Science

Course Description

2

edusystem™ by Dreyfous

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Series Description

This EduSystem's Science K-6 series was developed based on the curricular design Puerto Rico Core Standards and the Curriculum Framework created by the Department of Education of Puerto Rico. Additionally, the content has been enriched with curricular frameworks developed by other educational entities and private schools.

This series presents the content in a dynamic, stimulating, innovative and recreational manner. The series gives the students the opportunity to build their knowledge through the cognitive development of scientific keywords, principles, and laws. The series also encourages the study of this discipline by putting scientific research, science skills, and the scientific method within the student's reach.

Conceptual Framework

The design and conceptualization of the K-6 series is founded upon the following basic principles:

1. The need for emphasis on:
   - Encouraging students to think logically and analytically to develop reasoning and interpretive skills used for problem solving during the learning process.
   - Learning science by "doing science" through the completion of various activities, experiments, and scientific inquiry.
   - Promoting curricular integration and the application of scientific keywords to real life situations.
   - Systematically organizing the learning process (in sequence, going from the concrete to the abstract).
   - Encouraging the development of multiple talents and the opportunity to express them in different ways.
   - Promoting the development of keywords, principles, laws, scientific processes, and related skills.
   - Providing strategies to address the individuality of each student

2. The activities integrate a constructivist approach by encouraging more student participation in the building of knowledge and the development of skills.

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General Objectives

The objectives of this Series are to:

- Promote learning through real life experiences.
- Encourage the use of information technology as a learning tool.
- Educate students on the protection and conservation of the environment.
- Promote reflection and self-evaluation during the learning process
- Promotes experiences for the development and appreciation of science and the world around us
- Integrate the different scientific disciplines, such as chemistry, physics, and biology, among others with disciplines from other fields.
- Encourage participation in scientific inquiry and the development of keywords, skills and scientific processes.
- Integrate standards and grade level expectations. Encourage students to work with both concrete and abstract keywords.
- Provide situations, activities, and exercises to actively build and apply knowledge to different situations.
- Encourage students to work with both concrete and abstract keywords.
- Contribute to the development of language as a means of individual and collective communication while incorporation of scientific vocabulary.
- Enrich the lessons with level appropriate documents, activities, and exercises.
- Highlight the scientific environment in accordance with grade level.

Course Structure

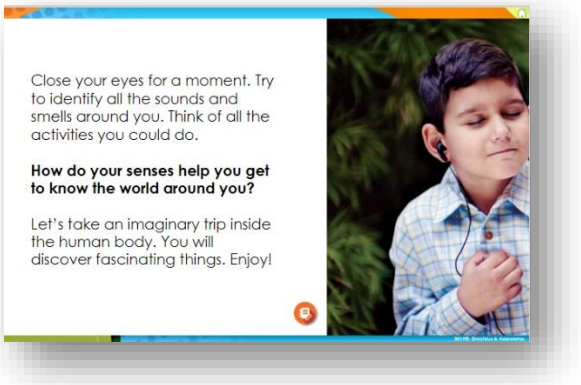
The course Science 2 is composed of five units. Each unit is composed of lessons. Each lesson is divided into sections that develop their individual topics. Each lesson contains a descriptive log, activities, worksheets and handouts that are related to the content and, as in most cases, website links and resources. It also proposes assessment exercises in order to help the students in different tasks.

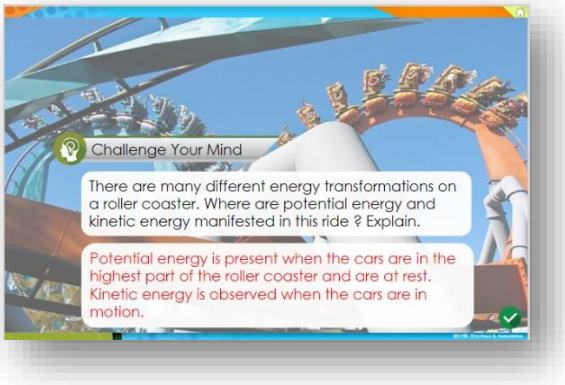
Here are some of the sections normally found in each lesson's presentation and documents.

