**EMERALD ROYAL INTERNATIONAL SCHOOL, MPAPE ABUJA**

**LESSON PLAN AND NOTE FOR WEEK 2 ENDING 22ND SEPTEMBER, 2023**

**TERM: FIRST**

**WEEK:** **2**

**DATE** : **18TH - 22ND SEPTEMBER, 2023.**

**SUBJECT:** **BIOLOGY**

**CLASS : SS 3**

**TOPIC : REPRODUCTIVE SYSTEM IN HUMAN**

**SUB - TOPIC: 1. removal of excretory product in foetus.**

1. **Features of developing animals.**
2. **Definition of terms used in reproduction.**

**PERIOD : 7th**

**TIME : 12: 30 - 1:00**

**DURATION : 40 minutes**

**AVERAGE AGE : 15 years**

**SEX:** **mixed**

**LEARNING OBJECTIVES:** by the end of the lesson,the students, should be able to;

1. Define excretion.
2. List excretory products.
3. Explain the removal of excretory products in foetus.

**RATIONALE:** the students should understand the removal of excretory products in foetus.

**PREVIOUS KNOWLEDGE:** The students can state excretory product in both plants and animals.

**INSTRUCTIONAL MATERIALS:** chart showing development of a foetus.

**Reference Material:** Essential Biology foe Senior Secondary School by M.C. Michael.

**LESSON DEVELOPMEN**

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| **STAGES** | **TEACHER’S ACTIVITIES** | **STUDENTS’**  **ACTIVITIES** | **LEARNING POINT** |
| **INTRODUCTION** | The teacher introduces the lesson by reviewing the previous knowledge. | The students were active. | To arouse the students interest. |
| **PRESENTATION**  **STEP 1** | The teacher explains the explains excretion. | The students pay attention. | To keep them focus. |
| **STEP 2** | The teacher asks the students to state the excretory products. | The students state the excretory product. | To encourage critical thinking. |
| **STEP 3** | The teacher explains the removal of excretory products in foetus. | The students were active. | To keep them focus. |
| **BOARD SUMMARY** | **REMOVAL OF EXCRETORY PRODUCTS FROM THE FOETUS** Waste products excreted from the foetus such as [urea](https://en.wikipedia.org/wiki/Urea" \o "Urea), [uric acid](https://en.wikipedia.org/wiki/Uric_acid" \o "Uric acid), and [creatinine](https://en.wikipedia.org/wiki/Creatinine" \o "Creatinine) are transferred to the maternal blood by [diffusion](https://en.wikipedia.org/wiki/Diffusion" \o "Diffusion) across the placenta.  During pregnancy, the foetal circulatory system works differently than after birth:  The foetus is connected by the umbilical cord to the placenta, the organ that develops and implants in the mother's uterus during pregnancy.  Through the blood vessels in the umbilical cord, the foetus receives all the necessary nutrition, oxygen, and life support from the mother through the placenta.  Waste products and carbon dioxide from the foetus are sent back through the umbilical cord and placenta to the mother's circulation to be eliminated.  The foetal circulatory system uses two right to left shunts, which are small passages that direct blood that needs to be oxygenated. The purpose of these shunts is to bypass certain body parts in particular, the lungs and liver that are not fully developed while the foetus is still in the womb. The shunts that bypass the lungs are called the foramen ovale, which moves blood from the right atrium of the heart to the left atrium, and the ductus arteriosus, which moves blood from the pulmonary artery to the aorta.  Oxygen and nutrients from the mother's blood are transferred across the placenta to the foetus. The enriched blood flows through the umbilical cord to the liver and splits into three branches. The blood then reaches the inferior vena cava, a major vein connected to the heart. Most of this blood is sent through the ductus venosus, also a shunt that passes highly oxygenated blood through the liver to the inferior vena cava and then to the right atrium of the heart. A small amount of this blood goes directly to the liver to give it the oxygen and nutrients it needs.  Waste products from the foetal blood are transferred back across the placenta to the mother's blood.  Blood enters the right atrium, the chamber on the upper right side of the heart. When the blood enters the right atrium, most of it flows through the foramen ovale into the left atrium.  Blood then passes into the left ventricle (lower chamber of the heart) and then to the aorta, (the large artery coming from the heart).  From the aorta, blood is sent to the heart muscle itself in addition to the brain. After circulating there, the blood returns to the right atrium of the heart through the superior vena cava. About two thirds of the blood will pass through the foramen ovale as described above, but the remaining one third will pass into the right ventricle, toward the lungs.  