

AREA: SCIENCE
GRADE: FOURTH
SECTION: PRIMARY
TERM PLANNING: FIRST PERIOD (August 26th – November 14th 2014)
SCHOOL YEAR: 2014-2015
TEACHER: VICTOR MAURICIO CARDONA HOLGUIN
WEEKLY HOURS: 5

GRADE MOTTO: "KNOWING MY PERSONAL HISTORY, I CAN PARTICIPATE RESPONSIBLY IN THE TRANSFORMATION OF OUR SURROUNDINGS"

UNIT: LEVELS OF ORGANIZATION OF LIVING THINGS AND RECYCLING OF ENERGY IN ECOSYSTEMS.

- 1.1 Concept of atom, molecule, cell, tissue, organ, system, individual, population, community and ecosystem.
- 1.2 Aquatic ecosystems.
- 1.3 Recycling of matter in ecosystems.
- 1.4 Route of matter and energy in ecosystems.
 - 1.4.1 Food chains and food webs.
 - 1.4.2 Biogeochemical Cycles: Carbon cycle

READING: The book "Colombia, my grandfather and I" by Pilar Lozano. Texts "Life on the Orinoco River" by National Geographic Discover.

SCIENCE PROBLEMS associated to the care of water in our environment,
GRADE PROJECT: "Recognizing our own history we recognize our country's history"

Purposes:

We are in the Universe, we all make part of it and our local home is planet Earth. All phenomenon, all physical and chemical laws can be explained in the relationship between matter and energy containing in the Universe. All interactions among matter and energy follow the Creator's plan and have made possible the raising of life in our planet from the inert matter. [Context]

As human beings, students must understand we are just living beings who make part of the Universe. In fourth grade students begin to understand and deepen in the levels of organization of living things. The purpose is to move mind schemes students have about living beings for they understand that single celled organisms, animals and plants and the many forms of life perform common processes of life which interact with one and other and their environments.

The concept of matter which is the starting point of the level in the levels of organization will be formally studied by exploring the concept of states of matter, the particular characteristics of each state and identifying the basic parts of an atom. The purpose is to guide students

towards the comprehension that everything in the Universe is made out of matter including living and nonliving things.

In the dynamic of this period and the ongoing periods, students should recognize and apply systematically some reading strategies that will enable to be more competent and more independent readers.

Once students have built a preliminary notion of atoms as the unit of matter; and cells as the unit of living things, they can give sense to the concept of levels of organization of living things. The purpose is to have students establish relationships among the levels of organization of living things and how they can perceive it in other forms of organization in our society.

To understand the next levels, students must identify the different ways organisms interact with each other in an ecosystem which is shaped by the interaction between organisms, energy and natural resources. In the study of “What is an ecosystem?” the main purpose is make students aware of the net of interactions between biotic (living) and abiotic (nonliving) elements that can be discovered and meant in the interactions of a community with in an ecosystem.

In the study of these interactions the main factor is energy which flows throughout the ecosystem. Students will recognize the main source of energy in our planet: sunlight that provides the power to generate all the cycles in nature and provides the energy for all living things to keep alive. It is in this context where the concepts of producers, consumers, and decomposers make sense. Students will explore the concept of food chain and web chain and the relations among living things. Finally they will be able to identify in which level of the trophic chain any organism belongs to.

At this point, is relevant to recognize the place human beings take in the trophic chain and how our basic needs, habits and superfluous demands are affecting different ecosystems all around the world. This reflection will give students insights to be more conscious and responsible in the decisions they make and in the daily basis habits that make us behave no as an organism but a non-reflexive compulsive consumer, we should say buyer instead.

In the analysis of these elements we will study a specific ecosystem: Aquatic ecosystem represented by the Orinoco River ecosystem. In this point we can participate in the grade motto through the reading of chapter XI from the book “Colombia, mi Abuelo y yo” that makes explicit the importance of rivers for humans and animals.

Finally, the last concept, “recycling of matter” will be introduced. In this topic we will explicit the way matter moves throughout nature. For this purpose we will study the cycle of carbon dioxide.

