," "Individual Spaces," and "Group Spaces." The class spaces and individual spaces are exactly what you'd expect, a place to share with the class and a place to save private work. The group spaces can be described as "asynchronous breakout rooms." You can assign students to specific group Spaces to share with each other and with you. Group Spaces could be used for simply sharing finished group projects. The better use of group Spaces is as a place where students can share their work in progress and get feedback from each other as well as from their teacher. Video demonstrations of how to use Spaces can be seen at https://bitly.com/2Xr24Zp

Augmented Reality & Virtual Reality

Augmented reality (AR) and virtual reality (VR) are hot topics in education right now. But before you jump into using these technologies in your classroom it is important to understand the differences between them.

Augmented reality content is typically displayed on your mobile phone to show you digital content over a physical world. Pokemon Go was a mainstream example of augmented reality. Augmented reality heavily relies on location to display images, text, video, and animation.

Virtual reality content is typically displayed on a mobile phone placed inside a virtual reality headset/ viewer. That viewer can be as simple as a Google Cardboard viewer that you can get for about $10 on Amazon or you can spend much more for fancier viewers. The digital content that you see in VR is not dependent on your current physical location.

Augmented Reality Apps to Try

When you conduct a Google search on your Android or iPhone/ iPad Google will suggest objects to "view in 3D." Of course, your search has to be for something that Google offers as a 3D augmented reality object. The complete list of objects can be seen on Google's Search Help Pages (https://support.google.com/websearch/answer/9817187?co=GENIE.Platform%3DAndroid&oco=1) .

Some of the animals in Google's 3D Augmented Reality Objects in Search:

- Timberwolves
- Tigers
- Pandas
- Alligators
- Great White Sharks
- Penguins
- Golden Retrievers

Animals aren't the only things available to view in augmented reality via mobile Google search. You can also view representations of chemistry, physics, and biology concepts. There is also a small selection of cultural objects and sites available to view as 3D augmented reality objects. Again, that complete can be found on Google's search help support page. Some highlights from the list include:

- Red blood cells
- Metallic bonding

- Plasma membranes
- Human digestive system
- Apollo 11 command module

To create videos of augmented reality animals simply conduct a Google search for them on an Android phone or iPhone and then choose the "view in your space" option to have the animals rendered in AR. Once the animals are rendered in AR hold down the record button that appears on the screen when viewing an AR object via Google mobile search. The video automatically saves to the phone and from there you can share it anywhere including YouTube and Instagram. The whole process of making a video with augmented reality videos might sound complicated, but it's not. I demonstrated the whole process in this short video (https://youtu.be/Mw3C9yJnwcE).

Plum's Creaturizer (http://pbskids.org/apps/plums-creaturizer.html) from PBS Kids is a free iOS and Android app that lets students create fun cartoon creatures then place them into outdoor settings through the use of augmented reality. The purpose of the app is to have students learn and show how the characteristics of an animal help it thrive in its environment. You can see an overview of Plum's Creaturizer in the video at https://www.youtube.com/watch?v=2GPXOq2YuEk

NASA offers another AR app about spacecraft. It's called Spacecraft AR. Spacecraft AR (https://apps.apple.com/us/app/spacecraft-ar/id1452909829#?platform=ipad) is a free iPad and Android app offered by NASA's Jet Propulsion Laboratory. The app enables students to learn about various NASA spacecraft including the Curiosity rover, Voyager, Mars Exploration Rover, and a handful of other spacecraft. Spacecraft AR includes information about each spacecraft's development and use. With Spacecraft AR installed and open on their iPads or phones, students can select a spacecraft or mission then point their iPads or phones at a flat floor or wall to see the spacecraft appear. Once the spacecraft appears on screen students can move to see other angles of the spacecraft and move the spacecraft. Students can also pinch and zoom to change the size of the spacecraft they're looking at. The Android version is available at https://play.google.com/store/apps/details?id=gov.nasa.jpl.spacecraftAR&hl=en_US

Quiver (http://www.quivervision.com/apps/quiver-education/) is a service that is part augmented reality and part coloring books. Quiver offers coloring pages (some content is educational, some is not educational) that students can color and then scan with the corresponding Quiver mobile app. When the pages are scanned with the app, the drawings become animated on students' phones or tablets.

WWF Free Rivers (https://apps.apple.com/us/app/wwf-free-rivers/id1349935575) is a free augmented reality app produced by the World Wildlife Foundation. The app uses augmented reality to present a story about rivers. WWF Free Rivers tells students stories about the implications of changes in weather patterns, damming rivers, and pollution on river ecosystems.

Students interact with these stories by moving their iPads and or by pinching and zooming on elements in the stories. Unlike some other AR apps the animations within WWF Free Rivers can be experienced by students from a variety of angles. A great example of this is found early in the app when students can see what a dam does to a river. During that experience students can see the dam from above, from below, and from the sides.

Merge Cube (https://mergevr.com/cube) offers augmented reality experiences through the use of a physical object, the Merge Cube, and free apps that interact with the cube. The is essentially a six-sided QR code. Interactive digital content is displayed on students' phones or tablets when they scan a side of the cube with one of the Merge Cube apps. Turning the cube changes the content that is displayed on the phone or tablet. To use Merge Cube augmented reality experiences you will need to purchase a Merge Cube. They're typically $14.99 from your favorite online retailers. Once you have the cube you can use it with as many compatible apps as you like. A few popular apps to try include 3D Museum Viewer, Galactic Explorer, and AR Medical.