In the fetus, the placenta does the work of breathing instead of the lungs. As a result, only a small amount of the blood continues on to the lungs. Most of this blood is bypassed or shunted away from the lungs through the ductus arteriosus to the aorta. Most of the circulation to the lower body is supplied by blood passing through the ductus arteriosus.  This blood then enters the umbilical arteries and flows into the placenta. In the placenta, carbon dioxide and waste products are released into the mother's circulatory system, and oxygen and nutrients from the mother's blood are released into the foetus' blood.  At birth, the umbilical cord is clamped and the baby no longer receives oxygen and nutrients from the mother. With the first breaths of life, the lungs begin to expand. As the lungs expand, the alveoli in the lungs are cleared of fluid. An increase in the baby's blood pressure and a significant reduction in the pulmonary pressures reduces the need for the ductus arteriosus to shunt blood. These changes promote the closure of the shunt. These changes increase the pressure in the left atrium of the heart, which decrease the pressure in the right atrium. The shift in pressure stimulates the foramen ovale to close.  The closure of the ductus arteriosus and foramen ovale completes the transition of fetal circulation to newborn circulation. ****ADAPTIVE FEATURES IN DEVELOPING ANIMALS**** EGGS OF FISH, AMPHIBIANS, REPTILES AND BIRDS  All vertebrates except mammals are egg laying animals. The egg has the following features that help the embryo to develop inside it.   1. SHELL: – Hard, porous and rich in calcium carbonate. It protects the egg and aid respiration. 2. MEMBRANES: – Also aid protection of the egg. 3. ALBUMEN: – It is called the egg white and accounts for over 50% of the egg. It nourishes the embryo. 4. YOLK: – Located at the centre of the egg. It is rich in vitamins, protein and minerals to nourish the embryos. 5. CHALAZA: – A piece of thick protoplasm that extends to both side of the yolk to hold the embryo in position.  **DEVELOPING EMBRYO/FOETUS IN MAMMALS** The embryo or foetus has the following adaptive features.   1. UTERUS: – Immediately after fertilization in the oviduct the embryo is planted in the wall of the uterus. 2. PLACENTA: – the connection between the embryo and the mother in mammals. 3. It carries oxygen, water and food from the mother blood to the embryo blood. 4. It also removes excretory waste like urea, salt and carbon dioxide from the embryos blood and transfers it to the mother’s blood stream for elimination. 5. It produces hormones which helps the mother to adapt to the pregnancy.  8. UMBLICAL CORD: – It helps to attach the embryo to the placenta .The arteries and vein of the cord carry the blood of the foetus to and from the placenta .The blood of the mother and of the foetus are separated and so do not mix 9. EMBRYONIC MEMBRANES: –  These membranes envelop the foetus to provide it adequate protection .The membranes include 10. Amnion which is the innermost membrane filled with the amniotic fluid which serves as a cushion or shock absorber for the embryo. The fluid also neutralizes the effect of changes of external temperature. 11. Chorion is the outermost membrane which absorbs oxygen for the embryo. 12. Allantois is a membrane which aids respiration and excretion in developing.   ****DEFINITION OF OVIPARITY, VIVIPARITY AND OVOVIVIPARITY****   * **OVIPARITY** is a process of reproduction in which eggs are laid into the external environment where the embryos complete their development and hatch out of the eggs as young. Most fishes, amphibians, reptile and eggs undergo this type of reproduction. * **VIVIPARITY** is a process of reproduction in which the young develops and nourished inside the female’s body through the placenta and are born alive when fully developed. A few fishes, reptiles and all mammals are viviparous animals. * **OVOVIVIPARITY** takes place in few fishes and reptiles where the laid eggs are retained in the body of the female without placenta and when fully develop the young hatch from the eggs and are released from the female’s body. | The students ask questions for further clarification. | To create room for slow learners. |
| **Evaluation** | The teacher evaluates the students with the following questions;   1. Define excretion. 2. State at least 3 excretory products. 3. Explain the removal of excretory products in the foetus. | The students attempt the questions. | To ascertain their level of understanding. |
| **Conclusion** | The teacher concludes by coping the note on the board. She checks and marks the note. | The students copy the note on the board. | For future use. |
| **Assignment** | State at least 5 excretory products in plants and animals. | The students did and submit their assignment for marking and correction. | To encourage the students to study at home. |



22nd September, 2023

Deputy Head Instructor Admin

APPROVED