





Código: CA-02	CA-02 MALLA DE DESEMPEÑO Y SECUENCIA DE EXPERIENCIAS DE APRENDIZAJE Y EVALUACIÓN 2023	
Versión: 1		
Fecha de revisión: 24/03/2023		

PROJECT'S NAME: The wonderful world of Pi		
LEVEL: Seventh	CLASS: A-B	TEACHER/S: Ivonne Lorena Quiroga
PERIOD II		<p>KEY SKILLS: Identify and analyze the vital functions of the living things like, transporting materials, waste disposal, gas exchange, nutrition and propose healthy habits and relationship with the environment.</p> <p>STANDARD KNOWLEDGES: Recognize the soil as a vital element of the ecosystem, in which the different biogeochemical cycles arise and, in turn, are affected by the misuse that some people or companies give it</p> <p>Analyze the formation of molecules through the several types of bonds, recognizing the electrostatic forces present.</p>
<p>FROM: April 19th TO: August 9th</p>		
<p>WHICH ARE THE COMPREHENSIVE SKILLS WE WANT THE STUDENTS HAVE?</p> <p>Explain and argue the different biogeochemical cycles of nature since observation and the generation of hypotheses.</p> <p>Establish a scheme of energy flow through biological elements and different ecosystems.</p>	 <p>CB2: Relacional</p>	<p>WHICH IS THE SCENERY OR PROBLEMATIC SITUATION?</p> <p>This year there is the second version of the Teresian Science congress, that's why we want to take another chance to keep promoting the essential and environmental values like, respect, austerity, solidarity, co-responsibility, empathy and coherence to be better living things and find</p>


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<p>Describe the characteristics of the soil as a livelihood for the food of the human being, through the use of the garden and urban agriculture.</p> <p>Establish and describe the properties of the simple substances, considering the location of the elements in the periodic table by their setting electronics.</p> <p>Recognize how an atom is formed and classified according to its number and type of particles.</p>	<p>WHAT TO LEARN FROM THE TERESIAN SKILLS?</p> <p>Conceptual: biogeochemical cycles of water, carbon, nitrogen and sulfur and what chemical components can be observed in each of them, including their atomic number, mass number, electron configuration and bond type.</p> <p>Procedimental: Creation of a bioluminescent model containing the biogeochemical cycles of water, carbon, nitrogen and sulfur, showing the different elements, compounds and chemical substances in each of them.</p> <p>Attitudinal: Work cooperatively, develop their creativity, identify the social relationships that are created at a certain time and demonstrate a good aptitude for the fulfillment of the objective of the class.</p>	<p>some solutions to protect and take care of our planet from our own environmental relationship. It will also be the perfect space to express various ways of thinking about the past in ancient societies in Europe, Asia and Africa, contributing to social and historical knowledge.</p>
STUDENT'S ROLE: Adventurer of an unknown world		
CHALLENGE: Do you want to know a wonderful bioluminescent world? Explore a bioluminescent ecosystem, where he will design each component of the	PRODUCT: Bioluminescent scale model of the biogeochemical cycles (water, carbon, nitrogen and sulfur).	PROMOTION: Teresian Science congress

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biogeochemical cycles and expose the different chemical components of each of them, a whole adventure of exploration of a magical world.		
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LEARNING OUTCOMES			
SUPERIOR (S)	ACCURATE (A)	AVERAGE (B)	LOW (J)
<p>The student creates a bioluminescent model, analyzing and justifying the components of each biogeochemical cycle and its relationship with compounds, substances and chemical elements. In addition, the student demonstrates a proactive and collaborative attitude in the development of each of the activities, being able to lead initiatives to solve issues related to environmental pollution.</p>	<p>The student explains and applies the information about the components of each biogeochemical cycle and its relationship with the chemical elements, using the teacher's notes and elaborating a bioluminescent model. The student shows a good attitude in the development of the activities, is punctual and complies with the class agreements.</p>	<p>The student identifies the components of each biogeochemical cycle, uses the teacher's notes and is reflected in the elaboration of a bioluminescent model. The student shows a good attitude in the development of the activities, is punctual and complies with the class agreements.</p>	<p>The student presents difficulty in identifying the components of each biogeochemical cycle, does not use the teacher's notes and this is reflected in his limited elaboration of a bioluminescent model. The student shows an inadequate attitude in the development of the activities, is unpunctual and does not comply with the class agreements.</p>

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SECUENCIA DE EXPERIENCIAS DE APRENDIZAJE Y EVALUACIÓN

STAGE 1: Elementary dance and cyclic harmony.


EXECUTION: From cycle 1 to 4 cycle

CRITERIUM: Understand the different biogeochemical cycles and their energy schemes, associating it with the chemical application of each element, compound and substance, coherently relating the micro-subatomic world with the macro or physical one.

TASK 1: Identify the different components of the biogeochemical cycle of water at the atomic and macroscopic level, observing the energy flows and their chemical properties.