Didactic Performance

Introduction to science. Class agreements. Procedure and safety tips at the laboratory. (See attachment at the end of this planning.) Methodology: Class discussion, readings and

explanatory lessons, oral presentations, workshops and worksheets, listening comprehension exercises, worksheets based on video clips and hands on activities, Whole class. PPP & work in groups. Students will listen and think about the importance, influence and consequences of science and technology in our society. [Context-Experience] After the introduction, students will work in groups of three to think over some products and inventions created by mankind and how they have changed our society and what consequences they have brought to nature. Then, they will write answers/conclusions in their science notebooks.

To identify the levels or organization of living things students must recognize the characteristics of living things and the forms they perform different processes of life. For reaching this goal students will review and deepen into the concept of processes of life: Nutrition and respiration (getting energy, exchanging gases), growing and changing, getting rid of wastes, reproduction, dying and fixing problem and reacting to stimuli. To explore and explain, these processes student will answer in small groups this question: "What are living things? What are nonliving things? What are some of the characteristics of living things? [Experience]. In groups of two/three students they will solve a worksheet to help them recognize and understand what living things must do in order carry out their functions. Then in a whole class students will share their findings to finally write their conclusions in their science notebooks.

After listening to their ideas the teacher will explain "What are the characteristics of living things". [Experience] Students will write main ideas making emphasis on new information. Finally, students will compare in a Venn diagram the similarities and differences of plants and animals in terms of how they perform the activities of life. [Reflection]. Once this is done, student will have a **quiz 1**.

Then students will learn about the first levels in the organization of living things which are related to the understanding of the physical nature. For this purpose they will read a text about "The Basic Blocks of Matter". The teacher will guide reading making explicit the strategies they can apply. As long as the reading is analyzed students will get the main ideas and will write them in their science notebook.

The teacher will explore the background students have built about the concept of matter. The teacher will project a PPP to explain that cells (all living things) and nonliving things are made of matter which is made out of basic blocks called atoms. [Experience]. Through this experience students will [reflect] about the relationship between matter, living things and nonliving things. In this way they might understand that living things need nonliving things to survive and that we depend basically on water, carbon dioxide, oxygen, nitrogen and sunlight as the main source of energy. Finally, student will have a **quiz 2** to evaluate the main facts about this level. [Reflection]

Ongoing with the next levels, students will watch a PPP about the first levels or organization of living organisms: cells, tissue, organ, organ's system and organism.

At this point, an analogy will be introduced to students to understand the concept of level of organization. Teacher will present an analogy in a PPP to illustrate these levels of organization: clay, brick, wall, room and different kinds of rooms or house. This will allow

students to identify how the same type of cells join together to make tissue and subsequently perform specific activities in an organ system. [Context].

Then, students will receive a reading and a worksheet to learn about each level. Throughout a PPP students will identify, describe, define and explain the function and the basic structure of each level. [Experience]. Finally, students will have a **quiz 3** to evaluate this lesson.

To explore how some of the needs of an individual are met in an ecosystem creating a net of interactions between biotic (living) and abiotic (nonliving) elements students will read the text “What is an ecosystem?” [Experience].

Students will read about what makes each level different in the different levels of organization: individual, population and community. A PPP will be shown to illustrate different examples for each level. Then they will conclude what are the characteristics of each group. Finally they will solve a worksheet. [Reflection] Students will have a **quiz 4** to evaluate this lesson.

The interaction between communities will facilitate the explanation of trophic chain.

The aim is to understand how energy flows in ecosystems. To introduce the topic students first will identify different sources of energy that they might know. The visible source of energy for living beings is food in the forms of fruits, meat, vegetables etc. So the purpose is to track back where the energy (food) they get comes from and to realize that the Sun is the main source of energy empowering others forms. [Context]. Then, they will watch a PPP in which each level is described and what species make part of each level. Finally, they will create a paper chain in which each link represents a different level and the way they are structured. They will also identify how non-living things make part of the food chain. This hands on activity will be graded to evaluate this lesson.

To integrate these concepts with the grade motto students will read “Life on the Orinoco”. First students will explore the reading by themselves. They will apply reading strategies. Then they will watch a video clip about the Orinoco River to contextualize the reading activity. Teacher will hand out a worksheet based on the reading. The main aim is to have students to establish relationships between the information read in the text about this aquatic system and the topics seen in the first term such as life cycles, levels of organization and the route of matter and energy in ecosystems.

