

Grade/Content areas: 3 Science, ELA, Social Studies, Math

Students will have been learning about rural and urban populations within Louisiana; as well as, state and national symbols. This lesson will address culture in Louisiana, how it shapes our celebrations, and singles out a key element central to many festivals in our state: parades. Mardi Gras is a celebration known throughout the United States as being an exclusive Louisiana celebration but, Carnival in Brazil also has a similar celebration influenced by our Mardi Gras traditions and vice versa. Beads thrown at parades are a central theme among these celebrations. Additionally, students will explore predictability in patterns of motion by investigating with a pendulum design to see if weight, length, and type of force impact the movement of Mardi Gras beads. Students will discuss the current revelation of scientists have found: the Earth's magnetic poles are shifting throwing off global positioning systems. Does magnetic force affect how objects react and move? Before we can find an answer to that question we need to first understand types of force and their effects on objects.

link to news story or current event:

<https://www.mardigrasneworleans.com/news/bring-your-kids-to-mardi-gras-yes->

<https://www.dogonews.com/2019/2/27/scientists-scramble-to-keep-up-with-fast-moving-north-magnetic-pole>

Students will find this topic of interest as Mardi Gras celebrations are a part of our culture, here in Louisiana. Parades are events most all students have been to at least once in their lives. Many schools have parades or celebrations near the holiday. The shifting of the magnetic poles will be of interest as it has been discussed the importance of the discovery of magnetic gravitational waves at LIGO in Livingston, La. Discussions in class leading up to this lesson will have included this discovery and the importance of magnetic force when talking about gravity. The experiment will be an opportunity to apply scientific principles to a real-world situation.

In this lesson students will be using critical analysis adapted for discussion from the Library of Congress Teaching with Primary Sources to reflect on the article they read and its connections to the quote about Louisiana culture. Students are being asked to read an informational text for the purpose of identifying the main idea and the applying the main idea to a real world experience in which most of the student population should have participated, the exception being new immigrant or migrant families or those just moving from another state to Louisiana. Students are provided opportunity for discussion which can also be an opportunity for those students hailing from other communities or countries where the culture is different to share in their cultural experiences. In allowing for this discussion the curricula is empowering those of different cultures to share while exposing others to cultures different from their own, tantamount to a culturally diverse classroom experience. Additionally, the discussion provides opportunity for higher order questioning and empathy training which promotes attention key to memory and learning.

In a social constructivist classroom, the sharing of culture combined with hands on collaborative activities and experiences allows students to become experts in their knowledge, both collectively and as individuals. Students are working together to gather information and discuss lesson objectives connecting the learning to a social activity thereby creating the likelihood learning will be transferred to long-term working memory better for recall needed for state assessments as opposed to recognition which is usually lost after the need for having the information has passed.

The experiment is project based with an anchor phenomenon which poses a question and purpose for learning. The collaborative assignment addresses needs of 21st century learning while also incorporating all the components of the NGSS including the engineering design process and technological literacy as well as cross curricular content such as math and ELA. Students discuss problems and solutions within their groups producing high order thinking skills while connecting to experiences they are more likely to recall when encountering questions of similar nature about predictability of patterns and gravity on the state standardized test. When the teacher is mindful of the grouping of students, such as being sensitive to the need for Hispanic and Latino groups to be placed with the same gender, participation and attention increases promoting memory and learning.

Objectives/Standards:

Standards: All are Louisiana Standards found at louisianabelieves.com in the teacher toolkit. Louisiana follows CCSS and NGSS but has modified language, slightly, to conform to the constraints of teaching to the LEAP standardized achievement test.

ELA: RIT-1, 2, and 10: TSW read and identify the main idea of the informational text and find supporting evidence of the main idea with 80% accuracy. TSW read increasingly difficult texts independently with 80% accuracy.

W2 a-d: TSW write a news article, with an illustration, about the experiment. TSW include key details and terms used during the experiment.

Social Studies: 3.2.4 TSW identify cultural elements that have contributed to the state's heritage with 80% accuracy

Science: 3-PS2-2: TSW make observations and measurements of an objects motion to provide evidence that a pattern can be used to predict future motion. TSW match their hypotheses to comparable data with 75% accuracy in 3 out of 4 trials.

Math: 3MD-B.4 TSW generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters with 75% accuracy in 3 out of 4 trials.