Presentation

Let's Explore

In this section, the students will look at important details of a photograph. Additionally, they will discuss and answer questions geared toward increasing their curiosity towards different topics that will be discussed in the lessons.





Topics

Concept development, where the content will be discussed using specific situations for exploration while presenting other examples

Icons

Each of the sections in our lessons is identified with an icon. These help both the student and the teacher compliment their ideas and activities. Below, you will find the icon next to a description of its function.

Challenge Your Mind

A situation or an exercise Will be presented to the students so they can develop their critical thinking skills.

Connect What You Have Learned

that can be applied to daily life. This will also help them understand what was studied in class.

Scientists in Action

Diverse assessment activities in which the students can express themselves and apply what they have learned about any topic discussed in class.

Link with…

In this section, students will be able to relate the topics with other branches of Science.

Think

The students will answer questions that will encourage them to think and give their opinion about the topic presented in **Link with**… section.

Interactive Icons

Audio

Diagram

Images

Videos

Games

Answers

Lecture

Internet

Animation

Steps

Information

Writing Assignments

Music

Let's Solve Together

Handouts and Worksheets

Let's Investigate

This document presents an inquiry activity in which the students will learn science by "doing science" and participate in activities related to scientific investigation.

Did you know?

This document presents intriguing scientific topics and trivia to stimulate students' imaginations

Stimulate your mind

This document includes a number of stimulating activities that will help students better understand the topics discussed in class.

Ecological Awareness

This document will prompt the students to learn and actively contribute to the preservation of our environment.

Scientific Zone

This document presents a scientific concept related to a specific process in such a way that learning can be integrated along with a single scientific skill.

Complementary Documents

A variety of activities, exercises, and games related to the topics discussed in the lesson.

Vocabulary

Definitions of the most important keywords in the lesson.

Evaluation

Practical exercises to verify the student's learning process.

The lessons 00 contain unit documents that may be used at the beginning, during, or after discussing the corresponding unit.

Unit Breakdown

Below is an itemization of the division of each unit in lessons, including the name of each lesson with its corresponding objectives and keywords

Unit I. Living things

At the end of this unit the student will have completed the objectives found in the following lessons.

Lesson 0. Living things

Code: C417G02U01L00

Unit's documents: Scientific Zone, Evaluation

Lesson 1. Plants

Code: C417G02U01L01

Objetives

- Identify the different characteristics among plants.
- Draw a plant and name its parts.
- Name the main function of the parts of a plant.
- Distinguish among different types of leaves and seeds.
- Identify the plant's basic needs.
- Experiment with different types of soil to identify the best soil for growing bean plants.
- Create a model of a plant and identify its parts.

Topics

- Plants
- The parts of plants and their function
- Diversity in plants
- Plants and their stem sizes
- Diversity of leaves, roots, and seeds
- What plants need

Keywords

- air
- basic needs of plants
- flower
- fruit
- leaf
- parts of the plant
- root
- seed
- soil
- stem
- sunlight water

Lesson 2. Animals

Code: C417G02U01L02

Objetives

- Differentiate between vertebrates and invertebrates.
- Classify vertebrates and invertebrates.
- Identify carnivores, herbivores, and omnivores.
- Explain the differences between humans who are omnivores and the ones who are vegetarian.
- Classify domestic and wild animals.
- Explain the importance of animals to human beings.

Topics

- Vertebrate and invertebrate animals
- Herbivorous animals
- Carnivorous animals
- Omnivorous animals
- The food chain
- What do humans eat?
- Domesticated and wild animals

Keywords

- animals
- carnivores
- domestic
- herbivores
- invertebrates
- omnivores
- wild

Lesson 3. Taking care of plants and animals

Code: C417G02U01L03

Objetives

- Explain role of plants in nature and how people benefit from them.
- Identify the needs of plants and how to care for them.
- Explain the importance of animals in nature and the ways they benefit people.
- Identify the needs of animals and how to take care of them.
- Explain what agriculture is.
- Differentiate among livestock breeding, poultry farming and aquaculture.