The last topic Biogeochemical Cycles will be covered by studying the cycle of carbon dioxide. Students will watch a PPP explicating different moments of the cycle. The way it enters and exits throughout living beings creating a cycle.

PERFORMANCE:

Achievements:

1. I identify levels of organization of living things in nature establishing intuitive relationships among them. 50%
2. I identify and find out about how matter and energy flow in ecosystems. 50%

Bibliography

“**Science, 4-5-6**”. Scott Foresman. Pearson Publisher. 2006.

“**Life on the Orinoco**”. Footprint Reading Library. Thomson Heinle Publisher. 2008.

“**Life on the Orinoco**”. National Geographic: video and audio. Thomson Heinle Publisher. 2008.

PLANNING ACTIVITIES

WEEK/DATE	ACTIVITIES	EVALUATION
1. Initiation week August 26-29	Level weekly initiation planning	
2. Agreements and introduction to science. Living beings and nonliving beings: Main characteristics. September 1-5	First Term Plan Analyzing the impact of science and technology in our society and in nature. Worksheet N°1	
3. Living beings and nonliving beings: Main characteristics. Sep. 8-12 SEMANA POR LA PAZ	Worksheet N°1 Note taking	Quiz N° 1
4. Basic blocks of matter: a. Atoms b. Elements c. Molecules. Levels of organization of living beings: a. Cells b. Tissue c. Organ. d. System e. Organism. Sep.15-19	Reading N°1 Reading N°2 Worksheet N° 2	Quiz N° 2
5. Endless week (No classes) Sep. 22-26		
6. Levels of organization of living beings: a. Individual. b. Population. c. Community.	Reading N°3 Worksheet N° 3	Quiz N° 3

d. Ecosystem. Sep. 29- Oct 3 FAS (one class less per group)		
7. Break MEN (No classes) Oct. 6 – 10		
8. Levels of organization of living beings: a. Individual. b. Population. c. Community. d. Ecosystem. Oct. 13 – 17	Worksheet N° 3	Quiz N° 4
9. Energy in ecosystems Oct. 20-24	Worksheet: What are food chains and web chains? Oral presentation: “Our food chain sample”	Hand on activity
10. Aquatic ecosystem. Oct. 27-31	Reading N° 4 “Life on the Orinoco” Listening comprehension exercise. Guided reading and reading comprehension Worksheet.	Worksheet
11. Recycling of matter: Cycle of Carbon. Nov. 5- Nov 7	Worksheet based on a PPP “Carbon Dioxide Cycle”.	Worksheet
12. Review Nov. 10- Nov 14		

Science Laboratory Safety Rules

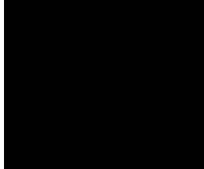
If you are working in a science laboratory at school there are some important rules that need to be followed before conducting your science experiment.

1. A teacher should always be present when entering the lab.
2. Leave all your belongings outside the lab.
3. No running in the lab, always walk to avoid accidents.
4. No shouting or messing around with anything or anyone.
5. Long hair should be tied back.
6. Put always on your lab long sleeve robe.
7. Safety goggles must be worn to protect your eyes.
8. Eating and drinking in the laboratory is not allowed.
9. Follow all instructions carefully.
10. Ask questions if you are uncertain about the experiment.
11. When finished with your experiment waste materials should be put in the correct containers.
12. Put away all your equipment and clean your work bench.
13. Wash your hands.

RECOMENDACIONES GENERALES DE SEGURIDAD PARA EL TRABAJO EN EL LABORATORIO DE CIENCIAS NATURALES.

