

ALL YEAR BUNDLE

CREATED BY BROOKE BROWN AND KATIE KING



# 44 STEM CHALLENGES

## TO SUPPLEMENT FAVORITE READ ALOUDS





# STRESS-FREE STEM ACTIVITIES

## LESSON PLANS

## KEY VOCABULARY

### PAPER PLAYGROUND

#### The Recess Queen

**HS-ESS Standard Alignment: 2-PS-3** Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object. **K-PS-4** Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. **K-PS-2** Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or pull. **K-2-ETS-1** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. **K-2-ETS-2** Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

**Challenge Description:** Students will use only toilet paper/paper, towel rolls, tape, and scissors to construct a working paper playground. They may cut and assemble the pieces however they choose to create the different features. They may use gummy bears to "test" the different features of their playgrounds, such as slides, swings, seesaws, sand boxes, and merry-go-rounds. Students will learn about some of the simple machines such as levers and ramps as they construct.

**Suggested Materials:** poster board cut into fourths (1 piece per group for base of playground), toilet paper/paper towel rolls (6-8 per group), scotch tape, scissors, **OPTIONAL:** gummy bears (2-3 per group)

### LESSON PLAN

- Ask students to brainstorm different play areas that are found on most playgrounds and how they work. Project Google Images of playgrounds and discuss the similarities and differences between different play areas. Point out the use of many different simple machines that are used in playgrounds such as levers, slides, and wheels and axles in merry-go-rounds. Ask students to brainstorm different pieces used in these simple machines. Record student ideas on the provided teacher chart and their individual booklets. Refer to the provided vocabulary cards as needed throughout the lesson in your classroom.
- Introduce permitted materials and share the challenge instructions. Brainstorm and model. Students can cut and assemble their paper rolls (i.e., paper ships, half cylinders, short cylinders, slots and tabs). Allow students time to brainstorm playground ideas, cut and assemble features, test their features with gummy bears, and record in their STEM journals.
- Hold a whole class closing discussion and reflection, allowing students to present their playground. Point out the different simple machines, pushes, and pulls involved in their play areas.

### PAPER PLAYGROUND

#### Vocabulary Cards

**simple machine**  
a basic device that applies force

**lever**  
a bar that rests on a fulcrum that is used to move a load with one end when pressure is applied to the other end

**inclined plane**  
ramp or plane that slopes at an upward angle

**force**  
a push or pull upon an object



## TEACHER CHARTS

## STUDENT BOOKLETS

### PAPER PLAYGROUND

#### The Recess Queen

#### parts of a playground

#### simple Machines playgrounds

**types of simple machines**

lever

ramp (inclined plane)

wheel and axle

### The Recess Queen

#### Maker Task Cards

Use the following task cards in a MakerSpace or with STEM PINS for students to make more creations.

