ABOUT THE PROGRAM

This lesson guides students through an age-appropriate design process that will help them describe and model their very favorite Ferris wheel. Students will participate in discussions with their teacher and with each other to describe the features they would love to see on a Ferris wheel; the features they think would be the most useful or the most fun. They will also take a trip to the High Roller to look at and ride one version of a Ferris wheel to help them answer the questions, “What kinds of things would your very favorite Ferris wheel have?”

They will express their understanding by asking questions, brainstorming solutions, drawing pictures of their favorite kind of Ferris wheel, listening to their peers, revising their ideas and sharing their ideas with their peers.
A. Ask Questions to Define the Project: Students will use the guidance provided by the teacher to discuss what they already know about Ferris wheels with their peers. Then, they will take a look at Ferris wheels from around the world and discuss their ideas further, asking questions about what they would still like to know. (60 Minutes)

B. Imagine the Possibilities: Students work with their teacher to create a list of things that they like about the Ferris wheels that they have seen so far, to get students to start thinking about what they would like to see in their own design and why that feature is important to them. (30 Minutes)

C. Plan Your Design: Students will review the images of Ferris wheels, as well as their original sketches and discuss what will make people want to ride THEIR Ferris wheel and the features it will have. Students will work independently to use words and pictures to create their ferris wheel. (60 Minutes)

D. Additional Research: Students will share their ideas in groups of four and choose the design in their group that they like the best to share with the rest of the class. They will make observations and express their opinions for the Ferris wheels that are shared. (60 Minutes)

E. Improve Your Design: This stage includes a trip to the High Roller. Students will make observations and ask questions to get more information about features they might like to include in their own designs.
A. ASK QUESTIONS TO DEFINE THE PROJECT (60 Minutes)
As a whole class, students will communicate with each other and their teacher to spark their initial thinking about the lesson’s Big Question.

**TASK #1:** Teachers can inform students that over the next four weeks, they will be studying Ferris wheels. To start teachers can tell students to put their thinking fingers up and, without talking, think about answers to the following questions:

a. What do you know about Ferris wheels?
b. Where have you seen a Ferris wheel?
c. What does it feel like to ride a Ferris wheel?
d. What does a Ferris wheel look like?
e. Why do we have Ferris wheels?

Give thinking time between each question.

**TASK #2:** Teachers should guide students to talk about Ferris wheels they have seen or ones that they know of with a partner in class.
What do they know already and what do they want to know? They should take turns, one idea each, back and forth, until time is up. After two minutes, the class stops talking and they share in groups of four what they discussed with a partner.
**TASK #3:** Finally, the teacher should bring the class together and tell them that they will be taking a look at several types of Ferris wheels in a slide show. Their job will be to make observations of each image. **REVIEW WHAT OBSERVATIONS ARE PRIOR TO PROJECT START.**

Teachers should show the first slide, then have students make observations and share with their partner. Then, show the next slide, asking them to make observations and comparing those to the first slide. Continue on until all four pictures have been shown and discussed.

Then, the teacher should guide the students to think about the one they would want to ride the most and why. They should put their heads down, close their eyes and then use their finger to hold up the number of the image of the Ferris wheel they like best. The teacher should make a note of student choices.

Finally, teachers should guide students to make a sketch of the Ferris wheel that they chose. **TEACHERS SHOULD REMIND STUDENTS THAT A SKETCH IS A DRAWING WITH A LOT OF DETAILS AND LABELS.**

**WRITING EXTENSION:**
Have the students write an opinion paper describing why they chose the Ferris wheel, using evidence from the picture and what they infer (like the inside of each cabin).

**B. IMAGINE THE POSSIBILITIES (30 Minutes)**
Teachers will guide students to be creative and communicate all of the ideas that they have and observations they have made to answer the question, “What kinds of things would your very favorite Ferris wheel have?”

**TASK #1:** After talking with the students and/or reading their writing, teachers should create a list of positive aspects of each Ferris wheel that the students choose and, if needed, teachers can add positive aspects of their own. For example: Is the cabin open to the outside or closed in? Is the cabin all one color or is each cabin a different color? How many people can each cabin hold? Can they sit down or walk around inside?

Teachers should try to include aspects that may not be in the picture but can be implied about the inside of the cabins or the overall design of the Ferris wheel. (Continues on next page.....)
Then, gather the students and let them know that they will be creating their own Ferris wheel at the end of this unit and that they need to make choices about the aspects they want. Discuss the aspects of each Ferris wheel, using the slides as references. Be sure to include any other aspects that come up during the class discussion.

**TASK #2:** Next, using one aspect at a time, teachers should guide students to decide which aspect they like and move to an area in the room. For example, for the number of riders per cabin, have the students break up by how many people they want in each cabin (2, 4, 8 or more).

Then, students move to a different spot in the room and discuss why they want that many people. They will come up with great reasons ("I only want to be in there with_ or I want my whole family to fit so..."). Each group then shares out their reason for what they wanted with the other groups so that they can think about the different options. Teachers will guide students to continue this until they have made decisions on at least 4 aspects of their Ferris wheel. Then students will write down the choices they made for the Ferris wheel they are going to create.

**C. PLAN YOUR DESIGN (60 Minutes)**

In this stage, students will use what they have communicated and observed to actually create a representation of their best Ferris wheel idea that describes the features they feel are most important.

**TASK #1:** Students should review pictures of the four Ferris wheels, their original sketches and the aspects that they chose as most important during the last class session. Then, teachers will have the students think about other things their Ferris wheel could have. Discuss with the what is going to make people want to ride their wheel. What will it look like from far away? Where will it be located? What will the ride include? How long will it take to ride? Include any additional questions that come up during the conversation.

Create a poster (or another slide) that lists the different things to consider for their Ferris wheel. Other topics can include: Comfort, safety, visibility, space, etc while on the ride.....free movement, temps, etc. Brainstorm multiple options and ideas. Let the students be creative! Then, students will work independently to use words and pictures to create their Ferris wheel; including details on the cabins being used and the experience overall for their riders.
D. RESEARCH FERRIS WHEELS (60 Minutes)

**TASK #1:** Once students have completed their designs, teachers will have them share their ideas (both words and pictures).

Start by having them share in their groups of four. Then have each group choose the design they think is the best and have each group share one with the class.

Teachers will have students make observations and form opinions about each ride as well as questions they have about the rides that were not included in the words or pictures. Give students time to go back and add to (not erase) their ideas to make them have more information and detail. Make sure each student has a completed idea recorded.
E. IMPROVE YOUR DESIGN (60 Minutes in class/Field Trip)

In this section, students will use the field trip to the High Roller to make additional observations to revise their ideas to answer the question, “What kinds of things would your very favorite Ferris wheel have?”

Students will participate in a field trip to the High Roller, where they will get a behind the scenes tour with a High Roller expert and get to take a ride on the wheel. Teachers will encourage students to ask questions and make observations throughout the trip.

They will compare their designs to the High Roller. What do they like about the High Roller? How are they different? Be sure to clarify that all designs are important and depending on the purpose of the Ferris wheel, many designs can be the “best” for a particular location and situation.