**🎭 Activity 2: Case Study – “Juma’s Grandparents’ Water Woes”**

**🎙️ Activity Introduction**

"Juma has noticed problems while staying at his grandparents’ rural home. The water causes soap to fail, a white layer coats the kettle, and the pipes are very old. Can you help him make the best decisions to solve these challenges using your science skills?"

**🛠 Developer Guide Instructions**

* Display an illustrated **story card** showing:
  + Juma beside a laundry bucket with no lather
  + A white-scaled kettle
  + Old lead pipes with rust
* Present **six clickable checkboxes** under the question:  
  **“Which of these are good decisions Juma should make?”**
* Allow **multiple selections**.
* Give **specific correct and incorrect facilitative feedback** for each choice.
* Lock completion until all options have been clicked at least once.
* Trigger completion animation once all correct options are selected without selecting incorrect ones.

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

* "Read Juma’s situation carefully."
* "Click on the decisions you think will help Juma and his grandparents."
* "Some decisions are good, others are not — think before you select."
* "You may select more than one option."

**💡 Hints (On-Screen)**

* "Think about how to remove hardness in water."
* "Consider both health and appliance protection."
* "Avoid solutions that waste resources."

**📜 Activity Content – Scenario Recap**

**Scenario:**  
Juma visits his grandparents. Their water causes soap not to lather, the kettle has white scale, and pipes are old. They want to continue using the water but avoid waste and health problems.

**📋 Decisions and Facilitative Feedbacks**

|  |  |  |
| --- | --- | --- |
| **💬 Option** | **Correct?** | **Facilitative Feedback** |
| 🔥 Boil water before laundry | ✅ | "Correct. Boiling removes temporary hardness by forming insoluble calcium carbonate." |
| 🧂 Add washing soda to laundry | ✅ | "Right! Washing soda removes calcium and magnesium ions — improving lather." |
| 💧 Drink the hard water | ✅ | "Yes! Hard water contains calcium and magnesium which are good for bones and muscles." |
| 🔁 Replace pipes with non-lead ones | ✅ | "Great choice. Soft water can dissolve lead, so replacing old pipes prevents health risks." |
| ❌ Use more soap than usual | ❌ | "Try again. This wastes soap and money. It does not solve the hardness issue." |
| ❌ Ignore the white deposits | ❌ | "Not a good decision. These deposits can damage kettles and heating appliances over time." |

**🎙️ Activity Conclusion**

"Excellent work! You helped Juma and his grandparents make smart, science-based water decisions. You now understand the effects of hard water and how to manage it at home!"