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A DETAILED LESSON PLAN IN SCIENCE 4

I. OBJECTIVES

At the end of the lesson, learners should be able to:

- a. Identify the different types of forces;
- b. Share their understanding about the relationship of different type of forces on our physical activities by writing a short essay;
- c. List real-life examples of contact and noncontact force.

II. SUBJECT MATTER

- a. Topic: **Different Types of Forces**
- b. References:
Balatbat, F., Ocampo, C. & delos Reyes, R. Worktext for Scientific and Technological Literacy: Science Links. Rex Bookstore Inc. p. 220-226
- c. Materials: Pictures, Non-Projected Instructional Materials
- d. Values Integration: Physical fitness

III. PRODEDURE

Monday (February 20, 2023)

| Teacher's Activity | Student's Activity |
|--|---|
| <p>A. Preliminary Activities</p> <p>1. Prayer Class, please stand up and let us pray.</p> <p>2. Greetings Good morning class! I am Jade Mae E. Español and you can call me Teacher Jade. I will be your student teacher in Science. You may now take your seats.</p> <p>3. Attendance Before we start, let us check your attendance. Who is absent for today?</p> | <p>In the name of the Father and of the Son and of the Holy Spirit Amen!</p> <p>Good morning teacher! Good morning classmates! Good morning!</p> <p>Thank you, teacher!</p> |



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| <p>Okay, Thank you!</p> <p>4. Review</p> <p>Before we start to our new discussion, can you still recall what was discussed to you last week?</p> <p>What was the topic all about?</p> <p>Very good! So, what are the different types of interaction among living things?</p> <p>Correct! What do we mean by symbiosis?</p> <p>Very good! What are the types of symbiosis?</p> <p>Correct! How about predation, what does it mean?</p> <p>What do you think is the reason why predation happen?</p> <p>Very good! What is the beneficial and harmful effect of predation?</p> | <p>No one is absent, teacher.</p> <p>Yes, teacher!</p> <p>It is about beneficial and harmful interactions among living things and their environment.</p> <p>Symbiosis, Predation, Competition, and Cooperation</p> <p>Symbiosis are any relationship that involves two or more species living and interacting together.</p> <p>Mutualism- where both organism are benefiting from each other. Commensalism- one organism benefits while the other organism is neither benefitted nor harmed from their interaction Parasitism - one organism benefits and other is harmed</p> <p>It is the consumption of one living organism, plant, or animal by another.</p> <p>It regulates the population growth and promotes natural selection by weeding out unfit from a population.</p> <p>Predation has beneficial effects and can be important in maintaining healthy ecosystems. They can help to regulate prey numbers, prevent disease spread, and promote the presence of multiple species. Predation has a negative impact on an individual prey. Their population will</p> |
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Precisely! Thank you! Another type of interaction is competition. What does it mean?

Yes you're right! Now what do you think is the meaning of cooperation?

Thank you! Who can give an example of living things that shows cooperation?

Very good class, I could see that you truly understand the lesson that was discussed to you last meeting.

B. Developmental Activities

1. Motivation

Before we begin today's discussion, we will first have an activity. This activity is entitled "Arrange Me!"

You are going to arrange the pieces of puzzle to reveal the hidden picture.

Are you ready?



2. Presentation

What have revealed on the 1st picture?

Very good observation! What about on the 2nd picture?

decline, and the weaker organisms will become prey.

Population can grow when needs are met. But when populations in an ecosystem have the same resources, the resources become scarce and competition exists.

It is the type of interaction where organism cooperate with each other for their survival.

Ants working together to get food.

Yes teacher.

There is a boy sitting behind the tree.
There is a falling apple.

There are people running.



