SCIENCE

Structuring Competencies in a Definitive Budget of Work

Grade	**TEN**
Science Discipline/Component	**LIVING THINGS AND THEIR ENVIRONMENT**
Grade Level Standard	At the end of Grade 10, learners realize that volcanoes and earthquakes occur in the same places in the world and that these are related to plate boundaries. They can demonstrate ways to ensure safety and reduce damage during earthquakes, tsunamis, and volcanic eruptions. Learners can explain the factors affecting the balance and stability of an object to help them practice appropriate positions and movements to achieve efficiency and safety such as in sports and dancing. They can analyze situations in which energy is harnessed for human use whereby heat is released, affecting the physical and biological components of the environment. Learners will have completed the study of the entire organism with their deeper study of the excretory and reproductive systems. They can explain in greater detail how genetic information is passed from parents to offspring, and how diversity of species increases the probability of adaptation and survival in changing environments. Learners can explain the importance of controlling the conditions under which a chemical reaction occurs. They recognize that cells and tissues of the human body are made up of water, a few kinds of ions, and biomolecules. These biomolecules may also be found in the food they eat.
Domain	Learners learn that organisms have feedback mechanisms that are coordinated by the nervous and endocrine systems. These mechanisms help the organisms maintain homeostasis to reproduce and survive. Learners are introduced to the structure of the DNA molecule and its function. They also learn that changes that take place in sex cells are inherited while changes in body cells are not passed on. Learners revisit the mechanisms involved in the inheritance of traits and the changes that result from these mechanisms. Learners explain how natural selection has produced a succession of diverse new species. Variation increases the chance of living things to survive in a changing environment. Learners investigate the impact of human activities and other organisms on ecosystems. They learn how biodiversity influences the stability of ecosystems.

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Performance Standard	The learners should be able to construct a poem discussing healthful habits that promote proper functioning of the reproductive, endocrine, and nervous systems; compose an oath of responsibility on the proper care of the reproductive, endocrine and reproductive systems; interview families about the importance of family planning through video presentation.			
Content Standard	The learners demonstrate understanding of organisms as having feedback mechanisms, which are coordinated by the nervous and endocrine systems; how these feedback mechanisms help the organism maintain homeostasis to reproduce and survive			
CONTENT	**LEARNING COMPETENCIES**	**CODE**	**NO. OF DAY/S TAUGHT**	**REMARKS**
1. Coordinated Functions of the Reproductive, Endocrine, and Nervous Systems	**1. describe the parts of the reproductive system and their functions**	**S10LT-IIIa-33**		
1.1 The Nervous System	1.1 Identify and describe the major divisions, parts and functions of the nervous system	S10LT-IIIa-33.1.1.1	1	
1.2 The Endocrine System	1.2 Identify and describe the glands, its location , the hormones released by each gland and functions of the endocrine glands.	S10LT-IIIa-33.1.1.2	1	
1.3 The Reproductive System	1.3 Identify and describe the parts and functions of the male reproductive system.	S10LT-IIIa-33.1.1.3	1	
	1.4 Identify and describe the parts and functions of the female reproductive system.	S10LT-IIIa-33.1.1.4	1	

	2. explain the role of hormones involved in the female and male reproductive systems	**S10LT-IIIb-34**		
	2.1 explain the hormones screted by the male reproductive system	S10LT-IIIb-34.2.2.1	1	
	2.2 explain the hormones screted by the female reproductive system	S10LT-IIIb-34.2.2.2	1	
	2.3 discuss the role of hormones involved in the male and female reproductive systems using a video clip	S10LT-IIIb-34.2.2.3	1	
	2.4 explain the effect of hormone secretion in the development of an organism	S10LT-IIIb-34.2.2.4	1	
	3. describe the feedback mechanisms involved in regulating processes in the female reproductive system (e.g., menstrual cycle)	**S10LT-IIIc-35**		
	3.1 describe the important events of the menstrual cycle using video clips	S10LT-IIIc-35.3.3.1	1	
	3.2 describe the feedback mechanisms involved in regulating processes in the female reproductive system using diagram	S10LT-IIIc-35.3.3.2	1	
	4. describe how the nervous system coordinates and regulates these feedback mechanisms to maintain homeostasis	**S10LT-IIIc-36**		