Topics

- The importance of plants
- Taking care of plants
- The importance of animals
- Taking care of animals

Keywords

- agriculture
- aquaculture
- importance of plants and animals
- livestock breeding
- poultry farming
- taking care of animals

Lesson 4. Plant and animal reproduction

Code: C417G02U01L04

Objetives

- Name different ways in which plants are born.
- Distinguish among different types of seeds and describe their characteristics.
- Identify the different ways in which seeds disperse.
- Explain the importance of seed dispersal.
- Explain the difference between oviparous and viviparous animals.
- Identify animals that take care of their offspring and the ones who do not.

Topics

- How do plants reproduce?
- Seeds
- Seed dispersal
- Other ways that plants are born
- How are animals born?
- How do animals take care of their offspring?

Keywords

- dispersal
- oviparous
- seed
- stem
- viviparous

Unit 2. Growth

At the end of this unit the student will have completed the objectives found in the following lessons.

Lesson 0. Growth

Code: C417G02U02L00

Unit's documents: Scientific Zone, Evaluation

Lesson 1. Your growth

Code: C417G02U02L01

Objetives

- Describe the differences of the human body since birth until his/her current age.
- Name the stages of development of living beings.
- Identify the differences between humans and other living beings.
- Identify the similarities between humans and other living beings.
- Identify the components of the parts of the human body.
- Explain that human beings grow at a different rate.
- Differentiate between baby and permanent teeth.

Topics

- Your growth
- I am an living being
- You are different
- Do you know your body?
- We grow everyday
- How do you grow?
- Your teeth

Keywords

- adolescence
- baby tooth
- birth
- canine
- elderly
- extremities
- grow
- head
- incisor
- life cycle
- molar
- permanent tooth
- pre-molar
- reproduction
- torso

Lesson 2. Inside your body

Code: C417G02U02L02

Objetives

- Name the systems of our body that allow movement.
- Identify some of the joints of our body.
- Explain the main function of the parts that compose the respiratory system.
- Explain the main function of each part of the digestive system.
- Identify the parts of the circulatory system and name its parts.
- Explain that the organs join to carry out certain functions and form systems.

Topics

- It protects and moves you
- Bone union
- You breathe
- Digestion
- Transporting substances
- How do they work?
- They work together!

Keywords

- artery
- blood
- bone
- carbon dioxide
- circulatory system
- digestion
- digestive system
- esophagus
- exhale
- heart rate
- heart
- inhale
- joint
- large intestine
- lung
- mouth
- muscle
- muscular system
- organ
- respiratory system
- skeletal system
- skeleton
- small intestine
- stomach
- system
- tendon

Lesson 3. Necessary foods

Code: C417G02U02L03

Objetives

- Name the different food groups.
- Name the importance of washing the food before eating.
- Explain the importance of cooking your food properly.
- Name the importance of vitamins.
- Identify the vitamins that some foods contain.
- Discuss the importance of following a balanced diet.
- Create examples of a balanced diet.

Topics

- Necessary foods
- Delcious and nutritional
- We eat to be healthy
- Combining foods
- Rules for a healthy diet

Keywords

- balanced diet
- cereal
- cooking
- dairy product
- grain
- protein
- vegetable
- vitamin

Lesson 4. Taking care of your body

Code: C417G02U02L04

Objetives

- Name different ways of keeping our body healthy.
- Explain the importance of personal hygiene.
- Give examples of personal hygiene.
- Analyze the importance of keeping our belongings clean in order to be healthy.
- Value being a clean and responsible person with his/her body.
- Discuss the importance of sleep and exercise for a healthy lifestyle.
- Explain why is important to visit health professionals twice a year.

Topics

- Taking care of your body
- It's bath time!
- Your hands and feet
- Do you like to be clean?
- Your teeth
- Exercise and rest
- Visit your doctor

Keywords

- cleanliness
- disease
- exercise
- germs
- personal hygiene
- rest

Unit 3. Natural resources

At the end of this unit the student will have completed the objectives found in the following lessons.