Vocabulary

Culture – the customs, arts, social institutions, and achievements of a particular nation, people, or other social group

Festival – a day or period of celebration, typically a religious commemoration; an organized series of concerts, plays, or movies typically held annually in the same place

Background – all of a person's experiences, education, and family history

Force – a push or a pull

Magnetic Force (pull) – attraction or repulsion that arises between electrically charged particles because of their motion

Gravity – the force that attracts the body toward the center of the Earth, or toward any other physical body having mass

Mass – any matter which takes up space and has weight

Materials:

pencils

plain white paper

scissors

notebooks

white and black crayons or colored pencils

printed copy of ReadWorks article and question set; one for each student

computer, tv or smart board, access to Louisiana travel website to project quote and news article about magnetic poles shifting from DOGO news; each website pulled up in separate tabs ready to be displayed

Louisiana Festivals Graphic organizer, one for each group

Louisiana graphic map of festivals celebrated around the state; <http://www.laffnet.org/fairs-and-festivals.html>

yard sticks

marble

straws

popsicle stick

experiment instructional set; one for each group

data collection sheets; one for each group

string cut into 5" lengths enough for each groups trials (three per set per group)

tape for each group

sets of Mardi Gras beads each containing one string at 11", one at 14" and one at 20" (approx.)

digital scales, enough for one for each group

paper; cardstock to be folded for the experiment

collaborative group rubric for this assignment to address objectives for experiment, hot seat/snowball discussions, and listening and speaking skills

Student roster and clip board for assigning rubric scores for each component

Warm-up:

Bell ringer: <https://www.readworks.org/article/Brazil-Today---Carnaval/0cdd5661-4b36-4878-af5e-ad6d6ce0d455#!articleTab:content/> Students will read and complete questions page turning into designated space in room prior to the official start of the lesson. 10 minutes will be allotted for completion of this task. Article has read to me option for students with vision impairments, comprehension delays, and those students who are not proficient in the English language. The read to me option includes vocabulary and question sets. For students needing to use these accommodations the article assignment can be submitted electronically.

Instructional strategy:

1. TTW ask students about the main idea of the article read.
2. TTW state: "we have been learning about Louisiana, rural and urban areas and state symbols, for several weeks. Today we are going to discuss some of the festivals and celebrations we observe that contribute to our culture."
3. TTW project the quote from Louisiana travel "Louisiana always can find a reason to celebrate. Throughout the year, music, food, history, and holidays inspire festivals and events of all sizes occurring throughout the state." Engage students to share what they think via asking higher order thinking questions: what do you think this quote means?, what types of celebrations do we have?, what other celebrations do we engage in Louisiana?"
4. TTW record responses on the white board. Discussion will last 5 min.
5. TTW then explain we are going to use a special map to help us identify places in our state that have special celebrations or festivals. TSW be instructed they will be using the map and corresponding graphic organizer to record where and what type of festivals are celebrated in our state.

6. TTW divide students into groups and provide each with a computer with link to access map of Louisiana festivals and the graphic organizer "Louisiana Festivals". TTW instruct each group to put the names of the groups on their organizer. TSW use the map to fill in the graphic organizer. TSW have 10 min to fill in all components of the graphic organizer. TTW move freely around the room to engage in, and listen to, discussions with collaborative groups rubric to score students participation and listening and speaking skills. All graphic organizers will be collected at the end of the 10 min period.

7. TTW ask, "what is a major component of festivals in our state?" TSW respond with parades and if fail to do so TTW guide them to the correct answer. TTW then ask "what do we do while at the parades?" TSW respond "throw me something mister" or "catch beads and things".

8. TTW ask "how do we know where those beads will land?, what force is acting upon them to reach our hands?, how much force do you think is it taking for the beads to be thrown?, do you think the length of the beads matters?, what about the weight?" TTW record answers on white board.

9. TTW project news article about magnetic poles and pose question: "do you think the Earth's magnetic fields affects the pull or push of gravity on objects?" TSW engage in snowball discussion whereby they pair up and answer the question recording their answers/ideas on plain white paper, then repeat in groups of 4, then in groups of 8 and so on until the whole class is involved in the discussion. TTW record answers on white board.

10. TTW introduce experiment with pinball activity; a demonstration of the theory we will be testing. TSW explore effects of a soft or gentle force. Demonstrate by setting up a track between two yardsticks and have students take turns rolling the marble down the track. Blow on it through the straw from the front, side, and behind. Demonstrate the effects of a hard force. TSW take turns rolling the marble down the track. As the marble is rolled down the "lane," hit it with the "flipper" (popsicle stick) from the front, side, and behind. TSW use hot seat to discuss what they saw and why it happened.

11. TSW divide into teams again to perform the pendulum experiment whereby they will measure force by marking distance on a sheet of paper varied distances with a ruler marking every quarter, half, and full inch.

13. TTW give each student a sheet of plain white paper. TSW will mark 0 on one end of paper. TSW then mark every quarter and half inch until the end of the paper is reached. TSW color every other half inch black/white to create a visible plane to mark distance traveled.

