# APH Chameleon 20 Braille Display & Notetaker

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**Trademarks:** *The APH Chameleon 20 Braille Display is developed and produced by HumanWare/APH***.** *The APH Chameleon 20 Braille Display is sold and supported by the American Printing House for the Blind. 1839 Frankfort Ave, Louisville, KY 40206*

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**Current Firmware Version: 2.x**

# Class Objectives

1. \_\_\_\_ Able to list all of the Menus in the APH Chameleon 20 Braille Display.
2. \_\_\_\_ Able to set the unit to default and erase all data in the unit.
3. \_\_\_\_ Able to connect the APH Chameleon 20 to a Chromebook and use ChromeVox.
4. \_\_\_\_ Able to connect the APH Chameleon 20 to a Windows computer and use JAWS.
5. \_\_\_\_ Able to connect the APH Chameleon 20 to an iPad and use VoiceOver.
6. \_\_\_\_ Able to use the Text Editor in the APH Chameleon 20.
7. \_\_\_\_ Able to move files back and forth from a Windows PC or Chromebook to the APH Chameleon 20.
8. \_\_\_\_ Able to use the Library in the APH Chameleon 20.
9. \_\_\_\_ Able to use the File Manager in the APH Chameleon 20.
10. \_\_\_\_ Able to use the Calculator in the APH Chameleon 20.
11. \_\_\_\_ Able to set the Date and Time in the APH Chameleon 20.
12. \_\_\_\_ Able to configure the Settings as needed in the APH Chameleon 20.
13. \_\_\_\_ Able to use the On-Line services.
14. \_\_\_\_ Able to toggle the Braille grade, select Grade 2.
15. \_\_\_\_ Able to copy/move files with Windows Explorer using keystrokes only.
16. \_\_\_\_ Able to copy/move files with Google Files using keystrokes only.
17. \_\_\_\_ Able to check the battery level.
18. \_\_\_\_ Able to change languages.

# APH Chameleon 20 Menu Options

*This training manual is designed to be used in conjunction with the APH Chameleon 20 training manuals from the American Printing House for the Blind. Information on the APH Chameleon 20 can be obtained here:* [*https://www.aph.org/product/chameleon-20/*](https://www.aph.org/product/chameleon-20/)

The APH Chameleon 20 has a Braille keyboard and a 20-cell display.

The **Routing Keys** are the preferred option to confirm. The **Enter** key can also be used to choose an item from a menu or to confirm. **Enter** is dot 8.

First letter navigation is available throughout the device.

### Thumb Keys

The action of the Thumb keys depends on the current activity. The Braille display has touch cursors, which will route the cursor. The Thumb keys from left to right are:

**Previous:** Will exit the current Menu and move the display up a line in the Editor

**Left:** Moves back through Menus and will read backward in the Editor

**Home:** Return to the Main Menu or exit Terminal Mode

**Right:** Advances through Menus and will read forward in the Editor

**Next:** Will select the current Menu item and move the display down a line in the Editor

APH Chameleon 20 Menu Options. When one of the following options is selected the user is usually presented with another Menu. Pressing the Home button when the user is in the Terminal mode will return to the Editor. Terminal can be set as default in Settings. This device has a one-handed mode.

**Editor (E)**

**Braille Editor (B)**

**Terminal (T)**

**Library (L)**

**File Manager (F)**

**Calculator (C)**

**Date and Time (D)**

**Settings (S)**

**Online Services (O)**

**User Guide (U)**

**Power Off (P)**

# Setting the APH Chameleon to Factory Default & Other Options

1. Shut down the APH Chameleon 20 Braille Display.
2. Start the APH Chameleon 20 Braille Display by pressing and holding the Volume Up button and while doing that press the Power Button.
3. The APH Chameleon 20 will say “recovery,” start, and then shutdown.
4. Hold the power button again to turn it back on.
5. The standard Menus will now display, but in addition Diagnostics will now be in the Menu, appearing at the bottom of the Menu Structure.
6. This menu has numerous options; set the unit to factory default, check the status of the unit, wipe all data in unit, etc.
7. All the data in the unit should always be erased before giving the unit to another student.

## APH Chameleon 20 Firmware Updates

Always have the most recent firmware in the APH Chameleon 20 Braille Display. If it is possible to connect the APH Chameleon 20 to Wi-Fi the unit will always stay current. Current firmware is 2.x.

