BIOLOGY SYLL&BUS GR&DE 8

HERBERT MORRISON TECHNICAL HIGH SCHOOL

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TOPIC Responding to the environment	MAJOR CONCEPT Senses Response/Stimuli	DURATION 3 WEEKS	GENERAL OBJECTIVES Explain the purpose of the Senses.	TEACHING STRATEGIES Discussion on the concept of senses	SUGGESTED LEARNING ACTIVITIES Students will do drawings to
	 A stimulus is a change in internal or external environment of an organism that initiates a response. A response is a change in an organism or part of an organism which is brought about by a stimulus. A receptor is the part of the organism that detects the stimulus. Forms of tropism include phototropism (response to light) geotropism (response to gravity) chemotropism (response to gravity) chemotropism (response to water) photoperiodism (Describes a plant ability to flower in response to change in photoperiod; the relative lengths of day and night. 		 List the senses Define the term stimuli Define the term receptor. Define the term response. Identify common stimuli Differentiate between internal and external stimuli. Identify some internal and some external stimuli. Define tropism. Define and explain the following Hydrotropism Geotropism Photoperiodism Chemotropism 	Video presentation on the senses and their importance	show the response of plants to different stimuli. Students will observe pictures and identify the type of tropism that is taking place in particular plants Students will watch youtube videos on tropism.

tp;www.bioreference.com/Ph- b/Photoperiodism.html#ixzz4JV7j 00	 Explain how vertebrates//899 and invertebrates respond to stimuli. 	

Sense Organs	• Eye	12 weeks	List 5 sense organs Power point Drawing of the
	The eye is the organ of the sense of sight.		State the stimulus to presentation cross section of the secti
	The eyes detect light, and convert it to		which they respond on the eye will eye to show
	electro- chemical impulses in neurons.		Do a label diagram of the be done correct labeled
	http://wwwmcwdn.org/body/senseorgans.		(CROSS SECTION) of the parts.
	<u>html</u>		eye. Video
	Accommodation is the ability of the ciliary		Explain the process of presentation to Drawing to show
	muscles in the eye to change the shape of		accommodation in the Explain how the response of the
	the lens to focus light coming from near or		eye. the eye eye in dim and
	far object.		Explain the response of respond to dim bright light.
	Accommodation is the adjustment of the		the eye when viewing and bright light
	optics of the eye to keep an object in focus		object in dim and bright as well as to Illustration in
	on the retina as its distance varies. It is the		light. show the diagram of defect
	process of adjusting the focal length of a		List some major eye defects and and correction of
	lens.		defects. (<i>long sight, sho</i> rt correction. the eye.
			sight, astigmatism etc.)
	Some major eye defect includes		

Myopia (Near sight) This person can see near objects but distant objects are out of focus. Light rays from near object focus on the retina but those from distant objects focus in front of the retina. This happens if the eyeball is too long from front to back or if the lens is too curved (thick). Wearing a diverging (concave) lenses or contact lenses correct the defect. Hypermetropia (long sight) This person can see distant object but near objects are out of focus. Light rays from distant objects focus on the retina but those from near object focus behind the retina. This happens if the eyeball is too short from front to back or if the lens is too flat (thin). Wearing converging (convex) lenses or contact lenses correct the defect. Presbyopia (Old Sight) As a person ages the lens loses its elasticity and the ciliary muscle weakens making the lens less able to curve the individual finds it increasingly difficult to see near objects, correction is done by wearing converging (convex)lenses to focus on near objects. Astigmatism Blurry vision because the cornea is not perfectly shaped to direct light into the eye.	•	With the aid of diagrams, explain the cause and correction of long and short sight. Name some diseases of the eye and explain the cause and effect of each (glaucoma, cataract, conjunctivitis etc.) Compare the structure of the eye to a simple pin hole camera. Diagram to be included.	Discussion and diagram to compare the eye as an optical organ to the pin hole camera an optical instrument.	Comparison of the eye and pin hole camera in a tabular format.
 perfectly shaped to direct light into the eye. Ear The ear is the organ of the sense of hearing and equilibrium. 	•	Name the stimulus to which the ear respond	Power point presentation	

