Chromebooks™ in the Classroom

Changing the Landscape of Education

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Chromebooks are revolutionizing the way students and educators are using computers. Chrome and Chromebooks make it possible to provide universal supports for all learners through a cloud-based system that de-emphasizes hardware and instead focuses on providing the student with support anywhere learning occurs. This paradigm shift has the potential to level the educational playing field and provide Universal Design for Learning (UDL) supports across the curriculum. This reference guide provides teachers with the critical information they need to maximize the benefits of Chromebooks in their classrooms.

Chromebooks Hardware

Chromebooks have been designed to be lightweight and start up quickly to get you up and running in a flash. All Chromebooks have a built-in webcam, making it easy to video conference using services like Google Hangouts or Skype. Most Chromebooks come with 1-2 GB of memory and generally 16-32 GB of storage, which is sufficient for installing small apps and extensions. Most Chromebooks have a built in SD card slot to allow for expanding the storage memory for things like photos, documents or videos. However, since most files will be saved in the cloud, there's no need for Chromebooks to have large storage capacities. Chromebooks have built-in USB 2 or USB 3 ports and HDMI ports for video-out, as well as Bluetooth 3.0 or 4.0 compatibility for connecting to peripherals. While all Chromebooks have built-in WiFi 802.11 a/b/g/n as a standard feature, there are a number of Chromebook manufacturers that also offer LTE models, complete with a data plan, making it easier to connect to the web when not in range of a WiFi network.

Offline Mode

A common misunderstanding about Chromebooks has to do with their offline functionality. While many supports rely on Internet access to function, there is a considerably long list of features/tools that will work when the user is offline.

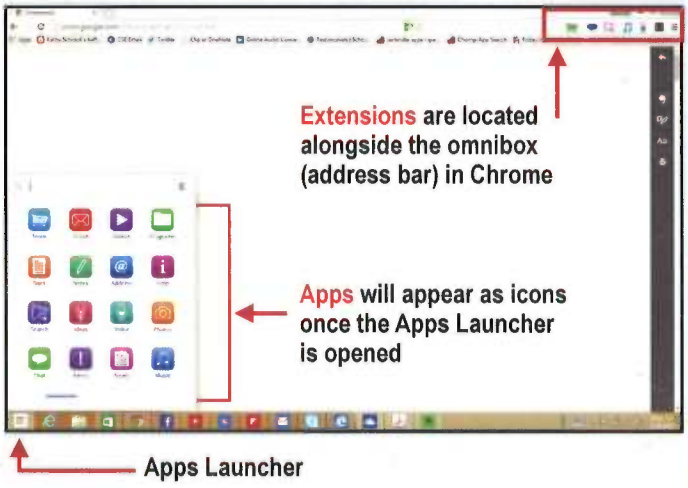
Chromebooks have a built-in photo editor that allows users to make changes to photos stored locally on the Chromebook or a mass storage drive (such as a flash drive). Users can also access locally stored music files without needing an Internet connection.

Google Drive™ apps have an offline mode that will allow the user to work in Docs, Slides, Sheets, Drawings and Calendar all without being connected to the Internet. Users can also save web pages for offline viewing.

When searching the Chrome Web Store for apps and extensions, there is an option to search for tools by features, including "Runs Offline."

Google Drive

While traditional laptop users have become accustomed to storing files on their hard drive, Google changed the model when it created a virtual cloud-based hard drive called Google Drive. Once logged into Chromebooks, the user can access Google Drive from the Apps launcher to reveal all personal documents and folders. Much like a hard drive, files can be organized into folders, making it more efficient for finding documents. Teachers may want to help students structure their Google Drives with folders to make it easier to locate documents. Students may find it helpful to set up folders when they are working on specific long-term school projects or presentations. Students can upload Word and PDF files, as well as photos, to their Google Drive and store them in their native format (i.e., .doc, .pdf, .jpg) or choose to have Drive convert them to the Google Docs format. Another organizational strategy is to color code folders within Google Drive to assist students with issues related to executive functioning.