The APH Chameleon 20 requires a 2.4 GHz Wi-Fi connection. If it is not possible to update the unit through Wi-Fi, for example a school district does not support this connection speed or does not support wi-fi for this unit, APH provides information here on how to update the unit manually: <https://www.aph.org/release-notes/>

## Home Button

When in Terminal mode pressing the Home button will temporarily disconnect the APH Chameleon 20 Braille Display from the Chromebook, Windows PC, or iPad and return the user to the Editor.

The APH Chameleon 20 Braille display will become an external drive for the Chromebook or Windows PC if it is connected when the Editor is the current option. USB to USB-C cable, the USB-C is the small connector. This part always goes into the APH Chameleon 20.

## Frequently Used Keystrokes

Context Menu, useful everywhere: Space + M.

Toggle Braille Grade: Backspace + G (Space + Backspace + G when computer Braille code is active.)

Check Battery Level: Enter + P

Eject Media: Enter + E

Change Navigation Level When Reading Text: Space + T

Change Language: Enter+L (Content voice needs to be configured in Speech settings.)

# Using the APH Chameleon 20 Braille Display with the Chromebook/ChromeVox

1. Navigate to Terminal or press T.
2. Press a Routing Key or enter to select Terminal.
3. Navigate to USB connection and select it with a Routing Key.
4. The APH Chameleon 20 will say “Braille Display.” Use a USB-C to USB-A connector and plug the USB-A into the Chromebook. Bluetooth connection is not supported.
5. ChromeVox will start, have the latest Chrome OS and the latest firmware in your unit.

## Chromebook & APH Mantis Q40

The APH Mantis Q40 is the preferred Braille display for the Chromebook, not the Chameleon 20. At the current time QWERTY input works well with Chromebook. Or the Perkins keyboard could be disabled in Terminal and the unit would be just used as a Braille display. Braille input is working much better in Google Docs, speech is only available on demand with Braille input.

1. Go to Settings, then Device, then Keyboard
2. In Keyboard Settings change Caps Lock to Search.
3. The F1 – F10 keys are not labeled. I use a permanent marker and write above the Function Keys what the Chrome OS equivalents are. I also label the Caps Lock key as the Search key. It would be great if future versions of the APH Mantis Q40 had these keys labelled. Locator dots are also be useful on the Chromebook/Function keys.

## ChromeVox Braille Settings

1. Enter Search + O, then O
2. Navigate to Braille
3. Select English (UEB), Grade 2
4. Braille Captions: ChromeVox + A, B

## Home Button

Pressing the Home Button using a Chromebook, Windows PC or iPad will exit the Terminal mode and return the user to the Editor. Navigation Across All Devices, But Very Useful for Google Docs.

1. Space + Dots 1-2-3: Top of text Field
2. Space + Dots 4-5-6: Bottom of Text Field
3. Space + E: Escape or Move Back a Level

# Using the APH Chameleon 20 Braille Display with Windows/JAWS

1. Navigate to Terminal or press T.
2. If Bluetooth is not on, press and hold the Enter key for 5 seconds.
3. Press a Routing Key or enter to select Terminal
4. Navigate to USB connection and select it with a Routing Key.
5. The APH Chameleon 20 will say “Braille Display.”
6. Use a USB-C to USB-A connector and plug the USB-A into a Windows PC with JAWS installed.
7. Have the focus be on the JAWS application.
8. Enter Alt + O and select Basics.
9. Tab to “Use Keyboard Layout” and select Laptop with Alt + Down Arrow. Press Enter
10. Enter Alt + O and go the Braille.
11. Tab to “Add Braille Display”
12. Select the APH Chameleon 20 Braille display.
13. Tab to Next
14. The APH Chameleon 20 Braille display needs to appear in the list as the Primary Device.
15. Tab to Finish and Restart JAWS.

## JAWS Braille Settings

1. Enter Alt + O and go to Braille, then Advanced
2. You can also get here with Insert + F2, then go to Settings Center.
3. Go to Braille, then General.
4. For Output and Input select “Unified English Braille Grade 2.”
5. To learn how the APH Chameleon 20 Braille display works with JAWS, have the focus be on the JAWS application and go to Help.
6. Then go to JAWS Help Topics
7. Select JAWS and Refreshable Braille
8. Navigate to the content by pressing F6.
9. JAWS has no specific configurations for this device, only general settings.

# Using the APH Chameleon 20 with an iPad/VoiceOver

## iOS 15.x or later is required when connecting the APH Chameleon 20 to an iPad. Current iOS version is 16.x. The latest APH Chameleon 20 firmware is also required, currently 2.x. These instructions work best with VoiceOver running.

