Build a Wolf (Hurricane) Resistant Structure



Problem Scenario: As you know, the Big, Bad Wolf has been visiting neighborhoods and blowing houses down. His huffing and puffing is creating hurricane force winds.

Challenge: You have been hired to help the pig community by designing and building a house that the big, bad wolf can not blow down.

Criteria (Design Requirements):

1. You must build the house on the foundation provided.
2. Your team must work collaboratively - listen to all ideas!
3. Your house must stay standing through the following:
   -10 seconds of low winds
   -10 seconds of high winds

Constraints (limitations that will affect the optimal design):

1. You have 1 hour to complete the planning and construction.
2. You can only use the materials provided in the bin. You CANNOT use the bin as part of your structure.

Procedures:

1. Plan your design on paper. Label and/or illustrate the materials you will use. Preschool helpers will use pictures and place it on the planning sheet.
2. Bring your plan to a teacher and get it approved.
3. Get your supply bin and start building!
4. Bring your completed house to the testing center.
5. Make improvements to your design, if necessary, and bring back to the testing center.

Engineering Reflection



If you had additional time to optimize your design, what would you do to improve it? Why? Use your results from the activity as well as your understanding of energy transfer with wind to support your science thinking. Also, share your reflections about working with the preschoolers.

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Masking
Tape


Cardboard


Straw


Index Cards


Toothpicks


Ziti Pasta


Spaghetti


Skewers




Yarn


Straws


Scotch
Tape


Popsicle
Sticks

The 3 Little Pigs STEM Challenge

Group members: _____

1. Materials being used:

-You can use anywhere from 1-13 different materials

-Pre-K students glue pictures here

2. Sketch:

Teacher signature of approval: _____

Science and Engineering Investigation Rubric

	0	1	2	3
Follows Directions	Did not follow directions at all.	Required many reminders to follow directions.	Usually followed directions with very few reminders.	Consistently followed directions accurately.
Planning	No plan was provided.	Investigation plan had many missing parts of the materials list, steps, and/or sketch (for engineering)	Investigation plan included partial complete materials list, steps, and/or labeled sketch (for engineering)	Investigation plan included complete list of materials, steps, labeled sketch (for engineering)
Observations	No observations provided.	Observations were general statements and/or sketches were not labeled.	Some observations were detailed and sketches may have been labeled.	Observations were detailed and may include labeled sketches.
Written response to Questions and/or Reflections	No responses were provided.	Responses did not address most of the question(s) and did not use scientific vocabulary.	Responses answered most of the question(s) and included some reference to observations and/or scientific vocabulary.	Responses answered the question(s) in detail using observations and scientific vocabulary.
Participation	Did not collaborate with peers at all.	Sometimes collaborated with peers but was often off task.	Usually collaborated well with peers and required few reminders.	Consistently collaborated well with peers and remained on task.
Writing Conventions	Written responses were not written in sentences and did not include any punctuation or capitalization. Spelling errors were frequent which made the text difficult to read.	Written responses may or may not be written in complete sentences. Capitalization, spelling, and punctuation errors were frequent which resulted in text that was difficult to read.	Written responses were in complete sentences using capitalization and punctuation with very few errors.	Written responses were in complete sentences using capitalization and punctuation with little to no errors.