

Subject	Grade	Standard	Objective
Science	5	I. Students will understand that chemical and physical changes occur in matter.	1. Evaluate evidence that indicates a physical change has occurred.
Content Big Ideas		ILO Big Ideas	Science, Technology, & Society Big Ideas
The weight of an object is always equal to the sum of its parts, regardless of how it is assembled. In a chemical reaction or physical change matter is neither created nor destroyed. When two or more materials are combined, either a chemical reaction or physical change may occur. Chemical reactions are often indicated when materials give off heat or cool as they take in heat, give off light, give off gas, or change colors. In a chemical reaction, materials are changed into new substances. In a physical change a new substance is not formed.		(PoS) Science investigation uses data collected by observation, experimentation, comparison, questioning and prediction. (CoS) Describe, explain and record observations and report with pictures, sentences, models, graphs and charts. (NoS) Science is a way of knowing based on evidence used by many people through investigation with a variety of methods and procedures.	(T) People use appropriate tools and models to investigate the world. (A) People working alone or in groups often invent new ways to solve problems and get work done. (S) The tools and ways of doing things that people have invented affect all aspects of life.
Content Objective Indicators Framed by ILO Big Ideas			
<p>Indicator 1. Identify the physical properties of matter (e.g., hard, soft, solid, liquid, gas).</p> <p>Indicator 2. Compare changes in substances that indicate a physical change has occurred.</p> <p>Indicator 3. Describe the appearance of a substance before and after a physical change.</p>			
Science language students should be able to use correctly: heat, substance, chemical change, dissolve, physical change, matter, product, reactants, solid, liquid, weight			
Guidance for Combining Content and Process		Guidance for Combining Science, Technology & Society	
<p>When presented with an ice shape, students make and record observations of its physical properties. (The ice shape could be frozen in a tear-away balloon or milk carton.)</p> <p>Using various objects and simple tools such as ice, food coloring, salt, scissors, warm water, etc., students work in groups to perform physical changes on the ice shape. Students will describe and compare the appearance of the ice shape before and after the physical changes. (A)(PoS)(CoS)(NoS)</p> <p>Alternative activity: Students will construct an origami shape and record and compare the physical properties before and after the folding. (A)(FA)(PoS)(CoS)(NoS)</p>		<p>(T) Students will use a variety of tools such as scales, measuring tapes, and thermometers.</p> <p>(A) Students will understand that in a physical change a new substance is not formed, even though the physical properties may have changed.</p> <p>(S) Student will understand that an item may change its color, shape or state but it is still the same substance.</p>	
Earth and Space Science (E) Earth science (SS) Space science	Physical Science (A) Atomic/molecular (F) Force and motion	Life Science (CT) Changes over time (C) Cell theory	Processes, Communication and Nature of Science (PoS) Processes of science (CoS) Communication of science (NoS) Nature of science
			Applications: Science, Technology, and Society (T) Tools of science (A) Applications of science (S) Implications of science for people

Subject	Grade	Standard	Objective
Science	5	I. Students will understand that chemical and physical changes occur in matter.	3. Investigate evidence for changes in matter that occur during a chemical reaction.
Content Big Ideas		ILO Big Ideas	Science, Technology, & Society Big Ideas
<p>The weight of an object is always equal to the sum of its parts, regardless of how it is assembled. In a chemical reaction or physical change matter is neither created nor destroyed. When two or more materials are combined, either a chemical reaction or physical change may occur. Chemical reactions are often indicated when materials give off heat or cool as they take in heat, give off light, give off gas, or change colors. In a chemical reaction, materials are changed into new substances. In a physical change a new substance is not formed.</p>		<p>(PoS) Science investigation uses data collected by observation, experimentation, comparison, questioning and prediction. (CoS) Describe, explain and record observations and report with pictures, sentences, models, graphs and charts. (NoS) Science is a way of knowing based on evidence used by many people through investigation with a variety of methods and procedures.</p>	<p>(T) People use appropriate tools and models to investigate the world. (A) People working alone or in groups often invent new ways to solve problems and get work done. (S) The tools and ways of doing things that people have invented affect all aspects of life.</p>
Content Objective Indicators Framed by ILO Big Ideas			
<p>Indicator 1. Identify observable evidence of a chemical reaction (e.g., color change, heat or light given off, heat absorbed, gas given off). Indicator 2. Explain why the measured weight of a remaining product is less than its reactants when a gas is produced. Indicator 3. Cite examples of chemical reactions in daily life. Indicator 4. Compare a physical change to a chemical change. Indicator 5. Hypothesize how changing one of the materials in a chemical reaction will change the results.</p>			
Science language students should be able to use correctly: heat, substance, chemical change, dissolve, physical change, matter, product, reactants, solid, liquid, weight			
Guidance for Combining Content and Process		Guidance for Combining Science, Technology & Society	
<p>Students conduct two simple experiments, (make observations and predictions, to gather and record data and draw conclusions) In one experiment they will combine vinegar and salt, in the other experiment they will combine vinegar and baking soda. In the both experiments they will weigh and observe before and after they combine the materials.</p> <ul style="list-style-type: none"> • What evidence supports the conclusion of a physical/chemical reaction? • Was the measured weight the same before and after the combination? • What explanation could you make about any differences in weight? • How could changing one of the materials change the result? • What examples of chemical reactions do you see in daily life? 		<p>(T) Students will use scales, measuring devices, journals (A) reactions are often indicated when materials give off heat or cool as they take in heat, give off light, give off gas, or change colors. (A) In a chemical reaction, materials are changed into new substances. (S) What examples of chemical reactions do you see in daily life?</p>	
Earth and Space Science (E) Earth science (SS) Space science	Physical Science (A) Atomic/molecular (F) Force and motion	Life Science (CT) Changes over time (C) Cell theory	Processes, Communication and Nature of Science (PoS) Processes of science (CoS) Communication of science (NoS) Nature of science
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Subject	Grade	Standard	Objective
Science	5	II: Students will understand that volcanoes, earthquakes, uplift, weathering, and erosion reshape Earth's surface.	1. Describe how weathering and erosion change Earth's surface.
Content Big Ideas		ILO Big Ideas	Science, Technology, & Society Big Ideas
<p>(E)The Earth's surface is constantly changing. Some changes happen very slowly over long periods of time, such as weathering, erosion, and uplift.</p> <p>Other changes happen abruptly, such as landslides, volcanic eruptions, and earthquakes.</p> <p>(E)All around us, we see the visible effects of the building up and breaking down of the Earth's surface.</p>		<p>(PoS) Science investigation uses data collected by observation, experimentation, comparison, questioning and prediction.</p> <p>(CoS) Describe, explain and record observations and report with pictures, sentences, models, graphs and charts.</p> <p>(NoS) Science is a way of knowing based on evidence used by many people through investigation with a variety of methods and procedures.</p>	<p>(T) People use appropriate tools and models to investigate the world.</p> <p>(A) People working alone or in groups often invent new ways to solve problems and get work done.</p> <p>(S) The tools and ways of doing things that people have invented affect all aspects of life.</p>
Content Objective Indicators Framed by ILO Big Ideas			
<p>Indicator 1. Identify the objects, processes, or forces that weather and erode Earth's surface (e.g., ice, plants, animals, abrasion, gravity, water, wind).</p> <p>Indicator 2. b. Describe how geological features (e.g., valleys, canyons, buttes, arches) are changed through erosion (e.g., waves, wind, glaciers, gravity, running water).</p> <p>Indicator 3. c. Explain the relationship between time and specific geological changes.</p>			
Science language students should be able to use correctly: earthquakes, erode, erosion, faults, uplift, volcanoes, weathering, buttes, arches, glaciers, geological, deposition			
Guidance for Combining Content and Process		Guidance for Combining Science, Technology & Society	