1. iOS 15.x or later is required. The unit will not stay connected with earlier versions.
2. Do the following only if you are having difficulty connecting your device.
3. Delete all Bluetooth devices connected on the iPad.
4. Go to Settings, then Bluetooth on the APH Chameleon 20 Braille Display. Note that this device is first paired in Bluetooth, not VoiceOver.
5. Delete all paired devices.
6. Shut down the APH Chameleon 20 Braille Display and the iPad. Restart.
7. Go to Terminal on the Chameleon.
8. Go to Bluetooth settings in Terminal. Select Add Bluetooth Device.
9. The device will say “Activate Your Device in Your Host Computer.”
10. Check in the iPad in Settings, then Bluetooth that the device has connected.
11. Go to Terminal, then Connected Devices on your Chameleon. Select the name of the iPad that you connected to.
12. Open this connection and navigate until it says Brl Display on the Braille Display. With VoiceOver running use Gestures to send initial data from the iPad to the APH Chameleon 20.

Known Problem: Accessibility, then Keyboards, Full Access Keyboard must be Off

## VoiceOver Braille Settings

1. Go to Accessibility, then VoiceOver
2. Go to Braille
3. Set Output and Input to Contracted Braille
4. Check APH Chameleon 20 is selected as a Braille Display, if not select it.

## Word Processing Apps

I would suggest using Pages, iA Writer or Voice Dream Writer with the APH Chameleon 20 Braille display. Word prediction, with a Braille display and speech, can be used with iA Writer.

# Editor

Device does not print, but can function as an external drive, connect to either a Windows computer or a Chromebook, use Windows Explorer or Google Files to transfer the files.

## Editor: Activity 1

1. Press the Home button, the first option is Editor, use Enter key or Routing key to select.
2. Navigate these options with the Next/Back thumb keys or the Spacebar or Backspace key:

Create File

Open File

Recently Saved

Editor Settings

Close

1. Editor settings:  
   Confirm Delete: On or Off  
   Show Text Editor Indicators: On or Off
2. Select Create and begin writing. Press Space + S, then <enter> to save the file. If you do not want to remain in this file press Space + E to exit this file.
3. Navigation: Press a routing key to move the cursor to a specific location  
   Use the Previous/Next keys to quickly scroll  
   Use the left/right thumb keys to pan the 20 Braille cells backward/forward  
   Space + Dot 1 to navigate back by sentence or Space + Dot 4 to navigate forward  
   Space + Dot 2 to navigate back by word or Space + 5 to navigate forward  
   Space + Dot 3 to navigate back by character or Space + Dot 6 to navigate forward  
   Space + Dots 1-2-3: Top of document  
   Space + Dots 4-5-6: Bottom of document
4. Word Processing Commands  
   Save: Space + S  
   Save As: Backspace + S  
   Cut: Backspace + X  
   Copy: Backspace + C  
   Paste: Backspace + V  
   Leave Edit Mode: Space + E  
   Create File: Backspace + N  
   Open File: Backspace + O  
   Delete Previous Character: Backspace (Dot 7)  
   Delete Previous Word: Backspace + Dot 2  
   Delete Current Word: Backspace + Dots 2-5

Select Create and start writing. Use the Backspace key to erase mistakes.

Dear Pat,

*I am glad to hear that you are finally coming to Washington. The first two days we are camping in the Columbia River Gorge. Then we can go skiing. Did you know that there is skiing on Mt. Hood in the summer? Is it true that you are now snowboarding rather than skiing? That is not like you. Thursday we will visit Cannon Beach. The last day we can spend shopping in Vancouver.*

Sincerely, Your Name

1. Add the following sentence to the letter. Insert this sentence just before “Thursday.”

**Wednesday we are going to Mt. St. Helens. We can hike close to the volcano.**

1. Make the following changes to the letter. Change **Vancouver to Portland** and change **Cannon Beach to Seaside**.
2. Save this file with a Space + S <enter> and name the file, then use Space + E to leave the Edit Mode and exit the file. In some cases, Space + E may need to be pressed several times to get back to Editor, depending upon where the student is in the device. Files can only be saved as text files, but the device is able to read docx and brf files.
3. Connect this file to a Chromebook, have the Editor menu active.
4. Open the Files app on the Chromebook. Navigate to the APH Chameleon 20 and copy the Pat file to the Google Drive in the Files app. Close the File app and open Google Drive.
5. Enter a ChromeVox+M when you are in Google Drive and the focus is on the Pat file. Select Open in Google Docs.
6. Another option is to select “Manage in Drive” and open this file. Tab to “Open With” when the file is open, and press “Enter” and down arrow to open this file with Google Docs. Or open this file with Microsoft Word.