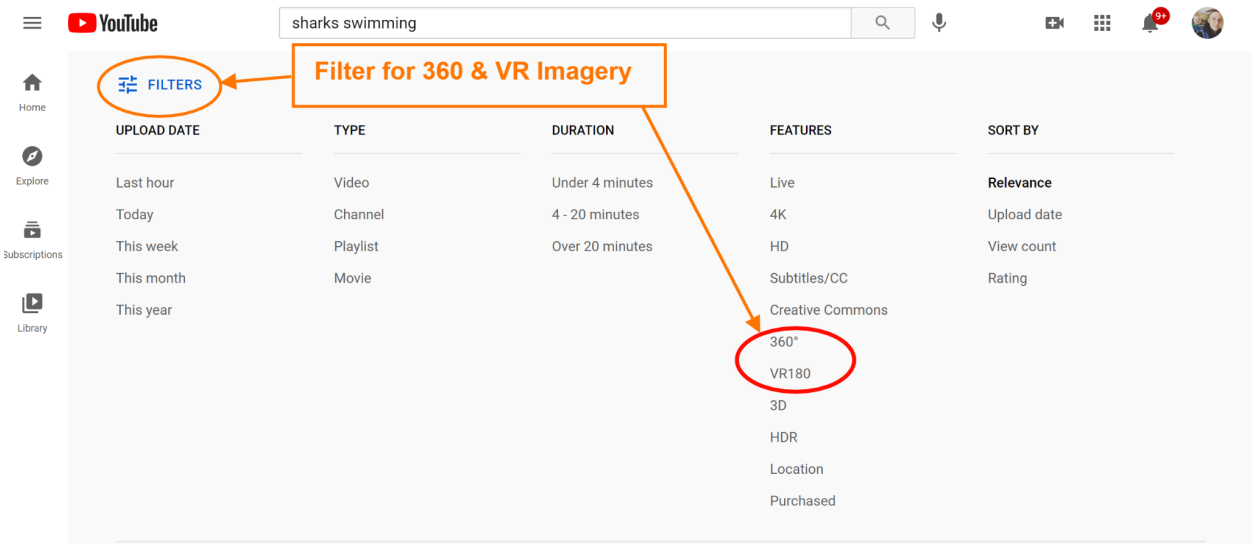
Virtual Reality Apps to Try

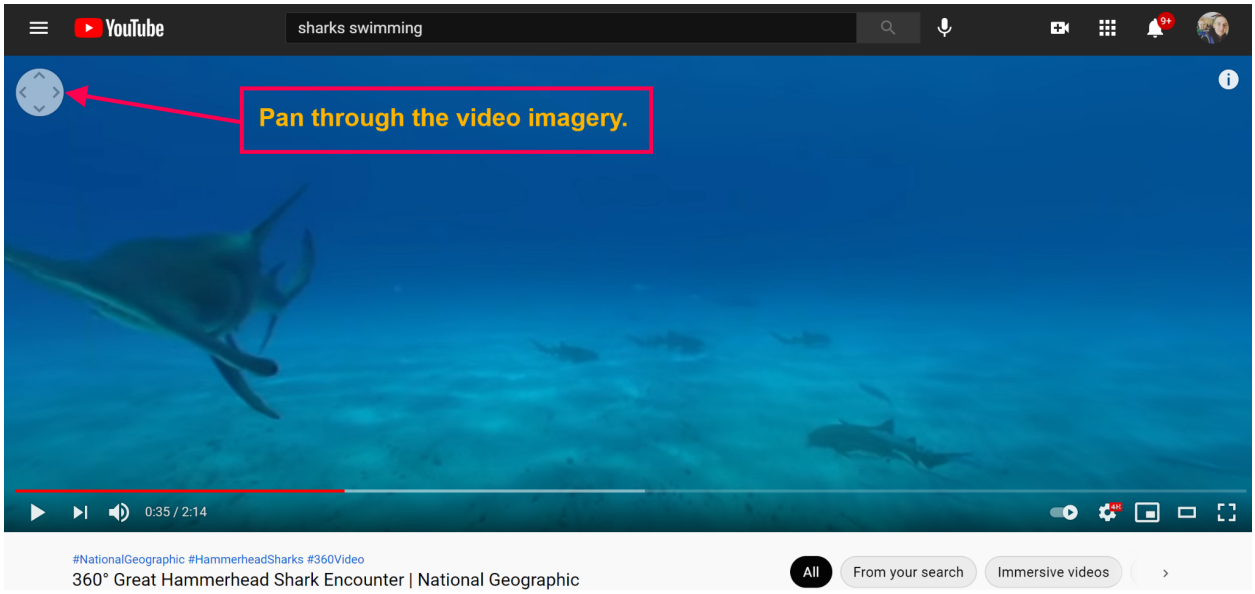
Unfortunately, after years of promotion, Google decided to shutter Google Expeditions on June 30, 2021. That left a big hole in the VR for education landscape. The alternative to Expeditions that Google is pushing today is the Google Arts & Culture App (https://artsandculture.google.com/). The Google Arts & Culture app includes many of the experiences that are present in Google Expeditions. The one thing that you can't do is guide students on tours. Google has introduced a new teacher center for Google Arts & Culture. In the video at https://www.youtube.com/watch?v=zRO0oW3B-s8 I provide an overview of how to use the Google Arts & Culture teacher center. The video includes directions for sharing specific portions of an Arts & Culture experience with your students.

