Overton HS
2023-2024 SYR
Science Lesson Plans

Educational Epiphany ™
Districtwide PLC Protocol for **Science**

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Grade: 12
Date: 04/16-05/02/2024

Lesson Plans should be posted by 3PM each Friday.

#	Planning Question	Teacher/Teacher Team Response
1	Which **state standard** is your lesson progression addressing?	HAP.LS1.39 Identify and describe the organs of the human male and female reproductive systems that provide the physiological functions of gametogenesis, fertilization, and embryogenesis. HAP.LS1.40 Examine the microscopic structures of the human egg and sperm and explain how their structures relate to their functions. HAP.LS1.41 Based on the secretion of hormones, identify the endocrine tissues of the reproductive system and describe their roles in regulation of secondary sex characteristics, the female menstrual cycle, pregnancy, fetal development, and parturition. *with focus on the bolded portion of this standard HAP.LS1.41 Based on the secretion of hormones, identify the endocrine tissues of the reproductive system and describe their roles in regulation of secondary sex characteristics, the female menstrual cycle, pregnancy, fetal development, and parturition. *with focus on the bolded portion of this standard. *in conjunction with* HAP.LS1.42 Trace the major events of human development with fertilization to birth, with a focus on the development of organs and functional organ systems
2	What **scientific concepts or phenomena** are embedded in the state standard?	Controlling Breast Cancer with Pregnancy Although pregnancy can place stress on the human body, recent studies show that it also has some physiological benefits. A protein called alpha fetoprotein (AFP) that is produced during pregnancy may inhibit the development of breast cancer. This finding came about after researchers discovered that the incidence of breast cancer is less in women who have had at least one full-term pregnancy. Women normally have a 13% chance of developing breast cancer; however, the chance is reduced to 7% in women who have biological children. Scientists surmised that AFP may play a role in reducing the incidence of breast cancer. A team of researchers developed an artificial form of AFP called AFPep. (The term AFPep is used to distinguish the artificial form of the protein from the naturally occurring AFP.) Using mice in their studies, they compared AFPep with a drug therapy called tamoxifen, which is currently used to treat breast cancer. The results showed AFPep to be

		equally effective at reducing the incidence of breast cancer as tamoxifen. In addition, the cancer cells did not lose sensitivity to AFPep; cancer cells ultimately become resistant to tamoxifen after prolonged treatments. Another benefit of AFPep is that it is not nearly as toxic as other chemotherapy treatments. Research indicates that during pregnancy, AFP plays a role in estrogen regulation. Most breast cancers are initiated by high levels of estrogen
3	What teacher **knowledge, reminders, and misconceptions** are assumed in the standard?	The reproductive system is the last system studied in high school human anatomy and physiology. It is a collection of internal and external organs, in both males and females, that work together for the purpose of procreating. Due to its vital role in the survival of the species, many scientists argue that the reproductive system is among the most important system in the entire body. Around 49.5 percent of the world's population is female, so there are slightly more men on the planet than women. A person's sex is determined by what reproductive system the person has, but it isn't always so simple. Illustrate the parts of the reproductive systems. • Summarize the functions of the male and female reproductive systems. • Demonstrate the differences between the male and female reproductive systems. • Differentiate the primary and secondary sexual characteristics of both the male and female. • Describe preventative health checks that will allow for detection of reproductive illnesses. Fertilization occurs in the fallopian tube (oviduct) of the female reproductive system. Once fertilized, the egg attaches to the lining of the uterus. It becomes a ball of cells over time, then develops in the uterus of the female to become a baby. • Only females are born with reproductive sex cells. Females are born with immature eggs already in their ovaries. When puberty occurs, the eggs mature and are released by the ovaries. Males only produce sperm after reaching puberty. • Females do not urinate through the vagina. In men, both semen and urine pass through the urethra, a passageway that terminates at the end of the penis. Females urinate through a urethra as well, but it is not connected to their vaginal opening.
4	What **objective(s)** must be taught? In what order? Why?	**SWBAT identify the Parts of the Male Reproductive System IOT Analyze their Mechanisms of functions and Homeostasis.**