## Additional Writing Activities

There are several sample writing activities at the end of this document. These documents can either be written in Google Docs or Microsoft Word and then transferred to the APH Chameleon 20 by either connecting it to a Windows PC or Chromebook or with a USB drive. If they are written in Google Docs, the files will need to be converted to Microsoft Word before they are transferred. Or these files can be written in the APH Chameleon 20 Editor.

# Google Docs/Windows Explorer

## Windows Explorer

* + - 1. Have the Editor selected on the APH Chameleon 20 Braille Display. The device can timeout during this activity, I would suggest increasing the sleep time in User Settings.
      2. Use Windows + E to open Windows Explorer. The files should be viewed either in Details or List View. If this is not the case enter Alt-V and change it.
      3. Tab from Tree View to List View.
      4. Stay in the List View. Use only the spacebar, enter key, backspace key and the up and down arrow keys.
      5. Select this PC and open it with right arrow
      6. Navigate to the APH Chameleon 20 and select it.”
      7. Navigate to the file that you wish to select. Enter Control + C.
      8. Use the Backspace key to navigate back to the location that the file will be pasted into: My Documents on the C drive for example.
      9. Enter Control + V to paste this file to the desired location.

## Google Files App

1. Have the Editor option active on the APH Chameleon 20, ChromeVox will start but the unit will still act as an external drive. The keyboard on the APH Chameleon 20 will not work.
2. Have the Google Files app pinned in the Launcher.
3. Navigate to the Google Files app with Alt + Shift + L.
4. Enter ChromeVox+Ctrl+Left Arrow to move to top of document.
5. Navigate to the APH Chameleon 20.
6. ChromeVox+Ctrl+Right Arrow or ChromeVox+C work well in the Google Files app for navigation. Move files from the APH Chameleon 20 to Google Drive.
7. Select “Manage in Drive” to open a file you have transferred from the APH Chameleon 20. Tab to “Open With” and press “Enter” and down arrow to open this file with Google Docs.

### Activity 2 Writing Activity for Microsoft Word, Google Docs, or iPad

American Revolutionary War

The American Revolutionary War took place from 1775 - 1783. George Washington was in command of all the American forces. The first major engagement of the American Revolutionary War was at Bunker Hill. On July 4, 1776, the Continental Congress voted to adapt the Declaration of Independence. The war effectively ended with the American and French victory at Yorktown in 1781.

### Activity 3: Writing Activity

Write the following information in either the APH Chameleon 20, Google Docs or Microsoft Word. Practice transferring this information back and forth between these devices. Save this file as **British Columbia.** Note that the APH Chameleon 20 saves files as text files, but it can read docx and brf files.

British Columbia

## The state of Washington lies to the south of British Columbia. The capital of British Columbia is Victoria. The largest city in British Columbia is Vancouver. British Columbia became a province in 1871.

### Activity 4: Writing Activity

Write this information in either the APH Chameleon 20, Google Docs or Microsoft Word. Practice transferring this information back and forth between these devices. Save this file as **Washington.**

*Washington*

*The Canadian province of British Columbia lies to the north of Washington. The state capital of Washington is Olympia. The largest city in Washington is Seattle. Washington became a state in 1889.*

### Activity 5: Internet Article

Copy information from the Internet into a Google Doc file or a Microsoft Word file. If it is a Google Doc file, then save this file as a Microsoft Word file before transferring. Transfer this information to the APH Chameleon 20 Braille Display.

# Library

The Library application supports file formats brf, pef, text, html, docx, and rtf. The DAISY format is supported. The folders that are installed with the factory default setting are Reading, Online-Books, and Books. Refer to the APH manual for extensive documentation on using the Library.

1. Book List
2. Recently Read
3. Search (Space+F: Search Library)
4. Close App

## Navigating Past Copyright Information

1. Change the Navigation Level to Sections: Space + T
2. Select Level 2, on some books with minimal navigation Level 1 will be a better choice.
3. Press the Next Thumb key two or three times and the student will be in the first chapter.

## Library Commands (Refer to APH manual for a complete list.)

Many of these commands are the same commands that are used in the Editor.