Lesson 0. Natural resources

Code: C417G02U03L00

Unit's documents: Scientific Zone, Evaluation

Lesson 1. Natural resources

Code: C417G02U03L01

Objetives

- Define what natural resources are.
- Distinguish between renewable and non-renewable natural resources.
- Identify renewable and non-renewable natural resources.
- Identify when renewable resources are being used incorrectly.
- Name ways we can preserve non-renewable resources.
- Analyze the importance of protecting and taking care of natural resources.

Topics

- Natural resources
- What are natural resources
- Renewable natural resources
- Non-renewable natural resources
- Renewable natural resources are in danger!
- Non-renewable natural resources are in danger!
- Let's take care of the natural resources

Keywords

- erosion
- natural resource
- renewable resource
- resource

Lesson 2. Natural environments

Code: C417G02U03L02

Objetives

- Define what natural environments are.
- Distinguish between aquatic and terrestrial natural environments.
- Identify the basic characteristics of each natural environment.
- Give examples of each natural environment.
- Distinguish between mountains and hills.
- Contrast the north hills and the south hills of Puerto Rico.
- Contrast the concepts of sea and oceans.

Topics

- What are natural environments?
- Aquatic environments
- Terrestrial environments

Keywords

- forest
- hill
- lagoon
- lake
- ocean
- prairie
- sea
- valley

Lesson 3. Artificial environments

Code: C417G02U03L03

Objetives

- Name examples of objects that were made by human beings.
- Explain the importance of objects made by human beings.
- Name different machines made by human beings.
- Express the importance of machines to make life easier and more comfortable for human beings.
- Describe artificial environments.
- Name and recognize artificial environments.
- Establish differences between artificial and natural environments.

Topics

- Furniture
- Vehicles
- Machines
- Manufactoring products
- Cities
- Countryside

Keywords

- building
- city
- farm
- furniture
- house
- machine
- vehicle

Lesson 4. Taking care of our natural and articial environments

Code: C417G02U03L04

Objetives

- Explain the importance of natural and artificial environments for human beings.
- Describe how human beings pollute the Earth.
- Communicate in oral and written form how a responsible citizen protects the environment.
- Name the importance of water and its preservation.
- Name the importance of protecting and preserving our trees.
- Name solutions to protect artificial environments.
- Identify what to do to care for the environment.

Topics

- Taking care of our natural and artificial environments
- What are doing with our environments?
- You are important for the environment!
- The preservation of water
- The protection and preservation of trees
- Protection of artificial environments
- What can you do to

Unit 4. Matter and energy

At the end of this unit the student will have completed the objectives found in the following lessons.

Lesson 0. Matter and energy

Code: C417G02U04L00

Unit's documents: Scientific Zone, Evaluation

Lesson 1. Matter is all around you

Code: C417G02U04L01

Objetives

- Define the concepts of matter and mass.
- Identify various examples of matter.
- Name the physical properties of matter.
- Use physical properties to describe matter.
- Use physical properties to classify objects.
- Identify the senses used for describing matter.
- Use senses to describe matter.

Topics

- Matter is all around you
- There is a lot of matter
- Taking up space
- How is matter like?
- With your eyes
- With your nose and mouth
- With your ears and hands

Keywords

- color
- hearing
- mass
- matter
- physical properties of matter
- senses
- shape
- sight
- size
- smell
- taste
- texture
- touch

Lesson 2. Three states of matter

Code: C417G02U04L02

Objetives

- Name the three states of matters.
- Distinguish between solid, liquid and gaseous state matter.
- Classify matter according to its state.
- Identify matter that have traits of more than state.
- Name the objects that change state when they gain or lose heat.
- Identify the changes of state that matter can experience.
- Identify the changes of state in which the matter gains or loses heat.

Topics

- Three states of matter
- Objects that have a shape
- Objects with no shape
- Objects that cannot be seen but can be felt
- Solid or liquid?
- Matter changes
- Hot or cold?

