

**Tables Accompanying  
Technology Standard Lesson Module for Characterizing Elastic Materials**

Table 1. Instructional Materials for Characterizing Elastic Materials

Table 2. Rubrics for Assessing Elastic Materials Activity – Student and Teacher Achievement

**Comments  
on  
Application of Technology Standards  
to  
Selection and Creation of Instructional Materials**

Educational technology supports several parts of this lesson module, including the anticipatory set, the modeling, the guided practice, the independent practice, the closing, and the assessment. The teacher will create the Socrative polls, the Prezi presentation, the Mind map, templates for the various tables and the experimental protocol after the duration of each lesson and the number of lessons in the module is agreed upon.

Socrative polls and an engaging video on rubber band manufacturing support the anticipatory set by developing student's interests in elastic materials, especially one they are familiar with, the rubber in a rubber band. Many of the operations in making rubber resemble home cooking.

The video "Stretching an Elastic Band" supports the modeling. A real time Socrative poll, whereby students enter first their estimates of the number of pieces of material they can link in chains and the number that they actually link, allows them to compare their progress with that of their peers in both the guided and independent practice. The videos tell their stories with images, which benefits visual and English learners alike. The video "The World's Highest Bungee Jump" during the close reviews what students have done and sets the stage for activities in future years with elastic materials.

A Socrative poll during the assessment will capture what they have learned about elastic materials. The presentation using Prezi will incorporate the videos and zoom out as unstretched materials are loaded and stretch.

This lesson module conforms to several of the program elements for Standard 9: Using Computer-Based Technology in the Classroom. These standards include:

9(a) Each candidate considers the content to be taught and selects appropriate technological resources to support, manage, and enhance student learning in relation to prior experiences and level of academic accomplishment,

9(f) Each candidate examines a variety of current educational technologies and uses established selection criteria to evaluate materials, for example, multimedia,

Internet resources, telecommunications, computer-assisted instruction, and productivity and presentation tools. (See California State guidelines and evaluations), and

9(g) Each candidate chooses software for its relevance, effectiveness, alignment with content standards, and value added to student learning.

**Table 1**  
**Instructional Materials for Characterizing Elastic Materials**

<i>Number</i>	Item Description	Location	Comment
1	Realia	Student and teacher homes	Nylon stockings, rubber band, balloon, yarn, thread, bungee cord, chop stick, metal and plastic table knife, rope ....
2	Two <a href="#">Socrative</a> polls	Teacher to create customized poll – see notes below for questions	One poll asking students to classify the realia materials as either elastic or inelastic and the other asking them for the maximum number of links they could include in their chain for various materials without the weight hitting the floor
3	<a href="#">Prezi</a>	Teacher to create customized presentation	One Prezi Presentation listing realia materials and including a zoom close up showing what happens as a rubber band stretches. Also will include a template of tables for recording the number of links and the corresponding height of the weight and for ranking the materials by elasticity estimated from the maximum number of links in a chain.
4	Two devices to shoot videos of chain link measurements	Students	Likely student cell phones
5	Three Ring app	Teacher to customize	Capture, process polls and videos for documenting and assessing student knowledge and skills
6	<a href="#">Rubber Band Manufacturing</a>	You Tube video	5 minutes
7	<a href="#">Stretching an Elastic Band</a>	You Tube video	5 minutes
8	<a href="#">World's Highest Bungee Jump</a>	You Tube video	< 1 minute
9	<a href="#">Mind Map</a>	Teacher to create with customized categories	Centered on elastic materials
10	Experimental protocol	Teacher to create step-by-step guide with diagrams and example calculations.	One copy for each student.
11	Blank table of Chain Length versus Number of Chain Links	Teacher to create	One copy for each student. Table will have at least five columns: a) material; b) number of chain links; c) chain length

			without weight; d) chain length with weight; e) comments.
12	Blank table of Chain Length With Suspended Weight vs. Material	Teacher to create	One copy for each student. This table will have at least three columns: a) material; b) number of chain links; and c) comments.
13	Templates for graphs of chain length (with and without weight) versus number of chain links	Teacher to create	Provide each team with at least 5 of these templates.
14	Table of Rubrics for Assessing Elastic Materials Activity	Follows this table	Assessment categories include: <ul style="list-style-type: none"> <li>1) Understanding the nature of elastic materials</li> <li>2) Proficiency with mathematical operations</li> <li>3) Leadership</li> </ul>
15	Table of Instructional Materials	This table	Lists the items needed to use this lesson plan in the classroom

Notes:

Socratic Polls

1. Realia poll – for each Realia material, asks whether the material is elastic or inelastic. Tabulates and displays responses after all students have responded.
2. Maximum links poll – for each material tested, asked what the maximum number of chain links were.

**Table 2****Rubrics for Assessing Elastic Materials Activity – Student and Teacher Achievement**

<b>Category</b>	<b>Developing</b>	<b>Intermediate</b>	<b>Qualified</b>	<b>Exceptional</b>
Understanding of the nature of elastic materials	Can identify which materials are elastic by memory, not function.	Can classify materials based on their own assessment of their elasticity. can define elasticity.	Can quantitatively compare the elasticity of fixed lengths of materials.	Can quantitatively compare the elasticity of variable lengths of materials.
Proficiency with Mathematical Operations and Problem Solving	Can perform addition, subtraction, and multiplication with assistance from other in setting up the problem.	Can set up and perform mathematical operations when data is in a tabular format.	Can independently determine which data needs to be entered in a formatted table to solve a problem.	Can independently create, format and populate the data tables necessary to solve a problem.
Leadership	Requires close supervision to execute simple tasks.	Asks for assistance when unable to execute tasks for which directions are clear	Can be relied on to execute tasks for which directions are clear, ask when assistance is needed, and assist others in completing tasks.	Asks for assistance only to clarify instructions or initiate new tasks and effectively delegates to and assists others on the team.