Expeditions Pro (https://expeditionspro.com/) has many of the same features that teachers liked about Google Expeditions. Not the least of those is the ability to guide your students on virtual reality tours. As long as you and your students are on the same Wi-Fi network, you can lead them through a tour. When you're leading a tour your students will see arrows on the screens of their devices to point them to what they should be looking at. Additionally, when you pause a tour your students' screens are blurred out until you resume the tour. To lead students on guided VR tours in Expeditions Pro, you have to download the tours to your phone or tablet. Your students don't need to download the tours in order to follow along with you. A video demonstration of Expeditions Pro is available at https://youtu.be/klm4t9eZd6w

YouTube's VR imagery is another alternative to Google Expeditions for teachers who are looking for video to use in a VR context. In YouTube you can filter your search results according to video features. One of the feature filters you can pick is VR180. Another filter you can pick is 360 degree video imagery. I used both of those filters this morning when I was searching for VR

imagery of sharks swimming. In the screenshots below you can see where to find the search filters and how to pan through VR videos on YouTube.





Google's VR Tour Creator was also shuttered at the end of June, 2021. There are some tools that have emerged to fill the void created by the closure of Tour Creator. One of those is Story Spheres (https://storyspheres.com/). It is a neat tool for adding audio recordings to 360 imagery. Story Spheres lets you upload short audio recordings in which you describe to viewers what they're seeing, the history of what they're seeing, and the significance of what's in the scene they're seeing. It's possible to upload multiple audio recordings. When you're done you can share your Story Spheres story in a blog post, on social media, or any other place that you typically post a link. Take a look at this Story Spheres story about Uluru (https://storyspheres.com/uluru/) to get a better sense of what can be done with Story Spheres.

A video demonstration of how to make a Story Spheres story can be seen at https://youtu.be/1McJdXQdcTw

Expeditions Pro can also be used to create your own virtual reality tours. There are a couple of things to note before you try creating your own virtual reality tours with Expeditions Pro. First, you need to capture your own 360 imagery or find it online outside of Expeditions Pro before importing it into your tour. Second, you'll need to use a third-party tool to record the audio narration for each view in your tour. The process of making your own VR tour with Expeditions Pro is outlined in the video at https://youtu.be/E2p0mamhMEw

CoSpaces Edu (https://cospaces.io/edu/) is a tool that you and your students can use to create virtual worlds. As a teacher you can create a classroom that your students join so that you can see their work. Students can design virtual worlds using a variety of pre-made artwork. After designing scenes in their virtual worlds students can animate the characters by using a block programming interface to make characters walk, talk, and interact.

Intro to Programming and Makerspaces

For some of us of a certain age, Logo was our introduction to computers and programming 30+ years ago. Logo is still accessible today. Dr. Gary Stager has repeatedly said that it is still the best way to introduce students to programming (http://stager.tv/blog/?p=4056). Logo is the basis for many other sites and apps that teachers can use to help students learn to program. Here are some of the best options for teaching and learning programming.

When the conversation amongst educators turns to programming, Scratch (https://scratch.mit.edu/) is often the first resource that is mentioned. Scratch allows students to program animations, games, and videos through a visual interface. Students create their programs by dragging together blocks that represent movements and functions on their screens. The blocks snap together to help students see how the "if, then" logic of programming works. Watch the video at https://vimeo.com/65583694 to learn more about Scratch. And check out the ScratchEd team's curriculum for teaching with Scratch http://scratched.gse.harvard.edu/sites/default/files/sneak_peek_creative_computing_curriculum_guide_v3.pdf

Scratch Jr. is based on the aforementioned online Scratch program. Scratch Jr for iPad (https://itunes.apple.com/us/app/scratchjr/id895485086) and for Android (https://play.google.com/store/apps/details?id=org.scratchjr.android) uses the same drag and drop programming principles used in Scratch. On Scratch Jr students can program multimedia stories and games. To program a story or game on Scratch Jr. students select background settings for each frame of the story. Then in each frame students select the actions that they want their characters to take. Students snap programming pieces together to make characters move and talk in their stories and games.

Blackbird (https://www.blackbirdcode.com/) is a platform that launched in early 2021 to help teachers teach programming to middle school and high school students. Blackbird positions itself as a platform that fills the gap between using a blocks-based service like Scratch and writing code in an IDE. Blackbird doesn't use blocks or even offer any blocks. Instead, Blackbird provides a series of interactive lessons in which students write JavaScript. Blackbird lessons are arranged in progressive units. From the first lesson students are building a game they can customize to their heart's content. When they've finished all of the lessons students can move onto a "workshop" where they can work on independent projects that you can observe from your teacher dashboard in Blackbird. A comparison of Blackbird and Code.org can be read here https://www.freetech4teachers.com/2022/09/codeorg-vs-blackbird-code-which-one.html

Snap! (http://byob.berkeley.edu/) is a drag-and-drop programming interface designed to help students learn to program. Snap! uses a visual interface that works in your browser on your laptop as well as on your iPad. To design a program in Snap! drag commands into a sequence in the scripts panel. The commands are represented by labeled jigsaw puzzle pieces that snap together to create a program. You can try to run your program at any time to see how it will be

executed. After previewing your program you can go back and add or delete pieces as you see fit. Snap! may remind some people of Scratch. That is because the Snap! developers call their program "an extended re-implementation of Scratch." The potential benefit of Snap! over Scratch is that teachers who have a mix of iPads, Android tablets, and laptops in their classrooms can have all of their students use the same programming interface.