<p>Suggested Strategies:</p> <p>Students will make observations and record the results of the erosional changes when water is poured on a mountain model.</p> <p>Students use various materials which could include plain dirt, grasses, twigs and structures to collect and record the amount of dirt that was deposited from the different experiments and describe the changes in geological features. (E) (L) (PoS) (CoS)</p>		<p>(T) Students can measure the amount of dirt by using scales, rulers or cups.</p> <p>(A) Students will compare how the different mountain models eroded.</p> <p>(A) Students will identify how various materials will affect the rate and quantity of erosion.</p> <p>(S)Students will understand how science can be used to curb erosion for the benefit of society.</p>	
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Guidance for Combining Content and Process		Guidance for Combining Science, Technology & Society	
<p>Suggested Strategies:</p> <p>Students will compare and contrast the differences and similarities of volcano types.</p> <ul style="list-style-type: none"> Do all volcanoes look the same? What are the major differences? Are there differences/similarities in volcanic activity between the types? Are there differences/similarities based on the location of the volcano? <p>Create a chart, with pictures, showing the findings of each type of volcano. (E) (PoS)(CoS)(M)(FA)</p> <p>Do a picture sort using a variety of different landforms and classify them by formation, i.e volcanoes, earthquakes and uplift. (islands, canyons, lakes, mountains, valleys)(E)(FA)(SS)(PoS)(CoS)</p>		<p>(T) Discuss the use of technology in the process of science by point out he various tools used while learning this objective. Examples of tools are video, camera, internet and computers.</p> <p>(A) Students can distinguish between volcano types.</p> <p>(S) Students will compare and contrast the positive and negative impacts of volcanoes.</p> <p>(S) Students can identify how volcanoes, earthquakes and uplift have affected landforms in their community.</p>	
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Subject	Grade	Standard	Objective
Science	5	II: Students will understand that volcanoes, earthquakes, uplift, weathering, and erosion reshape Earth's surface.	3: Relate the building up and breaking down of Earth's surface over time to the various physical land features.
Content Big Ideas		ILO Big Ideas	Science, Technology, & Society Big Ideas
<p>E)The Earth's surface is constantly changing. Some changes happen very slowly over long periods of time, such as weathering, erosion, and uplift.</p> <p>Other changes happen abruptly, such as landslides, volcanic eruptions, and earthquakes.</p> <p>(E)All around us, we see the visible effects of the building up and breaking down of the Earth's surface.</p>		<p>(PoS) Science investigation uses data collected by observation, experimentation, comparison, questioning and prediction.</p> <p>(CoS) Describe, explain and record observations and report with pictures, sentences, models, graphs and charts.</p> <p>(NoS) Science is a way of knowing based on evidence used by many people through investigation with a variety of methods and procedures.</p>	<p>T) People use appropriate tools and models to investigate the world.</p> <p>(A) People working alone or in groups often invent new ways to solve problems and get work done.</p> <p>(S) The tools and ways of doing things that people have invented affect all aspects of life.</p>
Content Objective Indicators Framed by ILO Big Ideas			
<p>Indicator 1. Explain how layers of exposed rock, such as those observed in the Grand Canyon, are the result of natural processes acting over long periods of time.</p> <p>Indicator 2. Describe the role of deposition in the processes that change Earth's surface.</p> <p>Indicator 3. Use a time line to identify the sequence and time required for building and breaking down of geologic features on Earth.</p> <p>Indicator 4. Describe and justify how the surface of Earth would appear if there were no mountain uplift, weathering, or erosion.</p>			
<p>Science language students should be able to use correctly: earthquakes, erode, erosion, faults, uplift, volcanoes, weathering, buttes, arches, glaciers, geological, deposition</p>			
Guidance for Combining Content and Process		Guidance for Combining Science, Technology & Society	
<p>Students will research the layers of the Grand Canyon and explain how layers of exposed rock are the result of natural processes acting over long periods of time. Ask them to investigate the following questions:</p> <ul style="list-style-type: none"> • Which rocks were the oldest? • How do you know? • How long would it take to form a layer? • How are the layers different? • If there were no uplift, weathering and erosion, what would the Grand Canyon look like? Draw a picture to depict your answer. (E)(FA)(M)(SS)(LA)(PoS)(CoS)(NoS) 		<p>(T) Students will use a computer, pictures, and research materials.</p> <p>(A)Students will understand that geological changes can be slow and unnoticeable and would not happen without erosion, uplift and weathering.</p> <p>(S)Students will understand that their environment is constantly changing even though it may not be noticeable.</p>	
<p>Earth and Space Science</p> <p>(E) Earth science</p> <p>(SS) Space science</p>	<p>Physical Science</p> <p>(A) Atomic/molecular</p> <p>(F) Force and motion</p>	<p>Life Science</p> <p>(CT) Changes over time</p> <p>(C) Cell theory</p>	<p>Processes, Communication and Nature of Science</p> <p>(PoS) Processes of science</p> <p>(CoS) Communication of science</p> <p>(NoS) Nature of science</p>
<p>Applications: Science, Technology, and Society</p> <p>(T) Tools of science</p> <p>(A) Applications of science</p> <p>(S) Implications of science for people</p>			

