SCIENCE

Structuring Competencies in a Definitive Budget of Work

Grade	**NINE**
Science Discipline/Component	**LIVING THINGS AND THEIR ENVIRONMENT**
Grade Level Standard	At the end of Grade 9, learners have gained a a deeper understanding of the digestive, respiratory, and circulatory systems to promote overall health. They have become familiar with some technologies that introduce desired traits in economically important plants and animals. Learners can explain how new materials are formed when atoms are rearranged. They recognize that a wide variety of useful compounds may arise from such rearrangements. Learners can identify volcanoes and distinguish between active and inactive ones. They can explain how energy from volcanoes may be tapped for human use. They are familiar with climatic phenomena that occur on a global scale. They can explain why certain constellations can be seen only at certain times of the year. Learners can predict the outcomes of interactions among objects in real life applying the laws of conservation of energy and momentum.
Domain	**Learners study the coordinated functions of the digestive, respiratory, and circulatory systems.** They also learn that nutrients enter the bloodstream and combine with oxygen taken in through the respiratory system. Together, they are transported to the cells where oxygen is used to release the stored energy. Learners study the structure of genes and chromosomes, and the functions they perform in the transmission of traits from parents to offspring. Learners learn that most species that have once existed are now extinct. Species become extinct when they fail to adapt to changes in the environment. Learners learn how plants capture energy from the Sun and store energy in sugar molecules (photosynthesis). This stored energy is used by cells during cellular respiration. These two processes are related to each other.

SCIENCE

Structuring Competencies in a Definitive Budget of Work

Performance Standard	The learners should conduct an information dissemination activity on effective ways of taking care of the respiratory and circulatory systems based on data gathered from the school or local health workers.			
Content Standard	The learners demonstrate understanding 1. how the different structures of the circulatory and respiratory systems work together to transport oxygen-rich blood and nutrients to the diffrenet parts of the body. 2. the prevention, detection, and treatment of diseases affecting the circulatory and respiratory systems			
CONTENT	**LEARNING COMPETENCIES**	**CODE**	**NO. OF DAY/S TAUGHT**	**REMARKS**
1. LIVING THINGS AND THEIR ENVIRONMENT				
1. Respiratory and Circulatory Systems Working with the other Organ Systems	***1. Explain how the respiratory and circulatory work together to transport nutrients, gases and other molecules to and from thye different parts of the body***	**S9LT-Ia-b-26**		
	1.1 Identify the key parts of the breathing system and describe the function of each part of the breathing system	S9LT-Ia-b-26.1.1	1	
	1.2 Explain how the lungs work	S9LT-Ia-b-26.1.2	1	
	1.4 Describe how the movement of the diaphragm helps the air go in and out of the lungs	S9LT-Ia-b-26.1.4	1	
	1.5 Identify the components of the circulatory system	S9LT-Ia-b-26.1.5	1	

	1.6 Explain the different types of circulation	S9LT-Ia-b-26.1.6	1	
	1.7 Explain how blood is pumped by the heart	S9LT-Ia-b-26.1.7	1	
	1.8 Explain the mechanism of how the respiratory and circulatory systems work together	S9LT-Ia-b-26.1.8	1	
	2. Infer how one's lifestyle can affect the functioning of respiratory and circulatory systems	***S9LT-Ic -27***		
	2.1 Explain the negative effects of cigarette smoking	S9LT-Ic -27.2.1	1	
	2.2 Infer how to detect and prevent diseases in the circulatory system and respiratory system.	S9LT-Ic -27.2.2	1	
	2.3 Infer how one's lifestyle can affect the functioning of respiratory and circulatory systems	S9LT-Ic -27.2.3	1	
	2.4 Conduct an information dissemination activity on effective ways of taking care of the respiratory and circulatory systems	S9LT-Ic -27.2.4	1	
	SUMMATIVE TEST		1	
Performance Standard	The learners should conduct an information dissemination activity on effective ways of taking care of the respiratory and circulatory systems based on data gathered from the school or local health workers.			

