Smartphone Training Guide for PVI

Enabling independence and connectivity for people with vision impairment (PVI) through learning smartphones

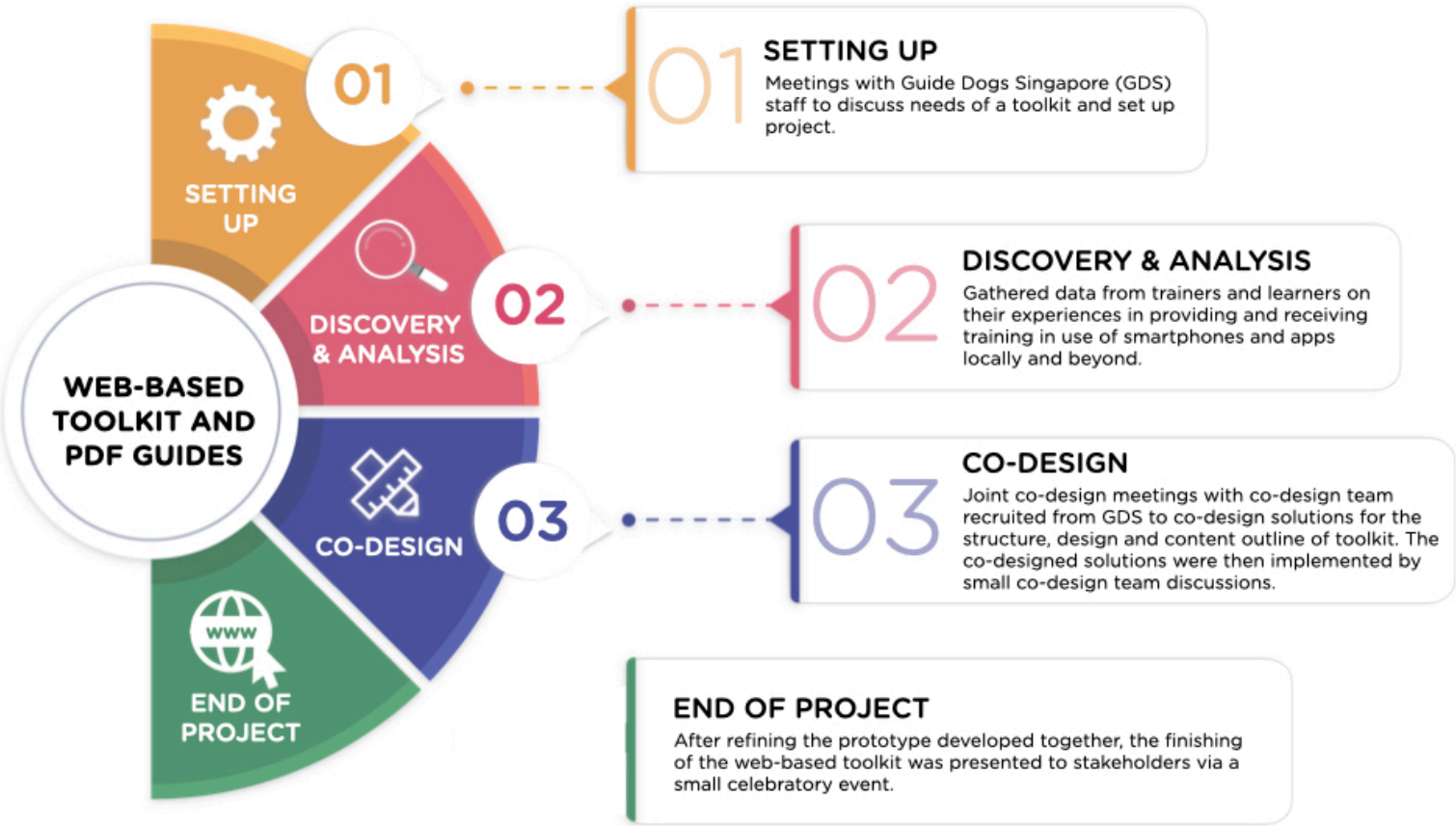
CONTENT

Overview of Toolkit and its Development

This co-designed web-based toolkit https://www.smartphone-trainingforpvi.guidedogs.org.sg/ with its associated guides for different (PVI, trainers, family and support persons) provides training and learning support on the use of smartphones and apps for people with vision impairment (PVI). It is a basic training guide for PVI.