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<p>(E)The Earth's surface is constantly changing. Some changes happen very slowly over long periods of time, such as weathering, erosion, and uplift. Other changes happen abruptly, such as landslides, volcanic eruptions, and earthquakes. (E)All around us, we see the visible effects of the building up and breaking down of the Earth's surface.</p>		<p>(PoS) Science investigation uses data collected by observation, experimentation, comparison, questioning and prediction. (CoS) Describe, explain and record observations and report with pictures, sentences, models, graphs and charts. (NoS) Science is a way of knowing based on evidence used by many people through investigation with a variety of methods and procedures.</p>	<p>(T) People use appropriate tools and models to investigate the world. (A) People working alone or in groups often invent new ways to solve problems and get work done. (S) The tools and ways of doing things that people have invented affect all aspects of life.</p>
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<p>Indicator 1. Identify the objects, processes, or forces that weather and erode Earth's surface (e.g., ice, plants, animals, abrasion, gravity, water, wind). Indicator 2. b. Describe how geological features (e.g., valleys, canyons, buttes, arches) are changed through erosion (e.g., waves, wind, glaciers, gravity, running water). Indicator 3. c. Explain the relationship between time and specific geological changes.</p>			
Science language students should be able to use correctly: earthquakes, erode, erosion, faults, uplift, volcanoes, weathering, buttes, arches, glaciers, geological, deposition			
Guidance for Combining Content and Process		Guidance for Combining Science, Technology & Society	
<p>Suggested Strategies: Students will make observations and record the results of the erosion forces such as water is poured on a mountain model. (E) (L) (PoS) (CoS) Students conduct experiments using various mountain models which could include plain dirt, grasses, twigs and structures. Using a mountain model, students will use one gallon of water and vary the height of the water as it is poured on to the model. Students will collect and record the amount of dirt that was displaced from the different experiments.</p>			
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<p>Suggested Strategies:</p> <p>Students will make observations and record the results of the erosional changes when water is poured on a mountain model.</p> <p>Students use various materials which could include plain dirt, grasses, twigs and structures to collect and record the amount of dirt that was deposited from the different experiments and describe the changes in geological features. (E) (L) (PoS) (CoS)</p>		<p>(T) Students can measure the amount of dirt by using scales, rulers or cups.</p> <p>(A) Students will compare how the different mountain models eroded.</p> <p>(A) Students will identify how various materials will affect the rate and quantity of erosion.</p> <p>(S)Students will understand how science can be used to curb erosion for the benefit of society.</p>	
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Subject	Grade	Standard	Objective	
Science	5	I: Students will understand that chemical and physical changes occur in matter.	1. Describe that matter is neither created nor destroyed even though it may undergo change.	
Content Big Ideas		ILO Big Ideas	Science, Technology, & Society Big Ideas	
The weight of an object is always equal to the sum of its parts, regardless of how it is assembled. In a chemical reaction or physical change matter is neither created nor destroyed. When two or more materials are combined, either a chemical reaction or physical change may occur. Chemical reactions are often indicated when materials give off heat or cool as they take in heat, give off light, give off gas, or change colors. In a chemical reaction, materials are changed into new substances. In a physical change a new substance is not formed.		(PoS) Science investigation uses data collected by observation, experimentation, comparison, questioning and prediction. (CoS) Describe, explain and record observations and report with pictures, sentences, models, graphs and charts. (NoS) Science is a way of knowing based on evidence used by many people through investigation with a variety of methods and procedures.	(T) People use appropriate tools and models to investigate the world. (A) People working alone or in groups often invent new ways to solve problems and get work done. (S) The tools and ways of doing things that people have invented affect all aspects of life.	
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<p>Indicator 1. Compare the total weight of an object to the weight of its individual parts after being disassembled.</p> <p>Indicator 2. Compare the weight of a specified quantity of matter before and after it undergoes melting or freezing.</p> <p>Indicator 3. Investigate the results of the combined weights of a liquid and a solid after the solid has been dissolved and then recovered from the liquid (e.g., salt dissolved in water then water evaporated).</p> <p>Indicator 4. Investigate chemical reactions in which the total weight of the materials before and after reaction is the same (e.g., cream and vinegar before and after mixing, borax and glue mixed to make a new substance).</p>				
Science language students should be able to use correctly: heat, substance, chemical change, dissolve, physical change, matter, product, reactants, solid, liquid, weight				
Guidance for Combining Content and Process		Guidance for Combining Science, Technology & Society		
<p>Students conduct a simple experiment, (make observations and predictions, gather data and draw conclusions) to compare the weight of a specified quantity of water before and after it undergoes melting or freezing. (A)(PoS)(CoS)(NoS)</p> <p>Students conduct a simple experiment (make observations and predictions, gather and record data, draw conclusions) by investigating chemical reactions where the weight before and after the reaction is the same. For example, combining baking soda and vinegar in a bottle, capped by a balloon. (A)(PoS)(CoS)(NoS)</p>		<p>(T) Students will use age appropriate tools during their investigation (scales, graduated cylinders, measuring cups.)</p> <p>(A) Students will understand the weight of an object is always equal to the sum of its parts, regardless of how it is assembled.</p> <p>(A) In a chemical reaction or physical change matter is neither created nor destroyed.</p> <p>(S) Students will understand that these principles affect many functions in day to day living, including cooking and construction.</p>		
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Science	5	III: Students will understand that magnetism can be observed when there is an interaction between the magnetic fields of magnets or between a magnet and materials made of iron.	1. Investigate and compare the behavior of magnetism using magnets.
Content Big Ideas		ILO Big Ideas	Science, Technology, & Society Big Ideas