5	What is your **resource plan for each of the 5 Es** of inquiry-based science instruction? 1. Engage 2. Explore 3. Explain	Curricular Resources Textbook: Applied Anatomy & Physiology: A Case Study Approach • Chapter 15: The Reproductive System and Human Development Suggested Activities Engage • The Reproductive System |Khan Academy| • Crash Course: Reproductive System-Female, Part 1 • Crash Course: Reproductive System-Male, Part 2 • Crash Course: Reproductive System-Sex & Fertilization, Part 3 • Crash Course: Pregnancy & Development, Part 4 Explore EMC AA&P Workbook & Laboratory Manual Chapter 15: The Reproductive System and Human Development • Laboratory Activity 1: Predicting Birth Defects; pp. 299-301 • Laboratory Activity 2: Modeling the Test for Human Chorionic Gonadotropin; pp. 301-302 Explain • Case Study Investigation #15, pp. 530, 533, 541, 544, 554, 560 • A Case Study: Mandatory Methods for Controlling Sexually Transmitted Diseases, pp. 567-569 Elaborate Short Readings • Gestation Facts, p. 537 • The Return of Wet Nurses? p. 540 • Child Mother, p. 546 • Hostile Cervical Mucus, p. 548 Related Research • Controlling Breast Cancer with Pregnancy, p. 557 Evaluate • Ch. 15 The Reproductive System and Human Development-Concept Check, pp. 533,534, 541, 544, 554, 558, 560 • Ch. 15 The Reproductive System and Human Development-Study Guide pp. 565-566 Additional Resources: • Encyclopedia Britannica: Human Reproductive System

	4. Elaborate 5. Evaluate	National Cancer Institute: SEER Training Modules: Introduction to the Reproductive System • Encyclopedia Britannica: Human Development • Development of the Male and Female Reproductive Systems Modules | Lumen Learning
6	What **academic language** must be taught **before and after the explain phase**? How will the academic language be **taught and assessed**?	Puberty, secondary sex characteristics, sexual dimorphism, external genitalia, mammary gland, reproductive tract, androgen, cervix, endometrium, erectile tissue, fallopian tubes, hymen, labia majora, labia minora, menstrual cycle, ovum, ovarian follicle, ovulation, uterus, vagina, vulva, womb, areola, lactation, nipple, scrotum, seminiferous tubules, undescended testis, cowper's glands, prostate gland, semen, seminal vesicles, vas deferens, circumcision, erection, foreskin, penis, ovarian cycle, postovulation (luteal) phase, preovulation (follicular) phase, uterine cycle, ejaculation, erectile dysfunction, fertilization, orgasm, sexual intercourse, amniotic fluid, amniotic sac, blastocyst, blastula, colostrum, conception, conjoined twins, fetus, fraternal twins, human chorionic gonadotropin (hCG), identical twins, implantation, labor, placenta, pregnancy, breast cancer, cervical cancer, cesarean section, ectopic pregnancy, fibroids, genital warts, hypospadias, Pelvic inflammatory disease (PID), placenta previa, prostate cancer, sexually transmitted diseases (STDs), testicular cancer, andropause, impotence, menopause, prolapse (organ).
7	What is your plan to ensure that assessment of instruction on this standard is not solely characterized by remembering or **regurgitating information**?	What are the functions of the testicles and ovaries? • What is the function of the epididymis? • How does the sperm and ova travel through the vas deferens and fallopian tubes? • What is the purpose of the cowper's gland, seminal vesicle and the prostate gland? • How does the urethra function in the male and female? • How does fertilization occur? • How is a vasectomy and a tubal ligation similar? • What types of preventative medicine can we practice preventing diseases of the reproductive system? Common cause of cirrhosis in
8	What **literacy concept** can be intertwined with instruction on this scientific concept or phenomenon?	Including the content lecture, students will learn dissection of heart, brain, rats, piglets' systems that are similar as human structure and function. Compare the digestive system between the piglets, rats and human types, and the genetics info behind the system.

9	How will instruction be impacted by the Cross Cutting Concepts and the Science & Engineering Practices?	This is a premed course. This study will help them to prepare for nursing schools, medical colleges, pharmacy institutes, pharmacology labs, and the graduate school scientific careers.