
Teaching the iPhone with VoiceOver Accessibility to People with Visual Impairments

Brian M. Celusnak

Moving from a conventional telephone keypad to a cellular telephone with a touchscreen can seem quite challenging for some people. When one is visually impaired, there is always the option of using VoiceOver, the iPhone's built-in access technology that is designed to allow individuals with visual impairments the ability to access the visual information on the device's screen (see, for example, Apple, n.d.). This accessibility feature also allows items on the screen to be spoken aloud when touched. With the use of additional finger gestures (taps and flicks or swipes of one or multiple fingers on the screen), VoiceOver is designed to provide users with visual impairments the same amount of information as is accessible to sighted users using the device.

The learning curve can seem steep and daunting, but the right teaching strategies can make the process of adjusting to a cellular telephone with a touchscreen easier for people with visual impairments. Teaching students to identify the similarities that exist in applications or "apps" (the location of buttons or icons, for example) can increase comprehension for individuals who have experienced challenges in exploring unfamiliar apps. Connecting the dots can begin with establishing basic comfort with receiving voice feedback from the device, learning basic orientation skills, and beginning training with the Phone app, which allows individuals to dial numbers and manage contacts.

Individuals who teach the use of the iPhone with VoiceOver may not realize the importance of orientation skills when interacting with apps. Being mindful of the location of items within an app can enhance the ability of learners to develop basic problem-solving strategies. This report intends to provide read-

ers with a method for teaching introductory skills for using the iPhone with VoiceOver.

STRATEGIES FOR COMFORT AND BUILDING FOUNDATIONAL SKILLS

Before delving into the Phone app, some primary building blocks have to be laid to make learning the iPhone less tedious. Comfort is key for conducive learning environments, so the learner needs to feel comfortable touching the screen and listening to VoiceOver's feedback. This comfort level will increase with training.

When introduced to the idea of VoiceOver, learners tend to want to press their fingers down in different areas of the screen. One way to counteract this response is to have a student slowly glide a finger over the surface of the screen. As visual items or icons on the telephone's touchscreen are announced by VoiceOver, teachers can explain briefly what each item is. Lest learners begin to think that the slow-glide gesture is the primary way to navigate an iPhone with VoiceOver, teachers should next introduce the idea of using distinct finger gestures to operate the device. Have the learner perform a four-finger double tap to enter Help mode and experiment with the other finger gestures recognized by the iPhone. In Help mode, learners will receive auditory messages describing the correct finger gesture and its function.

Once learners feel comfortable with finger gestures, introduce them to the layout of the home screen, which is the primary screen of the device. Show learners how to navigate to the major areas of the screen (Status Bar, Dock, and the array of apps) by placing a finger in the area, then having them perform finger gestures to navigate to the same location. Explain

that whenever VoiceOver speaks an item, a little black box is drawn around that item. When the item is spoken, the focus is placed on that item. If the learner performs a double tap, the focused item is opened. The focus can be on an icon at the bottom of the home screen, but the learner can double tap anywhere and still open the icon because of where the focus is placed.

Once the learner finds the desired item, he or she can perform a double tap or keep a finger on the item and tap anywhere on the screen with an additional finger to interact with the item. This two-finger gesture is called a *split tap*. Learners need to be taught that they cannot move the finger that is touching the original item, and it is only a single tap of an additional finger that activates the selected item. The split tap works the same as a double tap, but may be a more desirable choice for learners with greater amounts of usable vision, those who have trouble performing the double-tap gesture, or people who want a quicker way to type with on-screen keyboards or keypads.

INSTRUCTIONAL STRATEGIES FOR BASIC APP ORIENTATION

Have the learner open the Phone app and explore the screen layout. If the app has numerous sections or pages, explain that page tabs can usually be found in a row along the bottom of the screen. Have the learner select the Keypad tab by double tapping on the item along the bottom row of tabs. A new screen will appear that looks like an actual telephone keypad. Learners can run a finger over the screen and, based on their knowledge of a telephone keypad, orient themselves to the position of the number keys with little difficulty. If learners place their focus on

a Text Box, they will be able to hear what they have typed. Text Boxes can be found above the Keypad, either immediately above or near the Status Bar.

Adding a family member or friend as a contact in the Phone app is an excellent foundational activity that incorporates many of the required skills for the use of the iPhone with VoiceOver. Learners can navigate to the Contacts page by searching along the bottom bar and selecting the Contacts tab. In the Contacts tab, learners will encounter a list of all their contacts, and they can check the four corners of the screen for an Add button. Once the button is selected, they can begin to fill out the New Contact form.

