

Towering Messages

Background: Tourism is a major source of income for many areas of the country. When attendance at tourist attractions drops, revenue drops and workers lose their jobs.

Design Challenge: You are a member of the state tourism board and are at risk of losing your job due to a drop-off in visitors to Virginia. Design and create a tower that will be a tourist attraction. Then, advertise your tower to attract visitors and increase revenue, so that you keep your job. Your advertisement may be print-based or multimedia. Remember that people like to see extraordinary things, so your tower should be as tall as possible and aesthetically pleasing.

Criteria:

- | | |
|---|--|
| <input type="checkbox"/> Your tower must stand on its own. | <input type="checkbox"/> Your advertisement should entice people to visit your tower. |
| <input type="checkbox"/> Your tower must support the weight of a penny. | <input type="checkbox"/> Your advertisement must provide details including location, hours of operation, and prices for entry. |
| <input type="checkbox"/> The penny must not be permanently attached to the tower. | <input type="checkbox"/> Your advertisement should use precise and descriptive vocabulary. |
| <input type="checkbox"/> Your tower must be as tall as possible. | |



Materials: Select from the list below.

- card stock (1 sheet per group)
- tape (30 cm per group)

Tools: Select from the list below.

- computer with multimedia software (if applicable)
- penny
- ruler
- scissors

Targeted Standards of Learning: English 5.3
Supporting SOL: English 5.7; Mathematics 5.8

Targeted Standards for Technological Literacy: 17
Supporting STL: 9

Tips for Teachers

Targeted Standards of Learning:

- English 5.3 The student will learn how media messages are constructed and for what purposes.
- Differentiate between auditory, visual, and written media messages.
 - Identify the characteristics and effectiveness of a variety of media messages.

Supporting SOL: English 7.7; Mathematics 5.8

Targeted Standards for Technological Literacy:

17 Students will develop an understanding of and be able to select and use information and communication technologies.

Supporting STL: 9

Prior Knowledge & Skill	Materials & Preparation	Safety Issues	Class Management	Materials Provided	Design Process
<ul style="list-style-type: none"> Some understanding of the design process 	<ul style="list-style-type: none"> See Design Brief for recommended materials. Tower materials may be replaced by 15 spaghetti noodles and a marshmallow 	<ul style="list-style-type: none"> Safe use of tools 	<ul style="list-style-type: none"> Works best in pairs 	<ul style="list-style-type: none"> Design Brief Guided Portfolio (adapt as appropriate/optional) Rubric Assessments 	Follow the Design Process: <ul style="list-style-type: none"> Restate the problem. Brainstorm solutions. Create the best solution. Test the solution. Evaluate the solution.

Extension Ideas:

- Repeat tower building at the end of the year, and compare student growth in engineering.
- Have students graph tower height data.

Differentiation Option: For students with more advanced reading skills, the following page is provided as an alternative to page 1.

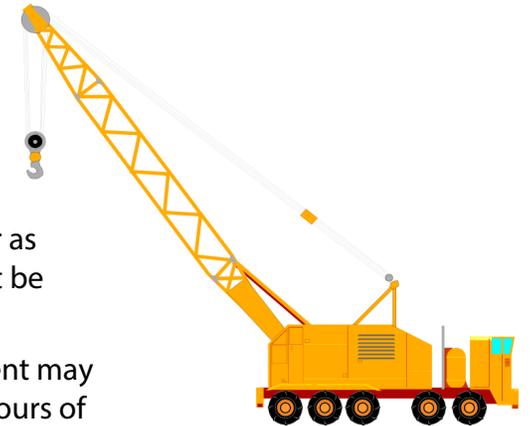
Towering Messages

Background: Tourism is a major source of income for many areas of the country. When attendance at tourist attractions drops, revenue drops and workers lose their jobs.

Design Challenge: You are a member of the state tourism board and are at risk of losing your job due to a drop-off in visitors to Virginia. Design and create a tower that will be a tourist attraction. Make the tower as tall as possible. It must stand on its own and support the weight of a penny; however, the penny must not be permanently attached to the tower.

Advertise your tower to attract visitors and increase revenue, so that you keep your job. Your advertisement may be print-based or multimedia. It should use vivid language and must provide details including location, hours of operation, and prices for entry.

Remember that people like to see extraordinary things, so your tower should be as tall as possible and aesthetically pleasing.



