



## Unit Essential Question

How can I use a persuasive, strong voice to express my knowledge of simple machines?

### PROJECT DESCRIPTION

In this project, students will have to first complete Project 2 in this 4th grade unit. In Project 2, they constructed a Rube Goldberg machine, using a set of simple machines that work together to comprise a complex machine with a specific function. In this particular project, students will be taking their hard work in the design studio and work on marketing it to an audience! Students will work collaboratively to write a persuasive script utilizing dialogue to clearly define a problem that their simple machine will solve. The purpose of the script is to persuade the audience to purchase their invention. Finally, it's showtime and students will perform their script and skit!

### LEARNING TARGETS

"I Can..."

- Present a persuasive pitch for why my Rube Goldberg machine is worth purchasing
- I can work collaboratively to write a persuasive script, which clearly defines a problem that our Not-So-Simple-Machine will solve
- Perform a skit using a persuasive strong voice that brings to life our script

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Units provide differentiated ideas and activities aligned to a sampling of standards. The units do not necessarily imply mastery of standards, but are intended to inspire and equip educators.

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Cherokee County (GA) School District and ArtsNow, Inc.

Project Description	Learning Targets
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**ESSENTIAL QUESTIONS**

<ul style="list-style-type: none"> <li>• How can I use a persuasive, strong voice to express my knowledge of simple machines?</li> </ul>
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**STANDARDS**

Curriculum Standards	Arts Standards
<p><b>S4P3 Obtain, evaluate, and communicate information about the relationship between balanced and unbalanced forces.</b></p> <ol style="list-style-type: none"> <li>a. Plan and carry out an investigation of the effects of balanced and unbalanced forces on an object and communicate the results.</li> <li>b. Construct an argument to support the claim that gravitational force affects the motion of an object.</li> <li>c. Ask questions to identify and explain the uses of simple machines, and how forces are changed when simple machines are used to complete tasks.</li> </ol> <p><b>ELAGSE4W1: Write opinion pieces on topics or texts, supporting a point of view with reasons.</b></p> <ol style="list-style-type: none"> <li>a. Introduce a topic or text clearly, state an opinion, and create an organizational structure in which related ideas are grouped to support the writer’s purpose.</li> <li>b. Provide reasons that are supported by facts and details.</li> </ol>	<p><b>TAES4.2 Developing scripts through improvisation and other theatrical methods</b></p> <ol style="list-style-type: none"> <li>a. Uses the playwriting process: pre-write/pre-play; prepare to write/plan dramatization; write/ dramatize; reflect and edit; re-write/play; publish/perform</li> <li>b. Analyzes the elements of a well-written script</li> <li>c. Creates an organizing structure for writing scripts</li> </ol> <p><b>TAES4.3 Acting by developing, communicating, and sustaining roles within a variety of situations and environments</b></p> <ol style="list-style-type: none"> <li>a. Uses articulation, volume and vocal variety to communicate thoughts, emotions and actions of a character</li> <li>b. Uses stage areas and body movement to communicate thoughts, emotions, and actions of a character</li> <li>c. Uses imagination and real life experience to portray characters</li> </ol>

<p>c. Link opinion and reasons using words and phrases (e.g., for instance, in order to, in addition). d. Provide a concluding statement or section related to the opinion presented.</p>	<p>d. Collaborates with an ensemble to create theatre e. Dramatizes literature and original scripts through various dramatic forms such as story drama, pantomime, process drama, puppetry, improvisation and readers’ theatre</p> <p><b>TAES4.7 Integrating various art forms, other content areas, and life experiences, to create theatre</b></p> <p>a. Identifies and describes the connection between theatre arts, visual art, music, dance, and technology</p> <p>b. Selects elements of other art forms to develop theatre</p> <p>c. Examines other core content areas through theatre experiences</p> <p><b>TAES4.11 Engaging actively and appropriately as an audience member in theatre or other media experiences</b></p> <p>a. Assumes the roles and responsibilities of the audience</p> <p>b. Applies theatre etiquette</p>
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**KEY VOCABULARY**

Content Vocabulary	Arts Vocabulary
<ul style="list-style-type: none"> <li>• Balanced</li> <li>• Unbalanced forces</li> <li>• Gravitational Force</li> <li>• Motion</li> <li>• Simple Machines</li> <li>• Rube Goldberg</li> </ul>	<ul style="list-style-type: none"> <li>• Ensemble: this is all the parts of thing taken together, so that each part is considered only in relation to the whole</li> <li>• Volume: the degree of sound intensity or audibility</li> <li>• Dialogue: this is a conversation between two or more persons</li> <li>• Theater: dramatic literature or its performance</li> <li>• Audience: the group of listeners collectively as in attendance at a theater</li> <li>• Locomotive: this refers to a movement that travels through space</li> <li>• Non-Locomotive: this refers to a movement that does not travel through space</li> <li>• Pantomime: the art of technique of conveying emotions, actions, feelings by gestures without speech</li> <li>• Props: these are items that actors use in a performance to depict real-life objects</li> <li>• Diction: this is using a “crisp &amp; clear” actor voice that can be understood by everyone watching and listening</li> </ul>