Keywords

- matter

Lesson 3. Energy

Code: C417G02U04L03

Objetives

- Name natural sources of heat.
- Distinguish between natural and artificial sources of heat.
- Name some fuels used for producing heat.
- Give examples of how heat is generated through friction.
- Explain how heat energy benefits human beings.
- Give examples of how human beings use heat energy in their daily lives.

Topics

- Energy
- Heat
- Friction
- Artificial sources of heat
- Changes
- More changes
- Heat helps us

Keywords

- benefits from heat energy
- coal
- gas
- petroleum
- sources of heat: natural and artificial

Lesson 4. Force and motion

Code: C417G02U04L04

Objetives

- Describe movement.
- Identify different types of movement.
- Explain that it is necessary to apply a force in order for movement to occur.
- Give examples of how applying force causes movements.
- Associate force with energy.
- Explain what gravity is.
- Explain how some machines make work easier

Topics

- Force and motion
- Trajectory
- Pushinf and pulling
- The invisible force
- Changes of force
- Waves
- Machines make jobs easier

Keywords

- force
- gravity
- machines
- movement

Unit 5. Our environment

At the end of this unit the student will have completed the objectives found in the following lessons.

Lesson 0. Our environment

Code: C417G02U05L00

Unit's documents: Scientific Zone, Evaluation

Lesson 1. The Universe and Planet Earth

Code: C417G02U05L01

Objetives

- Define what a galaxy and the Universe are.
- Explain that planets are celestial bodies that travel around a star.
- Identify the different components of the Solar System.
- Describe planet Earth.
- Identify the movements of rotation and translation of the Earth and what dictates each one.
- Establish the differences in the seasons of the year.
- Name the four moon phases.

Topics

- The Universe
- The Solar System
- The Day
- The year
- Climate changes
- Seasons of the year
- The Moon

Keywords

- asteroid
- autumn
- earth's rotation
- earth's translation
- galaxy
- moon phases
- moon
- planets
- satellite
- seasons of the year
- Solar System
- spring
- star
- summer
- Universe
- winter

Lesson 2. My country's climate

Code: C417G02U05L02

Objetives

- Identify the factors that influence a region's climate.
- Describe Puerto Rico's climate.
- Name the months with more rainfall and the ones with less in Puerto Rico.
- Describe some of the characteristics of hurricanes.
- Name the wind as an important aspect to determine the climate.
- Identify some instruments used for studying the wind.
- Distinguish between a breeze and wind gust.

Topics

- Puerto Rico's climate
- Puerto Rico's temperature
- Rainfall
- Breeze and wind
- Storms

Keywords

- breeze
- climate
- hurricane
- rain
- temperature
- wind
- wind gust

Lesson 3. Water and air

Code: C417G02U05L03

Objetives

- Mention the importance of the air for living things.
- Distinguish between positive and negative effects of the wind
- Explain that sunny days are hotter and that cloudy days are cooler.
- Explain how clouds are formed.
- Name three types of precipitation.
- Distinguish between rain, hail and snow.
- Explain what fog is.

Topics

- Water and air
- Air in mivement
- Sunny or cloudy?
- Clouds
- Water that falls
- Ice crystals
- A cloud close to the ground

Keywords

- air
- clouds
- cloudy
- fog
- hail
- rain
- snow sunny
- weather

Lesson 4. Puerto Rico's zones and environments

Code: C417G02U05L04

Objetives

- Explain that Puerto Rico is located in the tropical zone of planet Earth.
- Indicate the climate of a tropical zone.
- Name the characteristics of the Guánica Dry Forest and El Yunque rainforest.
- Identify some species that inhabit the dry and rainforest.
- Name the characteristics of caves.
- Explain the types of sand located on the beaches of Puerto Rico.
- Identify the endangered animals that live in Puerto Rico.

Topics

- A lot of sun and heat
- The south of Puerto Rico
- Mountainous areas
- More on mountains
- Let's explore our caves
- At the beach
- They are a few… we must take care of them

Keywords

- beaches
- cave
- coast
- El Yunque Rainforest
- endangered animal
- Guanica Dry Forest
- southern coastal plain
- tropical zone