Arijeet Patil

Computer Readiness Program for children with Visual impairments.

Helen Keller Institute for the deaf and Deafblind

Contents

[Introduction 2](#_Toc122977587)

[Essential Hardware/ Software 2](#_Toc122977588)

[First lessons on YouTube 3](#_Toc122977589)

[VLC Mp3 player and windows media player 4](#_Toc122977590)

[Podcast 5](#_Toc122977591)

[Kindle 6](#_Toc122977592)

[Audible 7](#_Toc122977593)

[Scribbling on a computer – typing 8](#_Toc122977594)

[MS Word 9](#_Toc122977595)

[Beginner level 9](#_Toc122977596)

[Intermediate level 9](#_Toc122977597)

[Higher level 9](#_Toc122977598)

[Advanced level 9](#_Toc122977599)

[PowerPoint 11](#_Toc122977600)

[Surf the net including YouTube and podcast 12](#_Toc122977601)

[Access your email 13](#_Toc122977602)

[Zoom 14](#_Toc122977603)

[Record your own notes 14](#_Toc122977604)

[Organise your data 15](#_Toc122977605)

[Math 16](#_Toc122977606)

[Basic Math 16](#_Toc122977607)

[Advanced Math 16](#_Toc122977608)

[A few tools 17](#_Toc122977609)

[Dictionary and first encyclopaedia 17](#_Toc122977610)

[Wikipedia 17](#_Toc122977611)

[This is a safe and trusted place for children to look for information, before getting lost on the web for safe trusted spaces online. 17](#_Toc122977612)

[Calculator on computer 17](#_Toc122977613)

[Date and time on the computer 17](#_Toc122977614)

[Gaming 18](#_Toc122977615)

[Kitchensinc life 18](#_Toc122977616)

[Bears night out 18](#_Toc122977617)

## Introduction

I have designed this curriculum for the students of HKIDB – across abilities and developmental stages. The design is based on my own learning methodology – where my motivation and interest level were always high. I understand that computer readiness skill is extremely important to facilitate independent higher education. While most of the information will be made available to the student with this, I urge students to always very openly ask for information that isn’t accessible – in terms of a recording, textual data, an audio description of a diagram or a tactile diagram. I have shown keyboard shortcuts for all the operations covered.

## Essential Hardware/ Software

All we need to get started is a windows-based computer with Ms Office installed, and a valid internet connection. I have provided the link for the free screen reading software that can be installed to give accessibility. Wherever possible I have shared links of the software that are used and referred to, and am trying to share mostly freeware, except for a few essential and minimal software that makes the learning experience meaningful.

NVDA link <https://www.nvaccess.org/>

## Prerequisites

Language: Kids will need to know English, as we are building computer proficiency with English.

In each section, a couple of commands can be chosen for the child to play around with and master, then go to the next command. We have started from basic operations on the computer to the advanced level.

Keyboard orientation is taught through the program. However, lesson plans to be made by the teacher, in terms of typing letters, then ask the child to type words, then sentences and paragraphs depending on the academic level.

## Scribbling on a computer – typing

With audio feedback, a child will love playing with their keyboard. There are a lot of resources available for children to learn typing.

TTT

[Talking Typing Teacher Standard | Braille Superstore (braillebookstore.com)](http://www.braillebookstore.com/Talking-Typing-Teacher-Standard.1)

Although this is a paid software, it is very well designed to encourage younger kids with audio feedback and reinforcers. It is a self-voicing program. it is Also self-guided, taking children through a total of 41 lessons in increasing levels of complexity rather easily.

Typer online

[Typer Online | American Printing House (aph.org)](https://www.aph.org/product/typer-online/)

This is a free program and helps one with the orientation of the keyboard and the various keys on it.

Also, in NVDA, there is an option to just learn the keyboard by turning keyboard help on and typing with audio feedback. Capslock/insert + 1. It’s a toggle setting meaning the same key combination to turn it off. All keys are read in this mode even function keys, alt, cntrl, windows, etc.

The next level the child reaches is typing random letters, the equivalent of scribbling and at the end listening to the word pronounced – its fun for them. For this the child types normally and then by pressing caps lock/insert+up arrow twice quickly reads what is on the line.

## MS Word

While training a student to write on this, teachers must give open documents to children and appropriate instruction.

And for reading skill, the teacher must make small readable documents that can be given to the child for reading.

### Beginner level

Writing skill - Open word document and type ?? keyboard help

Reading skill – type and read – any word readback with this command.

### Intermediate level

Writing words – dictation

The student can be asked to write multiple words, followed by enter, to learn typing words

Read - one para

The student reads an entire paragraph, navigating line by line using up and down arrow.

### Higher level

Writing – one sentence

Now the student must be asked to type entire sentences with a capital letter to start and a period to end the sentence. And must be able to type several sentences serially.

