# Chromebook Accessibility: The Missing User Guide

By Bridges Canada

BRIDGES CANADA

Accessing learning & communication, together

Version 1.1, Last update 11/15/2016

www.bridges-canada.com,
1-800-353-1107,
info@bridges-canada.com

© 2015 Google Inc. All rights reserved. Google and the Google Logo are registered trademarks of Google Inc.
© 2015 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

# Contents


# What is a Chromebook?
# The Assistive Tech Perspective

The Chromebook is a PC – like a Windows laptop, a Macbook or Linux computer.

As a PC, a Chromebook is also designed for multi-tasking, where one program can work with or on top of another program.

For assistive technology, this is important. Because whether it's to address a visual impairment, a physical challenge that makes a mouse/keyboard unusable, or a reading or writing disability, a lot of alternative access solutions are based on a specialized access piece of software interacting with commonly used software. Some quick examples include:

| *Challenge* | *Common software task* | *Specialized Assistive Software* |
|---|---|---|
| An individual can't read with their eyes | Internet browser | Screen reader |
| No fine motor ability to use mouse, keyboard or touch | Movie or music player | Programmable on-screen keyboard that interacts with a switch, eye gaze or other alternative in-puts |
| Spelling and other decoding issues make writing laborious and difficult for others to understand | Word processor or email client | Word prediction software |

## USB Ports

Chromebooks also have USB ports.

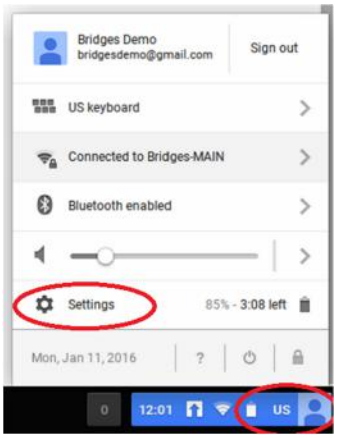
That means that you can connect alternative access tools via not just Bluetooth, but via USB ports too. So in theory, Chromebooks should have lots of accessibility options.

In practice, while there are lots of things you can connect to a Chromebook (pretty much anything with a USB or a Bluetooth connectivity), there isn't a lot of software to help you run it. So as you consider alternative access for your Chromebook user, a good rule of thumb is, if your preferred access option needs drivers or another layer of software for it to work effectively, it's not going to work well on the Chromebook.

## Being up-to-date

Google's practice is not to make a big splash on updates to their software, including the Operating System. Consider that, while Microsoft's Internet Explorer web browser went through 11 versions between 1995 and 2011, Google's Chrome web browser, released in 2008, is, at the time of writing, in version 54.

Google has been known to add features and updates to the Chromebook Operating System, including new accessibility features, piecemeal and with little fanfare. For most users, these updates happen seamlessly in the background sent through the Internet and are installed whenever a user restarts their Chromebook.

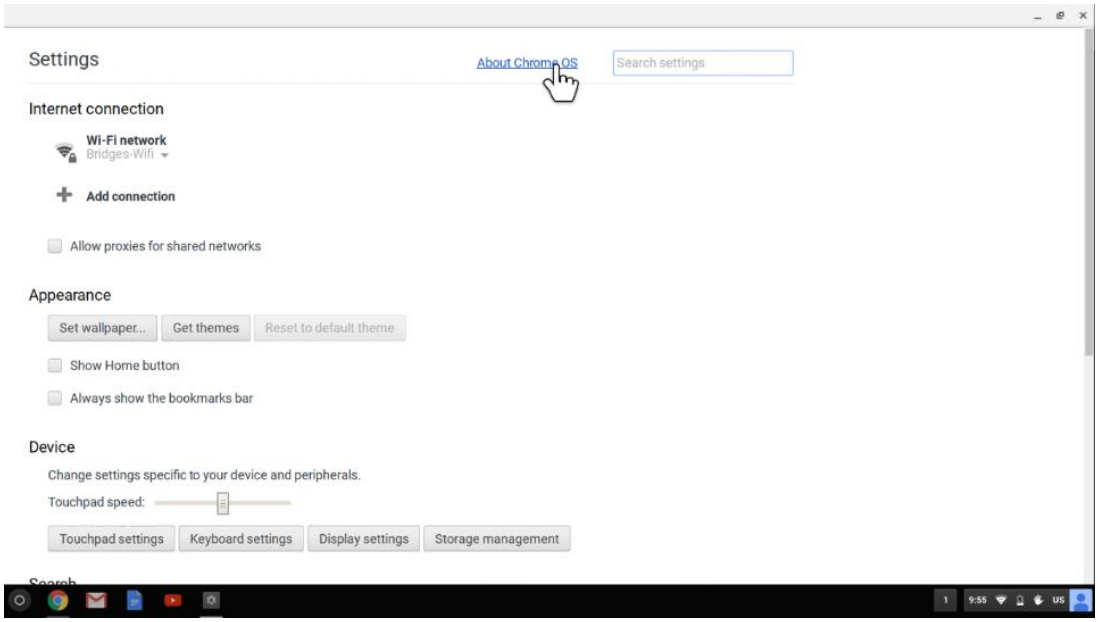



However, you can force the Chromebook to check for updates:

Click on the person symbol at the far right of the bottom task bar.

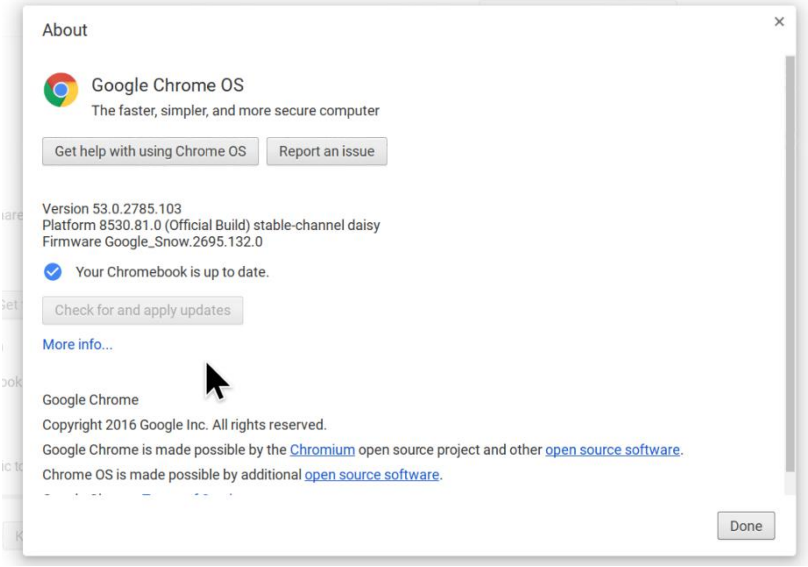
Click on **Settings.**

In the **Settings** screen, select **About Chrome OS.**




In the **About** screen, you'll see a status statement on whether the Chromebook is up to date.