1. Start Audio: Space+G
2. Stop Speech: Enter+Backspace (Same command as in Editor)
3. Options: Enter+G
4. Next Element: Next thumb key
5. Previous Element: Previous thumb key
6. Next Element: Space+Dots 4-6
7. Previous Element: Space+Dots 1-3
8. Fast forward 5 seconds: Right thumb key (Press and hold for longer jumps)
9. Rewind 5 seconds: Left thumb key (Press and hold for longer jumps)
10. Increase rate: Space+Dot 5 (Same command as in Editor)
11. Decrease rate: Space+Dot 2 (Same command as in Editor)
12. Move back one level: Space+Dots 1-5

# File Manager

## Creating Folders

1. Space + N will create a new folder.
2. 1-2-3-4-5-6 (full cell) will be on the first Braille cell of all folder names.
3. Space + D: List of available drives.
4. Space + F: Search for a file or folder.
5. Space + E: Go to parent folder
6. Space + Dots 1-5-6: Where Am I

To Copy, Cut, or Paste a file it first needs to be Marked. Do this with a Backspace + L. Dots 7-8 will show across the entire Braille display when the file is Marked. Backspace + L again to Unmark the file. To Mark all the folders in the current directory, do a Enter + Dots 1-2-3-4-5-6, this might be useful for cleaning a device. Refer to the APH manual for a complete list of file commands.

## Deleting and Renaming Files

1. Backspace + Dots 2-3-5-6 key to delete the current file or folder.
2. Backspace + R to Rename a file.

## Moving Files

1. Backspace + C: Copy
2. Backspace + X: Cut
3. Backspace + V: Paste

## Activity 6

Create two folders: English and Science. Move several of the files that you have created into these folders and transfer them to either a Windows PC or a Chromebook.

Tip when transferring files to a Chromebook, the top of document and bottom of document ChromeVox commands are very useful: ChromeVox+Ctrl+Left Arrow and ChromeVox+Ctrl+Right Arrow. The ChromeVox+C command is useful for jumping quickly to the file locations.

The APH Chameleon 20 Braille Display should say Editor when plugging the unit into a Chromebook. ChromeVox will start and will say that the Braille display is connected, but it is not, and the APH Chameleon 20 keyboard is not working. The APH Chameleon 20 Braille Display is functioning as an external drive and will show in the Google Files app.

# Calculator/Date & Time

## Actions

1. Plus: + Dots 3-4-6
2. Minus: - Dots 3-6
3. Multiply: \* Dots 1-6
4. Divide: / Dots 3-4
5. Equals: = or Enter
6. Clear: Delete Space + Dots 3-5-6
7. Decimal Point: . Dots 4-6
8. Percent: % Dots 1-4-6
9. Square Root: Space + Dots 3-4-5
10. Pi: Space + Y

## Activity 7

## Navigate to the calculator, practice several of the functions. Clear is Space+Dots3-5-6. Enter numbers as dropped without the number sign. Enter Dot 8 to complete the calculation.

## Date and Time

Enter Space + M and navigate through the options. Use a Braille Routing key and select just past the current data, backspace to delete this information, but not the number sign and then enter the correct time/date.

## One-Handed Mode

The APH Chameleon 20 has a one-handed mode that can be turned on or off in Settings. For a letter press all the keys for that letter and then press spacebar. For a command press spacebar, the letters of that command, and then press spacebar.

# Settings/Online Services

## Settings

1. User Services
2. Language Profiles
3. Speech Settings
4. Wi-Fi
5. Bluetooth
6. Change Language
7. Activate Exam Mode
8. Software Update
9. About

## Configuring Language Profiles

Press a Routing Key, then navigate with the Thumb keys, then press a Routing Key to confirm. The Braille Grade can be changed with a Backspace+G, when in Computer Braille Code the Spacebar needs to be added to this sequence: Space+Backspace+G

1. Braille Grade
2. Computer Braille Table (Set to None if you do not want to cycle through Computer Braille with the keyboard shortcut.)
3. Uncontracted Braille Table
4. Contracted Braille Table
5. Content Voice: Sharona (Select Rosa for Spanish)

Should it be necessary to reset an iPad connection, navigate to Bluetooth settings and delete all paired settings. I would also suggest increasing length of time before timeout if you are using the APH Chameleon 20 as an external drive.

## Online Services

1. Bookshare
2. NFB Newsline

## Power Off

Press Enter, then the Next thumb key. OK will display, then press a Braille Router key.

# Configuring a Language Profile for Spanish

I have two profiles configured in the APH Chameleon 20 that I use. One profile is labeled English and the other is labeled Spanish. Enter+L will switch between these two Language Profiles.

Before configuring the Language Profile for Spanish go to Speech Settings, then Voice Selection, the last option in this menu. Select the System Voice of Sharona, then add an additional voice of Rosa. This will be the Content Voice in the Language Profile for Spanish.

