Marble Empire Learning Activity #4:
Save a Friend

Summary:

In this activity, children will solve their first engineering challenge with Marble Empire.

Reference Standards:

Next Generation Science Standards:

K-PS2-2

K-2-ETS1-3

3-5-ETS-1-2

Common Core Standards:

MP.5

Learning Goals:

1. Experiment with different ways of solving a challenge with Marble Empire.

Materials and Setup:

Materials you will need:

1. An object that can be used to represent a river in Marble Empire. *A pillow, small box, blanket, etc.*
2. A complete Marble Empire kit

Part One: Defining the Challenge

1. Tell the child that today, someone is chasing their favorite book or movie character and they must cross a river to escape. Ask them who their favorite character is.

2. Have the child place the obstacle to serve as the river in the middle of the area you will be using to build.

3. Explain that the Marble Empire Sphere will be their character. Their challenge is to build something using Marble Empire to help their character cross from one side of the river to the other.

4. Challenge the child to build their invention using the **smallest number of pieces** that they can.

Part Two: Creating the Solution

1. Give the child plenty of time to create their solution to the problem. Feel free to help them build, but make sure they are guiding the process-- you are just a helping hand.

2. When the child has completed their build, ask them to describe what they have created:
   a. What is it called?
   b. How does it work?

3. Ask the child if there were any challenges they had to overcome during the process.

4. Allow the child to have fun roleplaying saving their favorite character. Maybe you can act out the person chasing them!

Part Three: Other Options

1. Challenge the child to save their character using even fewer pieces. Is it possible to modify what they made with fewer pieces?

2. Next, challenge them to save their character in a completely different way. If they built a bridge, how could they build something to save their character that doesn't connect end-to-end? *Hint: how could they use a Funnel?*

3. You can also challenge the child to create a solution that saves their character as quickly as possible, as slowly as possible, or in the most complicated way as they can think of.

4. Once the child has created a new way to solve the problem, ask them how it compares to the original solution.

Assessment

1. Is the child able to consider the constraints of the problem? Did they prioritize using as few pieces as possible as the problem specified?

2. Is the child able to identify and test multiple solutions to the same problem?