But there is a button there also to force an update if it isn't up to date.

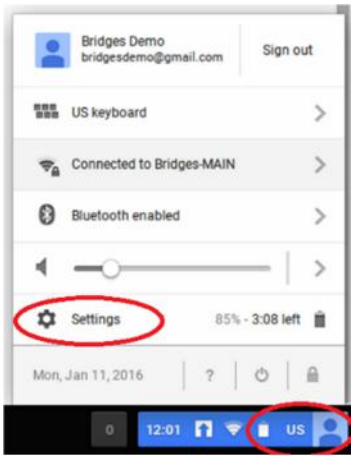



This guide summarizes the features that were available at the time of writing. Changes and additions may have happened since.

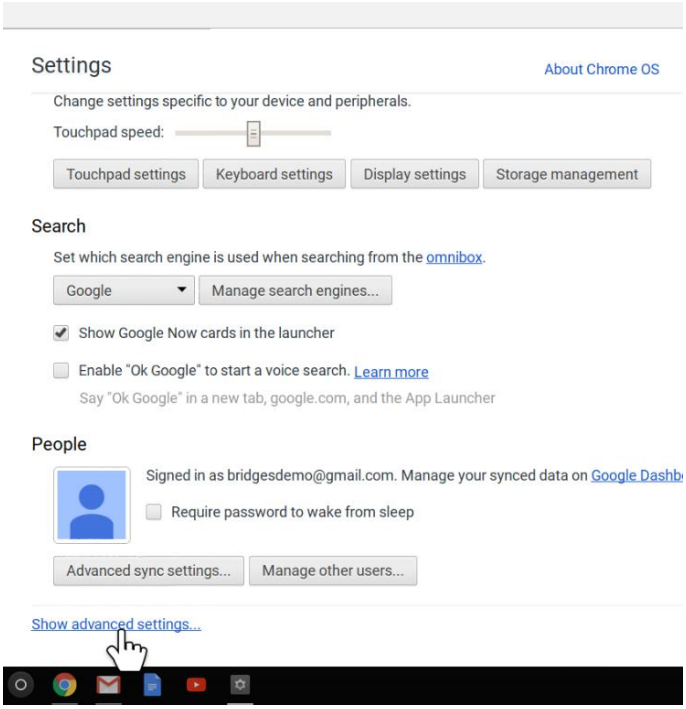
Feel free to notify me, Bogdan Pospielovsky – bogdan@bridges-canada.com – of any changes you'd like to suggest. I'll try to update it as quickly as I can.

# To Begin:

Click on the person symbol at the far right of the bottom task bar.



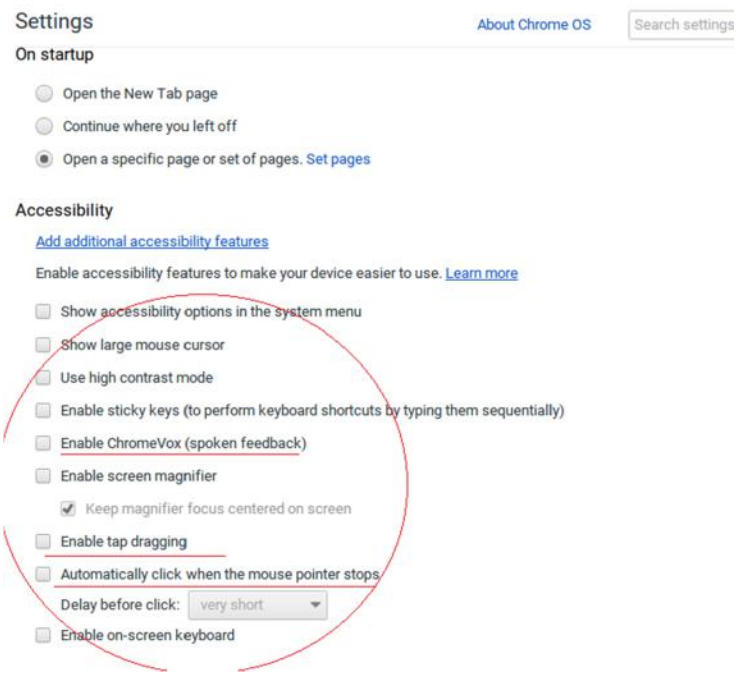

Click on **Settings > Advanced Settings > Accessibility**



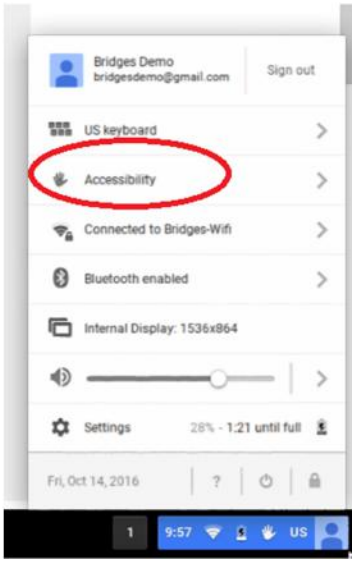
The first option under **Accessibility** is **Show accessibility settings in the system menu**. Selecting this option creates a way to get to these options, quickly and easily.

Select this option for a machine that is used for assistive tech support or assessments.

