

Water Slide Challenge

Adapted from STEM Learning with Young Children



Engineering Design Process: Identify the Problem

Engage:

Design Task:

Local authorities have recently decided to open a privately-owned swimming pool to the public. A grand-opening ceremony is currently being planned, and Water Slides-R-Us has requested a water slide to be constructed, so the swimming pool can bring more enjoyment to customers of all ages. This new slide must be completed before the pool can be opened to the public.

You have just been hired by Water Slides-R-Us to design and construct a water slide model. In the model, the wooden planks will serve as the track for the slide, the marble will serve as a replica for the inner tube, and the 4"x4" square will serve as a replica for the pool.

For maximum enjoyment, the water slide must have a sharp 180 degree turn, and have the inner tuber remain on the slide for ten seconds before depositing the inner tube into a swimming pool.

How can we design a water slide that meets the client's specifications?

Criteria:

- Slide must contain a 180 degree turn
- Slide must deposit the inner tube into a 4" x 4" area
- Inner tube must stay on slide for ten seconds

Constraints:

- Inner tube must drop in 4" x 4" area in a safe manner without hitting any object around it
- Each plank costs 30¢

Design Brief

Problem	
Goal	
Client (Who is paying?)	
End User (Who is using it?)	
Criteria (Features)	
Constraints (Limits)	
Materials (What will we use?)	

Explore:

Engineering Design Process: Design Sketch

Individual Sketch

Team Sketch

Engineering Design Process: Build/Create and Test

- Try to stick to your group design
- If you make any adjustments, record it on your design sketch
- Test your design and see if it meets the criteria
- Record results on data chart

Explain:

Engineering Design Process: Communicate Results

Data:

		Water Slide Testing				
Group	Number of Planks Used	Degree of Angle for Turn	Time (S)	Drop in 4"x4" square	Cost	Met Criteria?
1						
2						
3						
4						
5						
6						

Observations:

Data Interpretation and Inferences:

Design Strengths and Weaknesses:

Elaborate:

Engineering Design Process: Improve and Retest

Redesign:

Reflection: