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| Subject: Science Year: PHASE 3 Humans and Evolution (Year A) Unit 1 of 6  NC/PoS:   * describe the simple functions of the basic parts of the digestive system in humans * identify the different types of teeth in humans and their simple functions * Describe the changes as humans develop to old age. * Identify and name the main parts of the human circulatory system, and describe the function of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyles on the way their bodies function, describe the way in which nutrients and water are transported within animals including humans. |
| Prior Learning (what pupils already know and can do)  That the skeleton protects and supports the body. That to keep the body healthy a balanced diet must be eaten consisting of carbohydrates, fats, fibre, minerals and vitamins, protein, and water. Animals get their food from what they have eaten. Also, it is important to exercise and have good hygiene. Know carnivores, herbivores and omnivores have different diets. |
| End Goals (what pupils MUST know and remember)   * Know that the digestive system breaks down food. * Know the digestive system consists of mouth, tongue, oesophagus, stomach, small intestine, and large intestine * Know that some animals have more than one stomach to aid digestion e.g. alligator, cow * Know teeth are used to chew the food and break it up into bits * Know the tongue helps to chew the food and swallow it * Know that the oesophagus transports food to the stomach * Know that in the stomach the food is churned up and broken down further * Know in the small intestine the nutrients from the food are absorbed into the blood which transports them around the body * Know in the large intestine water is absorbed into the body * Know the circulatory system is made up of blood, blood vessels and the heart * Know blood moves food, waste oxygen and waste products around the body * Know there are three kinds of blood vessels: capillaries, veins, and arteries * Know arteries, carry oxygenated blood away from the heart to the body * Know veins, carry de-oxygenated blood back to the heart * Know exercise strengthens the muscles, develops the lungs, helps body coordination, uses up food for energy and can prevent the body getting fat and helps the body to sleep at nighttime * Know that taking health risks can damage the body * Know that smoking causes heart attacks, blocked arteries, lung cancer and breathing problems * Know sniffing solvents is extremely dangerous as damages the brain * Know that drinking alcohol slows down the reactions * Know heavy drinking damages the liver, heart, and stomach * Know drugs can be dangerous if misused and can cause damage to the brain * Know tobacco, sniffing solvent and some drugs are addictive * Know prenatal development has a germinal phase, an embryonic phase, and a foetal phase * Know animals have different gestation periods * Know the stages in a human’s life, include infancy, childhood, adolescent, adulthood, and old age * Know cell decline is part of becoming old * Know vision and hearing decline as animals get older * Know animals have different lifespans * know the changes that take place in children during puberty * Know a girl's hormonal changes cause the ovaries to release eggs and the monthly menstrual cycle is triggered * Know a boy's muscles become more developed and facial and body hair begins to grow during puberty |
| Key Vocabulary: mouth, saliva, tongue, teeth, oesophagus, stomach, small and large intestine, rectum, anus, digests, lubricates, pancreas, liver, gallbladder, acid, dissolve, dentist, nurse, orthodontist, gastroenterologist, circulatory system, oxygenated, de-oxygenated, veins, arteries, blood vessels, capillaries, solvents, addictive, heart, arteries, veins, red and white cells, platelets, plasma, pulse rate, heart rate, heart attacks, blocked arteries, lung cancer, tobacco, alcohol, solvents, drugs, medicine, vaccination, inhalation, legal, illegal, umbilical cord, sperm, egg, cell, germinal phase, embryonic phase, foetal phase, : infancy, childhood, adolescence, adulthood, old age, dependent, independent, |
| Session 1: review prior learning  Name the 7 types of nutrients needed to fuel the body. How do they help the body? What is the job of the skeleton? Why is exercise and hygiene important? What do we call animals that just eat meat? Plants, fruit, and vegetables? Both?  Discuss careers linked to this unit:  Dentist/ orthodontist <https://www.youtube.com/watch?v=CIHc2B06PFc>  Nurse <https://www.youtube.com/watch?v=zkhvoJsH_5k>  **A gastroenterologist** is a specialist with expertise in the disorders and diseases that affect the digestive system  Vocabulary: dentist, nurse, orthodontist, gastroenterologist |