- The student makes a summary with their respective energy flow diagrams on the water cycle based on the explanation and information provided by the teacher. They will also take into account the following video to complement their information: <https://www.youtube.com/watch?v=TD3XSIE4ymo>. (Cycle 1, 2 hours)
- The student performs a simulation of the water cycle using a plastic bottle, soil and a plant. The student solves problem questions randomly assigned by the teacher. The following link is taken into account for the correct elaboration of the simulation.: <https://www.youtube.com/watch?v6-0YhPdXWIM> (Cycle 1- 2, 6 hours).
- The student makes a summary or mind map with drawings about the physical-chemical properties of the different substances, compounds, molecules and atoms of the water and carbon cycles, taking into account the following video: [Physical and Chemical Properties](#) (Cycle 1-3, 3 hours)

TASK 2: Describe the different components of the biogeochemical carbon cycle at the atomic and macroscopic level, observing the energy flows and their chemical properties.

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- The student solves questions about the carbon cycle taking into account the teacher's explanation and the information in the following video.: <https://www.youtube.com/watch?v=p3R-dB9K4ss> ;through the educaplay platform. https://es.educaplay.com/recursos-educativos/731186-ciclo_del_carbono.html
- The student creates an infographic on the carbon cycle, taking into account the description of organic compounds, carbon recycling (photosynthesis), emitters, soil, sunlight and animal respiration. At the end there will be a discussion of the topic. (Cycle 3 , 4 hours)
- Students in the respective ABP groups previously assigned by the teacher, begin the elaboration of their model on biogeochemical cycles, elaborating the water cycle and the carbon cycle and their relationship with bioluminescence, identifying bioluminescent organisms present in any ecosystem (terrestrial, aquatic and aerial). (Cycle 4, 4 hours)
- The student summarizes the electronic configuration of the main chemical elements carbon, hydrogen and oxygen. Taking into account the teacher's explanation and the information in the following video: <https://www.youtube.com/watch?v=PFgurjIMThg> En posterior, se realiza un discusión sobre el tema. (Cycle 4- 5 2 hour)


STAGE 2: Chemical pathways, nitrogen and sulfur trails

EXECUTION: From cycle 5 to 8 cycle

CRITERIUM: Analyze and explain the relationship between elements, compounds, substances and chemical properties with the biogeochemical cycles of water, carbon, nitrogen and sulfur that occur in an ecosystem.

TASK 1: Explain the different components of the biogeochemical nitrogen cycle at the atomic and macroscopic level, observing the energy flows and their chemical properties.

- The student participates in a role-playing game about the nitrogen cycle, where the teacher will hand out cards to define the function of each group. The game will allow the student to understand the meaning of sulfur movement and the importance of plants, fungi, bacteria and ammonium-derived compounds in an ecosystem.. (Cycle 5-6, 6 hours)
- Students in their respective ABP groups assigned by the teacher in advance, continue with the development of their model on biogeochemical cycles, specifically elaborating on the nitrogen cycle. (Cycle 6, 2 hours)

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- The student performs in ABP work groups a graphic representation of the types of ionic, covalent and metallic bonds present in the nitrogen, carbon and water cycle. The explanation in class and the following video are taken into account [Tipos de Enlaces Químicos. Iónico, Covalente y Metálico](#) . (Cycle 6-8, 3 hours)

TASK 2: Explain and relate the different components of the biogeochemical cycle of nitrogen and sulfur at the atomic and macroscopic level, observing the energy flows and their chemical properties.


- The student creates an infographic on the sulfur cycle, taking into account factors such as sulfur dioxide, sulfuric acid, sulfates, industrial emissions and volcanic emissions. (cycle 7, 4 hours)
- The students in their respective ABP groups assigned by the teacher in advance, continue with the development of their model on biogeochemical cycles, specifically elaborating the sulfur cycle, taking into account the following video for its elaboration: [como hacer el ciclo del azufre](#) (Cycle 8, 2 hours)

STAGE 3: Creatures of light

EXECUTION: From cycle 9 to 11 cycle

CRITERIUM: Present a model of a bioluminescent ecosystem during the science fair, with the biogeochemical cycles of water, carbon, nitrogen and sulfur with their corresponding explanation of energy flow diagrams and their composition at the chemical level (elements, compounds and substances).

TASK 1: Apply the information learned in the elaboration of a model with all the biogeochemical cycles, explaining at a chemical level the general characteristics of the elements, compounds and substances found in each one of them.

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- The student makes a mind map about the different pollutants of the biogeochemical cycles, taking into account topics such as carbon dioxide emissions, greenhouse effect and toxic substances. Takes into account the following video [¿Qué es el efecto invernadero? - Medio ambiente para niños](#) (Cycle 8 y 9, 4 hours)
- Students in their respective ABP groups, complete their model, elaborating bioluminescent organisms in different environments (aquatic, aerial and terrestrial) and identifying the different chemical components, developing a brief explanation about each one of them. They take into account the following video for the elaboration of their mock-up. [How to make water cycle working model](#)(Cycle 9, 2 hours)
- Students in their ABP groups elaborate the different polluting chemical compounds such as greenhouse gases (carbon dioxide, chlorofluorocarbon compounds), toxic substances, plastics, in their model on biogeochemical cycles. Consider the following video: <https://www.youtube.com/watch?v=OhhWY1WewoI> (Cycle 9, 1 hours)
- Students submit the quarterly assessment on the topics seen in biology. (Cycle 10)
- Students submit the quarterly assessment on the topics seen in chemistry. (Cycle 10)