Earth and some earth materials have magnetic properties. Without touching them, a magnet attracts things made of iron and either pushes or pulls on other magnets. Electricity is a form of energy. Current electricity can be generated and transmitted through pathways. Some materials are capable of carrying electricity more effectively than other materials. Static electricity is a result of objects being electrically charged. Without touching them, materials that are electrically charged may either push or pull other charged materials.		(PoS) Science investigation uses data collected by observation, experimentation, comparison, questioning and prediction. (CoS) Describe, explain and record observations and report with pictures, sentences, models, graphs and charts. (NoS) Science is a way of knowing based on evidence used by many people through investigation with a variety of methods and procedures.	(T) People use appropriate tools and models to investigate the world. (A) People working alone or in groups often invent new ways to solve problems and get work done. (S) The tools and ways of doing things that people have invented affect all aspects of life.
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<p>Indicator 1. Compare various types of magnets (e.g., permanent, temporary, and natural magnets) and their abilities to push or pull iron objects they are not touching.</p> <p>Indicator 2. Investigate how magnets will both attract and repel other magnets.</p> <p>Indicator 3. Compare permanent magnets and electromagnets.</p> <p>Indicator 4. Research and report the use of magnets that is supported by sound scientific principles.</p>			
Science language students should be able to use correctly: battery, complete circuit, incomplete circuit, current, conductor, insulator, pathway, power source, attract, compass, electromagnetism, magnetic force, magnetic field, natural magnet, permanent magnet, properties, repel, static electricity, temporary magnet, switch, load			
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<p>In small groups students can make and communicate observations about magnets by exploring magnetic properties. Provide students with a variety of magnets and materials.</p> <ul style="list-style-type: none"> Does the size or shape of the magnet make a difference in what they will attract? What type of magnet is the strongest? Where is a magnet the strongest? When will a magnet attract or repel another magnet? (A)(PoS)(CoS)(NoS) <p>Teacher demonstration: Teacher creates an electromagnet in a variety of ways. (Loose coil, medium coil and tight coil) Use the various electromagnets to pick up paperclips.</p> <ul style="list-style-type: none"> Compare the number of paperclips attracted by each electromagnet. What conclusions can you draw? Is there a way to make the electromagnet even stronger? How could you use an electromagnet in everyday life? Does the size of battery make a difference? Compare permanent magnets and electromagnets. (A)(PoS)(CoS)(NoS) 		<p>(T)Students will use magnets, paperclips, copper wire, and batteries to investigate.</p> <p>(A)Students will investigate the properties of magnets and learn that a magnet attracts things made of iron and either pushes or pulls on other magnets.</p> <p>(S) How might magnets be used to improve daily life?</p> <p>(S) What are some everyday uses of magnets?</p>	
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Subject	Grade	Standard	Objective
Science	5	III: Students will understand that magnetism can be observed when there is an interaction between the magnetic fields of magnets or between a magnet and materials made of iron.	2. Describe how the magnetic field of Earth and a magnet are similar.
Content Big Ideas		ILO Big Ideas	Science, Technology, & Society Big Ideas
Earth and some earth materials have magnetic properties. Without touching them, a magnet attracts things made of iron and either pushes or pulls on other magnets. Electricity is a form of energy. Current electricity can be generated and transmitted through pathways. Some materials are capable of carrying electricity more effectively than other materials. Static electricity is a result of objects being electrically charged. Without touching them, materials that are electrically charged may either push or pull other charged materials.		(PoS) Science investigation uses data collected by observation, experimentation, comparison, questioning and prediction. (CoS) Describe, explain and record observations and report with pictures, sentences, models, graphs and charts. (NoS) Science is a way of knowing based on evidence used by many people through investigation with a variety of methods and procedures.	(T) People use appropriate tools and models to investigate the world. (A) People working alone or in groups often invent new ways to solve problems and get work done. (S) The tools and ways of doing things that people have invented affect all aspects of life.
Content Objective Indicators Framed by ILO Big Ideas			
<p>Indicator 1. Compare the magnetic fields of various types of magnets (e.g., bar magnet, disk magnet, horseshoe magnet).</p> <p>Indicator 2. Compare Earth’s magnetic field to the magnetic field of a magnet.</p> <p>Indicator 3. Construct a compass and explain how it works.</p> <p>Indicator 4. Investigate the effects of magnets on the needle of a compass and compare this to the effects of Earth’s magnetic field on the needle of a compass (e.g., magnets effect the needle only at close distances, Earth’s magnetic field affects the needle at great distances, magnets close to a compass overrides the Earth’s effect on the needle).</p>			
Science language students should be able to use correctly: battery, complete circuit, incomplete circuit, current, conductor, insulator, pathway, power source, attract, compass, electromagnetism, magnetic force, magnetic field, natural magnet, permanent magnet, properties, repel, static electricity, temporary magnet, switch, load			
Guidance for Combining Content and Process		Guidance for Combining Science, Technology & Society	
<p>Draw a variety of different magnets, label the poles, and show their magnetic fields.</p> <p>In small groups students will create a compass and explore Earth’s magnetic field. Using a magnetized needle, water, and styrofoam each group creates a compass and records their observations.</p> <ul style="list-style-type: none"> • How is the needle reacting? • Explain the reaction? • Does it react to other magnets the same way? (A)(FA)(SS)(PoS)(CoS)(NoS) 		<p>(T) Students will use magnets, needles, water, and styrofoam to investigate the properties of magnetism.</p> <p>(A) Students will construct a compass and explain how it works. Students will investigate the effects of magnets on the needle of a compass and compare this to the effects of Earth’s magnetic field on the needle of a compass (e.g., magnets effect the needle only at close distances, Earth’s magnetic field affects the needle at great distances, magnets close to a compass overrides the Earth’s effect on the needle).</p> <p>(S) Students will use a compass to find geographic directions on Earth.</p>	