Writing – mcq, fill in the blanks, match the following

The student must be able to access a worksheet with mcqs, by writing the correct option next to the question. Or accessing fill in the blanks by reading it as a dash and writing the appropriate word at the end of the sentence. And being able to match 2 columns as in 1 from left with d from right.

Reading – One chapter - document multiple paras using caps lock or insert+down arrow.

At this level, the student should be able to read the entire document, navigating by paras and sentences and words.

### Advanced level

Reading – textbook

Here the student must be able to access an entire textbook, from chapter to para to line to word. Should be able to look for words they are searching for.

To navigate between headings: Press caps lock or insert+space to enter browse mode and press H (next) or shift+H (previous), or press caps lock or insert+F7 to open elements list.

Writing – subjective answers, essays, stories

Here the student learns to write subjective answers with multiple paragraphs, essays and stories. They are able to spell check their work and is able to insert a table of contents and mark different parts of the document as heading 1, 2, 3, etc.

Here are the commands for the following:

Navigate between characters: Left and right arrows.

Navigate between words: Ctrl+left and right arrow.

Navigate between lines: Up and down arrow.

Navigate between paragraphs: Ctrl+up and down arrows.

Read current line: Caps lock or Insert+up arrow.

Read entire document from current position: Caps lock or insert+down arrow.

Spellcheck: F7 takes you to various options, navigate using tab and shift tab, then press enter to select the required option.

Format to heading 1, 2, 3: Alt+shift+left and right arrows to format to various heading levels.

Insert page break: Ctrl+enter

Insert table of contents: Alt+W to go to the References tab, then choose table of contents with tab or shift tab, followed by enter when you reach table of contents. Then up and down arrow keys to select automatic style 1.

Insert page numbers: Alt + N to reach insert tab. Then tab to go to page numbers. Then enter to select.

## PowerPoint

This is a very useful tool for projects and presentations all through school.

We start off with a title slide: this comes automatically when we start a new ppt. Title and sub title text boxes are chosen by tab and shift tab navigation keys. Select the text box, write the information press enter. Escape to come out of text box, then go to sub title and repeat with the same navigation keys.

Then insert a new slide by navigating using ALT N then tab to reach new slide. Spacebar to activate. A new slide is inserted with title and content page.

Navigate across the 2 text boxes, select, then enter the text required there.

Generally we have a title and pointers for that heading.

Once ready, we can take sighted assistance to help us format the ppt a little or add any images.

Once ready we can have a slideshow with the command F5. Exit slideshow with escape.

## Surf the net

These are the various commands used to surf the net.Open any browser (Microsoft Edge, Internet Explorer, Google Crome, Firefox)

Type the keyword for the search for example capital of India and press enter.

Keep pressing H until you reach the first result, then keep navigating using H and shift+H until you reach the desired result and press enter.

Look for content with the following commands: Ctrl+F or ctrl+capslock/insert+F, or navigation keys for headings and links (H/shift+H and L/shift+L), as above, B and shift B for buttons. There are also some special controls as follows:

Checkboxes: These are options which can be toggled (checked or unchecked) using spacebar E.G. Youtube loop as above. To move between checkboxes, use X or shift+X.

Radio buttons: Similar to checkboxes, but only one can be selected E.G. yes or no. To navigate between radio buttons, press A or shift+A. Press the spacebar to check or uncheck the button.

Combo-boxes and list boxes: These will have multiple options. Depending on the box you can choose either one or multiple choices. To navigate, use C or shift+C. On reaching a box, press enter and use up and down arrows until you reach the desire option, and press enter on it. Press escape to close.

We can look for content on podcasts and YouTube similarly.

## Access your email

To access your email, press the windows key, type ‘mail’, and press enter on the Windows mail app to open it.

Add your account E.G. Gmail, Outlook, Microsoft, by entering email and password.

Now go to inbox and read mails with the following commands. To navigate eMails, use up and down arrow. To go to the latest mail, press home and to go to the oldest, press end. Once you reach the desired mail, press enter to open it and then use the same reading commands as word.

To switch accounts, press Tab or shift+Tab until the all-accounts list and choose the account you want to switch to. You will automatically be taken to the inbox of that account after pressing Enter.

You can open an attachment by pressing shift+tab at the message body to bring up the list of attachments, and then press enter after choosing the attachment you want to open.

You can send email with ctrl+enter. To insert an attachment in your email, press alt+N for insert, press down arrow to reach the files button, activate it and then choose the file you want to send.

You can search for an email in the search edit field which can be accessed with tab and shift+tab

## Zoom

Once you are given a zoom link, you will be able to enter the meeting by pressing enter on the link and activating the launch meeting button on the webpage that opens. This will open Zoom and make you join the meeting.