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| | |
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| <p>Correct! Based on the two presented pictures, what are their similarities?</p> <p>Okay! Thank you! Both apple and people are moving because there is a force applied on them.</p> <p>Again, what do we apply to make things move?</p> <p>Very good! Based on the activity that you accomplished. What do you think is our topic for today?</p> <p>Yes, you're right! So today, we're going to discuss further the topic about different types of forces.</p> <p>3. Discussion</p> <p>When you heard the word force, what comes first on your mind?</p> <p>So, when we say force, it is any push and pull on an object that could cause a change in motion. Whenever there is an interaction between two objects, there is a force upon each of the objects. Push is the movement away from the one pushing it while pull is the movement towards the one pulling it.</p> <p>Do you see force?</p> <p>Correct! We cannot see force but we can feel and do it. By simply pressing the object, it can change its size and shape.</p> <p>Do you understand class?</p> <p>The different kinds of forces are classified into two types: the contact and noncontact forces.</p> <p>What are your ideas when we say contact forces?</p> <p>Precisely! In contact forces, object comes in contact with another object. They are physically</p> | <p>Both apple and people are moving.</p> <p>Force</p> <p>I think it is all about the different types of forces.</p> <p>Movement</p> <p>No.</p> <p>Yes, teacher!</p> <p>Contact forces has a direct contact to the object.</p> |
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touching. There is an act between the objects when the objects are in contact with each other.

For example:



The boy is pushing a car.

Here, the boy is playing with a toy car. In order to move a car, he is applying some force with his hand.

When he moves the car, two objects car and surface comes in contact with each other. Which results in a contact force between them.

Do you understand, Grade 4?

Okay! Now, who can give another example showing contact force?

Very good! What else?

Thank you! Now let's proceed to noncontact force. Do you have any idea?

Very good! Noncontact forces do not require the objects to be touching. They are able to move objects without coming in contact.

For example:

Rubbing a comb against the hair.

After rubbing the comb against the hair and bringing the comb near small pieces of paper. The paper pieces get attracted to the comb.

Who can give more example?

Very good! Now let's discuss further the different types of forces under contact force.

Are you ready, Grade 4?

Yes, teacher.

Flipping a book

Picking a ball from the floor

It do not require physical contact to the object.

A parachutist falling freely in the air.



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Tuesday (February 21, 2023)

1. Air Resistance – acts on objects as they travel through the air. This force will oppose motion, but only for factors when objects travel at high speeds or have a large surface area.



I have here Person A and Person B. Both person fall from an airplane but with different size of parachute.

Who has the larger surface area?

Correct! While the person B has smaller surface area. There are more air pushes against the parachute of Person A, so there is more air resistance. Since Person B has smaller surface area, it has less air pushes against the parachute, so there is less resistance.

Which do you think will fall more slowly and more quickly?

2. Friction Force – when an object moves or tries to move across a surface and the surface opposes it motion. The amount of friction that is generated depends on how strong the two surface are being pushed together and the nature of the surfaces.



Yes, teacher.

Person A

Person A will fall more slowly while Person B will fall more quickly.



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A matchstick is rubbed on the rough side of matchbox.

While rubbing a matchstick, matchstick and rough side of matchbox slides against each other. So a friction is produced between them.

This friction produces a force in the opposite direction of a matchstick.



While driving on a road, tire and road slides against each other and friction is produced between them.

This friction produces a force which stops the motion of a bicycle.

Who can give another example of friction force?

Writing with a chalk on a blackboard.
Rubbing with an eraser on a paper.

Very good! Do you have question about contact forces?

None.

If none, what do you mean again by contact forces?

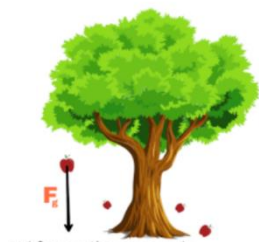
The two forces has a direct contact with each other.

What are the two types of contact forces?

Air Resistance and Frictional Force

Thank you! Let's now proceed to the types of forces on noncontact force.

1. Gravitational Force – force that pulls an object downward without any direct contact to it.



An apple is falling from a tree.