## Language Profile for Spanish

Profile Name: Spanish

Braille Grade: Uncontracted

Computer Braille Table: Espanol Liblouis

Uncontracted Braille Table: Espanol Reducida Duxbury Grade 1

Contracted Braille Table: Espanol Duxbury Grade 2

Content Voice: Rosa

## Language Profile for English

Profile Name: English

Braille Grade: Contracted Braille

Computer Braille Table: English U.S. Liblouis

Uncontracted Braille Table: English Duxbury Grade 1

Contracted Braille Table: English Duxbury Grade 2

Content Voice: Sharona

# Embossing Instructions

Files can easily be easily transferred to a Windows computer from the APH Chameleon 20. The file can then be opened in Microsoft Word and embossed in Duxbury or Braille Blaster. I would suggest opening the text file in Microsoft Word and then converting it to the Microsoft Word docx format. Some TVI’s find it easier to open the text file, then Ctrl+A, Ctrl+C, then open Duxbury and Ctrl+V.

Index Basic D V5 embossers or later have the capability of embossing directly from Microsoft Word.

# Appendix A: Frequently Used Shortcut Keys

## General

1. Toggle Braille Grade: Backspace + G (Use Space + Backspace + G when in computer Braille code, if you do not see the “ed” contraction in Editor, you are not in grade 2.)
2. Context Menu: Space + M
3. System Information Space + I
4. Exit: Space + E
5. Change Language: Enter+L
6. Top of Document: Space + Dots 1-2-3
7. Bottom of Document: Space + Dots 4-5-6
8. Previous Line: Space + Dot 1
9. Previous Word: Space + Dot 2
10. Previous Character: Space + Dot 3
11. Previous Paragraph: Space + Dots 2-3
12. Next Line: Space + Dot 4
13. Next Word: Space + Dot 5
14. Next Character: Space + Dot 6
15. Next Paragraph: Space + Dots 5-6
16. Find: Space + F
17. Copy: Backspace + Y
18. Cut: Backspace + X
19. Paste: Backspace + V

## Editor

* 1. Edit Mode: Enter or cursor routing key
  2. Leave Edit Mode: Space + E
  3. Create File: Backspace + N
  4. Open File: Backspace + O
  5. Save: Space + S
  6. Save At: Backspace + S
  7. Delete Previous Character: Backspace (Dot 7)
  8. Delete Previous Word: Backspace + Dot 2
  9. Delete Current Word: Backspace + Dots 2-5
  10. Start/Stop Selection: Enter + S (Navigate to end of selection)
  11. Select All: Enter + A

## Library

1. Toggle Navigation Level: Space + T
2. Bookmark Menu: Enter + M
3. Jump to Bookmark: Enter + J
4. Previous Paragraph: Space + Dots 2-3
5. Next Paragraph: Space + Dots 5-6

## File Manager

1. Create New Folder: Space + N
2. Backspace + L: Mark File
3. Delete Current File or Folder: Backspace + Dots 2-3-5-6
4. Mark all Folders in Current Directory: Enter + Dots 1-2-3-4-5-6
5. Rename: Space + R
6. List of Available Drives: Space + D
7. Go to Parent Folder: Space + E
8. 1-2-3-4-5-6 (full cell) will be on the first Braille cell of all folder names
9. Space + Dots 1-5-6: Where Am I
10. Space + F: Search for a file or folder
11. Backspace + C: Copy
12. Backspace + X: Cut
13. Backspace + V: Paste

Speech Commands (Editor and Library)

1. Start reading: Space+G
2. Stop reading: Enter+Backspace
3. Increase rate: Enter+Dot 5
4. Decrease rate: Enter+Dot 2
5. Speech On or Off: Space+Previous Thumb Key

# Appendix B: Speech Commands/Settings

## Speech Settings (In Settings)

Press a routing key to cycle through the two available options, except for Keyboard Echo. With Keyboard Echo press a routing key, then use one of the thumb keys to cycle between off, words, characters, and characters and words. Press a routing key when it is on the option that you want.

1. Speech On
2. Speak Menu
3. Speak Word Under Cursor
4. Speak Display Content After Panning
5. Echo Delete
6. Keyboard Echo
7. Voice Selection: Select a System Voice of Sharona, if a Language Profile for Spanish will be configured select the additional voice of Rosa, Rosa will be used for the Content Voice in the Language Profile for Spanish.

## Speech Commands

1. Turn speech off/on: Space+Previous Thumb Key
2. Start reading: Space+G
3. Stop reading: Enter+Backspace
4. Increase rate: Enter+Dot 5
5. Decrease rate: Enter+Dot 2
6. Speech is not available in the Braille Editor application

# Appendix C: Changing Languages

Two languages, English and Spanish are available in the APH Chameleon 20. Uncontracted Braille is necessary for Spanish Braille and is selected with the Spanish Default Braille Profile. The instructions below are a global change, unlike using Language Profiles, a hybrid method.