Smartphones have become a core piece of assistive technology (AT) for PVI for daily activities and participation. They can be used as effective and relatively affordable AT by PVI with good training and learning support.

The web-based toolkit has been co-designed and co-produced with PVI. Our team includes researchers and a group of trainers and learners with lived experience of vision impairment from Guide Dogs Singapore https://guidedogs.org.sg/. Over a six-month period (between June 2022 to December 2022), the team used the "Experience-based co-design (EBCD)" [The Point of Care Foundation (POC), n.d.] framework to guide the process of co-designing the web-based toolkit. The framework involves 3 phases as illustrated below.



How to Use This Guide?

This guide has been co-designed with people with vision impairment (PVI) who wish to learn how to use the basic vision accessibility features in smartphones.

To complement this guide we have created a companion website at http://www.smartphone-trainingforpvi.guidedogs.org.sg. The website offers concise summaries of the guide's content and allows you to access the mentioned videos for further guidance and support.

You can visit the website or refer to the relevant section of this guide that applies to you and the applicable smartphone platform (i.e. Android/iOS) that has links to the videos for learning.

Resources for PVI

Before You Start

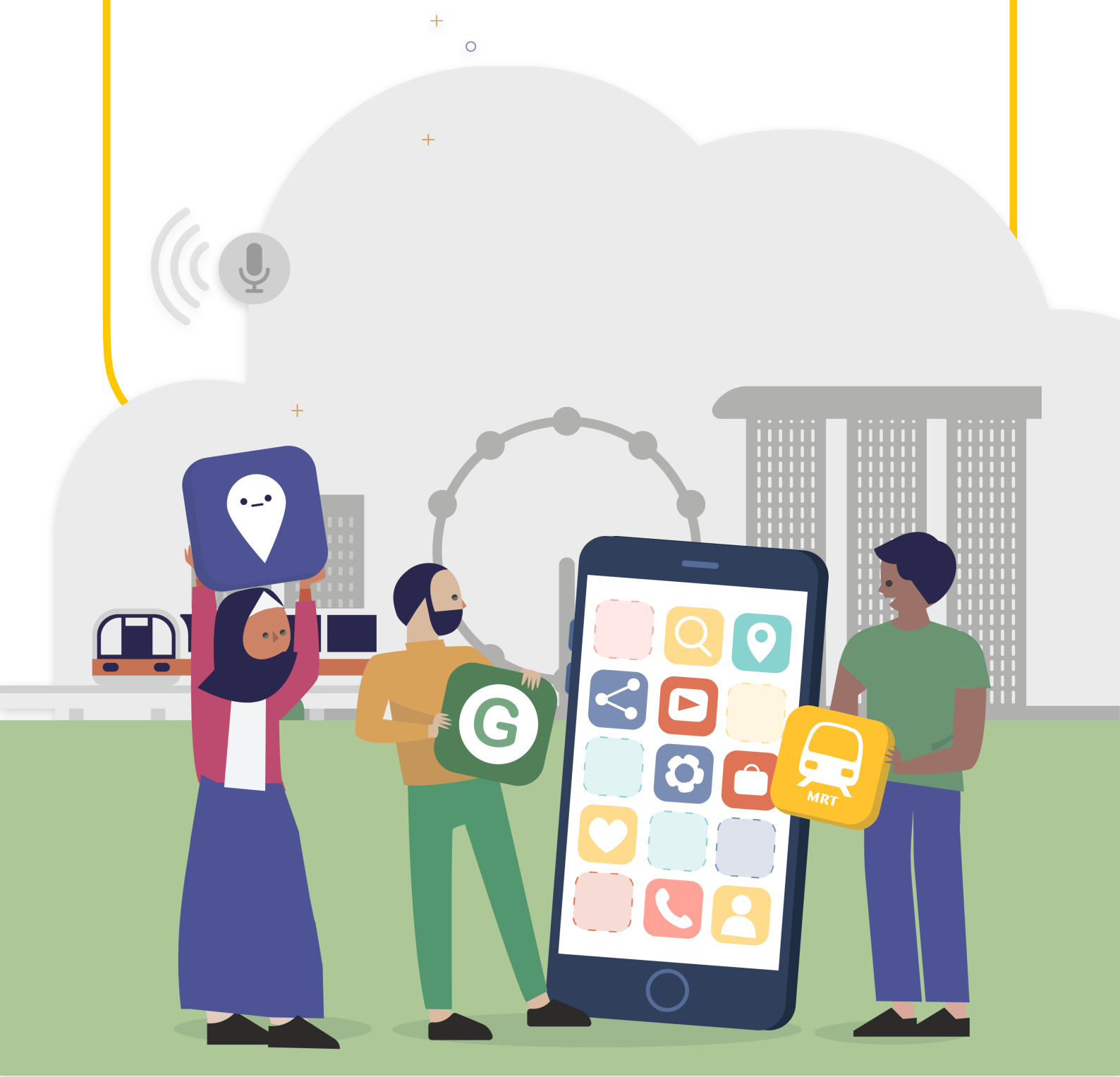
Before you start learning how to use the smartphone, you might like to learn more about the accessories that will make using your smartphone easier.

