Tinkercad Lesson 4: Design a Zoo Using Creatures, Characters, and Scenery

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Lesson Objectives

- Students will use the Engineering Design Process (EDP) to plan and create a zoo in Tinkercad.
- Students will explore the "Creatures and Characters" and "Structures and Scenery" categories to design 2 or 3 zoo exhibits.
- Students will practice spatial planning and creative design, focusing on exhibit placement and aesthetics.

Materials

- Computers with internet access
- Tinkercad accounts (set up prior to the lesson)
- Paper and pencils for design sketches
- Example zoo layout (optional for inspiration)

Lesson Plan

1. Introduction and Review (5-7 minutes)

Teacher Action:

- Review previously learned skills, such as:
    - Aligning objects
    - Grouping objects
    - Using the mirror tool
- Ask a few review questions or have students demonstrate skills to a partner:
    - "How do you group objects to make them easier to move?"
    - "What tool do you use to align objects so they line up perfectly?"
- Briefly explain that today they will be designing a zoo using animals and scenery available in Tinkercad.

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2. Introduction to Tinkercad Zoo Project (10 minutes)

Teacher Action:

- Show students where to find animals in the "Creatures and Characters" category and scenery in the "Structures and Scenery" category.
- Share examples of what they could include in their zoo (e.g., animal exhibits, trees, water features).
- Explain that they will design 2 or 3 exhibits for their zoo and that creativity is encouraged, but they should follow their design sketches.
- **Optional:** Let students browse the animal and scenery options in Tinkercad for a few minutes before beginning their sketches.

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3. Introduction to the Engineering Design Process (EDP) (5-10 minutes)

Steps of the EDP:

- **Ask:**
  - What animals will your zoo feature?
  - How many exhibits will you include (2 or 3)?
  - How can you make each exhibit unique and interesting?
- **Imagine:**
  - Brainstorm ideas for animal exhibits and how to organize them.
  - Think of fun details like water, trees, and paths for visitors.
- **Plan:**
  - Sketch your zoo layout on paper, showing where each exhibit and pathway will be.
  - Label the animals and any scenery you plan to include.
- **Create:**
  - Build your zoo in Tinkercad, following your sketch and adding creative details.

Student Activity:

- Students create sketches of their zoo, labeling each exhibit and any pathways or scenery elements.

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4. Create the Zoo in Tinkercad (25-30 minutes)

Teacher Action:

- Encourage students to refer to their sketches as they build in Tinkercad.
- Show an example of a simple zoo exhibit to inspire them.
- Remind students to:
    - Use the animals from the "Creatures and Characters" category.
    - Add scenery elements (trees, rocks, or water) from the "Structures and Scenery" category.
    - Make sure the exhibits are easy to see and connected by pathways.

Student Activity:

- Students bring their zoo sketches to life in Tinkercad by:
    - Adding animals to their exhibits.
    - Using scenery elements to create engaging, realistic environments.
    - Designing 2 or 3 unique exhibits that fit the layout they planned.

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5. Reflection and Sharing (5-7 minutes)

Activity:

- Students participate in a gallery walk to showcase their zoo designs.
- Each student briefly explains their zoo, including:
    - The animals they chose and why
    - How they made each exhibit unique
    - How they used scenery to enhance their design

Guiding Questions for Reflection:

- "What was the most fun part of designing your zoo?"
- "What details did you add to make your zoo special?"
- "What challenges did you face when building your zoo, and how did you solve them?"

Adaptations for Younger Grades (K-2):

- Limit the zoo design to 2 exhibits.

- Provide more step-by-step guidance and examples of simple designs.
- Allow additional time for exploring Tinkercad and creating exhibits.

Assessment

- Evaluate sketches for thoughtful planning and labeling of exhibits.
- Observe students as they work in Tinkercad to ensure they are exploring and using the tools correctly.
- Assess the completed zoo designs for creativity and functionality.
- Participation in the reflection and gallery walk.

Extension Ideas

- **Creative Details:** Students can add decorative elements, such as pathways, benches, or water features, to make their zoos more engaging.
- **Themed Zoo Challenge:** Advanced students can create a themed zoo (e.g., jungle, arctic) with matching animals and scenery.
- **Story or Description:** Have students write a short story or description about their zoo, highlighting its unique features and animals.

Note for Potential Middle/High School Extensions:

- In middle or high school, this project can be enhanced by introducing the ruler tool to set specific measurements for exhibit spacing and walkways. Requirements for minimum or maximum distances between exhibits could be added for a more advanced challenge.