The MIT App Inventor (http://appinventor.mit.edu/explore/) allows students to create and publish their own Android applications. The MIT App Inventor works in your web browser (Chrome is recommended). The only download that is required for App Inventor 2 is the optional emulator. The emulator allows people who don't have Android devices to text their apps on their desktops. If you have an Android device then the emulator is not required and you don't need to worry about installing it. MIT provides excellent support documentation and curriculum for classroom use for new users of App Inventor. A detailed tutorial on how to make an Android app with the MIT App Inventor can be watched at https://youtu.be/9_2J0ZHk8TE

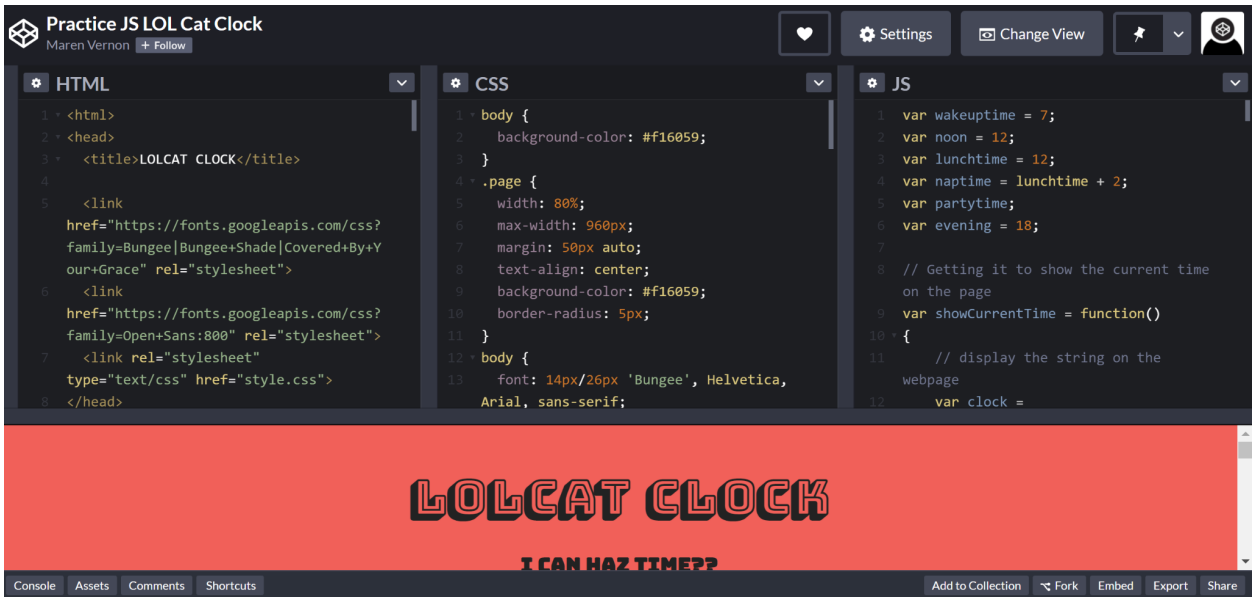
Glide Apps (https://www.glideapps.com/) enables anyone who can make a spreadsheet in Google Sheets to create his or her own mobile app. If that sounds simple, that's because it is just that simple. The headers that you put into your spreadsheet and the data that you enter into your spreadsheet is used by Glide to generate a mobile app for you that will work on Android and iOS devices. Watch https://youtu.be/BHQxxIzqgig to see how easy it is to create your own app with Glide Apps. Here are five ideas for using Glide Apps in your school https://www.freetech4teachers.com/2022/07/five-ideas-for-classroom-apps.html

Daisy the Dinosaur (https://apps.apple.com/us/app/daisy-the-dinosaur/id490514278) is a free iPad app designed to introduce young students to some programming basics. The app asks students to create commands for Daisy the Dinosaur to carry out. There is a free play mode in which students can make Daisy do whatever they want. But to get started you might want to have students work through the beginner challenges mode. Daisy the Dinosaur asks students to enter commands in the correct sequence in order to make Daisy complete tasks correctly. Daisy the Dinosaur could be used with students as young as Kindergarten age.

Exploratorium's Science Snacks website (https://www.exploratorium.edu/snacks) has dozens and dozens of hands-on science and engineering projects for students of all ages. There is a subsection of the site called Family-Friendly Snacks that offers activities specifically designed for parents to do at home with their kids. The vast majority of the projects can be done with common household items. And in response to the COVID-19 outbreak Exploratorium has a selection of activities and videos about viruses.

Tinkercad (http://tinkercad.com) is an online program that students can use to create designs for 3D printable objects. It can also be used to design simple circuits and Arduino projects. Students can safely design and test circuits and Arduino projects completely online through the use of Tinkercad's online simulator. As a teacher you can create a free classroom account in which you can see your students' work.

CodePen (https://codepen.io/) is a code editing environment in which students can see how HTML, CSS, and JavaScript work together to form web applications. As you can see in the screenshot that I've included below, the screen is divided into four parts. There's a column for HTML, a column for CSS, and a column for JavaScript. Below that there is a preview panel that displays what the application looks like and how it functions. The best aspect of CodePen is that it is a real-time editor. That means you can change any aspect of the HTML, CSS, or JS and immediately see the effects of those changes in the preview panel. This is a great way to see what happens when a variable is changed in an application. If the change didn't work as anticipated, a quick "CTRL+Z" on your keyboard reverts it back to the previous state. The same is true when you edit an aspect of the HTML or CSS.