Earth and Space Science (E) Earth science (SS) Space science	Physical Science (A) Atomic/molecular (F) Force and motion	Life Science (CT) Changes over time (C) Cell theory	Processes, Communication and Nature of Science (PoS) Processes of science (CoS) Communication of science (NoS) Nature of science	Applications: Science, Technology, and Society (T) Tools of science (A) Applications of science (S) Implications of science for people
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Subject	Grade	Standard	Objective
Science	5	IV: Students will understand features of static and current electricity.	1. Describe the behavior of static electricity as observed in nature and everyday occurrences.
Content Big Ideas		ILO Big Ideas	Science, Technology, & Society Big Ideas
Earth and some earth materials have magnetic properties. Without touching them, a magnet attracts things made of iron and either pushes or pulls on other magnets. Electricity is a form of energy. Current electricity can be generated and transmitted through pathways. Some materials are capable of carrying electricity more effectively than other materials. Static electricity is a result of objects being electrically charged. Without touching them, materials that are electrically charged may either push or pull other charged materials.		(PoS) Science investigation uses data collected by observation, experimentation, comparison, questioning and prediction. (CoS) Describe, explain and record observations and report with pictures, sentences, models, graphs and charts. (NoS) Science is a way of knowing based on evidence used by many people through investigation with a variety of methods and procedures.	(T) People use appropriate tools and models to investigate the world. (A) People working alone or in groups often invent new ways to solve problems and get work done. (S) The tools and ways of doing things that people have invented affect all aspects of life.
Content Objective Indicators Framed by ILO Big Ideas			
<p>Indicator 1. List several occurrences of static electricity that happen in everyday life.</p> <p>Indicator 2. Describe the relationship between static electricity and lightning.</p> <p>Indicator 3. Describe the behavior of objects charged with static electricity in attracting or repelling without touching.</p> <p>Indicator 4. Compare the amount of static charge produced by rubbing various materials together (e.g., rubbing fur on a glass rod produces a greater charge than rubbing the fur with a metal rod, the static charge produced when a balloon is rubbed on hair is greater than when a plastic bag is rubbed on hair).</p> <p>Indicator 5. Investigate how various materials react differently to statically charged objects.</p>			
Science language students should be able to use correctly: battery, complete circuit, incomplete circuit, current, conductor, insulator, pathway, power source, attract, compass, electromagnetism, magnetic force, magnetic field, natural magnet, permanent magnet, properties, repel, static electricity, temporary magnet, switch, load			
Guidance for Combining Content and Process		Guidance for Combining Science, Technology & Society	
<p>Students will predict and investigate how various materials such as tissue paper, salt and pepper, eraser shavings, paper clips, plastic spoons, rubber band pieces, pennies, etc. react differently to statically charged objects. (A)(L)(PoS)(CoS)(NoS)</p> <p>Compare the amount of static charge produced by rubbing various materials together (e.g., rubbing fur on a glass rod produces a greater charge than rubbing the fur with a metal rod, the static charge produced when a balloon is rubbed on hair is greater than when a plastic bag is rubbed on hair).</p> <p>Provide each small group of students with a balloon and materials to charge it. Have students investigate the strength of the charged as evidenced by the number of items it will attract. (A)(L)(PoS)(CoS)(NoS)</p>		<p>(T) Students use tools to collect information about static electricity.</p> <p>(A) Students will learn that static electricity is a result of objects being electrically charged.</p> <p>(S) Students will identify occurrences of static electricity that happen naturally and in everyday life.</p>	

Earth and Space Science

(E) Earth science
(SS) Space science

Physical Science

(A) Atomic/molecular
(F) Force and motion

Life Science

(CT) Changes over time
(C) Cell theory

Processes, Communication and Nature of Science

(PoS) Processes of science
(CoS) Communication of science
(NoS) Nature of science

Applications: Science, Technology, and Society

(T) Tools of science
(A) Applications of science
(S) Implications of science for people

Subject	Grade	Standard	Objective
Science	5	IV: Students will understand features of static and current electricity.	2. Analyze the behavior of current electricity
Content Big Ideas		ILO Big Ideas	Science, Technology, & Society Big Ideas
Earth and some earth materials have magnetic properties. Without touching them, a magnet attracts things made of iron and either pushes or pulls on other magnets. Electricity is a form of energy. Current electricity can be generated and transmitted through pathways. Some materials are capable of carrying electricity more effectively than other materials. Static electricity is a result of objects being electrically charged. Without touching them, materials that are electrically charged may either push or pull other charged materials.		(PoS) Science investigation uses data collected by observation, experimentation, comparison, questioning and prediction. (CoS) Describe, explain and record observations and report with pictures, sentences, models, graphs and charts. (NoS) Science is a way of knowing based on evidence used by many people through investigation with a variety of methods and procedures.	(T) People use appropriate tools and models to investigate the world. (A) People working alone or in groups often invent new ways to solve problems and get work done. (S) The tools and ways of doing things that people have invented affect all aspects of life.
Content Objective Indicators Framed by ILO Big Ideas			
<p>Indicator 1. Draw and label the components of a complete electrical circuit that includes switches and loads (e.g., light bulb, bell, speaker, motor).</p> <p>Indicator 2. Predict the effect of changing one or more of the components (e.g., battery, load, wires) in an electric circuit.</p> <p>Indicator 3. Generalize the properties of materials that carry the flow of electricity using data by testing different materials.</p> <p>Indicator 4. Investigate materials that prevent the flow of electricity.</p> <p>Indicator 5. Make a working model of a complete circuit using a power source, switch, bell or light, and a conductor for a pathway.</p>			
Science language students should be able to use correctly: battery, complete circuit, incomplete circuit, current, conductor, insulator, pathway, power source, attract, compass, electromagnetism, magnetic force, magnetic field, natural magnet, permanent magnet, properties, repel, static electricity, temporary magnet, switch, load			
Guidance for Combining Content and Process			Guidance for Combining Science, Technology & Society
Students will sort materials as either conductors or insulators by testing for conductivity. (Use various materials) Students will create a working model of a complete circuit which includes a power source, load and pathway. Once the model is complete, students will predict and test the effect of changing one or more of the components of the circuit. (A)(L)(PoS)(CoS)(NoS)			(T)Students will use age appropriate tools and materials to gather information about current electricity. (A) Electricity is a form of energy. Current electricity can be generated and transmitted through pathways. (A)Some materials are capable of carrying electricity more effectively than other materials.
Earth and Space Science (E) Earth science (SS) Space science	Physical Science (A) Atomic/molecular (F) Force and motion	Life Science (CT) Changes over time (C) Cell theory	Processes, Communication and Nature of Science (PoS) Processes of science (CoS) Communication of science (NoS) Nature of science
Applications: Science, Technology, and Society (T) Tools of science (A) Applications of science (S) Implications of science for people			

Subject	Grade	Standard	Objective
Science	5	V: Students will understand that traits are passed from the parent organisms to their offspring, and that sometimes the offspring may possess variations of these traits that may help or hinder survival in a given environment.	1. Using supporting evidence, show that traits are transferred from a parent organism to its offspring.
Content Big Ideas		ILO Big Ideas	Science, Technology, & Society Big Ideas
All living things inherit a set of characteristics or traits from their parents. Members of any given species transfer traits from one generation to the next. The passing of traits from parent to offspring is called heredity and causes the offspring to resemble the parent. Some traits differ among members of a population, and these variations may help a particular species to survive better in a given environment in getting food, finding shelter, protecting itself, and reproducing. These variations give the individual a survival advantage over other individuals of the same species.		(PoS) Science investigation uses data collected by observation, experimentation, comparison, questioning and prediction. (CoS) Describe, explain and record observations and report with pictures, sentences, models, graphs and charts. (NoS) Science is a way of knowing based on evidence used by many people through investigation with a variety of methods and procedures.	(T) People use appropriate tools and models to investigate the world. (A) People working alone or in groups often invent new ways to solve problems and get work done. (S) The tools and ways of doing things that people have invented affect all aspects of life.
Content Objective Indicators Framed by ILO Big Ideas			
<p>Indicator 1. Make a chart and collect data identifying various traits among a given population (e.g., the hand span of students in the classroom, the color and texture of different apples, the number of petals of a given flower).</p> <p>Indicator 2. Identify similar physical traits of a parent organism and its offspring (e.g., trees and saplings, leopards and cubs, chickens and chicks).</p> <p>Indicator 3. Compare various examples of offspring that do not initially resemble the parent organism but mature to become similar to the parent organism (e.g., mealworms and darkling beetles, tadpoles and frogs, seedlings and vegetables, caterpillars and butterflies).</p> <p>Indicator 4. Contrast inherited traits with traits and behaviors that are not inherited but may be learned or induced by environmental factors (e.g., cat purring to cat meowing to be let out of the house; the round shape of a willow is inherited, while leaning away from the prevailing wind is induced).</p> <p>Indicator 5. Investigate variations and similarities in plants grown from seeds of a parent plant (e.g., how seeds from the same plant species can produce different colored flowers or identical flowers).</p>			
Science language students should be able to use correctly: inherited, environment, species, offspring, traits, variations, survival, instincts, population, specialized structures, organism, life cycle, parent organism, learned behavior			
Guidance for Combining Content and Process		Guidance for Combining Science, Technology & Society	
Students will make a chart and collect data identifying various traits among a given population (e.g., the hand span of students in the classroom) (A) (M)(SS)(PoS)(CoS)		(T) Students will use pictures, internet resources, and each other for observation and classification.	
Students will compare various examples of offspring that do and do not initially resemble the parent organism but mature to become similar to the parent organism (e.g., mealworms and darkling beetles, tadpoles and frogs, seedlings and vegetables, caterpillars and butterflies). (CT) (FA)(L)(PoS)(CoS)(NoS)		(A) Students will show that traits are transferred from a parent organism to its offspring	
		(S) Students can identify traits they share with their brothers and sisters.	