You can create your own meeting by going to the ‘start a new meeting’ button on the home screen on Zoom and pressing it. To share details, go to the ‘send invitation’ button in your meeting and press it. This will copy the link to the clipboard and allow you to paste it anywhere using ctrl+V.

## Record your own notes

You can record your own notes by going into the voice recorder from the startmenu (windows key).

These are the buttons and controls for it. They can be accessed using tab and shift+tab.

Start recording

Pause recording

Stop recording

Play/pause

Rewind

Fast forward

Time slider

## Organise your data

One should organise one’s data neatly in well named folders and files. For example, you could create your folder in d: with your name then have grade wise data as in grade 1, grade 2, etc again as folders. Then you could have folders with textbooks, notebooks, projects in each of these folders. And in each you could have subject wise folders. This will help you find your data easily you could also have a recordings folder in your grade folder with subject folders and save your recorded files per subject there.

## First lessons on YouTube

YouTube could be used to play interesting rhymes, animated movies, stories for kids. One thing that must be kept in mind is that you must look for audio rich content in videos, otherwise with too much gestures and visual action, it gets meaningless. Also, there are videos that are enhanced by audio description – where the non-spoken or non-audio information is described along with the primary track.

Please see links for Disney Frozen, with and without audio description.

[Disney's Frozen Teaser Trailer - YouTube](https://www.youtube.com/watch?v=S1x76DoACB8) (without audio description)

[Frozen - Trailer with Audio Description - YouTube](https://www.youtube.com/watch?v=O7j4_aP8dWA) (with audio description)

Now once something that interests the child is played on YouTube, they could be started off with the following, with tactile dots put on just those keys that are needed for the operation. Once the child gets the key each time, the dots could be removed and reference of F and J keys can be given, as they are with the tactile markers.

These are the buttons on youtube, play/pause, next, mute, subtitles (if available), settings, autoplay, theatre mode(full screen), miniplayer. A student can be taught to navigate across these buttons with B which takes you to the next button or shift+B to the previous button. Once the required button is reached, the student activates the key with spacebar or enter.

Play/pause: ‘K’ or with navigation

Replay: With navigation (after video has finished playing, play/pause configures as replay). Reach replay and activate with spacebar.

Autoplay: With navigation, activate with spacebar.

Subtitles (if available): By navigation, reach subtitles and activate with spacebar.

Speed and other settings: Activate settings button (by navigation) and spacebar. Then with up down arrow keys, you will reach playback speed, press enter. Again with up own arrow keys, reach the desired speed option and press enter.

Anywhere to close menus, press escape.

Loop: Navigate across the various elements on the page with up and down arrow keys until you reach main video player, then activate with sacebar. To enable loop, go to the start of the ‘video player’ region and press right click on the mouse to open the context menu. Use up down arrow keys till you reach loop and activate with spacebar followed by enter.

## VLC Mp3 player and windows media player

This could be used to replay early audio fun times, stories, rhymes, songs made up for concepts. Basically, all audio files you have downloaded on the computer. Again, as this would be something the child is interested in, they would learn to do the following on the apps.

[Official download of VLC media player, the best Open-Source player - Video LAN](https://www.videolan.org/vlc/)

Windows media player comes with Ms Windows

All the buttons and other controls in these apps can be reached using tab or shift+tab. And activated using spacebar. To close menu press Escape.

These are the buttons there generally:

Pause/ Play

Repeat

Previous

Next

Time slider

## Podcast

Today we have a lot of ready content on podcasts and we have a lot of kid friendly podcasts.

[14 Best Podcasts for Kids (2022): Long-Form, Short Stories, and More | WIRED](https://www.wired.com/story/best-podcasts-for-kids/#:~:text=The%20Best%20Podcasts%20for%20Kids%201%20Stories%20Podcast,8%20Fierce%20Girls%20Apple%2C%20Google%20...%20More%20items)

Here too, orienting kids towards listening, learning through podcasts is important, and they can again be taught several keys and skills once a podcast is played. This will keep the interest level and encourage the child to learn more and expand their world.

The most popular platforms for podcasts are Apple Podcasts (accessed through iTunes on Windows) and Spotify. Both of these are free and only require you to create an account with your email and password.

All the buttons and other controls in these apps can be reached using tab or shift+tab. And activated using spacebar. To close menu press Escape.

Controls on these apps:

Pause/ Play

Repeat setting

Shuffle setting

Speed setting

(To access apple podcasts, go to iTunes on your PC, sign in, choose ‘podcasts’ and click search.

To install Spotify, go to the Microsoft Store on your PC, search for ‘Spotify’ and click on the app to install it.

Will cover more on this in web browsing for advanced users)

## Kindle

Kindle is another great resource for kids and adults alike, with all books available. Although paid, it is good to have some books here as well.

Kindle is like a bookshelf where you can store multiple books. It can be downloaded from the Microsoft Store.