This section also includes an explanation of some basic terminologies that will enhance your learning.

Our team has also recommended some useful apps for use in Singapore context.

Useful Apps in Singapore Context

Please download the list of apps recommended by the team members. They have found these apps to be useful in daily activities and participation in our local context.



Useful Accessories

1. Portable Power Bank

It is always helpful and useful to be able to charge up a smartphone with depleting battery life conveniently via a portable power bank. This will ensure that your usage of smartphone and apps will not be disrupted, especially when you are using the smartphone for something important, such as guiding you via GPS, or accessing some important print information and so on. If you need recommendations on which power bank to purchase, you can consult the IT trainers with Guide Dogs Singapore by calling or emailing them.

2. Earphones/Headset (Wired or Bluetooth)

When using VoiceOver or Talkback with your phone, it helps to have earphones or headset in circumstances when you don't want to disturb others while using screen readers; or when you are in a noisy environment. If you would like some recommendations on which earphones/ headset may suit you, you can consult the IT trainers with Guide Dogs Singapore by calling or emailing them.

3. Bluetooth or Wired Keyboard

A keyboard is handy when you are typing long messages or passages on your smartphone. Most PVI have found it easier and faster to type using a keyboard rather than using the touch keypad on the smartphone. Again, if you'd like to know more about keyboards, you can consult the IT trainers with Guide Dogs Singapore by calling or emailing them.

Basic Terminologies

Compiled by Ms Jacqueline Siow (SIT);
Ms Sherriza Jalil and Ms Amanda Chong
(from the co-design team)

Some have found it useful to understand the following terms when learning to use smartphones:

1) PHONE CONNECTION

1a) Bluetooth

Bluetooth is a short-range wireless technology. You use bluetooth when you want to move data from one device to another over a short distance without using wires. Imagine your data (for example, your materials) moving from your tablet to the printer via an invisible bridge. That's how bluetooth works. Other examples are bluetooth headphones, bluetooth keyboards, and bluetooth speakers. Note that bluetooth is one of several forms of wireless technology.

1b) Wireless

Wireless communication is referred to as wireless or cordless. It transmits information such as voice and data between two or more points without the use of a wire or cable.
The wireless transmission can be in the form of light, sound, or electromagnetic field (radiofrequency waves). When using smartphones, the sounds from your voice etc are encoded into radio waves by a transmitter first. Smartphones then use these radio waves to transmit signals to, and to receive signals from, a network of base stations.

1c) Wi-Fi

Wi-Fi is a wireless networking technology. Using radio waves, it allows nearby devices like smartphones, tablets, laptops, and desktop computers to interface (or connect) to the internet wirelessly via a router. Wi-Fi is found in homes and offices if it has been subscribed. It is also found at wireless access points in public places like coffee shops, libraries, and hotels. This is to provide visitors with internet access for their mobile devices.

2) PHONE ELEMENTS

2a) SIM-Card

A SIM-card (which stands for Subscriber identity Module) is a microchip inserted into the SIM-card tray on a mobile phone. The SIM card enables the phone to connect to the wireless mobile network. SIM-cards provided by phone companies contain identifying information. This information includes serial numbers, your phone number, the phone carrier you use (such as: Singtel, M1, StarHub, SIMBA etc), and other important information. The SIM card also enables the user to make phone calls, send text messages, surf the internet, and more.