Google Classroom

Schools that adopt Chromebooks and Google Apps for Education can take advantage of Google Classroom, which is free to anyone using Google Apps for Education. Google Classroom gives teachers a new set of digital tools to organize their classrooms. It enables teachers to create paperless classrooms and gives them the ability to comment on student work from within the Google Classroom environment. For schools that are not using a Learning Management System, this is the perfect entry point.

Some of the powerful features of Google Classroom include:

- The ability to create and manage multiple classrooms—posting different assignments and messages for each class quickly and efficiently.
- The use of Discussion Threads to create a back channel discussion to facilitate interaction and answer questions. This helps with reaching those reluctant learners who may not always actively participate in a discussion.
- Flipped Lessons, which can be created by incorporating YouTube™ videos and Google Docs directly into assignments, promoting a Universal Design for Learning (UDL) environment.
- A means to follow student progress by selecting "See Revision History" under the "Student Assignment Status" section.
- A system for sharing specific files directly with individual students, instead of sharing a folder with all students, which increases privacy and confidentiality.
- The ability to view submissions from students in a list with a link directly to the file. No more digging through folders to find a student's assignment!

Find out more at on Google Classroom at: https://www.google.com/edu/products/productivity-tools/classroom/

Core Google Apps

Google Docs

Most districts that have moved to Google Apps will use the core set of apps to replace the standard desktop apps for word processing, creating slideshows (akin to a PowerPoint presentation), and creating spreadsheets. Google Docs is a full-featured word processor with many of the standard features that one would expect to find in a desktop word processor like Microsoft Word. With Google Docs, students share documents with other classmates and/or with the teacher. The owner of the document can set the permissions so that his/her collaborators can either edit or just review and comment on the document. This is a powerful feature and one that changes the way students write and receive feedback. Students can work on documents together synchronously or asynchronously, which gives the teacher many options for peer editing and collaboration.

Google Forms

Google Forms is a powerful tool for collecting data from polls, surveys and/or tests. From Google Drive, click "Create" to find the Google Forms option. Google Forms can also be used to collect different types of data from students. Once questions have been created for a survey form, it can be distributed via an email or by providing a link. Those who have tried to collect a great deal of data using paper-based surveys will appreciate the way Google Forms aggregates all of the data from the survey into one spreadsheet, making it easy to analyze and review. Google Forms can be used for setting up quizzes and tests that are automatically graded using Flubaroo—http://www.flubaroo.com/.

Google Slides

Google Slides (an alternative to Microsoft PowerPoint) has fundamentally changed the way students can create collaborative presentations in the classroom. Google Slides allows students to select from a variety of slide styles and themes, and makes the process of creating dynamic presentation decks quite easy. By clicking on the Share button, students can collaborate and edit, comment, and even chat with one another as they build their presentation deck. This brings the concept of group work to a whole new level. Teachers can review the presentation history to see how much each student contributed to the project. Permissions can be set so that others can edit and review or only read and comment on the presentation. It is a great way to promote peer feedback.

Google Spreadsheets

Students no longer need to have a dedicated spreadsheet program (i.e., Microsoft Excel) to learn how to use a spreadsheet. With Google Spreadsheets, students can learn the basics of creating formulas and graphing data. Google Spreadsheets is an ideal tool for modeling, especially for math and science classes where students have real data to work with as they complete their analysis. Teachers should also look for Macros (like Flubarro—http://www.flubaroo.com/), which can be used with Google Spreadsheets to automatically grade students' quizzes, when used in conjunction with Google Forms. Google Spreadsheets are also ideal for graphing data.

Printing Using Google Cloud Print

While the core Google Apps can promote a paperless classroom, there may still be times when a hard copy of a document is needed. By setting up your classic printer via Chrome, users can select to print to this device over the Internet.