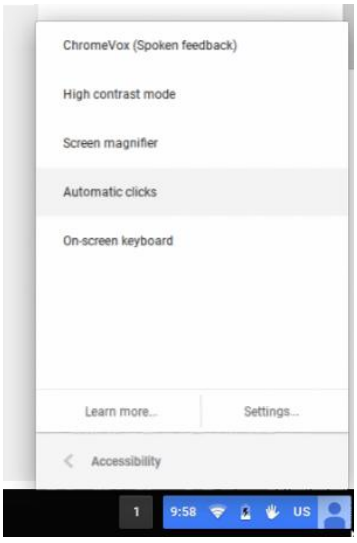
But if you are worried about inadvertently changing carefully selected settings for an individual, then do not select this option.




**2**




**3**



# Alternative Pointing Devices

Via the USB ports or Bluetooth connection (see below for information on how to connect your Bluetooth device), you have a broad range of alternative pointing tools you can connect to a Chromebook including:

- Trackballs
- Joysticks
- Keyboards
- Mice

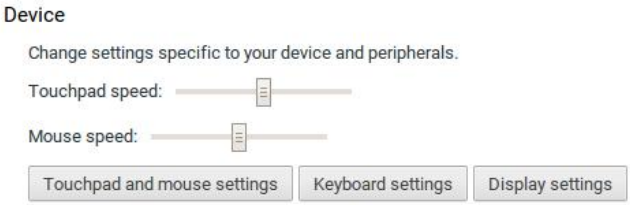
Any plug 'n play USB pointing device, as long as it does not require specialized drivers, should work on the Chromebook.

Some things to keep in mind:

- Some **head pointers** might work, as not all require drivers:
    - Eg. the TrackerPro from Ablenet will not work, since it requires drivers to run
    - E.g. the gyroscopic mouse from **Quha Zono** will work, it requires no drivers.
- No current eye gaze systems will work on a Chromebook

## Pointing Device Settings

In advanced settings find:




- **Touchpad Speed**
- **Mouse speed**

  and

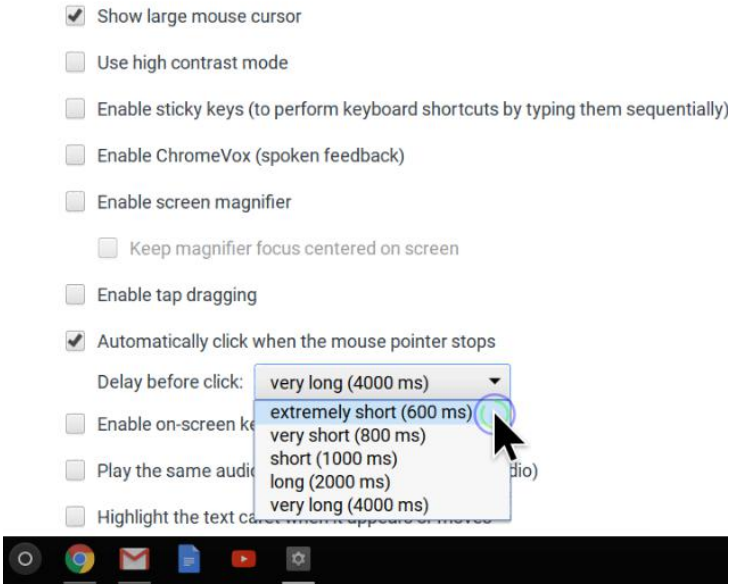
- **Automatically click when the mouse pointer stops**, which is essentially a dwell function

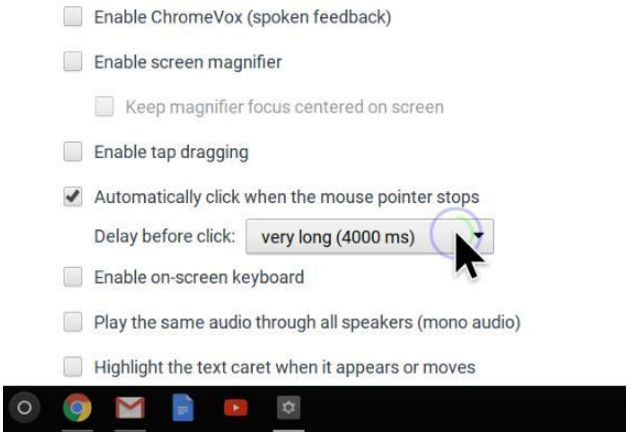
For this "**dwell**", there are five response speed settings to choose from.

At either end of the range, "Extremely short," is about a 10th of a second, whereas "very long" is just over a second.

When the dwell is on, a round graphic appears around the pointer, shrinking as the time elapses before the click.

In the image below, the large pointer is shown.

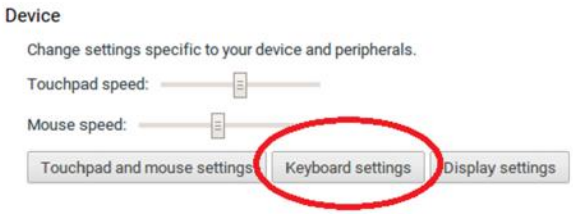


## Keyboard and Language Settings

Click on Keyboard settings for a variety of adjustments for users who will primarily use a keyboard for navigation, such as users with visual impairments or motor issues that make mouse targeting difficult:

**Enable Auto-repeat** for users who may have fine motor issues and my keep a key depressed, this setting can be adjusted or turned off.

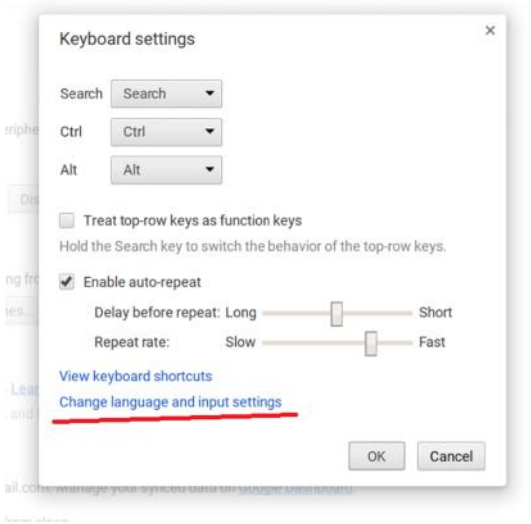



**Search** will let you create a short-cut key combination to launch the search engine.

**Treat top-row keys as function keys:** Chromebooks usually don't have a function keys (F1, F2 etc.). If you use or have assigned function keys in an app or extension, this is a way to mimic function keys, using the Chromebook's **Search** key.