2b) Biometrics Recognition

Biometrics recognition is meant for security when accessing smartphones. It can be carried out via Fingerprint reader, Face recognition or Iris recognition, depending on the model of smartphone you use. The main purpose of biometric recognition is to help in locking/ unlocking your device. It is also commonly used to authenticate your identity for financial transactions or other highly private and confidential transactions.

2c) Fingerprint Reader

A fingerprint reader (or fingerprint scanner) is a hardware sensor that uses your fingerprint for biometric authentication. Biometrics either allow or don't allow the user to lock or unlock their smartphone, access information, or to approve transactions. In short, a fingerprint reader is a form of biometric security. On today's smartphones, the most common type of sensor is the fingerprint reader. This takes the form of a fingertip-sized pad that reads the fingerprint with a single touch.

2d) Face ID

Face ID is an authentication facial recognition system designed and developed by Apple for iPhone and iPad. The system allows biometric authentication for unlocking a device, making transactions, and accessing information.
Face ID is enabled by scanning the user's face with the state-of-the-art TrueDepth camera system. The system then accurately maps out the geometry of the user's face. And with just a single glance, Face ID will securely unlock the iPhone or iPad.Other operating systems also use facial recognition technology for biometric authentication, but they are known by other names.

2e) Near-Field Communication (NFC)

The Near-field Communication (NFC) is a short-range wireless technology. It allows devices, such as smartphones, to exchange a small amount of data with other devices, and to read NFC-equipped cards/tags over a short distance. Typically, this distance must be within 4cm or less to initiate a connection.

With NFC, users can easily transfer information between devices quickly with a single touch, such as when making payment, and downloading or sharing information.

2f) AirDrop

AirDrop is unique to Apple's iOS (iPhone operating system), as well as Apple's iPad OS and mac OS. With AirDrop, users can transfer files from one AirDrop-supported Apple device to another easily. For example, we can transfer photos or other files from one iPhone to another iPhone, or from an iPhone to a MacBook. However, it requires Wi-Fi or Bluetooth connection for AirDrop to work.

3) ONLINE STORAGE AND WORKSPACE

3a) iCloud

iCloud is the service developed by Apple, which enables users to store and sync data across all iOS devices, such as iPhone, iPad, MacBook etc. Users don't need a physical storage device like an external hard disk or a thumb drive. Instead, storage is in data centres. So, users can access their data from anywhere, even when using someone else's computer or smartphone.

With iCloud, users can securely store their photos, files, notes, passwords, and other data in the cloud. It also automatically updates data stored across all their devices under the same registered Apple ID. You can register for an Apple ID using a valid email address.

iCloud also makes it easy to share information, including photos and documents, with friends and family. Users can also back up all information for their iOS devices by using iCloud. iCloud offers users 5 GB of free storage and may be upgraded to 50 GB, 200GB, or higher data storage and additional features through optional paid plans.

3b) Google Drive

Google Drive is an online or cloud-based storage and synchronisation service developed by Google. It allows users to create, edit, and save files online, and to access them remotely from any mobile device, such as smartphones, tablets, or laptops.

Google Drive also allows users to collaborate with others on the same document. To do this, users send an invitation to the person they wish to collaborate with. When the invited person accepts the invitation, users and guests can immediately work on the same document at the same time, even if they are thousands of kilometres apart.

Users with a Google account will be given a 15 GB of free storage on Google Drive, it also offers users to upgrade to 100GB, 200GB and more through optional paid plans.

Google Drive is also integrated with Google's office suite of cloud-native apps, which are similar to Microsoft Office. The apps include Google Docs, Sheets, Slides, Forms, and more.

4) SMARTPHONE OPERATING SYSTEM

4a) iOS

iOS was originally called iPhone OS. It is a mobile operating system (OS) created and developed by Apple. iOS is the world's second-most popular mobile OS after Android. It is used to power the iPhone, iPad, and iPod Touch.

4b) Android (Operating System)

The Android operating system was first developed by Android Inc., a software company located in Silicon Valley. In 2005, Google acquired Android Inc. Android's primary use is for touchscreen devices, smartphones, and tablets. And it is a Google product. Android users can link their mobile devices to other google products, including cloud storage and email platforms.