**TECHNOLOGY INTEGRATION**

**Websites:**

- <http://okgo.net/> OKGO Music Video with Rube Goldberg Machine
- Kids Shark Tank examples for their presentation, begin at 43 seconds: <http://abcnews.go.com/GMA/video/shark-tank-life-kid-preneurs-edition-28427763>
- Students can create a Sway, Office Mix or Powerpoint; Students can use an avatar to present their persuasive script in their own voice using <http://blabberize.com/>

**ASSESSMENTS**

Formative	Summative
<ul style="list-style-type: none"> <li>• Teacher will observe students while they work and engage in conversation about science concepts during the activators for part 2 and 3.</li> <li>• Teacher will read scripts and offer feedback as necessary.</li> </ul>	<ul style="list-style-type: none"> <li>• Teacher will assess student understanding of simple machines based on their script and performance.</li> <li>• Students will answer reflection questions.</li> </ul>

**MATERIALS**

- Costuming: Each student can design or assemble a costume based on the product they are pitching. Example: Students may choose to wear a lab coat and safety goggles for the presentation.
- Tablecloth

**Activating Strategy (5- 10 min)**

- Activating Strategy Part 1: Students will read aloud an example of Reader's Theater: Deluxe Slushy Lemonade Machine (SEE DOWNLOAD). It will serve as a model for their classwork.
  - Students will pair up in groups of two and practice reading the example.
- Activating Strategy for Part 2: Whole group choral echo. (Teacher and student will say the same phrase aloud repeating in in chorus, students are perfecting their "performance voice" with an emphasis on volume and diction.)
  - Round 1:
    - Teacher: The big black bug.
    - Students: The big black bug.
    - Teacher: Ate the big black bear.
    - Students: Ate the big black bear.
  - Round 2: Students create two circles, the inner circle faces towards the outer circle.

Each student facing students will become their partner. Refer to the inner circle as Partner A, and the outer circle Partner B. Once children are set, Teacher will direct Partner A to say their lines and Partner B will respond. The outer circle will rotate clockwise one-step and pair up with a new partner A in the inner circle.

- Partner A: The big black bug.
- Partner B: The big black bug.
- Partner A: Ate the big black bear.
- Partner B: Ate the big black bear.

○ Round 3: Students stay in their circles and try another phrase to the echo. Once children are set, Teacher will direct Partner A to say their lines and Partner B will respond. The outer circle will rotate clockwise one-step and pair up with a new partner A in the inner circle.

- Partner A: The big black bug.
- Partner B: The big black bug.
- Partner A: Ate the big black bear.
- Partner B: Ate the big black bear.
- Partner A: The big black bear
- Partner B: The big black bear.
- Partner A: Ate the big black bug.
- Partner B: Ate the big black bug.

### **PROCESS:**

#### ● **PART I: SCRIPT- WRITING**

Students will have an opportunity to write a script for their machine. It is important for them to remember to persuade the audience to purchase their product and use the example script as a model.

- Working collaboratively, students will need to include the following elements in their script.
  - Each member of the group must have a speaking role in the presentation.
  - It must clearly define a problem and explain/show how their "Not So Simple Machine" will serve as its solution.
  - Include 3 reasons to support its purpose
  - Persuade the audience to purchase their simple machine.

#### ● **PART 2 : REHEARSAL**

Students will have the opportunity to rehearse their skit. Students will work in their groups to rehearse their skits being mindful of having a strong, expressive performance voice.

- Preparedness: They will prepare the presentation for the skit.
  - Group must showcase their rendering.
  - Group must set up their "Not So Simple Machine".
  - Determine the placement of each character onstage.
  - Determine the costumes and props being included.

#### ● **PART 3: PERFORMANCE**

It's showtime! Students will present their skit to the class.

- Each group will take turns for their presentation.
  - Review with the class the proper etiquette for an attentive audience member. Remind the

## Project 3 of 3

Approx. Duration of Project: 4-5 days.

- students that part of their grade is in this category.
- Students will present with loud, clear voices with strong bodies.
- Students will "run" their machine and show the audience that it functions properly.

**Classroom Tips:**

Teacher needs to establish reasonable, yet manageable goals for each part of the project. When students are working collaboratively, they must respect the needs of other groups. They can easily speak loudly and disrupt others while they are working. On another note, students will often divide the tasks among themselves, however be sure to require all students to participate equally. Children may be frustrated when working in groups, prior to each work period, review strategies to ensure a positive experience. Depending on your class size and setting, the teacher may want to have all groups set up their presentation prior to the show so that transition times are minimum.

**REFLECTION****Reflection Questions**

- *Identify the simple machines in your "Not So Simple Machine".*
- *Explain how each simple machine uses balanced and unbalanced forces to operate individually or as a whole.*
- *If you had the opportunity to do this project again what would you do differently next time?*

**DIFFERENTIATION**

**BELOW GRADE LEVEL:** Provide students with key vocabulary terms with definitions to be used in their scripts. Preview the key vocabulary on an anchor chart, word wall, or flashcards. Group heterogeneously with students with higher writing proficiencies.