**Make a blueprint for a new playground area.**

**Make a poster about playground safety rules.**

**Make up a new outdoor recess game.**

**Make up a new indoor recess game.**

**My playground**

**simple machines used in my playground**

**pushes in my playground**

**pulls in my playground**

**PAPER PLAYGROUND**  
The Recess Queen  
Name: \_\_\_\_\_

**STEM CHALLENGE**  
Can you design a working paper playground that uses simple machines?

**parts of a playground**

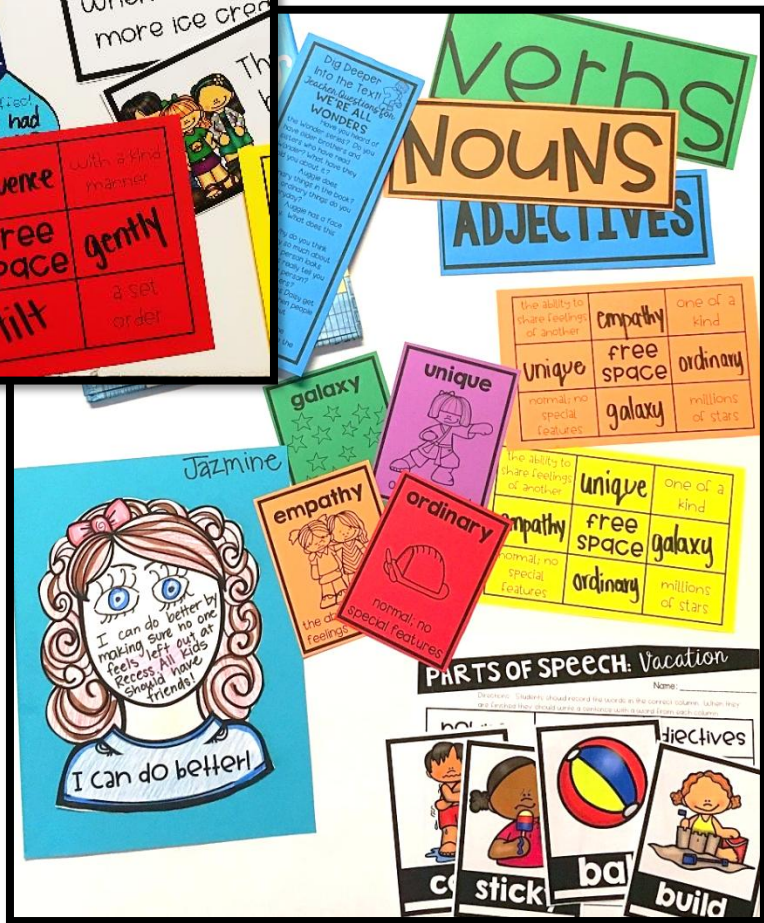
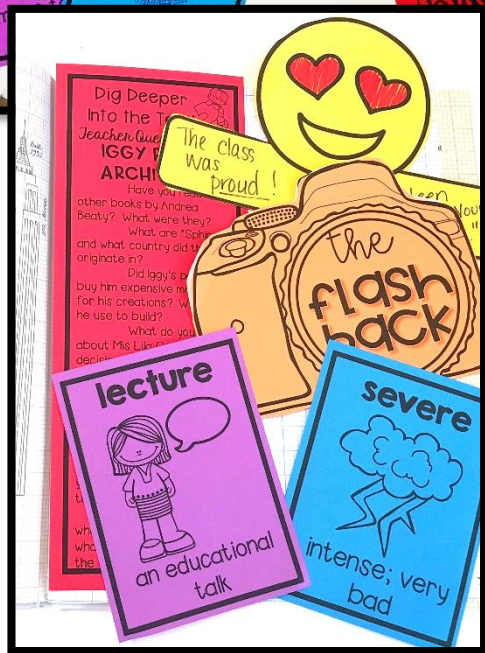
## MAKER CARDS





# QUICK & EFFECTIVE ELA LESSONS

- ✓ Comprehension
- ✓ Grammar
- ✓ Enrichment
- ✓ Vocabulary







# ENGAGING SEASONAL UNITS





# QUICK & EFFECTIVE ELA LESSONS

**uns** Add **-S**

- foxes • lunches
- boxes • punches
- tuxes • bunches

The angry clouds glared down on us.

The wispy clouds waved at me as I looked out my window.

## Plural nouns

More than one of something.

flowers

Many times you can just add -s to make a word plural

insects

Sometimes you need to add -es

foxes


Other times you have to change the word altogether!

Children

## Printable Anchor Charts, Vocabulary Cards, High Flyer Extensions & Exit Slips



**mischievous**



always getting into trouble

**resourceful**



finding clever ways to overcome something

**strategy**



a plan of action

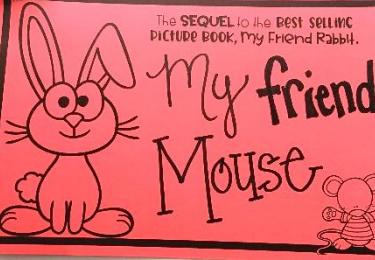
**irate**



very angry

The SEQUEL to the best selling picture book, My Friend Rabbit.

My friend Mouse



## TEXT EVIDENCE

In order to describe a character we use **Adjectives**.

It is important to give **EXAMPLES** from the book that prove your point.

