Gulf English School Year 8 Science

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| TOPICS: Breathing & Respiration/Light |
| Theme: Describe how oxygen enters the body and the journey taken to the cells. Explain how light travels and how we are able to see colour | Level: 5-7 |
| Objectives: appreciate that respiration is essential for life and organisms have adaptations for this purpose. Understand that light wavelengths allow us to see all the colours of the rainbow. |
| Focussing Statements | Key Words Practical |
| **Aerobic Respiration*** Model aerobic respiration using a word equation.
* Compare burning (combustion) and respiration.

**Breathing System*** Explain how specialised cells keep the lungs clean (mucus production and ciliated epithelial cells).
* Explain how the lungs are adapted for efficient gas exchange.
* Explain how and why a concentration gradient is maintained for oxygen and carbon dioxide between the blood and lungs.
* Explain the changes in heartbeat and breathing rate during exercise.
* Explain some of the effects of reduced oxygen supply on the body.
* Explain the effects of some chemicals in tobacco smoke on the body.

**Comparing Gas Exchange*** Describe how gas exchange occurs in plants.
* Compare the human gaseous exchange system with those of other animals.

**Anaerobic Respiration*** Recall that anaerobic respiration releases less energy than aerobic respiration.
* Model anaerobic respiration using a word equation.
* Describe how lactic acid is removed from tissues.
* Explain why anaerobic activity cannot be sustained.

**Light on the Move*** Compare longitudinal and transverse waves.
* Represent the path of light as straight lines with arrows on diagrams and describe how you can demonstrate that light travels in straight lines.
* Use a ray diagram to explain how shadows are formed and to explain image formation in pinhole cameras.

**Reflection*** State the meaning of: diffuse, specular, incident ray, reflected ray.
* Use the ray model of light to explain how a periscope works.
* Use ray diagrams to explain the law of reflection and to describe the differences in light reflected from smooth and rough surfaces.
* Describe the characteristics of the image formed by a plane mirror and use ray diagrams to explain its formation.

**Refraction*** Explain why refraction occurs.
* State the meaning of focal length, focus, and principal axis.
* Relate the power of a lens to its shape.

**Cameras & Eyes*** Use ray diagrams to explain image formation in pinhole cameras.
* Identify which parts of the eye cause refraction of light and describe how light is focused on the retina.

**Colours*** Explain why coloured objects appear coloured.
* Explain how filters can be used to make coloured light.
* Explain why objects look different in light of different colours.

Assessment: Class activities, class tests, Termly test/exams | AerobicOxygenGlucoseCarbon dioxideWaterCombustionVentilationInhalationDiffusionAlveoliHaemoglobinArteriesVeinsCapillariesGillsAnaerobicVacuumRaysTransparentTranslucentOpaqueReflectionRefractionRetinaPupilPrimary coloursSecondary coloursPrismDispersionFilters |  Testing for CO2Lung dissectionExercisingPinhole cameraReflection/refractionMaking a rainbow |