# **Paint360**

**Testing Plan for Interactive Prototype 2**

### **Project Description**

Paint360 is an immersive drawing and painting prototype built in Unity for Meta Quest using hand-tracking. Users draw with pinch gestures, mix colours with their non-dominant hand, paint objects via raycasting, erase with palm gestures, and preview their palette through spatial UI feedback. The goal is to evaluate whether hand-based gestures and visual feedback (pointer rays, highlight glow, palette sphere/ring) allow users to intuitively create, modify, and erase drawings in VR.

## **Testing Objective**

From my updated concept, I want to evaluate:

* Can users intuitively understand and use the **hand gesture mappings** (draw, palette mixing, paint object raycast, erase with palm)?
* Do the **palette feedback elements** (colour ring above left palm) help users understand colour selection and mixing?
* Is the **raycast pointer** clear and easy to control when painting objects?
* Does erasing with palm feel natural (like a wipe) without orientation constraints?

This test will reveal which gestures feel intuitive and where more feedback or redesign might be needed.

## **Methodology**

* **Observational usability testing** with think-aloud protocol.
* Participants complete drawing and painting tasks using hand gestures while I observe.
* Collect task completion time, hesitation, errors, and verbal feedback.
* Short debrief interview afterwards.

## **Prototype Description / Requirements**

The VR prototype supports:

* **Draw Tool:** Right index pinch draws lines in 3D space.
* **Colour Palette:** Left-hand thumb, index, and middle pinches mix red, green, and blue; preview sphere/ring shows current mix.
* **Object Painting:** Right thumb+middle pinch raycasts forward with visible pointer; target objects glow yellow before being painted.
* **Eraser:** Left thumb+pinky enables erase mode; right palm wipes away strokes in its radius.
* **Visual Feedback:** Cyan pointer line, highlight glow, palette preview.

## **Data Collection**

During testing I will:

* Observe gesture accuracy, hesitation, and confusion.
* Record task completion times.
* Log comments from participants.
* Capture video/screen recording (with consent).
* Note whether visual feedback (pointer, highlight, preview sphere/ring) supports understanding.

## **Testing Setup**

* Meta Quest headset with Unity build installed.
* Clear VR play area.
* Notebook or spreadsheet for logging observations.
* Testing script with tasks prepared.
* Phone or OBS capture for recording (if consent).

## **Testing Process (Approx. 6–7 min total)**

**Introduction (30 sec)** Explain prototype, gestures, and overall goal: explore hand-based drawing and painting.

**Orientation (1 min)** Demonstrate gestures briefly:

* Right index pinch = draw.
* Left hand = colour palette (sphere/ring).
* Right thumb+middle = paint object with pointer ray.
* Left thumb+pinky + right palm = erase.

### **Tasks**

**Task 1: Draw Tool (40 sec)**

* Ask participants to draw a simple shape (e.g. red heart).
* Ask them to mix a colour (e.g. purple) with the left-hand palette and draw another shape.
* Observe colour mixing and drawing intuitiveness.

**Task 2: Object Painting (30 sec)**

* Ask participants to point at a cube
* Paint it using a raycast gesture.
* Observe use of pointer lines and highlight glow.

**Task 3: Colour Mixing & Preview (30 sec)**

* Ask participants to mix colours to get olive and confirm preview circle matches.
* Ask them to draw a multicoloured object by changing palette mid-stroke.

**Task 4: Eraser (30 sec)**

* Ask participants to activate eraser mode (left thumb+pinky).
* Use your right palm to wipe away their drawing.
* Observe how natural the wipe feels.

**Task 5: Free Expression (1 min)**

* Let participants freely draw, mix colours, paint objects, and erase.
* Observe natural workflow and tool switching.

## **Time on Task (sample logging)**

* Task 1 (Draw Tool):
* Task 2 (Object Paint):
* Task 3 (Colour Mixing):
* Task 4 (Eraser):

## **Debrief Questions**

**General Impressions**

* How did it feel to create art with only hand gestures? Was the experience enjoyable?

**Specific Tools**

* Which gesture felt most natural? Which gesture was confusing or hard to perform?
* Did the pointer ray help when painting objects?
* Did you find any of the tools clunky to use or poorly designed?

**Workflow & Efficiency**

* Did switching between drawing, painting, and erasing feel smooth?
* Were there moments of hesitation or frustration?

**Suggestions**

* Did you have any suggestions for future development or ideas?