Google Earth - It's More Than Just Social Studies

Google Earth is available to use in your web browser, as desktop software, as an iOS app, and as an Android app. All versions can be found at google.com/earth. The web version will work in your web browser on a Chromebook, Windows, or Mac laptop. The desktop version has more features than the web and mobile versions, but those versions are starting to catch-up. The desktop version is only available on Windows, Mac, and Linux computers. Here are ten ways for students to use Google Earth in your classroom.

I do offer a complete, self-paced course on how to use Google Earth. That course is available at https://practicaledtech.com/on-demand-pd/

1. Take a tour of new and interesting places.
This is the most basic activity that you can do in Google Earth. The web and mobile versions of Google Earth have pre-made tours called "Voyages" that your students can view. Stops on the voyages include notes about the notable landmarks in the tour. The desktop version of Google Earth also has pre-made tours. You can also find tours made by others and use them in Google Earth. Watch this video (https://youtu.be/gFeeZ2b6_cI) to learn how to do that.

2. Play *Where in the World is Carmen Sandiego* and other geography games.
Where in the World is Carmen Sandiego? is available to play in Google Earth. The game can be played in the web version of Google Earth as well as the iOS and Android versions. *Where in the World is Carmen Sandiego?* isn't the only game or quiz you'll find in Google Earth. You can find them all by opening the Voyages tab in Google Earth. A video of how to find the games and quizzes is available here: https://youtu.be/5lNfgWQCLVo

3. Take and or Create Literature Tours
Google Lit Trips (http://googlelittrips.org/) is dedicated to helping teachers use Google Earth tours in literature lessons. In a literature trip students explore the places that are significant in a story and or the places that are significant in an author's life. The desktop version of Google Earth has built-in tools for creating tours of landmarks around the world (watch this video: https://youtu.be/Y9R2bV9NHbw to learn how). The web version of Google Earth doesn't have the same tour recording tools, but you can import placemarks(https://youtu.be/LrlwYsuUyMo) and then use a screencasting tool to create a tour.

4. Global scavenger hunts.
Create a scavenger hunt for students to complete by using clues and finding the answers "hidden" throughout the globe. This can be a fun way for students to test their knowledge of physical and human geography.

5. View a Timelapse of Coastline Changes.
Thanks to historical imagery available through the Google Earth Engine you can view historical satellite imagery in Google Earth.This allows viewers to see how things like coastlines have

changed over time. You can piggyback on that visual to prompt students to investigate what makes a coastline change.

6. Map and Compare Datasets.
Mapping datasets can be a good way for students to create visualizations of species diversity and distribution or to see economic data as it relates to geography. It is possible to take a dataset that is in a CSV or Google Sheet and have that data appear in Google Earth. To do this you will first make a map in Google's My Maps tool (a tutorial is available here: https://youtu.be/R2X0oRiMtWE) and then export a KML from My Maps to import into Google Earth. A tutorial for completing that process in the desktop version of Google Earth is available here: https://youtu.be/fjvID2iKtX8 A tutorial for completing that process in the web version of Google Earth is available here: https://youtu.be/LrlwYsuUyMo

7. Layer Images Over Maps.
The desktop version of Google Earth lets you layer images over a view of the world. Adjust your zoom level to cover more or less of the map with your image. Adjust the image's opacity to let the map faintly show through the image. This is a great way to show students a comparison of a historical map with a contemporary map. Try using this method to show how coastlines and waterways have changed over time.

8. Measure Distances for Math Lessons.
Google Earth includes tools for measuring distances in a variety of units. Students can use the measuring tool to complete activities designed to help them understand distance, scale, and units of measurement. Tom Barrett's Maths Maps page (http://edte.ch/blog/maths-maps/) is a good place to find lessons that incorporate measurement. A tutorial on measuring in Google Earth is available here: https://youtu.be/ysMo6cZQtHk

9. Explore the Moon or Mars.
The desktop version of Google Earth includes a moon view and a Mars view. Select the moon view or the Mars view then click on some of the placemarks in the NASA layer. Your students could even create a narrated tour of the moon or Mars by following these direction: https://youtu.be/FsIZohEUrIE

10. Use Google Earth as an Alternative to PowerPoint.
The next time you're thinking about having students give a presentation on a place that they've studied in your geography lesson, have them create a Google Earth tour instead. They can use their custom placemarks shown in full size as an alternative to using slides.

Tools to Improve the Accessibility of Documents, Slides, Videos, and Websites

We all have different needs and preferences when it comes to consuming the media in our lives. Our students are the same. Some need websites read aloud, some need different color schemes or fonts, and others need captions enabled on videos. Those are just a few of the things that can be done to improve the accessibility of documents, slides, videos, and websites used in our classrooms.

Improving the accessibility of documents, slides, videos, and websites used to be a lot more difficult than it is today. Here are some tools that you and your students can use to improve the accessibility of media used in your classroom.

Improve the Accessibility of Websites

Microsoft Edge

- If you have access to Microsoft Edge (the default for Windows computers) then should familiarize yourself with Microsoft's Immersive Reader tool. Immersive Reader in Microsoft Edge can be used to have pages read aloud, to alter the font size and spacing, and to alter the color scheme of articles read on websites.

- Microsoft Edge is also available to use on Android and iOS phones and tablets. A read-aloud function is available in the iOS and Android versions of Microsoft Edge.

- Mac users aren't left out of using Microsoft Edge and Immersive Reader. Microsoft Edge is to install on Mac OS. It contains the Immersive Reader functions that are available in the Windows version of Edge. You can find the Mac OS version of Edge right at https://www.microsoft.com/en-us/edge

Safari

- Safari has a "reader view" option that you can find to the left of the URL in the address bar. The reader view menu appears as four horizontal lines. Click the menu to enter the reader view. The reader view will let users change the font style and size as well as the overall page color scheme.

- Safari's reader view is in addition to all of the other accessibility options that are built into the Mac operating system. A comprehensive list of Mac accessibility options is available at https://www.apple.com/accessibility/mac/

Chrome

- The Chrome web browser can be customized to each user's preferences regarding font size, font style, and spacing. Those setting choices can be made by typing chrome://settings/fonts into the address bar in Chrome. The choices will apply as the default wherever you go in with Chrome.

- You can zoom-in or zoom-out on individual pages in Chrome by simply holding the control key then tapping the "+" key on a Windows or Chromebook keyboard or by holding the command key then tapping the "+" key on a Mac keyboard.

- There are Chrome extensions that offer read-aloud capabilities. Read & Write for Chrome is one of the most popular ones for use in school settings. Other accessibility extensions can be found at https://chrome.google.com/webstore/category/ext/22-accessibility

Firefox

- The Firefox users can customize default font sizes, spacing, and colors. These options are available by opening the options menu listed under the "Tools" drop-down menu in Firefox. Alternatively, the options menu can be accessed by typing "about:preferences" (without quotation marks) into the address bar in Firefox.

- Other accessibility options for Firefox include using a keyboard to navigate webpages, zooming to enlarge pages, and installing screen reader add-ons. You can enable keyboard navigation from the options menu under general settings. To zoom in to enlarge pages simply hold down the ctrl key then press the "+" key. To reverse that process hold ctrl and press the "-" key. A couple of screen reader add-ons for Firefox can be found at http://bit.ly/accsettings and complete list of Firefox accessibility settings is available at https://mzl.la/2DSxHhy

Improve the Accessibility of Your Slideshows

- **Automatic Subtitles for Your Live Presentations**
  Both PowerPoint and Google Slides offer automatic subtitling tools that you can use when presenting to an audience.

  In Google Slides the subtitles appear at the bottom of your screen when you are in full-screen presentation mode. You can enable subtitles by entering presentation mode then hovering your cursor over the lower-left corner of your slides to make the subtitles option appear. This short video (https://youtu.be/cuH8n0UqpJU) provides a demonstration of how to enable subtitles in Google Slides.

PowerPoint gives you the choice of having subtitles appear at the top or bottom of the screen when you are using the full-screen presentation mode. The process of enabling subtitles is slightly different depending upon whether you're using the web browser version or desktop version of PowerPoint. In both versions the subtitles options are found by choosing the "slideshow" menu. This video (https://www.youtube.com/watch?v=DrLRJlbNlRc) demonstrates subtitles in the browser version of PowerPoint and this video (https://youtu.be/IvXO47uaPpc) demonstrates subtitles in the desktop version of PowerPoint.

- **Add Alt Text to Your Slides**
  Alt text, short for alternative text, is text that you can add to images and videos to describe what they are and or what they contain. Adding alt text can make your slideshows accessible to people who use screen readers. The alt text describes what is in a picture, chart, or video that is included in a slide. PowerPoint, Keynote, and Google Slides all provide options for adding alt text to your presentations.

  To add alt text to images or videos in Google Slides simply right-click on the image or slide to which you need to add alt text. The menu that appears when you right-click on the image or video will include an alt text option where you can then write a title and description for the image or video. This (https://youtu.be/Z5RnzMfj9Qk) video provides a demonstration of how to add alt text to Google Slides.

  You can add alt text to PowerPoint slides by right-clicking on an image in your slides. One of the options that appears when you right-click on an image in PowerPoint is "edit alt text." Select that option then write your description of the image.

  Keynote users can add alt text to images by selecting an image on a slide which then opens a panel on the right-hand side of the slide. In that panel select the image tab then add your alt text in the description box that appears at the bottom of the screen.

Improve YouTube Video Accessibility
YouTube can be a great source of educational videos to either display in your classroom or have students watch on their own. Fortunately, YouTube offers some easy ways to improve the accessibility of the videos that you use in your instruction.

- **Enable and Customize Captions Display**
  You can enable captions on any YouTube video by clicking on the little "CC" icon in the lower-right corner of any video that you're viewing. This will turn on the automatically generated captions for any spoken words in the video you're viewing.

The default size, style, and color of the automatic captions on a YouTube video may not work for every viewer. If that's the case for you or your students, you can adjust how the captions are displayed. To adjust the captions display click on the small "gear" icon in the lower-right corner of the video that you're viewing. Once you click that icon you'll be able to select "subtitles/CC." Within that menu there is an "options" menu that you can click on to select the size, style, and color of the captions display. This video (https://youtu.be/p0NgXg7A5U8) will walk you through the process of customizing the display of the captions on YouTube videos.

- **Edit the Captions on Your Videos**
  If you're making original videos for your students to watch, when you upload those videos to YouTube they will be automatically captioned. However, the automatic captions are not always accurate. For example, my last name is always captioned as "Bern" instead of it's proper spelling of Byrne. You can edit the automatic captions. I've outlined the caption editing process in this video (https://youtu.be/4eCdC47AKJM).

- **Create a Transcript of any YouTube Video**
  YouTube offers automatic transcription of videos. You can find an automatically generated transcript by opening the "more menu" (it looks like three stacked dots) next to the "share" button when you are watching a video. This short video (https://youtu.be/t_KIoLtCTBg) demonstrates how to use the automatic transcription option on YouTube.