The ear detects and analyze sound and convert the sound waves into electrochemical impulses and maintain the sense of balance. Sound waves travel through parts of the ear to the brain (outer ear, middle ear, inner ear)Sound waves travel from outer ear in through the auditory canal, causing the ear drum or tympanic membrane, to vibrate. This, in turn, causes the three small bones (hammer, anvil, stirrup) in the middle ear to move. The vibration moves via the oval window through the fluid in the cochlea in the inner ear, stimulating thousands of tiny ear cells. This result in the conversion of vibrations into electrical impulse finally perceived by the brain as sound.	 ear. Draw and label a diagram of the (CROSS SECTION) of the ear. State the function of each part of the ear. Explain how hearing is perceived. List any defect/disease of the ear. 	on the structure and function of the ear will be done. Video presentation to explain how the ear works (youtube)	Construct a table to show the function of the different parts of the eye. Make an annotated drawing of the ear. Oral presentation on how hearing is perceived
Some examples of infections that affect hearing or balance;			
Ear infections			
Tinnitus-a roaring in the ears Meniere's disease may be the result of fluid problems in the inner ear. Ear barotrauma is an injury to the ear resulting from changes in barometric (air) or water pressure.			
The skin			

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The skin is the organ of the sense of touch it detects (pain, pressure, temperature) It is the outer covering of the body and is the largest organ of the body's (integumentary system) Because the skin interface with the environment it plays important immunity role in protecting the body against pathogens (bacteria, virus, fungus) and excessive water loss. Its other functions are insulation, temperature regulation, sensation, vitamin D synthesis. Some skin infections include Liver spot- flat brown or black spots that can appear on areas of the skin expose to sunlight. Athlete foot (Tinea pedis) fungal infection that usually begins between the toes, in people whose feet become very sweaty while confined in tightly fitting shoes. Scabies-itchy skin condition caused by tiny burrowing mite called Sarcoptes scabiei. Intense itching occurs in areas where the mite burrows.	•	Name the stimulus to which the skin respond. State the function of the skin. Draw and label a diagram of the skin (CROSS SECTION) Name some diseases of the skin state their cause and effects. (liver spot, athlete foot, scabies,) Explain the effect of skin lightening	Video	Oral presentation on the impact of skin lightening on the melanin content of the skin. Oral presentation on some diseases of the skin state their cause and effects. (<i>liver spot, acne, eczema, lupus, athlete foot,</i> scabies)
Tongue The tongue is the sense organ of taste it is a muscular organ in the mouth covered with moist pink tissue called mucosa. The tongue is covered with tiny bumps called papillae that gives the tongue it's rough texture.	•	Name the stimulus to which the tongue respond. State the function of the tongue.	Video presentation on the structure and function of the tongue.	Oral graded presentation on diseases of the mouth and tongue.

Taste is the perception stimulated when a substance in the mouth react chemically with the taste receptors cell on the taste buds. Thousands of taste buds cover the surfaces of the papillae.	 Draw and label a diagram to show the regions of the tongue most sensitive to the sour, sweet, bitter, salt. Draw a labelled diagram of the tongue.
The taste buds are a collection of nerve-like cells that connect to nerve running into the brain. The main function of the tongue is to detects and transmit taste signals to the brain. Four common tastes detected by the tongue are sweet, sour, bitter, sour. All four taste sensation comes from all regions of the tongue. However, different parts are more sensitive to certain taste bitter (back) sweet(tip) sour (side close to the back) salt (side close to the tip). Infections of the tongue Thrush Caused by candida yeast, thrush is most common in babies and adults.	
Nose The nose is the sense organ of smell it detects chemical smell and is the most protruding part of the face. It bears the nostrils and is the first organ of the respiratory system. The main function of the nose is in breathing which is the physical exchange of air, it has a major function in olfaction the sense of smell	 Name the stimulus to which the nose respond List the three functions of the nose Name some common nose infections cause, symptoms and treatment Video presentation on how the nose works and the function Group presentation on diseases.