| Session 2: Recap: From LKS2 what can damage the enamel on teeth? How can you prevent this?  Children learn that the digestive system breaks down food and the digestive system consists of mouth, tongue, oesophagus, stomach, small intestine, and large intestine. The tongue helps to chew the food and swallow it. The oesophagus transports food to the stomach. In the stomach the food is churned up and broken down further. In the small intestine the nutrients from the food are absorbed into the blood which transports them around the body. In the large intestine, water is absorbed into the body  LO: to understand how the body digests food  <https://www.youtube.com/watch?v=3pjkQcQBTtc>  <https://www.youtube.com/watch?v=eSEYPO30AN0> how nutrients get into the body  Vocabulary: mouth, saliva, tongue, teeth, oesophagus, stomach, small and large intestine, rectum, anus, digests, lubricates, pancreas, liver, gallbladder |
| Session 3: Recap: Match the part of the digestive system to its function  Model this experiment to show what happens <https://www.stem.org.uk/resources/elibrary/resource/35396/digestive-system-experiment>  Children learn the digestive system of a chicken includes mouth, tongue, oesophagus, stomach, small intestine, and large intestine. The digestive system of most reptiles and amphibians includes mouth, oesophagus, stomach, small intestine, and large intestine. The digestive system of a salmon includes mouth, teeth, tongue, oesophagus, stomach, intestine. Some animals have more than one stomach to aid digestion e.g. alligator, cow.  LO: to research information about the digestive system in animals  e.g. It takes about seven seconds for food to travel from your mouth to your stomach.  A woman’s small intestine is longer than a man’s.  Your stomach acid would be able to dissolve metal.  If you stretched out your whole digestive system, it would be 29 feet long.  Vocabulary: acid, dissolve |
| Session 4: review prior learning  Skeleton purpose - **Support** – the skeleton keeps the body upright and provides a framework for muscle and tissue attachment. **Posture** – the skeleton gives the correct shape to our body. **Protection** – the bones of the skeleton protect the internal organs and reduce the risk of injury on impact.  Digestive system - breaks nutrients into parts small enough for your body to absorb and use for energy, growth, and cell repair. It includes the mouth, pharynx (throat), oesophagus, stomach, small intestine, large intestine, rectum, and anus. |
| Session 5: Recap: function of each part of the digestive system  Children learn the circulatory system is made up of blood, blood vessels and the heart. Blood moves food, waste oxygen and waste products around the body. There are three kinds of blood vessels: capillaries, veins, and arteries. Arteries, carry oxygenated blood away from the heart to the body. Veins, carry de-oxygenated blood back to the heart.  LO: to understand the function of the components of the circulatory system  <https://www.youtube.com/watch?v=GMBSU-2GK3E> the heart  <https://www.youtube.com/watch?v=VSVYgivfs9c> blood and function– red cells, white cells, platelets and plasma  <https://www.youtube.com/watch?v=co6iuDpaQTM> what is blood?  <https://www.youtube.com/watch?v=pjOxpLEynIE> veins and arteries  Vocabulary: heart, blood vessels, capillaries, arteries, veins, red and white cells, platelets, plasma |
| Session 6: Recap: the components of the circulatory system and their function  LO: to research how the circulatory system works  <https://www.youtube.com/watch?v=_qmNCJxpsr0> how the system works  Vocabulary: circulatory system, oxygenated, de-oxygenated, lungs |
| Session 7: Recap: the circulatory system – components function and how it works  Children learn exercise strengthens the muscles, develops the lungs, helps body coordination, uses up food for energy and can prevent the body getting fat and helps the body to sleep at nighttime  Lo: Looking for patterns to see how exercise affects the heart rate  <https://www.youtube.com/watch?v=pjOxpLEynIE> – circulatory system – pulse rate affected by exercise  Children complete own investigation: resting rates, do taller children have faster pulse rates, difference between boys and girls etc.  Collect data and record results  Vocabulary: pulse rate, heart rate |