Within the New Contact form, learners can either move their fingers from item to item or flick left or right to move from field to field. To be able to manipulate the current field, learners need to double tap on it as if to say, “Yes, I want that one.” Keyboards, keypads, and “picker” or list items appear at the bottom of the screen, depending on which field of the form has been selected. Once the information is entered in the bottom half of the screen, the learner must position the focus back on the form by touching the top half of the screen with one finger. Learners can then continue flicking to the next item within the form. After the form is completed, learners can check the four corners of the screen for the Done button. Comprehension of these skills can be measured by having the learner demonstrate the way to independently enter five contacts into their Contacts list. If this task is completed, the learner is ready to approach other aspects of the iPhone. If the task is not completed in a timely manner, teach-

ers may have to explore different avenues with the learner to accomplish set goals.

If the learner already has set skills for navigating around the Keypad, there is always the option of building upon Phone Dialing to add a contact into the Phone app. The learner would dial a telephone number and, instead of selecting the Call button, he or she would select a Save as Contact button in the upper-left corner of the screen. A notification will appear and a Create New Contact button will need to be selected. Next, learners enter a first name for their contact with the on-screen keyboard, and select the Done button in the upper-right corner. Foundational skills can be taught through a variety of different apps, but the Phone app in particular can assist learners in forming a great foundation in only a single application for working with other aspects of the device.

SIMILARITIES BETWEEN APPS

One instance of the similarities between apps that are designed to be used with the iPhone is the location of the Back button in the Mail app and the Contacts tab of the Phone app. Back buttons are usually found in the upper-left corner of the screen, just like on some computer applications. This location is also used for a Cancel button. The Cancel button is in the same location as the Back button because it directs learners away from the current function and back to the previous page. The upper-right corner of the screen is usually reserved for the Next or Done buttons. In the Contacts tab of the Phone app, learners can find that they can save contacts by selecting the Done button in the upper-right corner, which navigates learners to the next screen. When a contact is selected, an Edit button appears in the upper-right

corner that opens a new page on which contact information can be updated. From the edit page, the Edit button location changes to a Done button, which can be selected to save new content.

In the Phone app, learners look to find different buttons along the bottom bar in order to locate different tabs to navigate the app. This bottom bar scenario is the same when using the Safari web browser app. Learners can look at the bottom of the screen when navigating in Safari or manipulating a webpage. Along the top bar of an app screen, just below the Status Bar, learners can typically find a heading that tells them about what is on the current screen. Navigation buttons are found on either side of the heading. Just as when creating a new contact, the heading is in the middle with a Cancel and Done button on either side. The Notes app is slightly different, with a New button in the bottom-right corner, but the concept of checking the four corners of the screen remains the same for primary navigation items.

ALTERNATIVE TEACHING METHODS

Since every learner has a slightly different way of taking in new skills and information, alternative teaching methods may need to be considered. If finding similarities between apps is challenging to a learner, teachers may try to relate concepts to topics that the learners know and use. For example, the concept of the split tap VoiceOver finger gesture cannot always be learned easily. To learners who find enjoyment in basketball, the gesture can be related to the "travel rule." One finger must always be touching the screen, and a pivot point or focus on the device must be maintained.

When learners are first developing their

use of VoiceOver finger gestures, the Help mode can be compared to the bull pen in baseball. Learners are just practicing. When not in Help mode, learners are in the game and can put their gestures to use. Help mode is essentially a transparent screen that is pulled over the device. Learners can practice their finger gestures, but they will not be able to interact with what is shown on the screen. If Help mode is turned on in the home screen, learners will see the app icons displayed. If the learner has a lot of usable vision and tends to be focused on what they see on the screen, take away this sensory distraction by enabling the screen curtain, blacking out the screen completely. The screen curtain can enable learners to work with complete auditory feedback.

With all teaching methods, repetition is key for establishing a basis of whether or not the learner grasps the material. No matter the teaching methods or how quickly the learner seems to grasp the information, it is always beneficial to provide him or her with notes on the material covered. Learners can refer back to audio or large print notes if future issues arise. Notes in a preferred medium can offer comfort and support, reinforcing taught problem-solving strategies.

CONCLUSION

In my experience as a blind rehabilitation specialist, I have utilized this orientation

method for my last 20 students. By the end of their first week of training, over half were utilizing this method to problem solve and increase their comprehension of app orientation on the iPhone while using VoiceOver. Learning these similarities can help learners feel more comfortable with exploring new apps. Instead of exploring the whole page and trying to make sense of what relates to what, learners can briefly scan the top and bottom bars, or four corners, for basic items in an app. They will feel at ease using these landmarks. Simple introductory skills can be overlooked without the use of teaching basic app orientation. Even if the item is not directly in one of the corners, students can be taught to reorient themselves to the frame of the device and find the location on the screen for quick navigation. Simple shortcuts and the ability to identify similarities among the telephone's functions will make it easier to learn to use the iPhone with VoiceOver.

Reference

Apple. (n.d.). Introducing VoiceOver. In *VoiceOver getting started*. Retrieved from https://www.apple.com/voiceover/info/guide/_1121.html

Brian M. Celusnak, M.A., CVRT, blind rehabilitation specialist, Louis Stokes VA Blind Rehabilitation Center, 10701 East Boulevard, Cleveland, OH 44106; e-mail: <brian.celusnak@va.gov>.