14. TSW use materials provided to set up experiment: rulers, small scales, string, varied sizes and lengths of Mardi Gras beads, paper, straw, data tracking sheet, and instruction set. TSW be instructed to put the names of all individuals in their group on the data tracking sheet.

15. TSW will follow instructions to conduct the experiment. TTW rotate among groups to facilitate and answer questions as students complete the experiment. The teacher may wish to use same rubric to observe cooperative learning among group members to collect for additional ELA, math, and science grades or to contribute to the overall score of the group. The time allotted for the experiment should be 20-30 minutes.

Closing:

16. TSW select one "expert" from their group to be in a hot seat panel to discuss the results. The expert will be allowed to have their groups data and measurement sheet to discuss results. The audience members will be members of the press taking notes for an article they will have to write about the findings. The panel will last for 10 minutes.

17. The experts will return data sheets to the teacher and receive a copy of the notes from their group members. The notes can be shared electronically via pictures from electronic devices and pictures emailed to all members of the group; the teacher may have to facilitate this dependent upon district technology policy and availability of technology provided in the classroom. TSW, as a homework assignment, write a news article about the experiment.

Assessment:

TTW use the collaborative group rubric to score students using a points system to determine effectiveness at communication, participation, and capacity to carry out experiment. TTW be looking for attention to making sure the experiment is conducted with reliability not on the outcomes exclusively.

ReadWorks questions sets will be graded to determine if the main point from an article is derived with at least 80% accuracy

A combination of the rubric scores and the data sheets collected will be used to score student understanding of social studies, math, and science concepts.

An extension of this lesson, to gain further understanding of student knowledge, could be for an individual student project to design a catapult method, using the data they collected from this experiment, to accurately launch beads at a target. The project could take place in and out of class as a project-based lesson in math and science.

Students having difficulty with understanding concepts in math and science, with this lesson, could be given a partner with which they would work on their projects individually, but the partner would be the expert mentor to help explain areas of difficulty for the students.

To conduct this lesson in lower grades: modify the graphic organizers to limited celebrations/festivals and use labeled pictures to match to regions. Students would conduct the experiment in teacher guided groups instead of individual groups with premade measurement sheets to track distance traveled. Distances should be marked in whole numbers for lower grades. Kindergarten could opt for one trial, eliminating weight and length variables, attempting to move one set of beads via blowing, tapping with hand, tapping with paper, and no force applied. Additionally, the hot seat panel would be a shared writing experience whereby the teacher writes small chunks on the board for students to copy.

Modifications for students with exceptionalities can include pre-written notes, outlines, and instructions, reduction of words on page and use of larger print, provide audio recordings for instructions, graphic organizers, careful consideration of members of the groups, and time reminders/advice notice of transitions. Modification of the accuracy level for the Readworks article will be based on IEP or ELPT score adjusted for meeting the needs of the cognitive ability or English proficiency of the student. Allowing students access to listen and report their knowledge via electronic assistance provides them the same access to lesson materials and learning but respects their need to present their knowledge in a manner sensitive to their learning needs. Since the experiment is graded based on participation in group, with contributions to discussions and not specifically outcomes, students not proficient in English will be assessed based on their ability to engage in conversation (focusing not on precise knowledge of content but ability to understand and respond to others in the group), observe and report, and statement of opinion with regard to their English Language Proficiency scores for grade 3.

Accommodations for ELL students will include ensuring they are grouped with same gender students to promote participation to increase the likelihood students will appropriately engage in groups and have an equal voice. Students will be provided vocabulary words and definitions in advance of lesson and provided list for reference during activities and experiment as frontloading the vocabulary and providing a reference will assist in their comprehension of the reading, listening, and speaking objectives of the lesson. The vocabulary, where applicable, will have a Spanish word equivalent to promote understanding because the objective is not only to increase English proficiency but also comprehension skills.

Homework:

TSW use notes taken during hot seat panel to write an article about the experiment. The article should include one illustration.

Lower grades: article length and complexity should be shortened and have an accompanying illustration of the experiment. Kindergarten could be given a reading assignment with material on any of the topics addressed in the lesson and to draw a picture about what they read with their parents; TSW write one sentence about the picture.

Accommodations: Students with writing skills deficiencies, English language learners, or those visually impaired may record their article and include a description of the experiment in their recording. Alternatively, the student may orally dictate the essay to a parent or para and the transcription turned in for a grade.

Modifications: Students who do not clearly understand all the concepts, have trouble with converting oral language to written, or who have limited proficiency in language will be asked to provide definitions to key concepts based on their knowledge and ability level. The number of terms, format and length of assignment will be determined individually based on IEP and/or ELPT parameters.

Experiment Instruction Sheet

Each group is responsible for building a machine and using it to experiment with applying force to an object in motion.