5) APPLICATIONS (APPS)

5a) Mobile Applications (Apps)

A mobile application or app is a computer programme or software application. It is designed to be installed and run on a smartphone, tablet, or other electronic device.

Most apps have one specific function (example, Shopee is a shopping app and Google maps is a wayfinding app). But some other apps carry multiple functions (such as Google Drive for accessing files and for sharing files and folders across users, and Grab, an app for food delivery and ride hailing).

There are three types of apps. The first type is called “Web-based” apps, those are applications that require internet connection for complete use, (such as Google Docs).

The second type is called “Native” apps, they are apps created for a certain mobile platform (such as Calculator and Clock in iOS devices).

The last type of apps is made to support both native and web-based technologies (i.e. different operating systems) and it has a combination of both web-based and native applications, it’s called “Hybrid” apps, examples are Instagram, Twitter, and Gmail.

5b) Apple App Store (App Store)

Apple App Store or App Store, is Apple's app marketplace. It is a digital shop where users can buy or download approved apps for their Apple devices such as iPhones, iPads, Macs, and Apple Watches. The apps add to what Apple devices can do. For example, a bus app can tell iPhone users when the next bus they want will reach their bus stop. To get to Apple Store on an iPhone, open the App Store app icon on the device.

5c) Google Play

Google Play, also known as the Google Play Store, was formally known as Android Market. Simply put, the Google Play Store is Google's official digital store. There, Android users can buy or download apps, books, games, movies, music and other content for their Android devices. You can get to Google Play on an Android phone or tablet, by opening the Play Store app icon on the device.

The above have been compiled using the following resources. You can find out more by referring to them:

- https://en.wikipedia.org/wiki/Bluetooth
- https://www.computerhope.com/jargon/b/bluetoot.htm
- https://en.wikipedia.org/wiki/Wireless
- https://www.computerhope.com/jargon/w/wireless.htm
- https://en.wikipedia.org/wiki/Wireless
- https://www.computerhope.com/jargon/w/wireless.htm
- https://www.businessinsider.com/guides/tech/what-is-a-sim-card
- https://www.easytechjunkie.com/what-is-a-sim-card.htm
- https://www.virtusa.com/digital-themes/biometric-recognition
- https://www.loginradius.com/blog/identity/what-is-mob-biometric-authentication/
- https://www.phonescoop.com/glossary/term.php?gid=532
- https://www.lifewire.com/understanding-finger-scanners-4150464
- https://en.wikipedia.org/wiki/Face_ID
- https://support.apple.com/en-us/HT208108
- https://www.digitaltrends.com/mobile/what-is-nfc/

- https://developer.android.com/guide/topics/connectivity/nfc
- https://www.investopedia.com/terms/n/near-field-communication-nfc.asp
- https://www.computerhope.com/jargon/a/airdrop.htm
- https://en.wikipedia.org/wiki/ICloud
- https://support.apple.com/en-sg/guide/icloud/mm74e822f6de/icloud
- https://en.wikipedia.org/wiki/Google_Drive
- https://www.businessinsider.com/guides/tech/what-is-google-drive-guide
- https://en.wikipedia.org/wiki/IOS
- https://www.makeuseof.com/tag/what-is-ios
- https://en.wikipedia.org/wiki/Android_(operating_system)
- https://www.investopedia.com/terms/a/android-operating-system.asp
- https://en.wikipedia.org/wiki/Mobile_app
- https://www.indeed.com/career-advice/career-development/what-is-an-app
- https://en.wikipedia.org/wiki/App_Store_(iOS/iPadOS)
- https://www.investopedia.com/terms/a/apple-app-store.asp
- https://en.wikipedia.org/wiki/Google_Play
- https://www.computerhope.com/jargon/g/google-play.htm

To Begin Learning

To begin learning the basic skills to operate a smartphone, we have included the transcripts of the videos available in our website www.smartphone-trainingforpvi.guidedogs.org.sg/ under each topic below.

To access the videos, you can click on the link after the topic, according to the smartphone platform you are using.

