UNIT PLAN BRAINSTORMS

There Goes the Rube Goldberg Machine (Science)

Time to grind your gears by making your very own Rube Goldberg machine! Ask your students if they know what a machine is and if they can name some machines that they encounter in their daily lives, like a bicycle, dishwasher or elevator. Afterwards, explain that a Rube Goldberg machine is a machine that does a simple task using a ridiculous series of chain reactions. You can help illustrate the idea of a chain reaction by standing in a circle with your students and sending different movements down the line, like doing the wave at a baseball game! Next, watch some videos of Rube Goldberg machines to get your class inspired for how they work (the music video for "This Too Shall Pass" by OK Go is a great place to start). Now it's time to build your own Rube Goldberg machine! First, decide on a simple task, like switching off a light or pouring a glass of water, that you would like your machine to perform. Then, conduct a scavenger hunt in your classroom to find fun and zany objects, like toys, blocks or string. Work together to see if you can set up these found objects into a five-step Rube Goldberg machine, meaning there are five different reactions that occur to perform your chosen task. When you're done, share your machine with another class to demonstrate all the magic that lives in everyday classroom objects!

We've Got Magic to Do! (Theater, Visual Art)

What tricks do you have up your sleeve? Lead a unit all about magic! Start the unit off by asking the class if they've ever seen a magic trick, and if anyone can demonstrate one for the class. Bonus points if you or a fellow teacher can perform one yourself to really generate students' buy-in! Next, show your class videos of some iconic types of different magic, like card tricks, illusions or mind-reading. Some famous ones to start with are David Copperfield vanishing the Statue of Liberty and Eden Choi's impossible magic from *Britain's Got Talent*. Afterwards, ask your students to choose one they feel most excited about and write down or draw how they think the trick was performed. In groups or as a full class, students should share their notes, with every student having a moment to present how they think it was done. After your theorizing is over, it's time to learn how the trick was really done with an explanation video! If you can't find an explanation, decide as a class what you think is the most likely solution. To culminate, try to recreate the magic trick to the best of your abilities, or use the performer's secret method to invent a whole new one. You can even invite another class to come watch, but remember, a true magician never reveals their secret!

Practical Magic (Science)

Rainbows, fireflies, shooting stars... sometimes nature is so wonderful that it feels like pure magic. With your class, choose a natural phenomenon that seems so mysterious it could seemingly only be explained via magic, and then use science to discover how it works! Some ideas for your class to study are bioluminescence, a caterpillar turning into a butterfly or a volcano erupting. Once you've chosen, start by observing the phenomenon that your class has chosen. This may be through a video online or, if possible, take a field trip to go see the magic in real life! Ask each student to create their own unique hypothesis, or testable prediction, about how the "magical" thing takes place. Invite students to individually share out their hypotheses, keeping track of all your class's different ideas. Afterwards, conduct research as a class to understand the scientific explanation for nature's magic. To culminate, present a research seminar to another class that explains how your chosen mystery works and walk the class through all of your predictions and scientific processes. Then, onto the next mystery!