1. Your teacher will demonstrate how to build the pendulum by placing the ruler on a desk so that four inches are on the desk and eight inches extend over the side. You will do the same and tape your group's ruler to the desk. Tape your measurement sheet to the floor directly beneath your pendulum set up making sure the 0 line is approximately where you will be pulling the beads back.
2. Find the Mardi Gras Beads, other ruler, scale and strings.
3. Select one set of beads then weigh and measure them. Record your results on the appropriate area of your data tracking sheet. You will measure and weigh each set of beads before using force to move them.
4. Wrap one end of the one of the strings around the Mardi Gras beads and tie securely.
5. Tie or tape the other end of the string around the ruler, three inches from the end.
6. To set the pendulum in motion pull it up (toward student) and let it go. Use a pencil to mark, approximately, where your beads reached the highest point in their swing on either side of the 0 mark. Record how many inches, either whole quarter or half, the beads traveled.
7. Use each of the following methods of different types of force to move your beads: blow with a straw, tap with cardstock paper, tap with your hand, do not touch at all. You will repeat these steps with each set of beads.
8. Predict what will happen when a force acts on the beads and write the prediction on the data collection sheet, along with how far the beads traveled each time. You will repeat this with each set of beads.

Rock-A-Bye Pendulum

Build a pendulum and explore the effect of different amounts of force on an object in motion. Follow these steps to build a pendulum:

1. Gather a ball, st Mardi Gras beads, string, ruler, and tape
2. Place the ruler on a desk so that four inches are on the desk and eight inches extend over the side. Tape it to the desk.
3. Wrap one end of the string around the beads once. Wrap a piece of tape around the beads, covering the string. Put two pieces of tape where the string hangs off the ball
4. Tie or tape the other end of the string around the ruler, three inches from the end.

Congratulations! You are ready to do the experiment.

Set the pendulum in motion by pulling it up and letting it go. Predict what will happen when each of the listed forces acts upon the pendulum. Write your group's prediction, then try applying the forces to the moving pendulum. Write what happened and why you think it happened.

Force	Prediction	Results	Why do you think this happened?
Blowing			
Tapping with your hand			
Tapping with a paper			
No force (don't touch it, just watch what it does)			

Name three things that could happen when a force acts on a moving object.

- 1.
- 2.
- 3.

Bead Measurements:

Set 1: Length: _____ Weight: _____

Distance Traveled:

Blow: _____ Tap hand: _____ Tap paper: _____ N/F: _____

Set 2: Length: _____ Weight: _____

Distance Traveled:

Blow: _____ Tap hand: _____ Tap paper: _____ N/F: _____

Set 3: Length: _____ Weight: _____

Distance Traveled:

Blow: _____ Tap hand: _____ Tap paper: _____ N/F: _____

Louisiana Festivals

Festival	Holiday	Food	Music/Art	Ethnic Group or Culture

Assessment Guide for the English Language Proficiency Test
for Kindergarten through Grade Twelve

Grade(s)	Listening	Reading	Speaking	Writing
Kindergarten	<ul style="list-style-type: none"> Follow Instructions Listen and Match <ul style="list-style-type: none"> Phrase Sentence Word Long Conversation Read Aloud Story Short Conversation Teacher Presentation 	<ul style="list-style-type: none"> Informational Set Read and Match <ul style="list-style-type: none"> Phrase Sentence Word Read-Along Story Short Correspondence Word Wall 	<ul style="list-style-type: none"> Classroom Tableau Observe and Report Picture Description Show and Share Presentation Show and Share Questions 	<ul style="list-style-type: none"> Complete the Story Sentence Builder Word Builder <ul style="list-style-type: none"> Phrase Sentence Word
Grade 1	<ul style="list-style-type: none"> Follow Instructions Listen and Match <ul style="list-style-type: none"> Sentence Word Long Conversation Read Aloud Story Short Conversation Teacher Presentation 	<ul style="list-style-type: none"> Informational Set Literary Set Procedural Text Read and Match <ul style="list-style-type: none"> Sentence Word Read for Details Read-Along Sentence Short Correspondence 	<ul style="list-style-type: none"> Classroom Tableau Conversation Observe and Report Opinion Picture Description 	<ul style="list-style-type: none"> Sentence Builder Word Builder
Grades 2-3	<ul style="list-style-type: none"> Follow Instructions Listen and Match Long Conversation Read Aloud Story Short Conversation Teacher Presentation 	<ul style="list-style-type: none"> Informational Set Literary Set Procedural Text Read and Match <ul style="list-style-type: none"> Sentence Word Read for Details Read-Along Sentence Short Correspondence 	<ul style="list-style-type: none"> Classroom Tableau Compare Pictures Conversation Observe and Report Opinion 	<ul style="list-style-type: none"> Opinion Picture Caption Sentence Builder Storyboard Word Builder