**ABOVE GRADE LEVEL:** Within the given small groups, students will take on the role of the simple machine by personifying it and acting as if they were the simple machine persuading the class to make the purchase.

**EL STUDENTS: EL Students:** (ELP=English Language Proficiency)

- Preview the key vocabulary with pictures listed beside each word on an anchor chart, word wall, or flashcards. The teacher and students will define words together. This may be done in small group the day before the unit begins. The ESOL teacher may meet with students who are lacking the basic vocabulary for additional practice before starting the unit.

**ELP 1-2**

Option 1: Group heterogeneously with students with higher writing proficiencies. Allow level 1-2 students to illustrate different parts of the script to hold up during the whole group presentation.

**ELP 3-4** Give students a checklist or graphic organizer they may use to ensure that they include all required portions in their script in a logical sequence. Students should be expected to provide evidence to support their persuasive points. Source: (WIDA CanDo Key Uses Gr4-5, pg. 9)

**APPENDIX**

- Rubric for this project
- Example of Readers Theatre: Deluxe Slushy Lemonade Simple Machine

Student Presentation

“It’s Showtime”

Grade 4

Project 3 of 3

Approx. Duration of Project: 4-5 days.

### **CREDITS**

U.S. Department of Education

Arts in Education--Model Development and Dissemination Grants Program

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### It's Showtime- Project 3 Rubric

**TASK: Students will present their Goldberg Not So Simple Machine**

Task	4	3	2	1
<b>Accuracy of Science Content</b>	All facts and vocabulary presented about balance, force and motion, and simple machines are complete and correct.	Most facts and vocabulary presented about balance, force and motion, and simple machines are complete and correct.	Some science facts and vocabulary was correct however the content wasn't fully developed.	The science content was minimally complete or correct.
<b>Purpose</b>	The script clearly defines a problem and explains how the not-so-simple machine will function and complete a specific task.	The script mostly defines a problem and explains how the not-so-simple machine will function and complete a specific task.	The script inconsistently defines a problem and explains how the not-so-simple machine will function and complete a specific task.	The script minimally defines a problem and explains how the not-so-simple machine will function and complete a specific task.
<b>Preparedness &amp; Collaboration</b>	The ensemble collaborated successfully the entire time. Student displayed their 2D rendering of their machine, the 3D machine was set up and ready to go, and students had incorporated necessary props, costumes and appeared well-rehearsed with their skit.	The ensemble collaborated successfully most of the time. Student mostly appeared prepared however not every item was complete: <ul style="list-style-type: none"> <li>● 2D machine rendering</li> <li>● 3D machine model</li> <li>● Props and costumes</li> </ul>	The ensemble collaborated on some things. Student lacked preparation of at least 2 of the following items: <ul style="list-style-type: none"> <li>● 2D machine rendering</li> <li>● 3D machine model</li> <li>● Props and costumes</li> </ul>	The ensemble minimally collaborated. Student was minimally prepared and the skit appeared to not be coherent or rehearsed.
<b>Performance</b>	Student held attention of entire audience with the use of direct eye contact, seldom looking at notes. Student spoke with fluctuation in pitch and emphasis on key points. Student was also a respectful and attentive audience member.	Consistent use of direct eye contact with audience, but returns to their notes. Student spoke with satisfactory variation of pitch and emphasis on key points. Student was also a respectful and attentive audience member most of the time.	Displays minimal eye contact with audience, while reading mostly from the notes. Student spoke with little or no inflection.  Student was a respectful and attentive audience member some of the time.	Holds no eye contact with the audience, as entire report is read from notes. Student spoke with little or no inflection. Student was a disrespectful and/ or inattentive audience member.

**Total Points** \_\_\_\_\_

# **EXAMPLE READERS THEATRE SCRIPT**

## **Deluxe Slushy Lemonade Simple Machine**

### **ACTOR 1**

Do you work outside in this insane summer heat? Has life got you thirsty?

### **ACTOR 2**

We have just the thing for you!

### **ACTOR 1**

Here we have the Deluxe Lemonade Slush Machine! It will quench all of your summertime thirst!

### **ACTOR 2**

The Deluxe Lemonade Slush uses two simple machines to get the job done. One, a screw that juices the lemon. We recommend doing this with three lemons per pitcher. This screw will extract the lemon juice right out of the fruit and will filter the seeds so your juice is fresh and seed-free.

### **ACTOR 1**

The second simple machine we use is our wheel and axle to make this lemonade the coldest it possibly can get. We spin and slush the lemon juice with sugar and ice to create a sensational icy treat!

### **ACTOR 2**

The Deluxe Lemonade Slush Machine is affordable, only \$29.99! The simple machines involved in the Deluxe Lemonade Slush Maker make the job easy, fun and effective. You will be so pleased with these slushy results.