**DAKOTA.EDU**

Game Design Document: Touch Control

# Introduction

This document outlines the use of touch control in Dakata.edu. The goal is to enrich the Kodu experience by using simple and intuitive controls while maintaining all the current features found in the program. Much of the gestures and UI mechanics are based on Windows 8’s Metro UI.

# Touch Gestures

## Core Gestures

The following are the standard touch interactions from Microsoft’s Metro style app development to be used in Dakota.edu.

|  |  |  |  |
| --- | --- | --- | --- |
| **Tap** | **Press and Hold** | **Drag** | **Swipe/Cross-slide** |
|  |  |  |  |
| One finger is placed down briefly to set focus, and then lifted up without sliding. | One finger is placed down without moving. | One or more fingers are placed on a moveable UI element and move in the same direction. The fingers are not lifted until the action is complete. | One finger is placed on an object and dragged at a right angle to the panning direction. |
| **Pan** | **Pinch & Spread** | **Rotate** |  |
|  |  | 1323302498_redo.pngfinger_small.png |  |
| One or more fingers are placed on a scrollable UI surface and move together across the surface. | Two or more fingers are moved closer together or farther apart. | Two or more fingers are moved in a clockwise or counter-clockwise arc. |  |

# General

|  |  |  |
| --- | --- | --- |
| **Feature** | **Gesture** | **Action** |
| Select | Tap | Tap on an icon to select an option (ex. Turn on/off option) |
| Place item/ select object | Tap | Tap on a spot on the map to place an object |
| Tooltip | Press and Hold | Press and hold on an icon to display a tooltip (ex. Move camera). Removing the finger does not select initiate the tool. |
| Slide menu | Drag | Drag a finger left/right to slide the menu left/right |
| Close/cancel | Slide from edge | Slide finger from the top edge down |

# Camera Controls

|  |  |  |
| --- | --- | --- |
| **Feature** | **Gesture** | **Action** |
| Zoom | Pinch & Spread | Pinch 🡪 zoom in  Spread 🡪 zoom out  Zoom focus is the center of the two points being pinched/spread apart |
| Pan | Pan | Slide screen in the direction of slide using one finger.  Ex. Slide left to right 🡪 pan screen left to right  Ex. Slide top to bottom 🡪 pan screen forward to back |
| Orbit | Two Finger Pan | Orbit screen in the direction of pan using **two adjacent fingers.** Like a ball, rotate into the direction of the force. |

# Radial Selector

Touch controls will be added to the Radial selector. Tap a slice to select it. If there are sub options, an additional radial appears over the parent slice. Players can tap a slice to select it, tap the parent slice or any other visible slice from the parent selector to close the sub radial or tap anywhere not on the radial(s) to close all of them.

To accommodate for all the available tools in Kodu, additional options will be placed in the Radial selector. For example change color, change size etc.

To reveal the previous Radial selector swipe from the top edge down. An example of this is reselecting a brush or material.

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| --- | --- |
|  |  |

|  |  |
| --- | --- |
| **Gesture** | **Action** |
| Tap + slice | Tap slice to select |
| Tap | Tap anywhere not on the radial to close all |
| Press and Hold | Show tooltip |

# Tool Menu

The Tool menu is similar to the current layout used in Kodu. The differences being that the Home menu is removed and some tools have been combined.

The Tool menu can be revealed at any time in Edit mode by swiping from the bottom edge up to reveal the Home menu.

The available tools are:

1. Play Game
2. Object Tool
3. Ground Brush
4. Terrain Tool
5. Water Tool
6. Delete Tool
7. Change World Settings

|  |  |
| --- | --- |
| **Gesture** | **Action** |
| Tap + icon | Tap icon to select |

## Home Menu

On the touch version of Dakota.edu the Home button will not appear on the Tool menu. Instead, the commands will appear on the App bar at the bottom of the screen. The App bar is revealed by swiping from the bottom edge up. The same swipe hides the App bar.

**New**

**Load**

**Save**

**Quit**

**Print**

**Edit**

**Play**

|  |  |
| --- | --- |
| **Gesture** | **Action** |
| Swipe from edge | Swipe from the bottom edge up to reveal and hide the App bar |

## Play Game

In Play Game mode, the gestures programmed in the “kode” take precedence over system gestures. For example, normally pinch is used to zoom in but players can assign pinch in code to do something else. The layout remains the same except that the icon to go to Edit mode is removed. To go back to Edit mode, use the Home menu.

|  |  |
| --- | --- |
| **Gesture** | **Action** |
| Swipe from edge | Reveal/hide Home menu |

## Object Tool

There are two primary actions with the Object tool, placing a new object or selecting an existing object. With either action, a visual cue will appear to confirm the touch action (ex. Object is highlighted or icon appears on the ground.)

