**🧪 Activity 1: Virtual Lab – “Water Detective Lab: Test the 4 Properties”**

**🎙️ Activity Introduction *(Mic Icon)***

“This is your virtual lab station, young scientist. You will test water’s colour, smell, taste, and boiling point. Carefully observe each reaction and make your decision. Ready your tools — it is time to discover what truly makes water pure.”

**👨‍💻 Developer Guide Instructions**

* **Type:** Virtual Experiment + Clickable Hotspots + Drag-and-Drop
* **Learning Focus:** Investigating the four key physical properties of pure water (colourless, odourless, tasteless, boiling point at 100°C)
* **Icons:** 🧪 🔍 👁️ 👃 👅 🔥
* **Media Tags:**
  + [🎞️ Animated digital lab interface with labelled beaker, Bunsen burner, tripod stand, thermometer]
  + [🎧 Sound FX: Water bubbling, thermometer clicks, drag-and-drop pops]
  + [📊 Live lab report card tracking each completed test]
* **Build Notes:**
  + Provide 4 water samples, each draggable to test stations.
  + Include interactive buttons for sniffing, tasting, boiling.
  + Each test station logs progress with visual checkmarks on a report card.
  + Thermometer must animate gradually, stopping at 100°C.
  + After each successful test, display a “Test Complete” stamp and update a badge tracker.

**📋 Learner Instructions (On-Screen)**

1. Drag the water sample to the correct test station.
2. Perform the test using the provided interactive tools.
3. Select the correct observation from the options given.
4. Continue until all four tests are completed.

**💡 Hint (On-Screen)**

* “Pure water should be colourless, odourless, and tasteless.”
* “Water’s boiling point at sea level is always 100°C.”
* “If you detect colour, smell, or taste — it is not pure water.”

**🔬 Lab Simulation Tasks & Detailed Interactions**

**1️⃣ 👁️ Colour Test**

**Instruction:** Drag the sample to the colour testing panel (virtual chart).  
**Options:**

* 🔵 Blue
* 🔴 Red
* 🟢 Green
* ⚪ Colourless ✅

**Facilitative Feedbacks:**

* ✅ “Excellent! Pure water has no colour. It looks completely clear like clean glass.”
* ❌ “Not quite. A pure substance like water does not appear coloured. Any tint signals contamination or dissolved substances.”

**2️⃣ 👃 Odour Test**

**Instruction:** Click the “Sniff” icon to simulate wafting the scent to your virtual nose.  
**Options:**

* 🌸 Floral
* 😷 Rotten
* 🌿 Minty
* 🚫 Odourless ✅

**Facilitative Feedbacks:**

* ✅ “Correct. Pure water should smell like nothing — truly scent-free.”
* ❌ “Close observation! However, any fragrance suggests an impurity. Pure water must be completely odourless.”

**3️⃣ 👅 Taste Test**

**Instruction:** Click “Taste” button to simulate a hygienic digital taste.  
**Options:**

* 🧂 Salty
* 🍬 Sweet
* 🍋 Sour
* 🚫 Tasteless ✅

**Facilitative Feedbacks:**

* ✅ “Correct! Pure water has no flavour. It is neutral to your tongue.”
* ❌ “Hmm… good thinking, but taste in water indicates dissolved salts or impurities. Pure water = no taste.”

**4️⃣ 🔥 Boiling Point Test**

**Instruction:** Turn on the burner. Monitor bubbles and drag the thermometer into the water. Stop when boiling is observed.  
**Options:**

* 90°C
* 95°C
* ✅ 100°C
* 105°C

**Facilitative Feedbacks:**

* ✅ “Spot on! Pure water boils exactly at 100°C under standard sea-level pressure.”
* ❌ “Try again. Watch when rapid bubbles start forming and the temperature stays steady. That is your boiling point — and for pure water, it is always 100°C at sea level.”

**🎙️ Activity Conclusion *(Mic Icon)***

“Amazing work! You completed all four scientific tests like a true lab expert. You have now confirmed that pure water is colourless, odourless, tasteless, and boils exactly at 100°C at sea level. You are officially a Water Property Pro!”