TOPICS

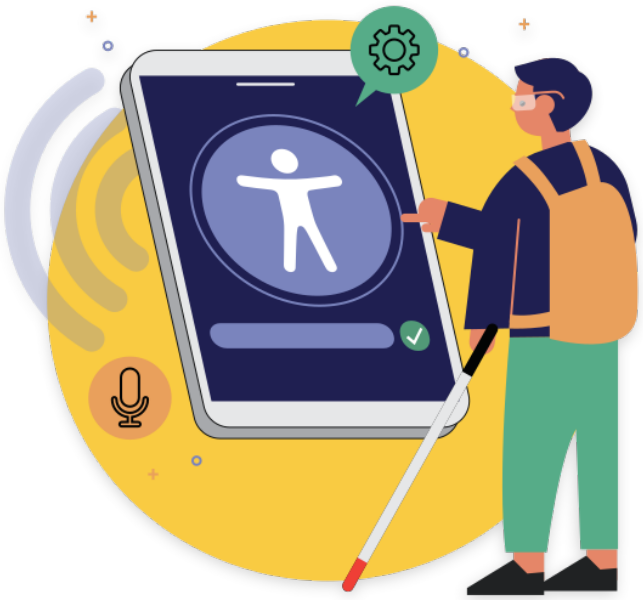
Need Help?

Email: it@guidedogs.org.sg

Call: (+65) 6339 7900

Explore Your Phone

This video explains how you touch around your phone and get to know the physical basic parts of your phone.



Exploring Your Android Device

If you are using an Android smartphone, click this link https://www.youtube.com/watch?v=qv1hnIuR0cc&t=2s to watch the video on *Explore Your Android Device*.

Exploring Your iPhone

If you are using iPhone, click this link https://www.youtube.com/watch?v=2h4aIPjglzk to watch the video on *Explore Your iPhone*.

Just Basics

This video explains how to power on/off your phone, how to bring up virtual assistance (i.e. Siri/ Google assistant), and how to adjust the volume.

Just Basics for Android Devices

If you are using an Android smartphone, click this link https://www.youtube.com/watch?v=m8uY-_Wnirw to watch the video on *Just Basics for Android Devices*.

Just Basics for iOS Devices

If you are using iPhone, click this link https://www.youtube.com/watch?v=EJ8P8g4IGIE to watch the video on *Just Basics for iOS Devices*.

Screen Display Settings

This video explains how you can customise your screen display settings to suit your needs and make it easier to see. This is mainly applicable to people with low vision who uses their residual vision to see the screen.

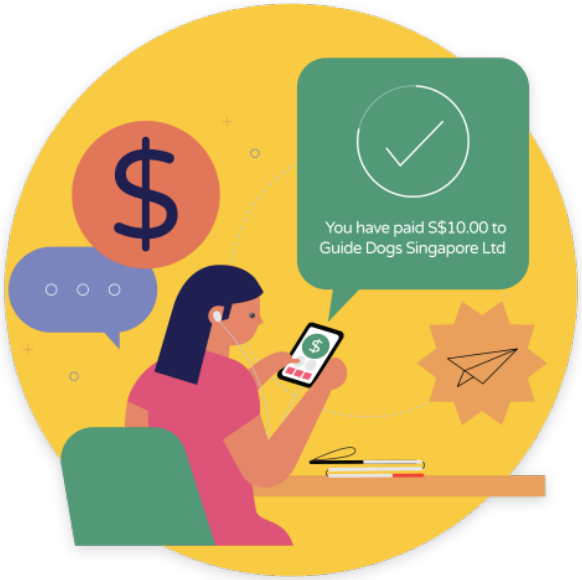
Screen Display Settings for Android Devices

If you are using an Android smartphone, click this link https://www.youtube.com/watch?v=mnTFE74Whdw to watch the video on *Screen Display Settings for Android Devices*.

Screen Display Settings for iOS Devices

If you are using iPhone, click this link https://www.youtube.com/watch?v=JRz4LoQOr6I to watch the video on *Screen Display Settings for iOS Devices*.

Screen Readers



Screen Readers - VoiceOver on Apple iOS and TalkBack on Android devices give you audible descriptions of what's on your screen.

Basic Gestures for Android Devices with TalkBack

If you are using an Android smartphone, click this link https://www.youtube.com/watch?v=QxB5GYoVvuc to watch the video on *Basic Gestures for Android Devices with TalkBack*.