To place a new object, players tap on an empty spot on the ground. The Radial selector will appear filled with the available objects. Players then tap an object from radial and the object will appear on the ground. The available options are:

1. Tree
2. Items
3. Kodu
4. Apple
5. Path
6. Paste (if avail.)

To select a target, players simply tap on an object. The Radial selector will appear with the following options:

1. Change color
2. Change size
3. Settings
4. Program
5. Pick up
6. Cut
7. Clone

|  |  |
| --- | --- |
| **Gesture** | **Action** |
| Tap | Tap a location on an empty space on the ground |
| Tap + target | Tap an object to select it |

## Terrain Tool (Up/Down, Flatten, Roughen)

The three terrain tools (up/down, flatten, and roughen) in the current version of Kodu will be combined into one tool to reduce redundancy.

### Available Terrain Tools

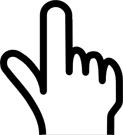
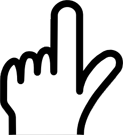
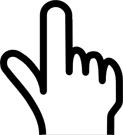
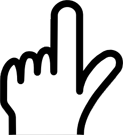
When the Terrain tool is selected the Radial selector appears with the following options:

1. Brush picker
2. Brush size
3. Smooth terrain
4. Level terrain
5. Raise terrain
6. Lower terrain
7. Make spiky
8. Make hilly

Tap the slice to select the optoin. If Brush picker is selected a sub Radial selector appears overtop that shows all the available brushes. If Brush size is selected a slider appears above that changes the brush size smaller (left) or larger (right).

### Using Terrain Tool

The touch mechanic maintains the ease of being able to swap seamlessly between editing the terrain and moving the camera. To accomplish this, Players simply hold or remove a finger from the touch screen. When the terrain edit is disabled, press and holding on a spot shows an outline of the selected brush.



Terrain Edit disabled, Camera On

Terrain Edit On, Camera disabled

|  |  |
| --- | --- |
| **Gesture** | **Action** |
| Tap + icon | Tap icon to select |
| Press and hold | Press and hold anywhere on the ground to show the brush area that is being edited. The terrain does not change until another finger is held down. |
| Press and hold + Drag | Edit terrain with selected tool |
| Pinch & Spread | Raises and lowers terrain. Also used in Water tool to raise and lower water. |

## Ground Brush / Water Tool / Delete Tools

These three tools work just like the Terrain tool. The only difference is the tools available on the Radial selector.

### Ground brush

1. Brush picker
2. Brush size
3. Material picker
4. Erase ground
5. Add ground
6. Change ground color

### Water Tool

1. Water type
2. Lower water
3. Raise water
4. Set water type

### Delete Tool

1. Brush picker
2. Brush size
3. Delete ground
4. Delete objects

## Change World Settings

The world settings will remain as a vertical list with touch control added.

|  |  |
| --- | --- |
| **Gesture** | **Action** |
| Tap right + icon | Tap icon to turn on/off setting. |
| Press and Hold | Show tooltip |
| Drag left/right | Use slider to change setting (ex. Volume) or slide through options (ex. Sky) |
| Drag up/down | Scroll though settings up and down |

# Koding

The Koding menu will be familiar but with several tweaks. The major change is the use of the addition of the Page selector.

*Reflex*

**WHEN**

**+**

**DO**

**+**

*Page Selector*

**+**

**WHEN**

**+**

**DO**

**WHEN**

**+**

**DO**

**+**

**+**

**DO**

**+**

**WHEN**

Page 7

Page 6

Page 5

Page 4

Page 3

Page 2

Page 1

Page 8

## Reflex

The reflex (lines of code) appears and function almost the same as before but with added touch control.

|  |  |
| --- | --- |
| **Gesture** | **Action** |
| Tap + line number | Show Radial selector: Delete, Cut, Paste, Add line |
| Drag + line number | Detach line to move it up and down the list to change the order. Players can also slide the line into a different page by sliding it to the page number where the reflex will then update and the line can be dropped anywhere on the list. |
| Tap + “When” filter | Show existing filters on Radial selector (ex. See, hear, bump, etc.) |
| Tap + “Do” modifiers | Show existing modifiers Radial selector (ex. Move, turn, eat, etc.) |
| Pan left/right/up/down | Slides the entire Reflex in the drag direction. |
| Slide | Band box select multiple lines |