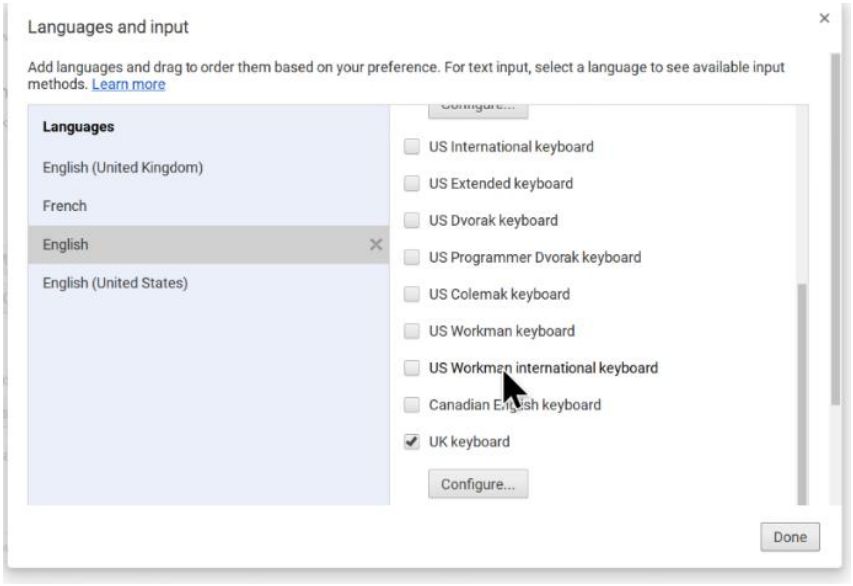
An external keyboard with function keys, of course, is also an option.

There is also the option here to **view keyboard shortcuts.** These keyboard shortcuts are provided in the Appendix, at the end of this guide.



Clicking on language and input settings will allow you to change to a Dvorak or keyboard in another language, including **French.**

**Configure** offers more settings that could be useful for individuals with fine motor issues.



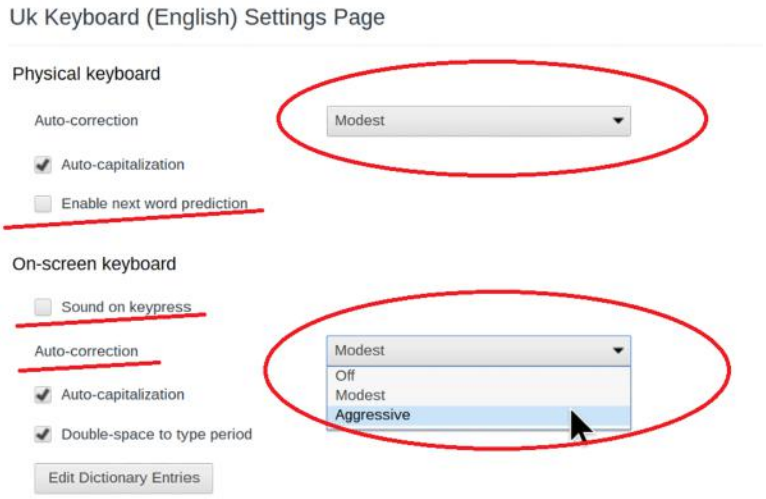

NOTE: selecting **English** offers up many more options than **English (United Kingdom)**, which a Canadian Chromebook may have as its default setting. This is also where **Canadian English keyboard** setting can be found.

**Auto-correction & Word Prediction:** If you have experience with using built-in/free rate-reduction tools in Windows OS or on your phone, you know not to expect too much from this setting.

There is a degree of assistance that both auto-correct and word prediction will offer. But consider them a convenience for those who want to reduce their keystrokes, rather than an aid for spelling and writing production for someone with a writing disability (dysgraphia).

Other options:

- Sound on keypress
- Auto-capitalization
- Double space to type period – adds two space-bar inputs after period and other terminal punctuation.
- Adjusting the amount of support/suggestions from **Modest** to **Aggressive**.



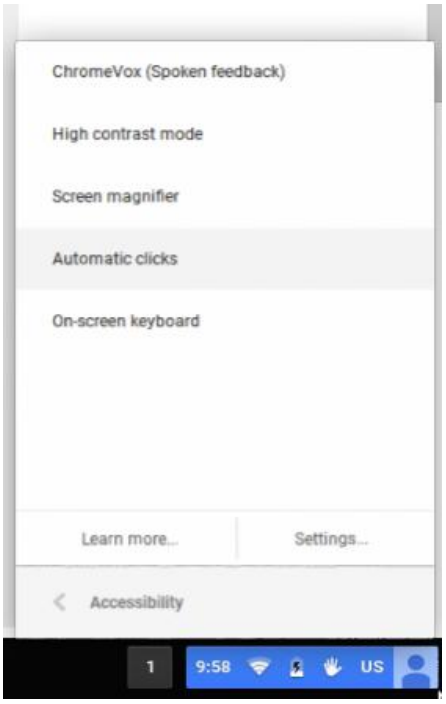

Note that you can have different settings for a physical keyboard versus the on-screen keyboard.

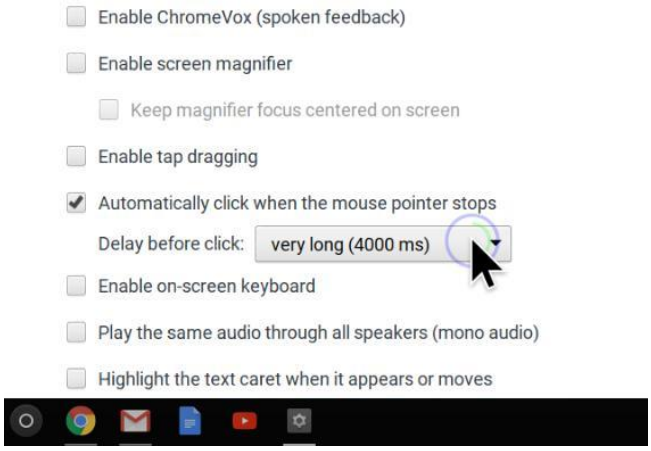
## Touch Access and Interactive Whiteboards

Many Chromebook models with touch screens are available. In addition, you could project out or connect to an interactive whiteboard.