English to Spanish

1. Press the Home button until you are in the Editor.
2. Press the Next thumb button until you are in Settings.
3. Press the Enter key or a Routing button.
4. Use the Next key to navigate to Change Language, then press Enter or a Routing button.
5. The device will say Language and will be in English.
6. Press a Routing key when the language is displayed.
7. Use the left/right thumb keys to switch to Espanol. Then press a routing key.
8. Press the next key to External Keyboard Layout options, leave these settings at default if you are not using an external keyboard with the device.
9. Press the next key to Close, press a Routing key or Enter. When Espanol is selected the device will say Replace Default Braille Profile. Press the Next Thumb Key. Select OK. The device will reboot.

Spanish to English

* 1. Press the Home button until you are in the Editor.
  2. Press the Next thumb button until you are in Ajustes. (Settings)
  3. Press the Enter key or a Routing button.
  4. Use the Next key to navigate to Cambiar Idioma (Change Language,) then press Enter or a Routing button.
  5. The device will say Idioma (Language) and will be in Espanol.
  6. Press a routing key, then the left/right thumb keys until English is displayed in Braille, then press a routing key.
  7. Press the next key to Teclado Externo (External Keyboard) options, leave these settings at default if you are not using an external keyboard with this device.
  8. Press the next key to Cerrar (Close,) then press a Routing key or Enter. When English is selected the device will say Reemplazar el Perfil Braille por Defecto. (Replace Default Braille Profile.)
  9. Press the next thumb key, device will say Aceptar. (Accept)
  10. Device will say Idioma Reiniciar. (Language Reboot.) Next button to Aceptar. (Accept)

# Appendix D: Frequently Asked Questions or Statements (FAQ)

1. The Braille input and output on the unit is reported as not working correctly? Sometimes it is reported as “strange” or “wonky.”  
   Go to Settings  
   Go to Language Profile  
   It is necessary to configure the Default Profile to check the settings  
   Frequently one or more of the following settings has been set to a foreign language, the default settings for students in the United States should be:  
   Profile Name: User Created Name

Braille Grade: Contracted Braille

Computer Braille Table: English U.S. Liblouis

Uncontracted Braille Table: English Duxbury Grade 1

Contracted Braille Table: English Duxbury Grade 2

Content Voice: Sharona

1. Speech is available in the Editor, but there is no speech available in the Braille Editor.
2. The command to toggle Braille grades is Backspace+G. But when computer Braille is active this command does not work. Add the spacebar, the command is Backspace+Spacebar+G.
3. The student’s documents look like this when printed. ,c we g to ! /ore8  
   The device is in computer Braille code. The instructor probably wanted the device in uncontracted Braille. It is easy to tell when the device is in contracted Braille, the ed contraction will be displayed in Editor menu.
4. The current iOS version is 16.x. The APH Chameleon 20 will not connect with any devices running iOS early than 15.x. If the instructor has an iPad that cannot be upgraded to at least this version, it will not connect.
5. Best iPad connection usage with APH Chameleon 20. Delete any Bluetooth connections on the iPad that are not being used. Do not turn off the iPad and let it go into sleep mode instead, similar to how we rarely turn off our phones.
6. Chromebooks work best with the APH Chameleon 20 and APH Mantis Q40 using the USB connection. My preference for Chromebooks is the APH Mantis Q40.
7. Braille input is improved in Google Docs. Speech is only available on demand using the legacy Braille commands. Braille translation happens when the spacebar is entered, so punctuation can not be added later.
8. Known Problem for iPads: Accessibility, then Keyboards, Full Access Keyboard must be Off.
9. When an APH Chameleon 20 is reset to Factory Default, the Language option will be presented after a restart. Assuming English is desired navigate away from this option or select English.

# Appendix E: APH Chameleon 20 Checklist

Student's Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Class Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Editor