| Session 8: Recap: how exercise affects the pulse rate  Children learn that taking health risks can damage the body. Smoking causes heart attacks, blocked arteries, lung cancer and breathing problems. Drinking alcohol slows down the reactions. Heavy drinking damages the liver, heart, and stomach.  Lo: To research the effects of tobacco and alcohol on the body  <https://www.youtube.com/watch?v=QDDnYcn-o8I> tobacco – (teacher knowledge)  Smoking: heart attacks, blocked arteries, lung cancer and breathing problems  (N.b: latest research indicates that vaping is also harmful to the lungs and can cause breathing problems)  <https://www.youtube.com/watch?v=1mOpdZQkZkY> operation ouch – how alcohol affects the body    Vocabulary: heart attacks, blocked arteries, lung cancer, tobacco, alcohol |
| Session 9: Recap: how body is affected by alcohol and tobacco  Children learn sniffing solvents is extremely dangerous as damages the brain. Drugs can be dangerous if misused and can cause damage to the brain. Tobacco, sniffing solvents and some drugs are addictive.  Lo: to research the effects of solvents and drugs on the body  <https://www.youtube.com/watch?v=cITuKremX9A> inhaling solvents – teacher watch for knowledge  <https://www.youtube.com/watch?v=W11ergeD09o> effect of drugs on the body – teacher watch  Vocabulary: solvents, drugs, medicine, vaccination, inhalation, legal, illegal |
| Session 10: Recap on the effects that different substances have on the body.  Children learn prenatal development has a germinal phase, an embryonic phase, and a foetal phase  LO: to research prenatal development in a human’s life  Watch <https://www.youtube.com/watch?v=XEfnq4Q4bfk>   * Before birth, a human must develop from a series of cells to a baby inside its mother. * Germinal Phase – where cells develop and divide. * Embryonic Phase – major organs and structure to the organism develops. * Foetal Phase – when it takes on a recognisable human form and grows until it is ready to be born. This is called a foetus.   Vocabulary: umbilical cord, sperm, egg, cell, germinal phase, embryonic phase, foetal phase  Children learn the stages in a human’s life, include infancy, childhood, adolescent, adulthood, and old age.  LO: to research the development in the stages in a human’s life  <https://www.youtube.com/watch?v=3RFir6WsLe0> how does the human body grow  <https://www.youtube.com/watch?v=9d4ODP5n8Ps> stages in growth and development   * Baby or infancy– they drink milk after they are born. They usually start eating solids when their teeth start to appear at about 6 months. Many can crawl by 9 months and begin to walk after they are 1. * Child - running, talking and learning to read, write and count are all developing in a child. They are developing skills as well as developing socially, emotionally, physically and psychologically * Adolescent - during the ages of 9-19, humans become more independent, begin puberty ready for reproduction and become ready for adulthood * Adulthood - the human body is at its physical peak of fitness and strength and are able to be completely independent. This is when most humans reproduce. * Late adulthood/ old age - body declines in fitness and health from 60 years onwards and there is an increased dependence on others to look after them as time goes on. The life cycle ends when a human dies. Cell decline results in declining hearing and vision.   Vocabulary: infancy, childhood, adolescence, adulthood, old age, dependent, independent |
| Session 11: Recap the stages of the human life cycle Lo: to identify how a human’s body changes during pubertyWatch <https://www.youtube.com/watch?v=Z7zw3tLA3xU> What Happens During Puberty? | [@Operation Ouch](https://www.youtube.com/channel/UCQJDFI9j8UeNoqra37p5OkA) | FULL EPISODE – 30 minutes Puberty is the process of physical changes through which a child's body matures into an adult body capable of reproduction. It is initiated by hormonal signals from the brain to  the ovaries in a girl and the testes in a boy  Changes for girls:   * The first physical changes during puberty are breast development and body growth. * Growth of underarm and pubic hair. * Increase in weight. * Hormonal changes cause the ovaries to start releasing the eggs. * trigger the monthly menstrual cycle   Changes for boys:   * Body growth and growth in the size of their sex organs. * Their muscles become more developed.   Acne and facial and body hair starts to grow |
| Link to career scientist:  <https://pstt.org.uk/application/files/2816/4572/2472/Associate_Scientist_Vaccine_Development_-_Rebecca_Hand_-_v2.pdf> - develops flu vaccines for children  geriatric medicine <https://www.youtube.com/watch?v=584Eh0cXa1Y>  paediatrician <https://www.youtube.com/watch?v=ZKKNQ_lA1HQ> |