**Enable tap-dragging** is the same as a click-lock, for moving objects with a tap and drag of your finger on a touch screen.

To use the included on-screen keyboard with a touchscreen, see the On-Screen Keyboard section on page 13.



# Chromebook Switch Access

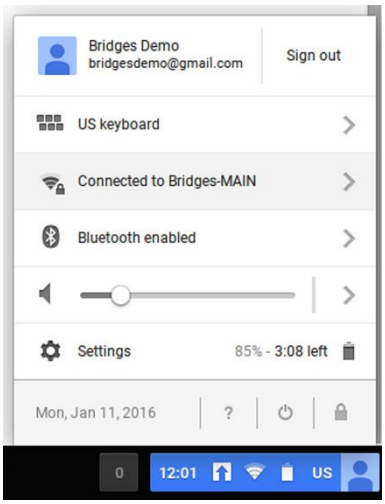
With a Chromebook, you can connect via Buetooth or USB. But if a USB switch interface requires software/drivers, chances are it won't work on a Chromebook. There just aren't any software drivers for switch access written for the Chromebook that we know of. Popular switch interfaces that aren't compatible with the Chromebook at this time include, Crick Switch Interface Box, Joy Cable, Joy Box and Intelliswitch.

## Method 1 — Bluetooth

A Bluetooth connected device, such as the Blue2 from Ablenet, uses the switches built into the Blue2, or you can connect up to two switches of your choice.

Pair the Bluetooth switch interface with your Chromebook:

- enable the Bluetooth function in the settings on the Chromebook
- activate the pairing button on the Blue2
- set switch modes, following the instructions that come with the Blue2 in the manual, or printed on bottom of the Blue2.



## Method – 2 USB Interface

To use a USB wired switch interface (SI), the SI must not require drivers to work.

Switch Interfaces that ***will* work** include a **DJ Switch Interface Pro** or a **Ablenet Hitch 2**.


The DJ **Switch Interface Pro** and the Ablenet **Hitch 2** are both USB connected switch interfaces that let you change settings to emulate mouse/keyboard strokes on the device itself -- no software or drivers necessary.

Not needing drivers are key to working with a Chromebook.

Websites, Chrome apps and extensions need to respond to the mouse/keyboard inputs that are available in the switch interfaces to control them.

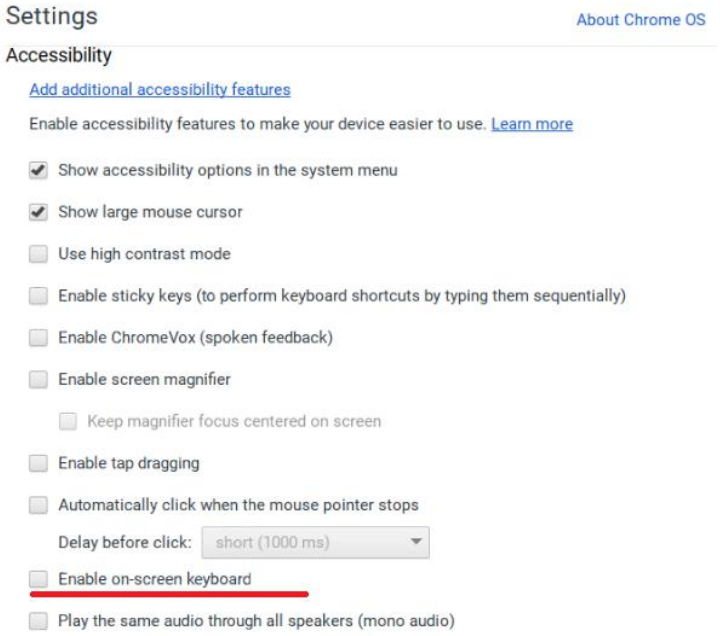
Switch Interfaces that ***won't* work** on a Chromebook include a Crick USB Switch Box, JoyCable and JoyBox from SmartBox and an IntelliSwitch.

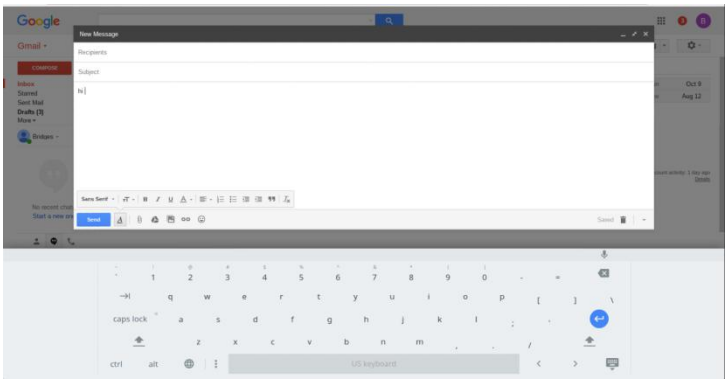
These are all excellent switch interfaces with customizable settings that are boon to switch users. But they rely on software and drivers for those features and these are not available for the Chromebook operating system.

# On-screen Keyboard and Voice Recognition

In settings, you can turn on an **on-screen keyboard**. You can customize the keyboard with emoticons, but that is all. At the time of writing, there were not many on-screen keyboards available for Chrome OS on the app store.

The ones that were available delivered little in additional accessibility functionality.



