

Subject/Grade: Science 1/2 Lesson Title: Friction Fun!

Teacher: Miss. Finlay Date: November 24 , 2021

Stage 1: Identify Desired Results

Outcome(s)/Indicator(s):

MP2.2

Investigate factors, including friction, which affect the motion of natural and constructed objects, including self.

(c) Describe examples of the motion of an object in terms of a change in position relative to other objects (e.g., faster, slower, towards, away, closer, and further).

(j) Observe and record the effects of different textured surfaces on the friction between two objects or surfaces.

Key Understandings: ('I Can' statements)

- I can identify what friction is, and how it is used
- I can identify and record how different materials create more or less friction
- I can identify the term “faster” and apply it when describing the movement of the ball
- I can identify the term “slower” and apply it when describing the movement of the ball
- I can identify the term “away” and apply it when describing the movement of the ball
- I can identify the term “closer” and apply it when describing the movement of the ball
- I can identify the term “further” and apply it when describing the movement of the ball

Essential Questions:

- What is friction
- What happens when there is more friction?
- What happens when there is less friction?
- How can we predict how much friction there is?
- What does it mean when the ball moves slower or faster?
- What does it mean when the ball stops rolling closer or further to the ramp?

Prerequisite Learning: N/A

Instructional Strategies:

- Use of **video** to engage students
- Asking **questions and using examples** from the video.
- **Classroom Discussion** to allow students to understand how friction can slow down objects that are in motion. Discussion will also allow students to understand what happens when there is more or less friction
- **Using the powerpoint** to include **visuals** and help students understand the concepts of friction

Stage 2: Determine Evidence for Assessing Learning

Assessment throughout the class:

Formative: Teacher will observe the class and look for engagement, participation, and a level of understanding on the concept of friction.

- Students will also be formally assessed when answering questions that are asked by the teacher
- Once the worksheets for this lesson are completed, the teacher will formatively assess students' work and check to see if the students understand the concept and what areas should be focused on moving forward in the school year.

Stage 3: Build Learning Plan

Set (Engagement):

Length of Time: 5min

To get students engaged, Miss Finlay will welcome her students by saying good afternoon and letting students know that today's lesson is about friction.

Please raise your hand if you know what friction is.

If students have their hands raised, Miss Finlay will call upon the student to answer. This brief discussion/questioning and answering period will allow Miss Finlay to see where everyone is at in their learnings in this topic before moving on.

- Next, Miss Finlay will play the first 1min 10sec of the following YouTube video which will explain to students what friction is:

▶ What is Friction? Types of Friction | Advantag...

After the video has been viewed, Miss Finlay will ask students one more time: **After watching this video, what is friction?**

Answer from the video: Friction holds back the movement of a sliding object

Development:

Time: 23min

Learning:

Powerpoint: A powerpoint presentation will be used to show students how friction works. The first picture slide will show a ramp and a ball. The ball will go down onto a smooth hard surface. **Do you think that the ball will go far?**

Materials/Resources:

- Computer: Microsoft powerpoint
- Ramp: Clipboard
- Foam ball
- Towel
- Blanket
- Felt
- Bath mat
- Observation, prediction and recording worksheets
- Table to perform the experiment on

Possible Adaptations/

Differentiation:

- Some students may want more of a challenge when completing their exit slip. In this case, the teacher will ask students to write why they chose the answer that they did. If the student does not feel comfortable writing that much, they may provide a verbal response to the teacher instead.

The second picture slide shows the same ball going down the same ramp, but this time landing on a shaggy rug. **Do you think that the ball will go as far as last time? Does this mean that there is more friction or less friction?**

The third picture slide shows the same ball and ramp but this time landing on a thinner rug. **Do you think that the ball will go as far as last time? Does this mean that there is more friction or less friction?**

The fourth picture slide shows the same ball and ramp but this time outside in the grass. **Will the grass slow down the ball? Why do you think this?**

Prediction and experimenting:

Miss Finlay is going to be doing an experiment and the students will be in charge of making predictions and recording their observations. Before the experiment takes place, Miss Finlay will hand each student sitting in the front row a stack of worksheets and ask the students to take one and pass it back.

Once each student has their worksheets in front of them, Miss Finlay will instruct students to listen very closely.