Improve Document Accessibility

- **Google Documents**
  Google Documents has some built-in accessibility options that you should know how to enable. There are also some third-party Google Docs add-ons that can help you improve the accessibility of your documents.

  In Google Documents there is a built-in voice typing capability. To find the voice typing tool simply open the "Tools" drop-down menu then select "Voice typing." A microphone icon will appear in the left margin of your document. Click it to activate your microphone then start speaking and your words will appear on the page. You will have to speak directions like "question mark" to add punctuation and "new line" to start writing on a new line.

  In the same "Tools" drop-down menu that contains the voice typing tool you will find the general accessibility settings menu. It is there that you can enable support for screen readers and screen magnifiers.

On the topic of screen readers, when you insert an image into a Google Document you can right-click on it to bring up the option to add alt text. Alt text is text that you add to an image to describe what is in the image. Screen readers will read the alt text.

Grackle is a Google Docs and Slides add-on that will check your documents and slides for accessibility compliance. When you run Grackle's accessibility checker it will identify places where your slide doesn't meet accessibility standards. It makes suggestions for improvement on the areas in which your document, slide, or sheet doesn't meet accessibility standards. Some of the suggestions can be implemented with just a click from the Grackle Add-on menu while others are changes that you will have to make yourself.

You can watch a demonstration of all of the Google Docs accessibility options mentioned above right here https://youtu.be/w90cW9sh3zs

- **Word Documents**
  When it comes to accessibility options, Microsoft Word is far ahead of Google Documents. Not only does Word come with many built-in accessibility options, Word also contains extensive help documentation that can be accessed without exiting the document that you are working on.

  Speech-to-text is built into the current versions of Word. To use speech-to-text simply open a new document then on the “Home” ribbon select “Dictation.” Dictation is available for a variety of languages in Word.

  Text-to-speech or read-aloud capabilities are available in Word through the power of Microsoft’s Immersive Reader. Immersive Reader will read documents aloud. Additionally, Immersive Reader can be used to alter the spacing of a document, to highlight words and syllables while the document is read aloud, and to highlight parts of speech as a document is read aloud. Immersive Reader can be found in the “View” menu in Word.

  Microsoft Word has a built-in accessibility checker. You can find the accessibility checker under the “Review” menu in Word. Simply click “Check Accessibility” and Word will run an accessibility check then give you feedback on areas for improving the accessibility of your document. That feedback will appear in the right margin of your document. Below the suggestions for improvement you will see a link to “read more about making documents accessible.” Click that link will open help documentation and suggestions that you can read in while simultaneously implementing them into your current document.

  Microsoft offers a good video overview of Word’s accessibility checker. That video is available at http://bitly.com/2Mwxs07

More About Immersive Reader

As mentioned in the sections about the Edge web browser and Word, Microsoft's Immersive Reader is a fantastic accessibility tool. Not only can it be used as a read-aloud tool, it can also be used to alter the font size, font spacing, and page color schemes of pages that students view. And Immersive Reader includes a picture dictionary tool for students to use. Microsoft's official guide to Immersive Reader can be found at http://bitly.com/33Qt3Lx

Immersive Reader is available in most of the Microsoft products in use in schools today including OneNote, Word, Forms, Teams, Office Lens, Flipgrid, and Outlook. Additionally, Immersive Reader has been incorporated into more than a dozen popular third-party programs including Thinglink, Wakelet, and Nearpod. The full list of third-party services that have incorporated Immersive Reader can be found at http://bitly.com/immr3rd

DIY Online Games & Skills Activities

Making online educational games used to be the domain of those with specialized coding and programming skills. Today, there are free tools that anyone can use to create their own educational games for students. Likewise, there are now some excellent free tools for creating online skills practice and knowledge recall activities to share with your students.

Educandy (http://educandy.com/) is a neat service for creating simple vocabulary games and multiple choice trivia games. A convenient aspect of the service is that once you've created a list of vocabulary words it will automatically be applied to multiple game formats for you. In other words, write one word list and you'll get three games that your students can play. Your students can play the games without needing to create an account on the Educandy site. Watch the short video at https://youtu.be/yEXpoYXV_tY to learn how you can create your own educational games with Educandy.

Flippity (http://flippity.net) is a free service that provides nearly two dozen Google Sheets templates that can be used to create a variety of online games including spelling games, vocabulary games, problem-solving games, and trivia games. The board game template is one of the most popular templates that Flippity provides. That template can be used to create an online board game that is similar in nature to Candy Land or Shoots & Ladders. Watch the video at https://youtu.be/Hq1cdfoa4Hk to learn how to create an online board game with Flippity's free board game template.