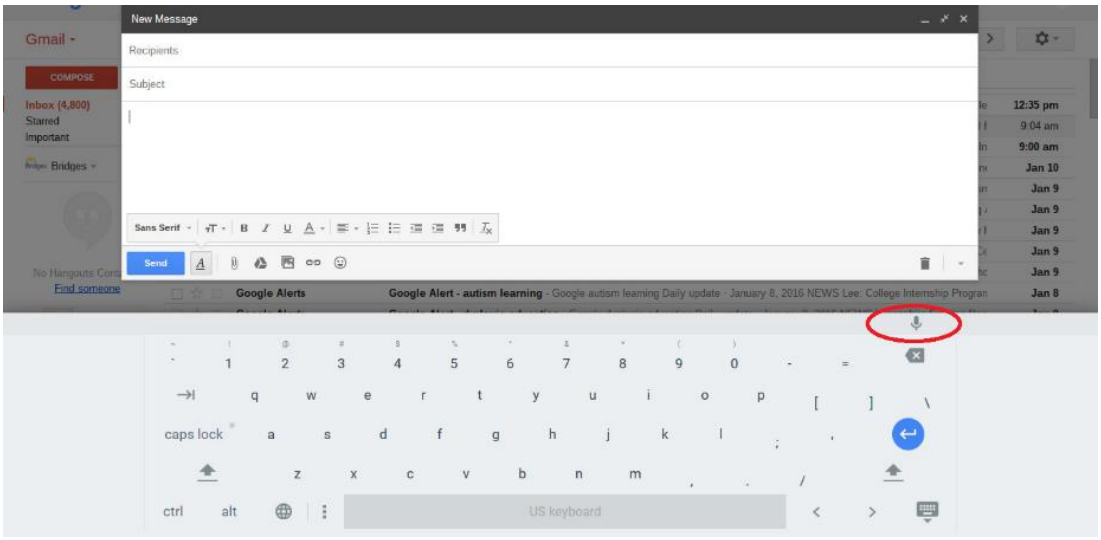



Most Chrome OS functions can be controlled by short-cut key combinations (see the Appendix). But there isn't an easy way to put those together under a single key input as an accessibility solution, i.e. a programmable on-screen keyboard.

## Voice Recognition

Activate **On-Screen Keyboard** in accessibility settings.

**Voice recognition** is switched on via the button on the on-screen keyboard. This is for dictating text only, and does not give full command and control of the Chromebook.

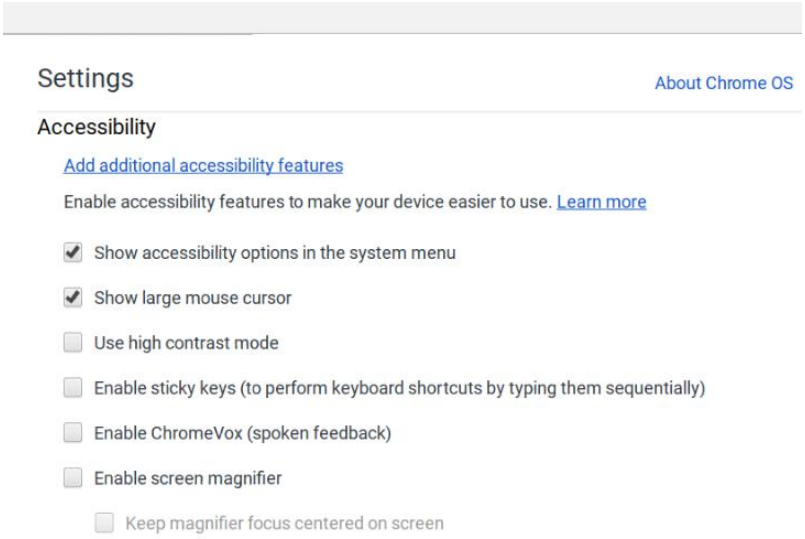



The **voice recognition** in the Chromebook is surprisingly accurate, considering there is no training process involved. However, all the usual factors that can degrade the accuracy of voice recognition– noise in the environment, unclear annunciation, stammers, accents, pronunciation and other speech qualities etc. – come into play on a Chromebook.

Because the speech recognition is web-server driven there can be a delay of several seconds after an utterance and before the text appears. Also, because the recognition process seems to be very contextually driven, speaking in complete sentences, rather than phrases or individual words, improves accuracy.

# SUPPORTS FOR VISUAL IMPAIREMENT

In **Settings > Advanced Settings > Accessibility** you can also adjust supports for enhanced visibility.




Current options include:

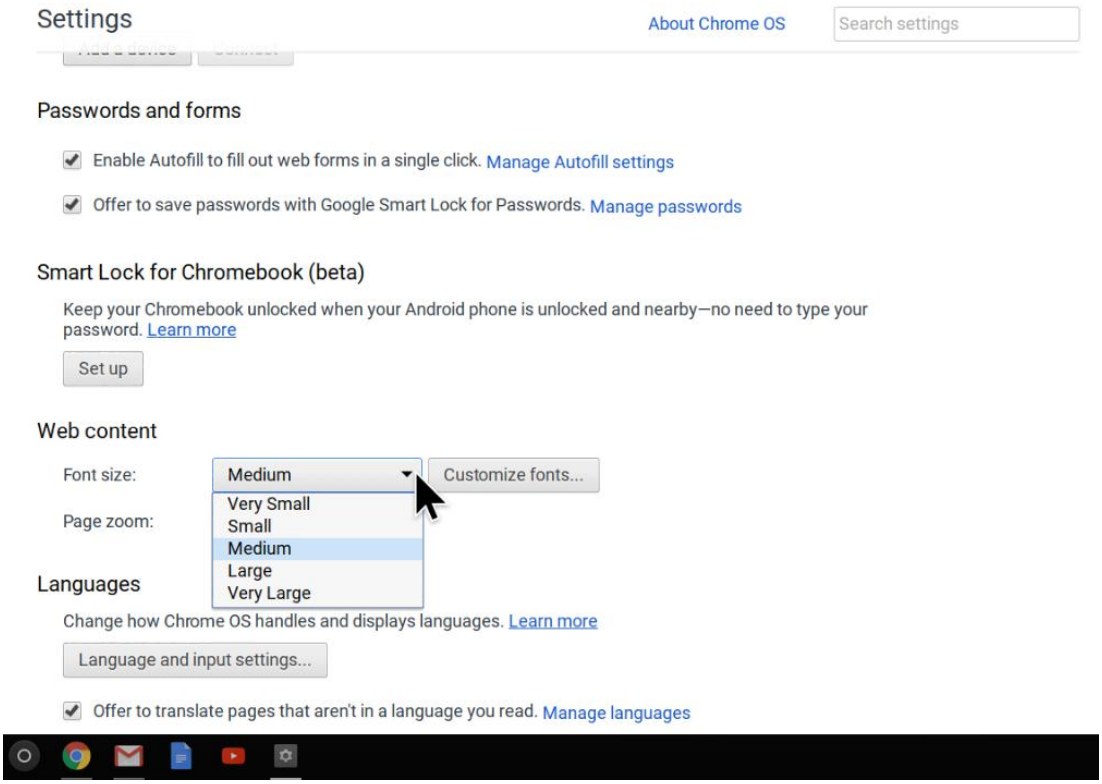
- High contrast mode
- Screen magnifier (not pictured)
- Large mouse cursor setting.