	4.1 describe how the nervous system coordinates and regulates these feedback mechanisms to maintain homeostasis .	S10LT-IIIc-36.4.4.1	1	
	SUMMATIVE TEST		1	
Performance Standard	The learners should be able to construct a DNA model of different organisms using local materials/indigenous materials.			
Content Standard	The learners demonstrate understanding of the information stored in DNA as being used to make proteins; how changes in DNA molecule may cause changes in its product; and mutations that occur in sex cells as being heritable			
2. Heredity: Inheritance and Variation	**5. explain how protein is made using information from DNA**	**S10LT-IIId-37**		
	5.1 explain how DNA duplicate itself using a model	S10LT-IIId-37.5.5.1	1	
	5.2 explain the complementary structure of DNA and RNA using a template	S10LT-IIId-37.5.5.2	1	
	5.3 explain the role of DNA and RNA in protein synthesis	S10LT-IIId-37.5.5.3	1	
	5.4 explain the events of transcription and translation using a video clip	S10LT-IIId-37.5.5.4	1	
	6. explain how mutations may cause changes in the structure and function of a protein	**S10LT-IIIe-38**		
	6.1 explain how mutation may cause changes in the structure and function of a protein using models/illustrations	S10LT-IIIe-38.6.6.1	1	

	6.2 explain how mutation occurs by identifying the amino acids codon using the genetic code table	S10LT-IIIe-38.6.6.2	1	
	6.3 explain how mutation may affect the growth and development of organisms using video clips/illustrations	S10LT-IIIe-38.6.6.3	1	
	SUMMATIVE TEST		1	
Performance Standard	The learners should be able to write an essay on the importance of adaptation as a mechanism for the survival of a species			
Content Standard	The learners demonstrate understanding of how evolution through natural selection can result in biodiversity			
3. Biodiversity and Evolution	**7. explain how fossil records, comparative anatomy, and genetic information provide evidence for**	**S10LT-IIIf-39**		
	7.1 explain how fossil records provides evidence for evolution using images/pictures	S10LT-IIIf-39.7.7.1	1	
	7.4 explain how rock formation, geologic time scale, and carbon-14 dating can be used in determining the age of a fossil.	S10LT-IIIf-39.7.7.2	1	
	7.2 explain how comparative anatomy provides evidence for evolution using pictures/video clips	S10LT-IIIf-39.7.7.3	1	
	7.3 explain how genetic information provides evidence for evolution	S10LT-IIIf-39.7.7.4	1	
	8. explain the occurrence of evolution	**S10LT-IIIg-40**		

	8.1 explain the occurrence of evolution according to Lamarck's ideas	S10LT-IIIg-40.8.8.1	1	
	8.2 explain the occurrence of evolution according to Darwin's ideas	S10LT-IIIg-40.8.8.1	1	
	8.3 explain the occurrence of evolution by comparing the ideas of Lamarck and	S10LT-IIIg-40.8.8.1	1	
	SUMMATIVE TEST			
Performance Standard	The learners should be able to write an essay on the importance of adaptation as a mechanism for the survival of a species			
Content Standard	The learners demonstrate understanding of the influence of biodiversity on the stability of ecosystems; an ecosystem as being capable of supporting a limited number of organisms			
4. Ecosystems	**9. explain how species diversity increases the probability of adaptation and survival of organisms in changing environments**	**S10LT-IIIh-41**		
4.1 Flow of Energy and Matter in Ecosystems	9.1 explain the flow of energy in an ecosystem using diagrams/pictures	S10LT-IIIh-41.9.9.1	1	
	9.2 9.2 explain how the diversity increases the probability of aaptation and survival of organisms in changing environment	S10LT-IIIh-41.9.9.2	1	
4.2 Biodiversity and Stability	9.3 explain how biodiversity is related to stability	S10LT-IIIh-41.9.9.3	1	
	9.4 explain how biodiversity affects stability in an ecosystem	S10LT-IIIh-41.9.9.4	1	

4.3 Population Growth and Carrying Capacity	**10. explain the relationship between population growth and carrying capacity**	**S10LT-III1-42**		
	9.1 explain population growth growth and carrying capacity using a model	S10LT-III1-42.10.10.1	1	
	9.1 explain how population growth affects carrying capacity	S10LT-III1-42.10.10.2	1	
	9.2. explain the relationship between population and carrying capacity by using video clips	S10LT-III1-42.10.10.3	1	
	9.3. explain the relationship between population and carrying capacity by constructing/composing a poem	S10LT-III1-42.10.10.4	1	
	11. suggest ways to minimize human impact on the environment	**S10LT-IIIj-43**		
	11.1 suggest ways to minimize human impact on the environment by discussing environmental issues and problems using video clips	S10LT-IIIj-43.11.11.1	1	
	11.2 suggest ways to minimize human impact on the environment by analyzing environmental issues using pictures.	S10LT-IIIj-43.11.11.2	1	
	11.3 suggest ways to minimize human impact on the environment by playing environmental songs	S10LT-IIIj-43.11.11.3	1	
	SUMMATIVE TEST		1	
		TOTAL NUMBER OF DAYS	39	
		PERIODICAL TEST	2	
		OVERALL TOTAL NUMBER OF DAYS	**41**	