Basic Gestures for iPhone with VoiceOver

If you are using iPhone, click this link https://www.youtube.com/watch?v=qNTHJRe5yV4 to watch the video on *Basic Gestures for iPhone with VoiceOver.*

Calling & Messaging

Basic Communications – This video series explains

- how to add contacts,
- make and receive phone calls,
- and how to send and receive messages.

This involves using the built in contact list, message and phone apps in all smartphones.

The team recognises that WhatsApp app and Telegram app are also other useful platforms for calling and messaging, however these apps are considered by the team as being more advanced level apps for users, and that you need to know how to search and download these apps in the app stores of either platform before you can use them. Hence, these skills will be covered in future versions of the web-based toolkit which aim to support the learning of more advanced skills.

Calling & Messaging

If you are using Android smartphones, click the links to watch the videos on 3 topics under *Calling & Messaging*:

- Adding Contact and Sending Text Messages Using the Contact List https://www.youtube.com/watch?v=FeDM68Hvux0
- Make and Receive Phone Calls https://www.youtube.com/watch?v=uL5OlxY9_KM
- Sending and Receiving Messages https://www.youtube.com/watch?v=H3-E73liEok

If you are using iPhone, click the links to watch the videos on 3 topics under *Calling & Messaging*:

- Adding Contact and Calling Using the Contact List https://www.youtube.com/watch?v=t08NQA-IV3U&t=1s
- Make and Receive Phone Calls https://www.youtube.com/watch?v=xmoQ1fMyXGo
- Sending and Receiving Messages https://www.youtube.com/watch?v=aNYuufxt0co

Glossary of Terms

GDS – Guide Dogs Singapore
PVI – Person/People with Vision Impairment
EBCD – Experience-Based Co-Design
AT – Assistive Technology
Apps – Applications
POC – The Point of Care Foundation, UK

1. The Point of Care Foundation. (n.d.). EBCD: Experience-based co-design toolkit. https://www.pointofcarefoundation.org.uk/resource/experience-based-co-design-ebcd-toolkit/step-by-step-guide/1-experience-based-co-design/

Co-Design Team

PROJECT LEAD

Designed and led the project

Ms Tan Hwei Lan

Singapore Institute of Technology
The University of Queensland

GUIDE DOGS SINGAPORE

The following team members shared their lived experience of learning and using the smartphone and apps generously during the project team meetings and contributed greatly to the direction of the toolkit and the construction of it throughout, including content writing/editing and script writing and filming of videos in the toolkit:

Mr Au Yew Zhang Dallon

Mr Chia Hong Sen

Ms Amanda Chong

Ms Nurul Natasya Binte Idru

Ms Sherriza Hareani Bte Jalil

Ms Ser Geok Yin (Vivian)

Ms Tan Xing En

Ms Yong Pei Yueng

SINGAPORE INSTITUTE OF TECHNOLOGY

Provided administrative and editing support, and contributed to content writing and editing, filming of videos and post production work on all videos in the web-based toolkit:

Ms Jacqueline Siow

THE UNIVERSITY OF QUEENSLAND

Provided project consultation and helped with editing of content:

Dr Tammy Aplin

Dr Hannah Gullo

Dr Tomomi McAuliffe

ACKNOWLEDGEMENT

The team would like to acknowledge

Mr Chew Kuan Hock

(Singapore Institute of Technology – CO-LEAD)
for his generous help with
all the videos' production and editing.

The Co-Design Team:

Front row, from left to right: Amanda, Sherriza, Vivian, Dallon;

Back row, from left to right: Nurul, Jacqueline [Research Assistant], Yong, Hong Sen

Absent from the picture: Xing En

Funded by

DIGITAL FOR LIFE

PLAY IT FORWARD

Digital For Life Fund
Infocomm Media Development Authority

Supported by

GUIDE DOGS SINGAPORE
ENABLING THE VISUALLY IMPAIRED

Guide Dogs Singapore

SiT SINGAPORE INSTITUTE OF TECHNOLOGY

Singapore Institute of Technology

THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

The University of Queensland

Need Help?

We are here to support you!
If you have any questions or you need more information, please email us at
it@guidedogs.org.sg
or call us at
(+65) 6339 7900.