Able to create a file: \_\_\_\_\_\_\_\_\_\_

Able to open a file: \_\_\_\_\_\_\_\_\_\_

Able to save a file: \_\_\_\_\_\_\_\_\_\_

Move to the beginning of the file: \_\_\_\_\_\_\_\_\_\_

Move to the end of the file: \_\_\_\_\_\_\_\_\_\_

Able to use panning keys: \_\_\_\_\_\_\_\_\_\_

Able to delete previous word: \_\_\_\_\_\_\_\_\_\_

Able to delete current word: \_\_\_\_\_\_\_\_\_\_

Able to use search commands: \_\_\_\_\_\_\_\_\_\_

## Files Manager

Create a file: \_\_\_\_\_\_\_\_\_\_

Open a file: \_\_\_\_\_\_\_\_\_\_

Delete a file: \_\_\_\_\_\_\_\_\_\_

Move through file list: \_\_\_\_\_\_\_\_\_\_

Create a folder: \_\_\_\_\_\_\_\_\_\_

Move to specific folders: \_\_\_\_\_\_\_\_\_\_

Delete a folder: \_\_\_\_\_\_\_\_\_\_

Copy files between folders: \_\_\_\_\_\_\_\_\_\_

Able to use search commands: \_\_\_\_\_\_\_\_\_\_

## Connectivity

Able to connect the APH Chameleon 20 to a Chromebook & use with ChromeVox: \_\_\_\_\_\_\_\_\_\_

Able to connect the APH Chameleon 20 to a Windows PC & use with JAWS: \_\_\_\_\_\_\_\_\_\_

Able to connect the APH Chameleon 20 to an iPad & use with VoiceOver: \_\_\_\_\_\_\_\_\_\_

Able to configure the Braille display in the host screen reader: \_\_\_\_\_\_\_\_\_\_

Able to use Windows Explorer & transfer files to/from the APH Chameleon 20: \_\_\_\_\_\_\_\_\_\_

Able to use Google Files & transfer files to/from the APH Chameleon 20: \_\_\_\_\_\_\_\_\_\_

## General

Able to use the Calculator: \_\_\_\_\_\_\_\_\_

Able to set the Date and Time: \_\_\_\_\_\_\_\_\_

Able to configure the Settings as needed: \_\_\_\_\_\_\_\_\_

Able to use the Library: \_\_\_\_\_\_\_\_\_

Able to use the Online Services and download books: \_\_\_\_\_\_\_\_\_\_

Able to power the unit off and be aware of battery management: \_\_\_\_\_\_\_\_\_\_Sample Letter 1

123 Main Avenue

Vancouver, WA 98661

Date

Dear Pat:

This letter is a response to your question on providing computer access to a learning disabled student with a physical handicap.

The Chromebook has switch access and supports three switches. I would suggest obtaining a switch interface that supports at least four switches, should Google expand this.

The current switch assignment in the Chromebook is Select, Next, and Previous. Auto scan is an option.

Sincerely,

Your Name

Sample Letter 2

123 Main Avenue

Vancouver, WA 98661

Date

Pat Smith

122 Main Street

Yorktown, VA

Dear Pat,

I was so delighted to hear that you have moved to Yorktown. From your last letter you informed me that you are studying the role that Alexander Hamilton played in the battle of Yorktown.

Alexander Hamilton commanded a unit that successfully attacked British fortifications at Yorktown near the end of the siege. Alexander Hamilton led an integrated unit, the 1st Rhode Island Regiment, widely considered to be the first Black military regiment.

Alexander Hamilton wanted surprise when he attacked the British. He ordered his men to unload their weapons and attack with the bayonet.

Looking forward to talking to you soon.

Sincerely,

Your Name

Sample Letter 3

123 Main Avenue

Vancouver, WA 98661

Date

Pat Smith

122 Main Street

Yorktown, VA

Dear Pat,

Your last letter said that you are interested in the weapons used in the American Revolutionary War.

One little-known fact is that the French provided the American army gunpowder that helped win the war. The French gunpowder was better than the British and provided the musket slightly longer range.

The most common weapon used was the smoothbore musket, which was not usually accurate beyond 50 yards. It is claimed that a soldier could fire 3 rounds per minute, but in actual combat 1 round per minute would be more likely. The primary use of the smoothbore musket was to be a holder for the bayonet.

A very few American soldiers had rifles, sometimes known as the American Long Rifle. This rifle had a range of over 200 yards but was even slower to reload then the musket. This weapon was greatly feared by the British, especially the officers. It was not possible to attach a bayonet to this rifle, so rifleman usually carried a tomahawk.

Edged weapons played an important part in the American Revolutionary War. The most common edged weapon was the bayonet. Swords, knives, and axes were also used.

It was good to hear from you again. Please keep in touch.

Sincerely,

Your Name

# 

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Session\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Activity 1: \_\_\_\_\_\_\_\_

Activity 2: \_\_\_\_\_\_\_\_

Activity 3: \_\_\_\_\_\_\_\_

Activity 4: \_\_\_\_\_\_\_\_

Activity 5: \_\_\_\_\_\_\_\_

Activity 6: \_\_\_\_\_\_\_\_

Activity 7: \_\_\_\_\_\_\_\_