**🧪 Activity 1: “Shake the Soap!” – Virtual Lather Test**

**🎙️ Activity Introduction**

"Water can be tricky when it comes to soap. Some make big bubbles — others leave ugly scum. Get ready to investigate! In this virtual lab, you will shake six water samples and watch what happens when soap is added. Lather means soft water. Scum means hard water. Let us test and see!"

**👨‍💻 Developer Guide Instructions**

* **UI Setup**:
  + Display six clickable water bottles: Distilled 🧫, Rain 🌧️, Tap 🚰, Borehole 🕳️, River 🏞️, Sea 🌊.
  + Clicking a bottle triggers soap-add animation → “Shake” button → result.
  + Result animations:
    - 💥 Lather = soft water
    - ❌ Scum = hard water
    - ⚠️ Weak foam = intermediate hardness
* **Audio cues**: fizz for lather, dull thud for scum, drip for weak lather.
* **Progress tracking**: store learner classifications in a virtual notebook pop-up.

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

1. Click on a sample bottle to add soap.
2. Press the **Shake** button to mix.
3. Watch carefully — is there foam or scum?
4. Decide whether the water is **Soft**, **Hard**, or **Intermediate**.

**💡 Hint**

"Soft water makes soap foam quickly. Hard water leaves a scum ring. Some water gives little foam — this means intermediate hardness."

**📜 Activity Content**

| **💧 Water Type** | **💥 Result** | **🔍 Classification** |
| --- | --- | --- |
| Distilled 🧫 | 💥 Big Lather | ✅ Soft Water |
| Rain 🌧️ | 💥 Lather | ✅ Soft Water |
| Tap 🚰 | ⚠️ Some Lather | 🟡 Intermediate |
| Borehole 🕳️ | ❌ Scum | ❌ Hard Water |
| River 🏞️ | ❌ Scum | ❌ Hard Water |
| Sea 🌊 | ❌ Scum | ❌ Hard Water |

**🗣️ Facilitative Feedbacks**

**Distilled 🧫**  
✅ “Correct. Distilled water is pure and soft — it allows rich lather to form.”  
❌ “Check again — this water is highly purified, it should foam easily.”

**Rainwater 🌧️**  
✅ “Well done! Rainwater is naturally soft and helps soap lather well.”  
❌ “Try again. This water is soft — it lathers quickly without any scum.”

**Tap Water 🚰**  
✅ “That is right. Tap water often contains some minerals, giving partial lather.”  
❌ “Look closely. Tap water usually lathers a bit, but not as much as pure water.”

**Borehole 🕳️**  
✅ “Correct. Borehole water usually contains calcium and magnesium — this causes scum.”  
❌ “Check again — scum formation means the water is hard.”

**River Water 🏞️**  
✅ “Yes. River water often has dissolved minerals that react with soap.”  
❌ “Look at the result — no lather means it is hard water.”

**Sea Water 🌊**  
✅ “Correct. Sea water has high salt content. Soap will not lather in it.”  
❌ “Re-evaluate. Salty sea water is hard — it does not let soap work properly.”

**🎙️ Activity Conclusion**

"Excellent investigation! You discovered that soft water forms lather while hard water leaves scum. Soap works best with soft water — now you understand why laundry behaves differently in different places!"