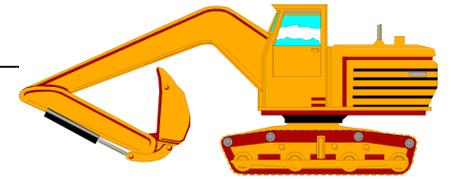
Materials: Select from the list below.	Tools: Select from the list below.
<ul style="list-style-type: none">• card stock (1 sheet per group)• tape (30 cm per group)	<ul style="list-style-type: none">• computer with multimedia software (if applicable)• penny• ruler• scissors

Targeted Standard of Learning: English 5.3
Supporting SOL: Mathematics 5.8

Targeted Standard for Technological Literacy: 17
Supporting STL: 9

Guided Portfolio

Name _____



Group Members _____

1. What is the problem? State the problem in your own words.

Guided Portfolio, p2

Name _____



2. Brainstorm solutions. Sketch and/or describe some possible solutions.

Name _____

4. Test your solution.

Is your tower freestanding? YES NO

What is the height of your tower? _____

Does your tower support a penny? YES NO

Is your tower neat and pleasing to look at? YES NO

Has your advertisement addressed all of the requirements? YES NO

What medium did you choose for the advertisement? _____

- Explain why you chose it: _____

Do you think your advertisement will make people want to visit your tower? YES NO

- Why, or why not? _____

Guided Portfolio, p5

Name _____

5. Evaluate your solution.

Was it the best solution? Would one of your other ideas have been better? Why, or why not?

What would you have done differently?

Could you add to it to make it better? What would you add to it?

Rubric for Towering Messages

Name _____

Date _____

0—no evidence; 1—limited understanding; 2—some understanding with room for improvement; 3—good understanding with room for improvement; 4—substantial understanding

Design Brief Rubric	0	1	2	3	4
The student restated the problem in his/her own words.					
The student brainstormed more than one idea.					
The student kept notes and/or made sketches while creating a solution, to include problems and how they were solved.					
The student tested to make sure					
• the tower is freestanding					
• the tower is tall enough to attract interest from the public					
• the tower supports the weight of a penny					
• the tower is neat and pleasing to look at					
• the advertisement addresses all the requirements					
• the medium chosen for the advertisement is effective					
• the advertisement will entice people to visit the tower.					
The student evaluated how he/she could make it better next time.					

Rubric for Towering Messages

Name _____

Date _____

0—no evidence; 1—limited understanding; 2—some understanding with room for improvement; 3—good understanding with room for improvement; 4—substantial understanding

Communication: Speaking, Listening, Media Literacy Rubric	0	1	2	3	4
<p>5.1 The student will listen, draw conclusions, and share responses in subject-related group learning activities.</p> <ul style="list-style-type: none"> a) Participate in and contribute to discussions across content areas. b) Organize information to present reports of group activities. c) Summarize information gathered in group activities. d) Communicate new ideas to others. e) Demonstrate the ability to collaborate with diverse teams. f) Demonstrate the ability to work independently. 					
<p>5.2 The student will use effective verbal and nonverbal communication skills to deliver planned oral presentations.</p> <ul style="list-style-type: none"> a) Maintain eye contact with listeners. b) Use gestures to support, accentuate, and dramatize verbal message. c) Use facial expressions to support and dramatize verbal message. d) Use posture appropriate for communication setting. e) Determine appropriate content for audience. f) Organize content sequentially around major ideas. g) Summarize main points as they relate to main idea or supporting details. h) Incorporate visual media to support the presentation. i) Use language and style appropriate to the audience, topic, and purpose. 					

Standards of Learning

English (2010)

Communication: Speaking, Listening, Media Literacy

- 5.3 The student will learn how media messages are constructed and for what purposes.
- Differentiate between auditory, visual, and written media messages.
 - Identify the characteristics and effectiveness of a variety of media messages.

Writing

- 5.7 The student will write for a variety of purposes: to describe, to inform, to entertain, to explain, and to persuade.
- Identify intended audience.
 - Use a variety of prewriting strategies.
 - Organize information to convey a central idea.
 - Write a clear topic sentence focusing on the main idea.
 - Write multiparagraph compositions.
 - Use precise and descriptive vocabulary to create tone and voice.
 - Vary sentence structure by using transition words.
 - Revise for clarity of content using specific vocabulary and information.
 - Include supporting details that elaborate the main idea.