To enhance the visual appearance of your apps and extensions, go to **Settings > Web content.**

As much of the functionality of the Chromebook is through websites and extensions that run in the Chrome web browser, making the setting change here is a way to change the visual representation across your applications.

Adjust **Page zoom** settings to set the size of all content on the page including graphics.

Or adjust the **Font size** and customize fonts for any text on web pages for easier reading.



## Braille displays

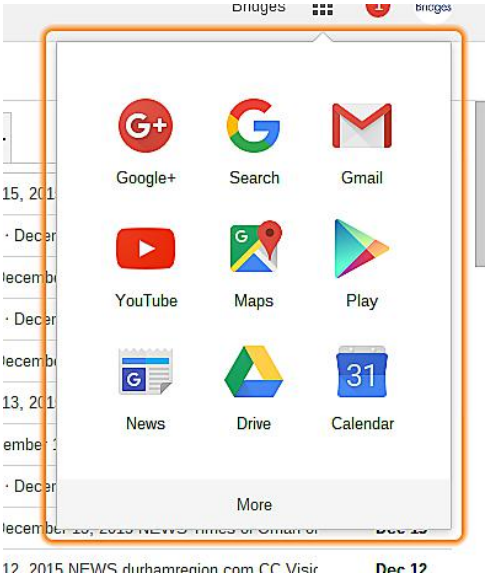
Most brands of **refreshable Braille** displays can connect directly to the Chromebook. As with keyboards, headmice and other alternate access devices discussed earlier, if the Braille display does not require special drivers, it will work immediately via USB connectivity.

## Screen Reader -- Chrome Vox

Chrome Vox is a screen reading tool built-in to the Chromebook. It can also be downloaded as an extension to run in the Chrome web-browser on a Windows or Mac PC.

To activate Chrome Vox:

- **Using a Chromebook keyboard:** hold down the Shift and Search keys
- **Using a Windows styled external keyboard plugged into a Chromebook:** hold down the Windows key




Press the arrow keys to highlight the area you'd like read to you.

For Mac or Windows machines running the Chrome Web browser, there are other key combinations – see below.

An orange highlighted box identifies what the area of focus is. The voice will say

"Dialogue box," "dropdown," and other descriptions to orient the user on the screen and communicate the current position of the cursor.

# Appendix
# Chromebook Keyboard Shortcuts

## Tabs and windows

| | |
|---|---|
| Open a new window | **Ctrl** + **N** |
| Open a new window in incognito mode | **Ctrl** + **Shift** + **N** |
| Open a new tab | **Ctrl** + **T** |
| Open a file in the browser | **Ctrl** + **O** |
| Sign out of your Google Account on Chrome OS | **Ctrl** + **Shift** + **Q** (twice) |
| Close the current tab | **Ctrl** + **W** |
| Close the current window | **Ctrl** + **Shift** + **W** |
| Reopen the last tab you've closed. Chrome remembers the last 10 tabs you've closed. | **Ctrl** + **Shift** + **T** |
| Go to the tab at the specified position in the window | **Ctrl** + **1** through **Ctrl** + **8** |
| Go to the last tab in the window | **Ctrl** + **9** |
| Activate items 1-8 on your shelf | **Alt** + **1** through **Alt** + **8** |
| Use F keys (F1 to F12) | **Search** + **1** through **Search** + **=** |
| Open the last item on your shelf | **Alt** + **9** |
| Go to the next tab in the window | **Ctrl** + **Tab** |
| Go to the previous tab in the window | **Ctrl** + **Shift** + **Tab** |
| Go to the previous window you had open | **Alt** + **Tab** |

| | |
|---|---|
| Go to the next window you have open | **Alt** + **Shift** + **Tab** |
| Go to previous page in your browsing history | **Alt** + left arrow |
| Go to the next page in your browsing history | **Alt** + right arrow |
| Open the link in a new tab in the background | Press **Ctrl** and click a link |
| Open the link in a new tab and switch to the new tab | Press **Ctrl** + **Shift** and click a link |
| Open the link in a new window | Press **Shift** and click a link |
| Open the link in the tab | Drag the link to the tab's address bar |
| Open the link in a new tab | Drag the link to a blank area on the tab strip |
| Open the webpage in a new tab | Type a web address (URL) in the address bar, then press **Alt** + **Enter** |
| Return the tab to its original position | While dragging the tab, press **Esc** |
| Dock a window on the left | **Alt** + **[** |
| Dock a window on the right | **Alt** + **]** |
| Lock your screen | **Search** + **L** |
| Open the status area | **Alt** + **Shift** + **S** |
| See your notifications | **Alt** + **Shift** + **N** |