Earth and Space Science

(E) Earth science
(SS) Space science

Physical Science

(A) Atomic/molecular
(F) Force and motion

Life Science

(CT) Changes over time
(C) Cell theory

Processes, Communication and Nature of Science

(PoS) Processes of science
(CoS) Communication of science
(NoS) Nature of science

Applications: Science, Technology, and Society

(T) Tools of science
(A) Applications of science
(S) Implications of science for people

Subject	Grade	Standard	Objective
Science	5	V: Students will understand that traits are passed from the parent organisms to their offspring, and that sometimes the offspring may possess variations of these traits that may help or hinder survival in a given environment.	2. Describe how some characteristics could give a species a survival advantage in a particular environment.
Content Big Ideas		ILO Big Ideas	Science, Technology, & Society Big Ideas
<p>All living things inherit a set of characteristics or traits from their parents. Members of any given species transfer traits from one generation to the next. The passing of traits from parent to offspring is called heredity and causes the offspring to resemble the parent. Some traits differ among members of a population, and these variations may help a particular species to survive better in a given environment in getting food, finding shelter, protecting itself, and reproducing. These variations give the individual a survival advantage over other individuals of the same species.</p>		<p>(PoS) Science investigation uses data collected by observation, experimentation, comparison, questioning and prediction. (CoS) Describe, explain and record observations and report with pictures, sentences, models, graphs and charts. (NoS) Science is a way of knowing based on evidence used by many people through investigation with a variety of methods and procedures.</p>	<p>T) People use appropriate tools and models to investigate the world. (A) People working alone or in groups often invent new ways to solve problems and get work done. (S) The tools and ways of doing things that people have invented affect all aspects of life.</p>
Content Objective Indicators Framed by ILO Big Ideas			
<p>Indicator 1. Compare the traits of similar species for physical abilities, instinctual behaviors, and specialized body structures that increase the survival of one species in a specific environment over another species (e.g., difference between the feet of snowshoe hare and cottontail rabbit, differences in leaves of plants growing at different altitudes, differences between the feathers of an owl and a hummingbird, differences in parental behavior among various fish).</p> <p>Indicator 2. Identify that some environments give one species a survival advantage over another (e.g., warm water favors fish such as carp, cold water favors fish such as trout, environments that burn regularly favor grasses, environments that do not often burn favor trees).</p> <p>Indicator 3. Describe how a particular physical attribute may provide an advantage for survival in one environment but not in another (e.g., heavy fur in arctic climates keep animals warm whereas in hot desert climates it would cause overheating; flippers on such animals as sea lions and seals provide excellent swimming structures in the water but become clumsy and awkward on land; cacti retain the right amount of water in arid regions but would develop root rot in a more temperate region; fish gills have the ability to absorb oxygen in water but not on land).</p> <p>Indicator 4. Research a specific plant or animal and report how specific physical attributes provide an advantage for survival in a specific environment.</p> <p>Science language students should be able to use correctly: inherited, environment, species, offspring, traits, variations, survival, instincts, population, specialized structures, organism, life cycle, parent organism, learned behavior</p>			
Guidance for Combining Content and Process		Guidance for Combining Science, Technology & Society	

Students will describe how a particular physical attribute may provide an advantage for survival in one environment but not in another by drawing and camouflaging a butterfly. Students must justify how this is a survival advantage in the specified environment. Students predict survival advantage if the environment changes, e.g. move the butterfly from the classroom to the school. (CT)(L)(FA)(PoS)(CoS)(NoS)

Compare the traits of similar species for physical abilities, instinctual behaviors, and specialized body structures that increase the survival of one species in a specific environment over another species. Using pictures of various birds, conduct a class discussion on the specialized structures that have allowed the birds to adapt to their specific environment. (Beaks, coloring, feet, etc.)

Extension: Assign the students an environment and have them create a bird that would survive based on its specialized structures. The students would report their findings with a picture and justifications. (CT)(L)(FA)(PoS)(CoS)(NoS)

(T) Students will use a variety of media including the internet to research a variety of animals and environments.

(A) Students will learn that some traits differ among members of a population, and these variations may help a particular species to survive better in a given environment in getting food, finding shelter, protecting itself, and reproducing.

(A) Students will see that these variations give the individual a survival advantage over other individuals of the same species.

(S) Students will understand that survival requires adaptation to the current environment.

Earth and Space Science (E) Earth science (SS) Space science	Physical Science (A) Atomic/molecular (F) Force and motion	Life Science (CT) Changes over time (C) Cell theory	Processes, Communication and Nature of Science (PoS) Processes of science (CoS) Communication of science (NoS) Nature of science	Applications: Science, Technology, and Society (T) Tools of science (A) Applications of science (S) Implications of science for people
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