ClassTools.net (created and hosted by a teacher named Russel Tarr) has long been one of my favorite places to find free educational games and templates for creating educational games. On ClassTools you'll find templates for creating map-based games, word sorting games, matching games, and many more common game formats. Use the search function on ClassTools to find the game template that is best for you and your students. You can see a video demonstration of ClassTools at https://youtu.be/b-SbGn4-g5c

TinyTap (http://tinytap.it/) is a free iPad app and Android app that enables you to create educational games for your students to play on their iPads or Android tablets. Through TinyTap you can create games in which students identify objects and respond by typing, tapping, or speaking. You can create games in which students complete sentences or even complete a diagram by dragging and dropping puzzle pieces. A set to TinyTap tutorials is available in this playlist https://www.youtube.com/c/RichardByrne/search?query=tinytap

TeacherMade (http://teachermade.com/) is a service on which you can upload a PDF then add to it fillable text boxes, lines for matching activities, multiple choice questions, and interactive hotspots to highlight specific points in the PDF. You can also use TeacherMade to add audio to an uploaded PDF. Depending upon the type of questions that you select, TeacherMade will automatically score assignments for you. Canva offers nearly two thousand worksheet templates (https://www.canva.com/worksheets/templates/) for teachers to copy and modify. All

of the templates can be downloaded as PDFs. You can combine the use of Canva and TeacherMade to create online activities for your students to complete. Depending upon the TeacherMade settings that you choose, your students can get immediate feedback. The process of combining TeacherMade and Canva is demonstrated in the video at https://youtu.be/s234wMpcyqI

If you're looking to make some simple trivia games or icebreaker games to play in your classroom or at your next staff meeting, take a look through the game presentation templates in Canva for a little inspiration. Watch https://youtu.be/IHUd6lAjQMc to learn how to make games in Canva.

Google's Jamboard became wildly popular during the 2020-21 school year and that popularity doesn't seem to be wavering as we head into the 2021-22 school year. Part of the reason for that popularity is the flexibility of Jamboard. Besides using it to create simple whiteboard sketches, it can also be used to create templates for activities like magnetic poetry and map identification. The process for using Jamboard to create mapping activities can be seen at https://youtu.be/8bPZvOizbEk and the process for making magnetic poetry activities can be seen at https://youtu.be/mdG5vC-A0A0. Both processes can be modified to create almost any kind of template that you want to distribute to your students. The process of distributing Jamboard templates is outlined in the video at https://youtu.be/xxNkQnkAyig

Helpful Things That Don't Fit Into One Category

These are some helpful tools that don't neatly fit into one category. Most of these can be used in almost any K-12 classroom setting.

Bouncy Balls (http://bouncyballs.org/) is a free online noise meter that shows students the volume of the noise in your classroom. Bouncy Balls does this by displaying a set of colorful bouncing balls on your screen. The louder your students are, the higher and more frequently the balls on the screen bounce. To use Bouncy Balls simply go to the website, click "begin bouncing," and then click the microphone icon to allow the site to access your computer's microphone.

SpinnerWheel (https://spinnerwheel.com/) lets you place multiple spinners on the same screen and spin them at the same time. By doing that you can create a random group picker, generate randomized writing prompts, randomly generate math problems, and even create random quiz game questions. You can use SpinnerWheel without creating an account on the site. However, if you do create a free account on SpinnerWheel you will be able to save your spinners to use whenever you like and as often as you like.

Classroomscreen (https://classroomscreen.com/) is a service that lets you create a homescreen on which you can place reusable countdown timers, stopwatches, noise meters, random name selectors, and more helpful classroom management tools. The noise meter lets you set a sensitivity level and have an alarm sound when the room gets too noisy. The random name selector lets you enter a list of names and save it for unlimited reuse. The countdown timers are easy to adjust for time allotment and appearance. In addition to the timers, noise meters, and random name pickers, Classroomscreen also offers handy tools like a digital whiteboard, a calendar, a task list, and a QR code to share the whole screen with your students. Watch the video at https://youtu.be/z-Q3P8JTPs8 to see Classroomscreen in action.

Readlee (https://www.readlee.com) is a free service that lets you create online reading assignments for your students to complete in your classroom or at home. That's not what makes it great. What makes it great is found in how your students complete assignments and how you can view their assignment completion. The basic concept of Readlee is that you give students a reading assignment and they complete it by reading it aloud to their computers. Readlee then uses AI to analyze how well your students read the assignment. That analysis is provided for you in a short report displayed next to all of your students' submitted assignments. See the student and teacher perspectives of Readlee in the video at https://youtu.be/ud4sQ1OEs68

Focusable (https://getfocusable.com/) is a tool that is designed to help users learn how to focus, ignore distractions, and get into a flow to complete any series of tasks or projects. You can use it for things like trying to read or write for 30 minutes without letting yourself get distracted, building and tracking progress toward completing a big project, or simply spending 5 minutes

thinking and breathing while not looking at anything at all. You can read more about it and see it in action at https://bit.ly/focusable22

Block Posters (https://www.blockposters.com/) is a web-based tool to which you can upload a high quality graphic then divide it into letter-sized chunks for printing. Print out each section and put them together on a poster board to make your own poster. A demonstration of how it works can be seen at https://www.youtube.com/watch?v=FIevqgi2tvs

DisplayNote Broadcast is a free tool for broadcasting whatever is on your screen to the screens on your students' laptops, iPads, and phones. One of the best things about DisplayNote Broadcast is that it works on any computer and you don't have to install any software in order to use it. Additionally, your students don't need to be registered in order to view the broadcast from your computer on their devices. To use DisplayNote Broadcast you have to register for a free account. Once you've registered you can then just click the broadcast button to start broadcasting. A six digit code will be generated for you to share with your students. Students receive the broadcast by going to the DisplayNote Broadcast site and entering the six digit code generated by your broadcast. A demonstration of the teacher and student perspectives of DisplayNote Broadcast can be seen at https://www.youtube.com/watch?v=yAOsY9samLg

Do you want resources and tips like these emailed to you? If so, subscribe to the PracticalEdTech.com weekly newsletter. It is sent every Sunday evening (Eastern Time). It contains my tip of the week and a summary of the most popular posts from FreeTech4Teachers.com.

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