Drag

Action

1-finger drag is a method used to move around the screen while listening to items being announced.

Why Is The Drag Gesture Important?

A touch screen device has a powerful advantage over the traditional computer. The power of a touch screen device is that you always know where your finger is on the screen and where other items are in relation to your position. Dragging a finger across the screen in a straight line helps build spatial awareness and mental mapping skills. These skills are useful for technology, math, and Orientation and Mobility.

Children quickly learn that most apps are intentionally designed with a predictable layout, making it easier to navigate for all users. Example:

- The Back button is typically in the top left corner.
- The Next button is often in the bottom right corner.

When a child places their finger on the Back button, they know it is in the top left. By recognizing these patterns, users can efficiently start at the corner without unnecessary movements around the screen.

Encourage children to drag their fingers to explore the screen and understand positions like **top, bottom, left, right, middle, and corners**. This helps them create a mental map of the screen, which is a critical tech skills for students with visual impairments.

It is also imperative that children learn to drag in a straight line - in a row - from left to right across the screen.

Swiping right and left across the screen does NOT provide spatial information; spatial concepts are lost when swiping. Do not introduce left/right swipe until the child has mastered dragging and has built spatial awareness of items on the iPad screen.

Prerequisite

The child should:

- Enjoy touching and interacting with the screen
- Have fine motor control
- Have basic isolated finger control

Warm Up Activities

The following three warm up activities help prepare the child for learning the new gesture:

- Tickle Touch
- Coin Hockey Drag
- Straight Line Tactile Activities

The Tickle Touch activity should be introduced before teaching the drag gesture. It can also be used as a warm up activity before each tech lesson to build muscle memory.

Physical Gesture

The correct drag gesture involves:

- The hand should **hover slightly above the iPad** with an open palm.
- Fingers should be relaxed and spread slightly apart.
- A relaxed index finger drops down to make consistent, light contact with the screen.
- Encourage the child to drag in a straight line from left to right.
- For short drags, only the finger moves.
- For longer drags, the hand and arm may move.
- Encourage the child to actively listen to the VoiceOver announcements as their finger drags over items on the screen.

Modification

Young children are still developing isolated finger control, which is important when making various one-finger gestures. Young children may initially make a **fist with only the index finger extended**. As their dexterity improves, they should transition to an **open palm position**, using only the index finger to interact with the screen. The index finger should be relaxed and make light contact with the screen.

Straight-Line Drag

The ability to drag in a straight line is a fundamental tech skill.

On an iPad's Home screen, app icons are arranged in a grid layout, requiring children to navigate from left to right across rows to hear all available options. Many educational games are also designed in a row or grid layout, making it easier for children who use screen readers to explore and interact with content.

When teaching a child to drag from left to right, it is important to introduce the concept and terminology of **rows**.

Why Are Rows Important?

- Recognizing and understanding rows helps with reading skills, which require following text in a straight line.
- Rows are essential for tactile and digital graphs, charts, and structured data**.**
- Understanding rows using tactile resources helps children navigate digital screens.
    - Many apps, including the iPad's Home screen, are designed in rows, making it easier to explore.
    - More advanced tools, like spreadsheets**,** also use a row-based structure.

Children first learn to place physical objects in a row before tracing lines from left to right.

Sonification

Sonification is the use of non-speech sounds to convey information or represent data. This auditory tool can be applied to digital lines to help blind and low-vision users trace them. Instead of using touch to trace a tactile line, the VoiceOver Playground app uses sonification to guide children in tracing a digital line.

- If the child's finger stays on the digital line, a sound plays.
- If the finger moves off the digital line, the sound stops.

Sonification provides an engaging way for children who are blind or have low vision to develop the ability to drag in a straight line across a digital screen. The Drag Lessons introduce activities that first teach dragging along a left-to-right line with sonification and later progress to practicing the skill without auditory guidance.

Earcon

Earcons are sounds that convey what is happening on the iPad. For example, a “click” sound plays when the finger is dragged over an item on the screen.

Encourage the child to listen for these clicks and to understand that each sound represents an item on the screen.

Common Issues

- **Dragging in an arc across the screen instead of a straight line**:
    - **Cause:** Resting the arm on the table, causing the hand to move in an arc across the screen.
        - **Fix:** Encourage the child to lift and move their arm instead of resting it.
    - **Cause:** Pressing the elbow tightly against the body causing the hand to move in an arc across the screen.
        - **Fix:** Help the child relax their arm and move their elbow slightly away from their body.
- **Lifting the finger**:
        - **Fix:** Encourage the child to **keep contact with the screen**. (Play the Coin Hockey warm up game**.)**
- **More than one finger on the screen**:
    - **Cause:** If using an open hand and fingers are stiff or touching, the longer middle finger may also touch the screen changing the gesture to a 2-finger gesture.
        - **Fix:** Relax the fingers – fingers should be slightly curved.
        - **Fix:** Spread the fingers slightly apart
        - **Fix:** Make a fist with only the index finger extended.
- **Drag speed too slow**:
  The expectation should be a nice, consistent drag speed – slow enough to hear announcements but fast enough that there is not lag time between announcements. As the child’s skills progress and the child is searching for a specific item, listen to only the very beginning of the announcement and quickly move to the next item - do not listen to the full announcement!
        - **Fix:** Speed up the drag movement!
        - **Fix:** Encourage the child to quickly find (x) on the screen.

    - **Cause: Pressing down too hard** on the iPad, causing the drag to be very slow. (In this case, the tip of the child's index finger may be bent back.)
        - **Fix:** Relax the fingers and practice the Tickle Touch. (See Tickle Touch warm up game)
    - **Cause: Slow processing speed**: Some children process auditory information slowly.
        - **Fix**: Increase VoiceOver speaking rate. Speeding up the VoiceOver speaking rate will increase how fast the child can process information which also impacts dragging speed!
- **Drag speed too fast**:
    - **Cause:** While most young children tend to be too slow, some children will drag too fast and will miss the announcements!
        - **Fix:** Slow down the drag movement!
        - **Fix:** Encourage the child to slow down and listen to announcements.

Lessons

- **Lesson 1: Drag in a straight line with sonification (Horizontal)**
    - **Goal**: Learn how to drag in a straight line from the left side of the screen to the right side following a sonified line. A sonified line is when sound is added to a line so that the child can follow a digital line.
    - **Screen Layout**:
        - A rubber duck on the left, halfway down the screen.
        - A bathtub on the right, halfway down the screen.
        - A green line connects them.
    - **Breakdown:**
        - Drag your finger down the left side of the screen until you hear a "squeak" sound, indicating the rubber duck.
        - Move your finger right while following the "dadada" sound.
        - Stop when you hear the "splash" sound, indicating the bathtub.
        - If the sound stops, you have fallen off the line; return to the duck and try again.
        - Complete the task three times to finish the lesson.

- **Lesson 2: Drag in a straight line without sonification (Horizontal)**
    - **Goal:** Learn to drag in a straight line from left to right without sound guidance.
    - **Screen Setup:**
        - A seed on the left, halfway down the screen
        - A pot on the right 3/4ths of the screen, halfway down.
    - **Breakdown:**
        - Drag your finger down the left side of the screen until you hear a "pop" sound, indicating the seed.
        - Move your finger right in a straight line until you find the pot.
        - Stope when you hear the sound for the pot.
        - Complete the activity three times to finish the lesson.