Mathematics (2009)

Measurement

- 5.8 The student will
- find perimeter, area, and volume in standard units of measure;
 - differentiate among perimeter, area, and volume and identify whether the application of the concept of perimeter, area, or volume is appropriate for a given situation;
 - identify equivalent measurements within the metric system;
 - estimate and then measure to solve problems, using U.S. Customary and metric units; and
 - choose an appropriate unit of measure for a given situation involving measurement using U.S. Customary and metric units.

Standards for Technological Literacy

Standard 9: Students will develop an understanding of engineering design.

Standard 17: Students will develop an understanding of and be able to select and use information and communication technologies.

Please give us some feedback.

Complete the form below to let us know how this design brief worked for you and your students. Please be specific so that we might use your suggestions to improve the activity. *You can fill this out on your computer, or you can print it, fill it out manually, and scan it.*

Teacher: _____

School: _____

School division: _____

Design brief title: _____

Background	<i>Put an X in the appropriate column:</i>	Needs to be rewritten	Needs minor adjustment	Is ready for classroom use
Does it set the context for the activity?				
Is it age-appropriate in language, length, and complexity?				
Does it reference prior learning and/or research that the students did that will facilitate designing a solution to a problem?				
Is it detailed enough that an adult will understand the purpose for the design brief?				
COMMENTS. <i>If any of the questions above are marked other than "ready for classroom use," please provide suggestions here.</i>				

Design Challenge	Needs to be rewritten	Needs minor adjustment	Is ready for classroom use
Does the challenge support your curriculum?			
Is it age-appropriate in language, length, and complexity?			
Is it detailed enough that an adult will understand the purpose for the design brief?			
COMMENTS. <i>If any of the questions above are marked other than "ready for classroom use," please provide suggestions here.</i>			

Criteria Criteria are part of the challenge. They set the limitations for the design. They are not directions.	Needs to be rewritten	Needs minor adjustment	Is ready for classroom use	N/A
Are the limitations age-appropriate?				
Do the limitations encourage critical thinking?				
Is the application of mathematic knowledge/skills integrated into the criteria? If not, should the skill area be addressed?				
Is the application of science knowledge/skills integrated into the criteria? If not, should the skill area be addressed?				
Is the application of social studies knowledge/skills integrated into the criteria? If not, should the skill area be addressed?				
Are language skills integrated into the criteria? If not, should the skill area be addressed?				
COMMENTS. <i>If any of the questions above are marked other than "ready for classroom use," please provide suggestions here.</i>				

Materials Materials help set the limitations for the design. The list should include materials that might work.	Needs to be rewritten	Needs minor adjustment	Is ready for classroom use	N/A
Does the materials list encourage a variety of design solutions?				
Does the materials list include a variety of choices for joining items?				
Does the materials list include materials that force students to make decisions?				
COMMENTS. <i>If any of the questions above are marked other than "ready for classroom use," please provide suggestions here.</i>				

Tools Tools can be used in the construction of the designed product. They are used to manipulate materials. They cannot become part of the product.	Needs to be rewritten	Needs minor adjustment	Is ready for classroom use
Are the tools listed age appropriate?			
Are all tools needed for the activity included?			
COMMENTS. <i>If any of the questions above are marked other than "ready for classroom use," please provide suggestions here.</i>			

Standards of Learning	Yes	No
Does the design brief reinforce the targeted Standard of Learning(s)?		
Are the supporting Standards of Learning appropriate?		
What Standards of Learning would you add or remove?		

Standards for Technological Literacy	Yes	No
Does the design brief reinforce the targeted Standard(s) for Technological Literacy?		
Are the supporting Standards for Technological Literacy appropriate?		
What Standards for Technological Literacy would you add or remove?		

Tips for Teachers	Yes	No
Are the tips listed in the chart helpful for a first-time teacher?		
What tips would you add?		

Guided Portfolio	Needs to be rewritten	Needs minor adjustment	Is ready for classroom use
Are the instructions and questions age appropriate and clear?			
In the "Test your solution" section, do the questions force students to thoroughly test their solutions?			
In the "Evaluate your solution" section, do the questions force students to honestly evaluate their solutions			
COMMENTS. <i>If any of the questions above are marked other than "ready for classroom use," please provide suggestions here.</i>			

<p>Additional Comments Please use this area to provide general suggestions for improving this design brief.</p>