



Project planning

**Balls**

**Project outline**

* **What kids might know**
  + **What question they might have (or what question the teacher can model)** 
    - ***What* they are likely to discover (the answer to the question)**
      * ***How* they might discover that answer (the experience)** 
        + **What practices,**

What other learning domains (e.g., Gold Objectives) might children engage in?

* + - * + **Crosscutting concepts**
        + **Core ideas might children engage in?**

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* Balls are round
  + Are all balls round?
    - No, some balls are oval, like a football or rugby ball
      * Children can survey people about their knowledge of balls, use informational books about balls or sports, use the internet to research the question, scavenger hunt at home and bring balls in to the class
        + Practices: Documenting, analyzing, and interpreting data, making observations, using math,
        + Crosscutting concepts: patterns
        + Core Idea: Physical science; Matter and It’s interaction: materials have different attributes
  + *Does the shape change how balls move?*
    - Yes, oval balls will roll, but only on one side. Round balls will roll on all sides
      * Children can experiment rolling different shaped balls down a ramp to see 1) how their movement is different, 2) how their shape affects the distance they role
        + Practices: Observations, making predictions, planning and carrying out investigations, using math and computational skills, Documenting, analyzing, and interpreting data, constructing explanations, communicating information
        + CC: Cause and effect, structure and function, patterns
        + Core idea: physical science; forces and motion
  + *What else changes the way a ball rolls down a ramp?*
    - Many things affect how a ball rolls down a ramp including the size and weight of the ball, the materials the ball is made out of, the slope of the ramp, the texture of the ramp.
      * Children can engage in multiple experiments to test the effects of weight, size, color, material, ramp height & length
        + Practices: Observations, making predictions, planning and carrying out investigations, using math and computational skills, Documenting, analyzing, and interpreting data, constructing explanations, communicating information
        + CC: Cause and effect, structure and function, patterns
        + Core idea: physical science; forces and motion
  + *What else is round?*
    - Wheels and circles are round
      * Children can explore differences between circles and spheres
* Balls can bounce
  + Do all balls bounce?
    - Yes, but some higher than others
      * Children can experiment with different types of balls to observe differences in how they bounce
        + Practices: Observations, making predictions, planning and carrying out investigations, using math and computational skills, Documenting, analyzing, and interpreting data, constructing explanations, communicating information
        + CC: Cause and effect, structure and function, patterns
        + Core idea: physical science; forces and motion
  + *What affects how balls bounce?*
    - Many things affect how a ball bounces including the size and weight of the ball, its shape, the materials the ball is made out of, the type of surface it is bouncing off of, the height from which the ball is dropped
      * Children can engage in multiple experiments to test the effects of weight, size, color, material, release height, floor type on how a ball will bounce
        + Practices: Observations, making predictions, planning and carrying out investigations, using math and computational skills, Documenting, analyzing, and interpreting data, constructing explanations, communicating information
        + CC: Cause and effect, structure and function, patterns
        + Core idea: physical science; forces and motion
* My Dad blows air into the beach ball
  + What’s inside of balls?
    - Different balls have different insides
      * Children can cut open (or have an adult cut open) various kinds of balls.
        + Practices: Observations, making predictions, planning and carrying out investigations, Documenting, analyzing, and interpreting data, communicating information
        + CC: patterns
        + Core idea: physical science; objects are made of smaller parts; Matter and It’s interaction: materials have different attributes
* Balls are like wheels
  + How are balls like wheels?
    - Balls and wheels are both round. Wheels are flat on two sides but balls are not flat at all and have no sides. Both can be used to help us do work.
      * Children can compare and contrast wheels and balls. Children can build a car and experiment with using balls vs. wheels to help it roll.
        + Observations, making predictions, planning and carrying out investigations, Documenting, analyzing, and interpreting data, communicating information, using models, designing solutions
        + CC: structure and function
        + Core idea: engineering and tech