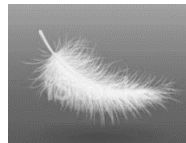
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When an apple falls from a tree, gravity attracts an apple in the downward direction.
I have here a feather and a ball. Rutherford will drop the two objects at the same time and at the same height. Observe what will happen to the two objects.

Is it clear?



What happened to the 2 objects?

Did the 2 objects reached the ground at the same time?

Which object falls first? Why?

What force do you think affects the objects to fall?

Do you understand the gravitational force?

Now, let's move to the next noncontact force.

2. Magnetic Force – attraction or repulsion force usually associated with electrical current or magnets



Coins stick to the magnet.

Do you think we can measure force?

Correct! We can measure force using different types of instrument.

Yes, teacher.

The objects fell on the ground.

No, teacher.

The object that fell first is the feather because it has a light weight compared to the ball.

Gravitational Force

Yes, teacher.

Yes, teacher.



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Wednesday (February 22, 2023)

Measuring Force Using Instruments

1. Dynamometer – device used to measure mechanical force



2. Spring Scale – device used to measure the force or weight of the object as indicated by the tension of the spring



3. Shockwatch Sticker – used on sensitive equipment in shipping. If the object is subjected to a sudden acceleration or impact, they will change color. They are usually placed on the outside of a box or container.

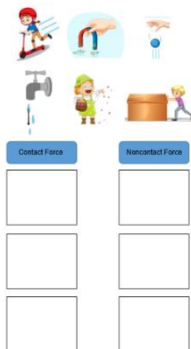


Do you understand class?

Are there any questions or clarifications?

4. Practice Exercise

Identify the images into the corresponding type of force.



Yes, teacher.

None, teacher.



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C. Post Activities

1. Generalization

Now, let us summarize.

What have you learned today?

Okay! We talked about the different types of forces. Who can give me the two types of it?

Who can enumerate and define the forces under contact forces?

Very good! What about the forces under noncontact forces?

Precisely! Thank you! What are the different instruments that we can use to measure force?

Very good!

Do you still have any questions or clarifications?

Thursday (February 23, 2023)

2. Application

Look at the pictures of people doing exercise.



What are the people in the picture doing?

I learned about the different types of forces.

Contact and Noncontact Forces

Air Resistance acts on objects as they travel through the air. This force oppose motion, but only for factors when objects travel at high speeds or have a large surface area.

Friction force happens when an object moves or tries to move across a surface and the surface opposes it motion.

Gravitational force pulls an object downward without any direct contact to it. Magnetic force is the attraction or repulsion force usually associated with electrical current or magnets

Dynamometer, spring scale and shockwatch sticker

None teacher.



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What do you think are they trying to achieve by doing these activities?

Thank you! All activities shown on the photos demonstrates different type of forces. Even though we do not notice, we apply different forces in our daily lives.

Now, for your activity you will write a short essay about the relationship of different type of forces on your physical activities. Your essay should be compose of 3-5 sentences and you will be given 10 minutes to accomplish it.

| | 5 points | 4 points | 3 points |
|---------------|--|--|--|
| Ideas | Presents ideas in an original manner | Ideas are too general | Ideas are vague or unclear |
| Accuracy | All answers are correct | Some of the answers are correct | Little to none of the answers are correct |
| Understanding | Writing shows strong understanding to the lesson | Writing shows adequate understanding to the lesson | Writing shows little understanding to the lesson |

They are exercising.

They want to maintain their physical fitness.

Friday (February 24, 2023)

IV. EVALUATION

I. Identify what type of force is acting on the object.

1. Man sitting on a chair _____
2. Clothes drying by the blowing wind _____
3. Car stopping _____
4. Man running _____
5. Girl pushing a grocery cart _____

II. List real-life examples of contact and noncontact forces.

| Contact Forces | Noncontact Forces |
|----------------|-------------------|
| 1. | 1. |
| 2. | 2. |
| 3. | 3. |



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V. ASSIGNMENT

Have an advance reading on the next lesson about Lesson 2: Effects of Force Applied on Objects on page 227

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