## Page shortcuts

| | |
|---|---|
| Page up | **Alt** or **Search** and up arrow |
| Page down | **Alt** or **Search** and down arrow |
| Scroll down the web page | **Space bar** |
| Go to top of page | **Ctrl** + **Alt** and up arrow |

| | |
|---|---|
| Go to bottom of page | **Ctrl** + **Alt** and down arrow |
| Print your current page | **Ctrl** + **P** |
| Save your current page | **Ctrl** + **S** |
| Reload your current page | **Ctrl** + **R** |
| Reload your current page without using cached content | **Ctrl** + **Shift** + **R** |
| Zoom in on the page | **Ctrl** and **+** |
| Zoom out on the page | **Ctrl** and **-** |
| Reset zoom level | **Ctrl** + **0** |
| Stop the loading of your current page | **Esc** |
| Right-click a link | Press **Alt** and click a link |
| Open the link in a new tab in the background | Press **Ctrl** and click a link |
| Save your current webpage as a bookmark | **Ctrl** + **D** |
| Save all open pages in your current window as bookmarks in a new folder | **Ctrl** + **Shift** + **D** |
| Save the link as a bookmark | Drag a link to bookmarks bar |
| Open the find bar to search your current page | **Ctrl** + **F** |
| Go to the next match for your input in the find bar | **Ctrl** + **G** or **Enter** |
| Go to the previous match for your input in the find bar | **Ctrl** + **Shift** + **G** or **Shift** + **Enter** |
| Perform a search | **Ctrl** + **K** or **Ctrl** + **E**, then type a search term after the search prompt in the address bar and press **Enter**. |

| | |
|---|---|
| Add www. and .com to your input in the address bar and open the resulting web address | **Ctrl** + **Enter** |
| Take a screenshot of your current page | **Ctrl** +  <br><br>For non-Chrome OS keyboards:<br>**Ctrl** + **F5** |
| Take a partial screenshot | **Ctrl** + **Shift** +  , then click and drag.<br><br>For non-Chrome OS keyboards:<br>**Ctrl** + **Shift** + **F5** |
| View page source | **Ctrl** + **U** |
| Show or hide the Developer Tools panel | **Ctrl** + **Shift** + **I** |
| Show or hide the DOM Inspector | **Ctrl** + **Shift** + **J** |

## Browser settings

| | |
|---|---|
| Show or hide the bookmarks bar. If the bar is hidden, you can see your bookmarks in the Chrome menu. | **Ctrl** + **Shift** + **B** |
| Open the Files app | **Alt** + **Shift** + **M** |
| Display hidden files in the Files app | **Ctrl** + **.** |
| Open the History page | **Ctrl** + **H** |
| Open the Downloads page | **Ctrl** + **J** |
| Open the Task Manager | **Search** + **Esc** |
| Open or hide the list of available keyboard shortcuts | **Ctrl** + **Alt** + **/** |
| Get help with your Chromebook | **Ctrl** + **?** |
| Configure monitor display | **Ctrl** +  |

| | |
|---|---|
| Open the status area in the bottom-right corner of the screen | **Shift** + **Alt** + **S** |
| Highlight the launcher button on your shelf | **Shift** + **Alt** + **L** |
| Highlight the next item on your shelf | **Shift** + **Alt** + **L**, then **Tab** or right arrow |
| Highlight the previous item on your shelf | **Shift** + **Alt** + **L**, then **Shift** + **Tab** or left arrow |
| Open the highlighted button on your shelf | **Shift** + **Alt** + **L**, then **Space** or**Enter** |
| Remove the highlight from a button on your shelf | **Shift** + **Alt** + **L**, then **Esc** |
| Switch focus to the next keyboard-accessible pane. Panes include:<br>• Status area containing the time, network icon, and battery icon<br>• Launcher<br>• Address bar<br>• Bookmarks bar (if visible)<br>• The main web content (including any infobars)<br>• Downloads bar (if visible) | **Ctrl** +  or **Ctrl** +  |
| Highlight the bookmarks bar (if shown) | **Alt** + **Shift** + **B** |
| Highlight the row with the address bar | **Shift** + **Alt** + **T** |
| Open the Chrome menu on the browser toolbar | **Alt** + **E** or **Alt** + **F** |
| Open right-click menus for highlighted items | **Shift** + **Search** + **Volume Up** |
| Turn ChromeVox (spoken feedback) on or off | **Ctrl** + **Alt** + **Z** |
| Change screen resolution | **Ctrl** + **Shift** and **+** or **-** |
| Reset screen resolution to default | **Ctrl** + **Shift** and 0 |
| Rotate screen 90 degrees | **Ctrl** + **Shift** and **Reload** |

## Text editing

| | |
|---|---|
| Turn Caps Lock on or off | **Alt** + **Search** |
| Select everything on the page | **Ctrl** + **A** |
| Select the content in the address bar | **Ctrl** + **L** or **Alt** + **D** |
| Select the next word or letter | **Ctrl** + **Shift** and right arrow |
| Select text to the end of the line | **Shift** + **Search** and right arrow |
| Select text to the beginning of the line | **Shift** + **Search** and left arrow |
| Select previous word or letter | **Ctrl** + **Shift** and left arrow |
| Move to the end of the next word | **Ctrl** and right arrow |
| Move to the start of the previous word | **Ctrl** and left arrow |
| Page up | **Alt** or **Search** and up arrow |
| Page down | **Alt** or **Search** and down arrow |
| Go to top of page | **Ctrl** + **Alt** and up arrow |
| Go to bottom of page | **Ctrl** + **Alt** and down arrow |
| Go to end of document | **Ctrl** + **Search** and right arrow |
| Go to beginning of document | **Ctrl** + **Search** and left arrow |
| Copy selected content to the clipboard | **Ctrl** + **C** |
| Paste content from the clipboard | **Ctrl** + **V** |
| Paste content from the clipboard as plain text | **Ctrl** + **Shift** + **V** |
| Cut | **Ctrl** + **X** |
| Delete the previous word | **Ctrl** + **Backspace** |

| | |
|---|---|
| Delete the next letter (forward delete) | **Alt** + **Backspace** |
| Undo your last action | **Ctrl** + **Z** |
| Redo your last action | **Ctrl** + **Shift** + **Z** |
| Switch between the keyboard languages you've set | **Ctrl** + **Shift** + **Space** |
| Switch to the previous keyboard language you were using | **Ctrl** + **Space** |
| Dim keyboard (for backlit keyboards only) | **Alt** +  |
| Make keyboard brighter (for backlit keyboards only) | **Alt** +  |