

Jack and the Beanstalk and the Tall Challenge

2-5 Grade STEM Start-Ups



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1. JACK AND THE BEANSTALK: THE TALL CHALLENGE (2-5)

Primary Resource: *The Story of Jack and the Beanstalk* by Joseph Jacobs

Adapted by: LearnZillion.com

1.1. INTRODUCTION

Jack and the Beanstalk by Joseph Jacobs is an adventurous fairy tale. In his quest, Jack tries to help his anxious mom, obtains some magical beans, arrives at an enchanted land ruled by a cruel giant, and faces challenging situations. In this lesson, students will analyze two characters from the story, demonstrating an understanding of key details and characters by rereading and visualizing the text.

Finally, students will work together to complete a fun design challenge. Students will create a new tower for Jack to return to the magical land of giants, only using marshmallows and spaghetti noodles. The group that can create the tallest tower for Jack to climb will win the challenge! Students will engage effectively in a range of collaborative discussions with diverse partners to build on others' ideas and express their own clearly. Students will review ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.

1.2. MATERIALS

- *Jack and the Beanstalk* by Joseph Jacobs (Picture Book, YouTube video, PDF)
- Spaghetti Noodles
- Marshmallows
- Ruler

1.3. LANGUAGE ARTS WORK

1.3.1. EXPLORE THE TEXT

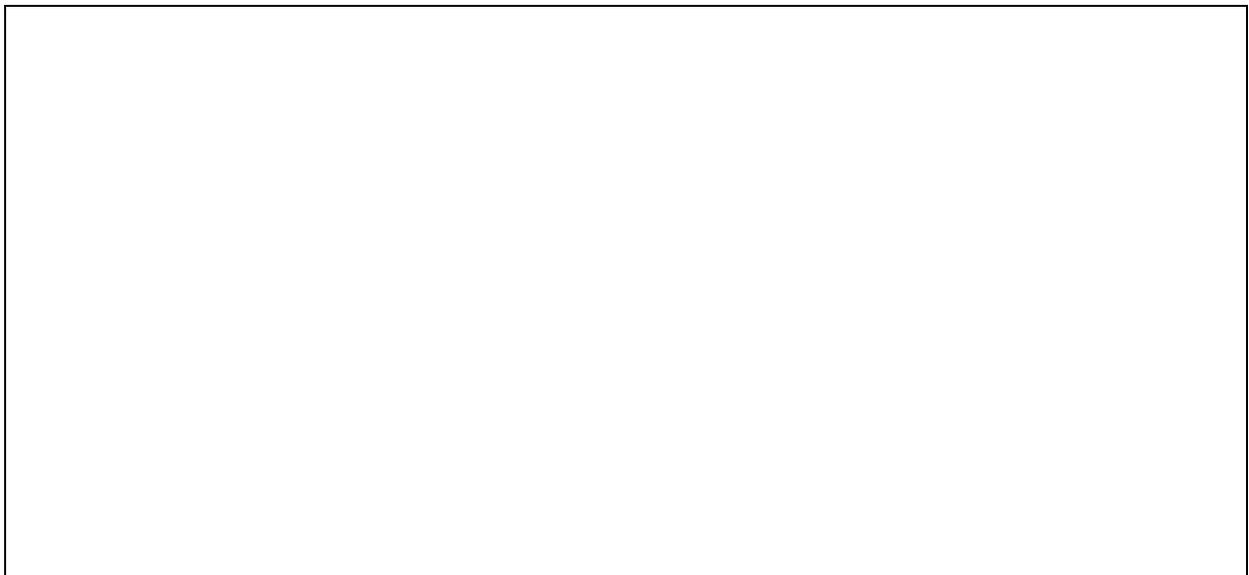
- Students will read closely and answer the following questions in their reading journal:
 - Who are the characters in the text?
 - What problems do Jack and his mother have at the beginning of the story? How do you know? Provide details from the text to support your answer.
 - The author says that Jack's mother is "wringing her hands." Why is she doing this?
 - How does Jack try to help his mother?

1.3.2. PART 2

- Students will read the text again closely and answer the following focus question in their reading journal:
 - Using evidence from the text, how can you describe Jack and his mother at the beginning of the story using pictures and words?
 - Reread the first 5 paragraphs of the story where Jack and his mother are introduced and underline details about the characters.
 - Finish the following table by asking what these details tell readers about these characters?

Details about the characters	What do these details tell readers about these characters?
Poor widow with son	Jack and his mother take care of themselves
The milk from the cow	
“What shall we do?” Wringing her hands	
“All right, mother, we’ll sell the cow”	

- Using the information from the table, picture in your mind what each character should look like and make a sketch.



- Now, go back to your picture and think, “What other details are important to know about these characters?” Add to your picture and write captions.

1.4. DESIGN CHALLENGE

Jack would like to visit the enchanted land of giants again but he does not have any more beans! Your task is to help him design his own tall tower that will reach the magical land again. The goal is to construct a tower as high as possible using only spaghetti and marshmallows. The tower has to stand on its own for 5 seconds and you can only use the materials provided. (Time limit is optional.)

1.5. DESIGN PROCESS

In their reading journal, students will answer the following questions:

- Ask:
 - What is the problem?
 - What are the materials?
 - What are the constraints?
- Brainstorm:
 - What are some ideas?
- Plan:
 - Draw and label a sketch for your solution.
- Test:
 - Was your challenge successful? Why or why not?
- Improve/Reflection:
 - If you were to complete the challenge again, what would you keep the same and what would you do differently? (Justify/Provide evidence for each answer.)

1.6. RUBRIC

Category	Developing (1)	Good (2)	Excellent (3)	Score
Language Arts Work	Answers are not correct. Evidence from the text does not correlate with the sketch.	Answers are on track but not fully correct. Evidence from the text is attempted to support sketch.	Questions are answered correctly with evidence from the text to support sketch.	
Design Process	Brainstorming: Ideas are unclear to connect to problem. Plan/Create/Build: The	Brainstorming: Ideas are somewhere aligned to problem but need explanation to make clear.	Brainstorming: Ideas are aligned to problem. Plan/Create/Build: The design and model is	

	<p>design and model is not aligned with the criteria, constraints, and intent of the problem.</p> <p>Improve/Reflection: Student only explains one concept: either what would be kept the same or what would be changed. Also, does not provide evidence for response.</p>	<p>Plan/Create/Build: The design and model is somewhat aligned with the criteria, constraints, and intent of the problem.</p> <p>Improve/Reflection: Student explains what would be kept the same and what would be changed, but does not provide evidence for response.</p>	<p>aligned with the criteria, constraints, and intent of the problem.</p> <p>Improve/Reflection: Student explains what would be kept the same and what would be changed. Provides evidence for response.</p>	
Collaboration	<p>Ignores and distracts others. Shows no understanding of project and has a negative attitude during work time. Argues with others and does not ask or answer any questions.</p>	<p>Listens respectfully and follows directions. Shows understanding of project and sometimes argues with others. Asks and answers questions.</p>	<p>Listens respectfully and engages in discussion. Shows understanding of project and has a positive attitude during work time. Never argues with others. Asks and answers questions and provides evidence to support answers.</p>	

1.7. RESOURCES

This 5 Step Engineering Design Process template can help the students answer the questions for the design process during their challenge:

- The Works: The Hands On Museum <http://teachers.egfi-k12.org/wp-content/uploads/2010/05/Post-lesson-Student-Activities-Engineers-and-the-Engineering-Design-Process.pdf>