Set-up is simple:

1. Open Chrome on the computer that is connected via USB to the printer you want to control. Make sure you are logged into your Google account.
2. Select the Chrome Menu button (on the far right of toolbar—it looks like horizontal lines).

3. Select "Settings."
4. Go to the bottom and select "Show Advanced Settings."
5. Find the Google Cloud Print section and select "Manage."
6. Under Classic Printers, select "Add Printer."
7. Choose the printer you wish to connect. You will receive a confirmation that the service has been enabled.

Once you have connected this printer to your account, the printer will be available to you anytime you are logged in.

Apps/Extensions

What is the difference between an app (application) and an extension?

Apps

- Where are they? Apps are stored under the Chrome Apps button or appear when the user opens a new browser window.
- What do they do? Apps launch a new Chrome browser tab. Sometimes an app leads to a website; other times the app will perform its function directly in the browser window.

Extensions

- Where are they? Extensions are located directly in the browser window, to the right of the URL address bar.
- What do they do? Extensions will perform their function directly in the current browser tab.

Installing Apps and Extensions

The Chrome Web Store can be accessed directly in the Chrome Browser or Chrome OS.

- In Chrome OS (on the Chromebook), select the Apps button located at the bottom left corner of the task bar, then click on Web Store icon.
- In the Chrome Browser, select the Apps button that is located at the top left corner of the browser window (directly under the Back and Forward navigation buttons). Find Web Store icon bottom right.
- Once in the Chrome Web Store, browse the categories for apps/extensions or use the Search box.
- Select a tool to launch the page that provides additional information: overview of the tool, details, user reviews, and related supports.
- If the tool has the features you need, click the button on top right labeled "Add to Chrome" and the tool will install within Chrome.

Note: the following apps and extensions are provided for reference and do not imply endorsement.

Key: (A) = apps; (X) = extensions

To begin, download ***Extensity (X)***, an extension for managing your apps and extensions.
Extensity provides a quick list of all installed tools, and provides the ability to enable/disable tools with the click of a mouse.

Apps for Reading Across the Curriculum

Bookshare (X)— Delivers accessible digital books that utilize text-to-speech technology. The Bookshare library is quite extensive and offers students a wide range of books, from novels to K-12 learning material, for no charge. Students can access the Bookshare library by using the Web Reader, which runs in the Chrome browser. Once students log in and find the book they want to read, they simply click on the Read Now link and the reading tools will be displayed in the browser. Students can customize the reading experience by clicking on the Gear icon. Some students have reported an issue with the Web Reader reading text with a French or German accent. This can be corrected by following the directions at this link: ow.ly/DBpz5. Once the high quality Female TTS speech voice has been installed, the reading experience will be more enjoyable.

Read&Write for Google (X)— This powerful tool provides an array of supports in the areas of reading and writing. Available in a free and premium paid version, users have access to:

Read&Write for Google Toolbar

- High quality text-to-speech support with dual highlighting to increase comprehension. Sentences are highlighted in one color and the spoken word is highlighted in a different color.
- Web-based fact finder.
- Four different colored highlighter tools, plus the ability to collect highlights in a new document.
- Two dictionaries for support to assist with word recognition and comprehension (word and picture dictionary).
- Text-to-speech support, with dual highlighting, for PDF, ePUB and KESI (Kurzweil 3000) documents.
- Premium writing supports include word prediction (for word completion and spelling support) and speech-to-text dictation.

Speak it (X)— Provides quality text-to-speech support for any reading material within the Chrome browser.

Readability (X)— With the click of a button, convert any web page to a distraction-free reading experience. All additional content on the web page (videos, audio, pictures, and banners) are removed and the user is left with basic text. Features include: ability to change font size, style, margins, and "send to" feature, which will generate custom URL link or ePub book file.

Snap and Read Universal (X)— High quality text-to-speech support available in any web browser tab with the click of a button. Also provides reading support for locked pages, such as digital editions of textbooks.