SCIENCE

Structuring Competencies in a Definitive Budget of Work

Content Standard	The learners demonstrate understanding of 1. how genetic information is organized in genes on chromosomes; 2. the different patterns of inheritance			
2. Heredity: Inheritance and Variation 2.1 Location of genes on chromosomes 2.2 Non-Mendelian inheritance 2.2.2 Sex-linked traits 2.2.3 Multiple alleles 2.3 Multiple genes	***3. describe the location of genes in chromosomes.***	***S9LT-Id-28***	1	
	4. explain the different patterns of non-Mendelian inheritance	***S9LT-Id-29***	***1***	
	4.1 Explain the incomplete dominance pattern of inheritance and describe the codominance traits	S9LT-Id-29.4.1	1	
	4.2 Determine all possible combinations of genes for a specific blood type.	S9LT-Id-29.4.2	1	
	4.3 Determine the probability of having a male or female gender	S9LT-Id-29.4.3	1	
	4.4 Explain the sen linked and sex influenced trait	S9LT-Id-29.4.4	1	
	4.5 Identify the components of a DNA molecule	S9LT-Id-29.4.5	1	
	SUMMATIVE TEST		1	
Performance Standard	The students must be able to make a multimedia presentation of a timeline of extinction of representative microorganisms, plants, and animals			
Content Standard	The learners demonstrate an understanding of how changes in the environment may affect species extinction			

3. Biodiversity and Evolution	***3. relate species extinction to the failure of populations of organisms to adapt to abrupt changes in the environment***	***S9LT-Ie-f-30***		
3.1 Causes of Species Extinction 3.1.1 natural 3.1.2 anthropogenic	3.1 Measure species distribution using mathematical way of expressing the amount of biodiversity and species distribution in a community	S9LT-Ie-f-30.3.1	1	
	3.2 Determine the pattern of population	S9LT-Ie-f-30.3.2	1	
	3.3 Explain the probable causes of species extinction	S9LT-Ie-f-30.3.3	2	
	3.4 Explain the local and global environmental issues that contributed to species extinction	S9LT-Ie-f-30.3.4	2	
	3.5 make a multimedia presentation of a timeline of extinction of representative microorganisms, plants, and animals	S9LT-Ie-f-30.3.5	2	
	SUMMATIVE TEST		1	
Performance Standard	The learners should be able to design and conduct an investigation to provide evidence that plants can manufacture their own food			
Content Standard	The learners demonstrate understanding of 1. the structure and function of plant parts and organelles involved in photosynthesis 2. the structure and function of mitochondrion as the main organelle involved in respiration			

SCIENCE

Structuring Competencies in a Definitive Budget of Work

4. Ecosystems	***4. differentiate basic features and importance of photosynthesis and respiration***	***S9LT-lg-j-31***		
4.1 Flow of Energy and Matter in Ecosystems 4.1.1 Photosynthesis 4.1.2 Respiration	4.1 relate physical plant characteristics (chloroplasts, pigments, stomata, etc) to their functions.	S9LT-lg-j-31.4.1	1	
	4.2 Differentiate Light Dependent and Light Independent Reaction in terms of the raw	S9LT-lg-j-31.4.2	1	
	4.3 Conduct investigations that will show that plants are capable of making food	S9LT-lg-j-31.4.3	2	
	4.4 Explain the factors that affect the rate of photosynthesis.	S9LT-lg-j-31.4.4	2	
	4.5 Describe the parts of the mitochondrion	S9LT-lg-j-31.4.5	1	
	4.6 Explain how cell release energy from food	S9LT-lg-j-31.4.6	1	
	4.7. Decribe the Krebs Cycle	S9LT-lg-j-31.4.7	1	
	4.8. Explain the Elecron Transport Chain	S9LT-lg-j-31.4.8	1	
	4.9 Differentiate photosynthesis and respiration in terms of cell structures involved, raw materials, end product and energy requirement.	S9LT-lg-j-31.4.9	1	
	4.10 Design and conduct investigation that plants can manufacture their own food	S9LT-lg-j-31.4.10	2	
	SUMMATIVE TEST		1	
		TOTAL NUMBER OF DAYS	43	

SCIENCE

Structuring Competencies in a Definitive Budget of Work

PERIODICAL TEST	2	
OVERALL TOTAL NUMBER OF DAYS	**45**	