## Page Selector

New to Kodu is the Page selector. This allows players to quickly select a page to change to and be used to drag and drop reflex kode lines

|  |  |
| --- | --- |
| **Gesture** | **Action** |
| Tap + page number | Selects the tapped page |
| Pan left/right | Slides the entire Page selector left and right |

# Control Tiles

The following are the gestures that can be assigned for gameplay:

|  |  |
| --- | --- |
| **Control** | **Action** |
| Tap anywhere/target | Tap anywhere on the screen or on set target |
| Swipe left/right/up/down/any/strength | Swipe in a particular direction or any direction. May include strength of swipe (ex. Strong and weak) |
| Slide left/right/up/down/any/object | Slide in a particular direction or any direction. May or may not need an object target |
| Rotate left/right/any | Rotate in a particular direction or any direction |
| Buttons | Press On screen buttons |
| Tilt left/right/any | Tilt device in a particular direction or any direction |
| Pinch anywhere/target | Pinch anywhere on the screen or on set target |
| Spread anywhere/target | Spread anywhere on the screen or on set target |

# Reference: Microsoft Metro Style for Windows 8

## 8 Traits of Metro Style Apps

From Build conference (<http://channel9.msdn.com/Events/BUILD/BUILD2011/BPS-1004>)

1. Metro style design
2. Fast and fluid
3. Snap and scale beautifully
4. Use the right Contracts
5. Invest in a great Tile
6. Feel connected and alive
7. Roam to the cloud
8. Embrace Metro principles

## Metro Style Design Principles

From Build conference (<http://channel9.msdn.com/Events/BUILD/BUILD2011/APP-395T>)

1. Pride in craftsmanship
   * Sweat the details
   * Make it safe and reliable
   * Balance, symmetry, hierarchy
   * Align to the grid
2. Be fast and fluid
   * Life is mobile
   * Delight with motion
   * Design for touch
   * Intuitive interaction
   * Be responsive and ready
   * Immersive and compelling
3. Authentically digital
   * Cloud connected
   * Dynamic and alive
   * Beautiful use of typography
   * Bold vibrant colors
   * Motion
4. Do more with less
   * Be great at something
   * Focused and direct
   * Content before chrome
   * Inspire confidence
5. Win as one
   * Fit into the UI model
   * Reduce redundancy
   * Work together to complete scenarios
   * Tools and templates are designed to scale

## Designing Metro style apps that are touch-optimized

From Build conference (<http://channel9.msdn.com/Events/BUILD/BUILD2011/APP-391T>)

### Goals of the Windows touch language

* Simple and consistent
* Limited gesture set
* Direct manipulation
  + Immediate visual feedback
  + No hidden thresholds
  + Reversible
* Sliding interactions
* Reversible interactions
* No modes
* Limited use of timed gestures

### Windows 8 touch interactions

* Press and hold – to learn (Time gesture)
  + Like hover over with mouse to get tooltip
  + Release will just close the tooltip and doesn’t launch the selection
  + Holding doesn’t stop people from doing something else (ex. Pan)
  + Hold to learn enables exploration without having to commit
  + The Tooltip control is the easiest way to enable hold to learn in your apps
* Tap – for primary action
* Slide – to drag
* Swipe – to select (good for settings)
  + Graphic reinforcements
  + Adding resistance to slower movements
  + Swipe is a touch optimized way to provide selection and commanding in your app (ex. Show options on toolbar after selected)
  + The easiest way to enable swipe to select is by using the List and Grid controls
* Pinch – to zoom
  + In additional to zoom in/out, when it is zoomed out change the view into categories for easier identification (ex. Headers, date)
  + One level of zoom
  + Semantic zoom provides a touch first way of jumping in content and getting an overview
  + The semantic zoom control is the easiest way to enable this in your app
* Swipe from edge – for app and system UI
  + Win8 apps given top and bottom (App bar) swipe from edge
  + Direct manipulation to reinforce
  + Commands should be revealed through swipe from edge (and usually in the App Bar)
  + People are confident using your app because they know how to find commands
  + Put frequently-used interaction surfaces near the edges
* Rotate – to rotate

### Touch Feedback

* Providing visual feedback to interactions increases user confidence
* Use controls for best feedback experience
* Make sure all other interactive elements have visual feedback on touch

### Touch target size

* Recommended size: 7x7mm
* Optimized for accuracy: 9x9mm
* Optimized for small size: 5x5mm
* Each target has 2mm padding