TLDR (X)— Shorthand for "Too Long Didn't Read," this tool automatically summarizes any web page to any length necessary to engage the reader (short, medium, or long).

Snapverter (A)— This app works in conjunction with Read& Write for Google. Users can take a picture of a document with a smartphone, upload the picture to Google Drive, then have the text converted via OCR (Optical Character Recognition). Once converted, ReadWrite for Google reads the text aloud with dual color highlighting support for comprehension. Annotation supports provide the ability to mark the document and type directly onto the electronic document.

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Writing Across the Curriculum

Co:Writer Universal (X)— For struggling writers, word prediction support to assist with word completion, word usage and spelling. Text-to-speech support is provided throughout the writing process.

Connected Minds (A)— Create mind maps to assist with development of writing ideas.

Mind Map (A)— Create mind maps that feature rich content elements such as images, rich text and embedded videos.

Dictanote (A)— Speech-to-text tool allows the user to dictate directly into a word processing tab.

Note Taking

Evernote (A)— This cloud-based note-taking/organization tool provides binders for each subject and the ability to access notes from any Internet connected device.

Mic Note (A)— Note-taking support that combines two modalities: audio and text. The power of this tool comes from the fact that the audio is synced to the text as the user types. The user can then listen to any portion of the recording simply by clicking the corresponding text.

OneNote (A)— Students can access this cloud-based note-taking tool that syncs across all devices. OneNote is feature-rich and the OneNote Clipper (X) makes it easy for students to capture information quickly from the Chrome browser.

Awesome Screenshot (X & A)— Take a screen shot of anything in the browser then annotate the picture (add marks and type directly on picture). Save the picture to Google Drive, local computer, or print.

MindMeister (A)— This mind-mapping tool promotes note-taking skills. Students can create quick notes then connect them to enhance meaning.

Supports for Executive Function

OneTab (X)— Use this extension to simplify the screen display by compiling all open tabs into one single tab. (*Note: Reduces computer memory use by up to 95%.)

LiveBinders (A)— This web-based electronic binder provides an organization system for students. Make a binder for each class, store web pages, documents and more. Students can then access their information from any web-enabled device.

TechSmith Snagit (X)— Use the Snagit extension to quickly capture and annotate screenshots from your Chromebook. This is a very handy tool for visually highlighting and annotating information from the web.

Wunderlist (X)— Wunderlist is an ideal tool for creating lists and tracking tasks that need to be accomplished. Wunderlist will send alerts and reminders before tasks are due, and much more.

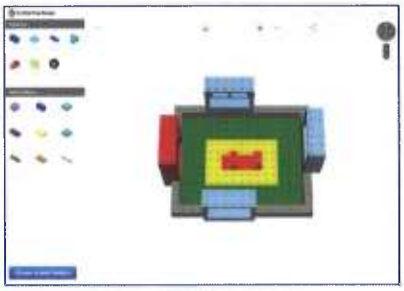
STEM (Science, Technology, Engineering, Math)

WeVideo (A)— Feature-rich video editing tool that allows splitting and merging video clips, and the ability to add captions.

Twisted Wave (A)— Powerful browser-based audio editing tool; includes the ability to apply effects.

SOLE 64 (A)— Helps users learn the basics of computer programming.

Lego Builder (A)— Manipulate all shapes and sizes of Lego bricks while creating a three dimensional project.



Lego Builder App

3D Design Something (A)— Create three-dimensional models of items. This app enables users to save projects as STL files to send to 3D printers.

TinkerCad (A)— A full-featured design tool that runs right within the browser. TinkerCad enables students to intuitively design unique projects. Pair this with MakerBot 3D printer and you have a winning combination.

Auto CAD 360 (A)— Enables students to sketch and draw directly in the browser.

Graphical Analysis for Chrome (A)— Students can use this application on their Chromebooks to connect the Vernier Go!Temp & Go!Motion sensors directly to the USB port. Use the Vernier Go!Link USB interface to your Chromebook and collect data from compatible Vernier sensors.

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