- El trabajo en el laboratorio requiere ser muy cuidadoso, riguroso y meticulado, por lo que mi actitud es de **concentración, orden y respeto** por mí, mis compañeros, profesores, espacio físico y material; esto implica que: no juego, no consumo ningún tipo de alimento en el laboratorio, no me distraigo con ningún equipo electrónico como iPods, Blackberries, tablets, celulares, etc., cuido del material e instalaciones del laboratorio, mantengo limpio y ordenado mi sitio de trabajo, realizo únicamente las actividades programadas por el profesor y sigo detalladamente sus instrucciones.
- **Conozco y aplico las normas para el uso del laboratorio que se encuentran en el Manual de Convivencia del colegio**, con relación al ingreso y uso adecuado del laboratorio de ciencias naturales
- **Leo siempre con anterioridad y cuidado** la guía de laboratorio, teniendo especial atención al procedimiento que se seguirá en la práctica.
- Antes de ingresar al salón tengo en cuenta que obligatorio el uso de bata y gafas de seguridad la bata de laboratorio debe ser de manga larga y permanecer durante toda la practica debidamente abotonada
- *Siempre* uso guantes y gafas de seguridad cuando la práctica requiera de la manipulación de *cualquier* sustancia química
- *Siempre* uso guantes y tapa bocas desechables cuando la práctica requiera de la manipulación de *cualquier* órgano o elemento que implique contaminación biológica.
- Si mi cabello es largo, lo mantengo bien recogido durante toda la práctica
- Traigo siempre un paño limpio para mantener el material limpio y seco
- Ubico los lavajos, duchas y rutas de evacuación al ingresar al laboratorio

- Al recibir el material de laboratorio lo reviso cuidadosamente y para evitar dificultades durante la práctica, lo lavo nuevamente con agua y lo seco muy bien
- No retiro de su lugar los materiales, reactivos ni disoluciones que sean de uso compartido, *debo usarlos exclusivamente* en el lugar asignado para ello.
- *Conozco y respeto todas las recomendaciones del uso particular de cada instrumento y manipulación de sustancias químicas*
- Consulto cualquier duda e inquietud con mis profesores



COLEGIO BERCHMANS

ACUERDOS PARA UNA SANA CONVIVENCIA EN EL GRADO 4°

1. Llego puntual a clases y permanezco con el uniforme bien presentado
2. Finalizo mis actividades de descanso 5 minutos antes para ir al baño o tomar agua.
3. Traigo diariamente la agenda y demuestro responsabilidad en el uso que le doy.
4. Cuando falto a clases presento la excusa y me pongo al día en lo trabajado.
5. Defino un horario de estudio en casa favoreciendo avanzar en mi responsabilidad y autonomía.
6. Traigo marcado mis uniformes y útiles escolares, los cuido y mantengo ordenados.
7. Aprovecho la hora de estudio para realizar actividades que favorezcan mi desempeño académico (leer, repasar, etc.).
8. Evito traer objetos que impidan mi concentración en clase.
9. Antes de salir a los descansos o a alguna clase en un espacio diferente, saco los materiales o el dinero porque el salón permanecerá cerrado.
10. Participo activamente en el comité que pertenezco cumpliendo las funciones y colaborando con los otros.
11. Me cuido y asumo actitudes que favorezcan el cuidado de los otros y de los espacios que uso en el colegio.
12. Participo en las clases pidiendo la palabra y respeto el turno de los demás.
13. Pido autorización para salir del salón a los maestros que me acompañen.
14. Evito pararme del puesto durante las explicaciones con el fin de no generar distracciones.



ME CUIDO Y CUIDO A OTROS GRADO CUARTO

1. Evito correr en los salones, pasillos, baños y escaleras.
2. Me alimento de forma saludable evitando el consumo de gaseosas y exceso de dulce.
3. Mantengo un adecuado aseo personal.
4. Evito practicar juegos bruscos y participar en actos que puedan causar un daño a los demás o a mí mismo.
5. Me comunico adecuadamente sin usar apodosos y palabras irrespetuosas.
6. Duermo y descanso el tiempo necesario en casa para lograr un buen desempeño en el colegio.
7. Hablo en tono de voz adecuado evitando gritar.
8. Valoro, cuido y respeto mi cuerpo.
9. Participo con seriedad y respeto en los simulacros que se realizan en el colegio y aplico las recomendaciones dadas en caso de emergencia.
10. Informo oportunamente a los adultos que me acompañan cualquier situación de riesgo o de salud.