	and plays a key role in speech where nasal vowels and nasal consonants are produced in nasalization. The nasal hollow cavities of the paranasal sinuses act as a sound chamber that modify and amplifies speech and other vocal sound. Infection of the nose Infection Sinus infection Inflammation of the sinuses that can cause Them to get blocked and filled with fluid. It is usually caused by a cold or allergies. An infection could result from the blockage				
Nutrition	 Types of nutrition There are two types of nutrition; Autotrophic Nutrition Heterotrophic Nutrition Autotrophic organisms make their own food by a process called photosynthesis. Heterotrophic organisms obtain their own food from the bodies of other organisms. This is done in various ways. Herbivores such as cattle, tortoises and sparrows eat plants; Carnivores such as lions, crocodiles and sharks eat the flesh of other animals. 	4 weeks	 Define the term nutrition List the type of nutrition Differentiate between autotrophic and heterotrophic nutrition Define the term photosynthesis Write the worded equation for photosynthesis. Explain the stages in photosynthesis (light and dark reaction) 	Video presentation on stages of photosynthesis Laboratory experiment to test for starch in green leaf.	Experiment to show that plants make food. (starch test) Worksheet with questions on photosynthesis /nutrition

	http://www.le,ac.uk/se/centres/sci/selfstu dy/orgl.htm Photosynthesis- Photosynthesis is the process by which green plant convert carbon dioxide and water into glucose (food) by using sunlight energy absorbed by chlorophyll.		 Identify the raw materials and product of photosynthesis. Draw and label the external structure of a leaf Describe the function of the external structure of the leaf. 		
Respiration and breathing	 Respiration is the chemical process by which energy is release from food substances by all living cell. Breathing is the mechanism that enables air to be brought into the lungs and expelling it from the lungs. A respiratory surface is a structure present in living things that is responsible for the exchange of gases oxygen and carbon dioxide or vice versa. The Characteristic of a Respiratory Surface are: Thin walls Moist inner surface Large combined surface area Rich blood supply 	4 weeks	 Define the term respiration Differentiate between respiration and breathing Write the word equation for respiration. Compare the raw materials of respiration and photosynthesis. Draw and label the diagram of the respiratory system State the function of the parts of the respiratory system Define the term inspiration and expiration Explain the mechanism of breathing in and out. Explain what a respiratory surface is. 	Class discussion on respiration and breathing Video presentation on the mechanism of breathing in and out. Observing the respiratory surfaces of fish and mammalian lungs to determine some common features of respiratory surfaces.	Make a model of the lungs and explain how it works. Draw and label a diagram of the respiratory system. Laboratory activity to observe the respiratory surfaces of select organisms (fish)

		 Identify the respiratory surface of various organisms (man, fish, worm etc.) List some common features of respiratory surfaces. (moist, thin, large surface area etc.) List the composition of air Compare the volume of inspired and expired air. Explain the effects of smoking. 		
humans	 <i>Reproduction</i> is the process by which living organisms generate new individuals of the same kind as themselves. Reproduction is a mechanism that ensures specie continuity There are two types of reproduction Sexual reproduction and asexual reproduction. <i>Menstruation</i> is described as the shedding of the uterine lining along with the unfertilized egg. The menstrual cycle is controlled by hormones. <i>Pregnancy</i> is the period between conception and birth. It last for nine months. <i>Birth process</i> There are three stages in the birth process 1. Dilation 2. Delivery of the baby 	 Define the term menstruation/reproductio n With the aid of a diagram explain the process in a typical 28 days' cycle and describe the function of the hormones in the cycle. <u>Pregnancy</u> Define the term pregnancy Identify the signs of pregnancy Explain the stages of pregnancy. 	Class discussion on menstrual cycle' Power point presentation on menstruation/ birth process.	Worksheet on menstruation and pregnancy.

3. Delivery of the placenta	
	 Birth Define the term parturition Explain the three stages in the birth process