[Get Amazon Kindle - Microsoft Store](https://www.microsoft.com/en-us/p/amazon-kindle/9wzdncrfj2jf?activetab=pivot:overviewtab)

The various instructions used for kindle are as below.

Go to the search field by navigating the page through tab and shift tab and pressing enter when you reach the search edit field.

Search for a book by typing the name of the book in the search edit field followed by enter.

The library will respond with results.

Browse through the results using up and down arrow keys.

Once you reach the desired book press enter.

The chosen book will be opened at its last read location.

Read book para by para: ctrl+up and down arrows (for previous and next paras)

Read book chapter by chapter: Navigate between headings using H/shift+H and choosing the chapter when the screen reader reads it by pressing enter.

Insert bookmark: Use Alt I to select insert menu. Then use up down arrow keys to reach insert bookmark. Enter to select the bookmark.

Playing speed increase decrease: Navigate to the speed button using tab and shift tab. Then up/down arrow for the desired selection followed by enter.

## Audible

Audible is yet another great resource for kids and adults alike, with a lot of books available in audio format here. Although paid, it is good to have some books here as well.

Audible is like a bookshelf where you can store multiple books. You can listen to Audible books either by downloading the Audible app on the Microsoft Store or on iTunes.

The various instructions used for audible are as below.

Go to the search field by navigating the page through tab and shift tab and pressing enter when you reach the search edit field.

Search for a book by typing the name of the book in the search edit field followed by enter.

The library will respond with results.

Browse through the results using up and down arrow keys.

Once you reach the desired book press enter.

The chosen book will start playing from its last played location.

Play/pause: tab and shift tab, followed by enter on reaching the button.

Read book chapter by chapter: Go to the chapter button by tab and shift tab, press enter. Then use up and down arrow keys to navigate to the required location and press enter.

Mark or make a note: Pause, then Alt I to reach insert menu. Up down arrow keys to reach bookmark. Press enter.

Playing speed increase decrease: Navigate to the speed button using tab and shift tab. Then up/down arrow for the desired selection followed by enter.

## Math

### Basic Math

[Marvel Math Standard | Braille Superstore (braillebookstore.com)](http://www.braillebookstore.com/Marvel-Math-Standard.1)

This is a paid software but very worth it. It has several automated tests once teacher enters data regarding types of sums, level of complexity, grade level, type of operation, etc. It generates automatic tests that are given feedback on immediately, with reinforcers and gentle corrections. It is a self-voicing program, with childlike voices and child friendly feedback. Its learning math the fun way.

Basic math on Ms word:

Plus sign: shift+equals

Minus: hyphen (dash)

Multiplication (times): Shift+8

Division/fraction: slash

Exponents: Circumflex (shift+6)

Equal to: Equals key

Also, kids can be given worksheets on simple documents and trained to use various symbols for math operations like ?? and ^ for raised to. To customise word to read it in a certain way, one would need to do the following.

### Advanced Math

While basic math can be read and written on Ms Word rather simply, things get a little confusing as math gets more advanced. Then the student needs to learn to type or write their math in latex code and read it back once converted to a visually correct format for the sighted teacher. To enable this, math type license is needed from the site below. It gives complicated math a little structure. It does have a learning curve but once you learn it, you are done.

<https://www.dessci.com/en/products/mathtype/>

## A few tools

### Dictionary and first encyclopaedia

<https://wordweb.info/>

This is a paid tool with an annual subscription, but it’s good to have on ones computer to be able to search a word immediately and find more information about it online through Wikipedia and Wiktionary.

### Wikipedia

[Wikipedia](https://www.wikipedia.org/)

### This is a safe and trusted place for children to look for information, before getting lost on the web for safe trusted spaces online.

### Calculator on computer

Using the calculator on the computer is an essential skill. It can be accessed from the start menu. The commands on the calculator are the same as what you use to type math in word E.G. Plus sign for addition, hyphen for minus, star (shift+8) for multiplication, slash for division, circumflex (shift+6) for exponents, etc.

### Date and time on the computer

Seeing the date and time on the computer is easy too with the flowing commands:

Read time: Caps lock or insert+F12

Read date: Same command twice quickly.

## Gaming

All children love to play. These are a few good resources for blind children and are good games for children to play. They are self-voicing and self guidig and must have for kids of all ages. Some interesting ones are listed below:

### Kitchensinc life

[Audiogames Archive: games by Jim Kitchen (agarchive.net)](https://www.agarchive.net/pages/devs/kitchensinc.html)

RS Games

[Home | RSGames - Accessible Games for the Blind](https://rsgames.org/)

### Bears night out

This is an Interactive Fiction game, a fun genre of games where kids progress through and complete the plot of a story. It can be downloaded from the if archive website at [www.ifarchive.org](http://www.ifarchive.org), along with the Frotz app which lets you play these games.