Activity 04-1: Understanding Binary and Hexadecimal Number Systems using Hexadecimal Color Mixer

Big Idea

The "Hexadecimal Color Mixer" lesson aims to teach students how hexadecimal codes are used to represent colors in computing. By exploring and predicting the outcome of various hexadecimal color codes using a color picker tool, students will gain a practical understanding of this base-16 number system and its application in digital color representation. This lesson bridges concepts in computer science, mathematics, and art, providing students with a multifaceted learning experience.

Materials

- **Technology:** Computers or tablets equipped with a color picker tool and an internet connection.
- **Printed Materials:** Color printouts featuring various hexadecimal color codes.

Vocabulary

Basic Color Theory
Introduction to Computing and Coding
Numerical Systems

Background

Activity Directions

1. **Task 1:** Set Up the Tools
   - **Equipment Preparation:** Ensure each student or group has access to a computer or tablet to access the color picker.
   - **Material Distribution:** Provide each student or group with color printouts/digital to the Hexacodes of Colors in Google Sheets Color Picker.

2. **Task 2:** Introduction to Hexadecimal Colors

- **Briefing:** Explain what hexadecimal codes are and how they are used to represent colors in digital media.
- **Discussion:** Review the basic structure of hexadecimal codes and how they relate to RGB (Red, Green, Blue) color values.

3. **Task 3:** Exploring with the Color Picker
   - **Hands-On Activity:** Students input hexadecimal codes from the printouts/digital copy into the [color picker tool](#).
   - **Observation:** Encourage students to note the color displayed by the tool and compare it with their initial expectations.

4. **Task 4:** Prediction Challenge
   - **Prediction Exercise:** Students select a hexadecimal code and try to predict the color it represents before using the tool.
   - **Group Sharing:** Allow students to share their predictions with the class or in small groups.

5. **Task 5:** Verification and Learning
   - **Verification:** Students use the color picker tool to input their chosen hexadecimal codes and observe the actual color.
   - **Discussion:** Encourage students to discuss why their predictions were right or wrong and what they learned about color representation.

6. **Task 6:** Reflection and Extension
   - **Reflection:** Ask students to reflect on how understanding hexadecimal color codes can be useful in various fields, like web design and digital art.
   - **Extended Learning:** For advanced students, introduce more complex concepts such as color theory, web design principles, or the role of hexadecimal codes in computer programming.

Extension Activity: Student may complete a Color Wheel Chart ([free download](#))to further ensure their independent knowledge.