**🎯 Activity 1: 📦 Element Sorter – “Classify That Atom!”**

**🎙️ Activity Introduction**   
"Atoms can be grouped by their behaviour. Metals love to lose electrons, non-metals tend to gain, and metalloids are in between. Your task is to drag each element into the correct category. Let the sorting begin!"

**👨‍💻 Developer Guide Instructions**

* **Interface Elements:**
  + Draggable element icons (e.g., Na, O, Mg, Si, etc.)
  + Tooltips with electron arrangements on hover.
  + Sorting bins labelled:
    - 🔧 Metals
    - 🍃 Non-metals
    - ⚖️ Metalloids
* **Functionality:**
  + Visual snap-in animation when element is dropped.
  + Tick (✔) or cross (✖) animation on placement.
  + Instant audio and text feedback.
  + Allow learners to reattempt until all are correct.

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

1. Look at the electron arrangement of the element.
2. Drag the element into the correct category bin: Metals, Non-metals, or Metalloids.
3. Release to place it in the bin.
4. Check the feedback to see if your classification is correct.

**💡 Hint Panel (On-Screen)**

**Classification Reminders:**

* **Metals:** Usually have 1–3 valence electrons, lose electrons easily.
* **Non-metals:** Usually have 5–8 valence electrons, tend to gain or share electrons.
* **Metalloids:** Share properties of both metals and non-metals.

**🧪 Activity Content with Facilitative Feedback**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Element** | **Electron Arrangement** | **Correct Category** | **Correct Feedback** | **Incorrect Feedback** |
| Na | 2.8.1 | 🔧 Metals | ✅ Correct! Sodium has 1 outer electron and is a typical metal. | ❌ Sodium has 1 outer electron. That means it gives away electrons like metals do. |
| Mg | 2.8.2 | 🔧 Metals | ✅ Magnesium has 2 valence electrons—classic metal behaviour. | ❌ Magnesium is a metal—it loses 2 electrons easily. |
| Al | 2.8.3 | 🔧 Metals | ✅ Aluminium has 3 outer electrons—metals often have 1 to 3. | ❌ Aluminium is a metal—it loses 3 electrons to form positive ions. |
| C | 2.4 | 🍃 Non-metals | ✅ Carbon has 4 outer electrons—it does not lose them easily. | ❌ Carbon has 4 electrons in its outer shell—it tends to share or gain, not lose like metals. |
| O | 2.6 | 🍃 Non-metals | ✅ Oxygen needs 2 electrons to fill its outer shell. A reactive non-metal! | ❌ Oxygen gains electrons. That is a sign of a non-metal. |
| F | 2.7 | 🍃 Non-metals | ✅ Fluorine has 7 outer electrons—wants to gain 1. | ❌ Fluorine gains electrons to complete its outer shell. This is non-metal behaviour. |
| Ne | 2.8 | 🍃 Non-metals | ✅ Neon is a noble gas—full outer shell makes it stable. | ❌ Neon has a full outer shell, making it inert and a non-metal. |
| H | 1 | 🍃 Non-metals (special case) | ✅ Hydrogen is an exception—it behaves like a non-metal. | ❌ Hydrogen is a non-metal—it shares electrons in bonding. |
| He | 2 | 🍃 Non-metals (special case) | ✅ Helium has a full outer shell of 2—it is inert. | ❌ Helium is a noble gas—it is chemically inactive and belongs with non-metals. |
| Si | 2.8.4 | ⚖️ Metalloids | ✅ Silicon sits between metals and non-metals. It has properties of both. | ❌ Silicon is a metalloid—it shares properties of both metals and non-metals. |

**🎙️ Activity Conclusion 🎤**

**Narration:**  
"Well done sorting! Metals usually have 1 to 3 valence electrons and lose them. Non-metals have 5 to 8 and gain or share electrons. Metalloids are in between. Classifying atoms helps us predict how they behave in reactions."