Grade ones and twos, today we are going to be doing an experiment, in order for this to work, I need each of you to listen very carefully. During the experiment I am going to be asking you questions. Last week we talked about school rules. One of the rules is to raise your hand if you would like to answer a question. If you understand, please give me a thumbs up.

Miss Finlay will wait until each student gives a thumbs up.

Today I have brought with me a ramp, ball and different materials to place as a surface to check for friction. One of the materials I have brought is a towel. One item is a blanket. One item is felt material, and one item is a bath mat.

After explaining and showing each of the materials, Miss Finlay will show students that pictures of each of these items are on their worksheets. Students will be instructed to make a prediction of which material will create the most friction when the ball rolls across. Once students think that they know the answer, they will be instructed to circle the image that they think it is going to be, on their worksheets.

Miss Finlay will then have the ball go down the ramp on each of the materials. After this has taken place, Miss Finlay will ask:

**Which material was used when the ball went the furthest?
Which material was used when the ball went the shortest distance?**

**Which material created the least amount of friction?
Why?**

- Noises in the classroom will be kept at an appropriate level to ensure that each student feels comfortable, and are able to hear classmates as well as the teachers during discussion and instruction.
- If students need more time to respond orally to questions, this time will be provided to ensure that each individual gets the opportunity to participate
- This lesson uses multi-sensory learning for students. Auditory instruction is provided by teachers and through the engaging video, as well as visual representations via Powerpoint and experiment presentations. Using a variety of methods to teach, provides support for student comprehension.
- To provide students with segment instruction, students will be directed to perform a movement break before transitioning from one activity to another.

Management Strategies:

- Teacher models behaviour that is expected from students
- Praise students for hard work and good ideas
- 123 eyes on me- student repeat to regain attention
- Give clear expectations for students for when they are done their work

Which material created the most friction?

Why?

After questioning and class discussion, students will be given the task of flipping over the worksheet and circling the picture of the material that caused the most friction. They will then write their name and date at the top of the page and hand it in to Miss Finlay.

Movement Break: Have students stand up beside their desks and complete a series of movements that is led by the teacher. Ex: Reach up to the sky, skip on the spot, touch your toes

Extension Activity/exit slip:

Now that students have completed learning as a class, an exit slip will be handed out to students that will formally assess each student's level of understanding from today's lesson. The lesson will include two pictures and students have to decide which one would have the most friction if a ball was rolled on the surface.

Learning Closure:

Time: 2min

Students will write their names and dates at the top of their worksheets and hand it in to Miss Finlay or the table at the front of the room. Then students will be instructed to sit at their desks. Before closing the lesson, Miss Finlay will ask one last time: **What is friction?**

Then Miss Finlay will thank the students for their engagement and participation during this lesson and hand the class over to Miss Kupper.

- Redirecting behaviour to match classroom expectations.

Safety Considerations:

- Have students stay seated during the experiment so that the ball does not hit anyone.
- Have the students listen carefully to instructions so that each student knows what is happening within the lesson at all times.
- Consider safety of students when working with a class, students should not feel left out when working on class discussion

Stage 4: Reflection

Professional Goals Plan

Topic:

Date: Wednesday November 24th

Teacher: Danica Finlay

Observer: Sheri Kupper

| 1. Professional Goals | 2. Steps to Achieve Goals |
|--|---|
| <p>1. Making sure students understand</p> <p>2. Keep things engaging but not too overwhelming.</p> <ul style="list-style-type: none">- This lesson includes many different parts to it which I think will help keep students interested with their learnings. However, I want to make sure that I have the perfect balance by not overwhelming students with the amount of activities. <p>3. Ensuring each students understands the concept being taught</p> | <ul style="list-style-type: none">- Having students put a thumbs up if they understand- Taking many opportunities to ask questions about what we just went over to ensure students heard the teacher- Walking around the classroom during individual work and helping any students who seem to be confused, frustrated or off task. |

3. Instructions to observer:

If possible, I would like for you to sit at the back of the classroom and take note of, if and when students disengage from the lesson. By recording this, I will be able to take that information with me for the future and know when to focus more on certain concepts so that students will understand more, and be able to keep engaged in the class because of that. Also by knowing when students become disengaged from the lesson, perhaps I could add in a movement break to reduce the chances of this happening again.

4. Data Collection:

