COURSE: 25.552 Applications of Therapeutic Services

UNIT: 18.1 Respiratory System

INTRODUCTION

Annotation:

In this unit students will identify basic anatomy and physiology of the respiratory system and how it relates to other body systems. Students will also discuss the etiology, symptoms, and treatment of common disorders or diseases in the respiratory system.

Grade(s):

X	9th
X	10th
X	11th
X	12th

Time:

Four 50 minute periods

Author:

Phyllis Dumas

Additional Author(s):

Students with Disabilities:

For students with disabilities, the instructor should refer to the student's IEP to be sure that the accommodations specified are being provided. Instructors should also familiarize themselves with the provisions of Behavior Intervention Plans that may be part of a student's IEP. Frequent consultation with a student's special education instructor will be beneficial in providing appropriate differentiation.

FOCUS STANDARDS

GPS Focus Standards:

HS-ATS-8:

The student will analyze the anatomy, physiology and basic pathophysiology of each of the body's systems and apply knowledge in performance of evaluating, monitoring, and treatment of client(s) and/or simulations.

a. Analyze anatomical structures in relationship to their physiological functions.

c. Assess the integration and coordination of body functions and their dependence on the endocrine and nervous systems to regulate physiological activities.

d. Analyze the interdependence of the body's systems as related to wellness, disease, and disorders.

e. Discuss the goals of therapy and care rehabilitation.

f. Discuss the etiology of two common diseases in each body system and how to treat and/or prevent them.

GPS Academic Standards:

SAP1: Students will analyze anatomical structures in relationship to their physiological functions.

SAP2: Students will analyze the interdependence of the integumentary, skeletal, and muscular systems as these relate to the protection, support and movement of the human body.

SAP3: Students will assess the integration and coordination of body functions and their dependence on the endocrine and nervous systems to regulate physiological activities.

SAP4: Students will analyze the physical, chemical, and biological properties of process systems as these relate to transportation, absorption and excretion, including the cardiovascular, respiratory, digestive, excretory and immune systems.

National / Local Standards / Industry / ISTE:

UNDERSTANDINGS & GOALS

Enduring Understandings:

- Students will understand the basic anatomy and physiology of the respiratory system.
- Students will describe the etiology, symptoms, and treatment of some respiratory system disorders or diseases.
- Students will explain how the respiratory system relates to other body systems.

Essential Questions:

- What are the functions of the structures that make up the respiratory system?
- What are the etiology, signs and symptoms and treatment of some common respiratory system disorders?
- How is the respiratory system interdependent on other body systems?

Knowledge from this Unit:

- The components of the respiratory system
- The function of each respiratory system structure
- The physiological and chemical aspects of breathing
- How the respiratory system depends on other body systems

Skills from this Unit:

- Trace the path of air into and back out of the lungs by identifying the anatomical structures involved in the process
- Accurately and discretely count respirations

ASSESSMENT(S)

Assessment Method Type:

_____ Pre-test
X Objective assessment - multiple-choice, true- false, etc.
_x_ Quizzes/Tests
__ Unit test
_____ Group project
_____ Individual project
X Self-assessment - May include practice quizzes, games, simulations, checklists, etc.
__ Self-check rubrics
__ Self-check during writing/planning process
__ Journal reflections on concepts, personal experiences and impact on one's life
__ Reflect on evaluations of work from teachers, business partners, and competition judges
__ Academic prompts
__ Practice quizzes/tests
_____ Subjective assessment/Informal observations
__ Essay tests
__ Observe students working with partners
__ Observe students role playing
X Peer-assessment
__ Peer editing & commentary of products/projects/presentations using rubrics
__ Peer editing and/or critiquing
_____ Dialogue and Discussion
__ Student/teacher conferences
__ Partner and small group discussions
__ Whole group discussions
__ Interaction with/feedback from community members/speakers and business partners
_____ Constructed Responses
__ Chart good reading/writing/listening/speaking habits
__ Application of skills to real-life situations/scenarios
_____ Post-test

Assessment(s) Title:

Respiratory System Quiz

Assessment(s) Description/Directions:

Administer this written assessment at the end of the unit.

Attachments for Assessment(s):

LEARNING EXPERIENCES

Sequence of Instruction

1. **Identify the Standards. Standards should be posted in the classroom for each lesson.**
2. **Review Essential Questions.**
3. **Identify and review the unit vocabulary.**
    - RESPIRATION
    - EPIGLOTTIS
    - INSPIRATION
    - LARYNX
    - EXPIRATION
    - ALVEOLI
    - CILIA
    - BRONCHIOLES
    - SINUSES
    - BRONCHI
    - TRACHEA
    - PHARYNX
    - NASAL CAVITIES
    - LUNGS
    - NOSE
    - NASAL SEPTUM
    - OXYGEN
    - CARBON DIOXIDE
    - DIAPHRAGM
    - INTERCOSTAL MUSCLES

Disorders

Acute bronchitis **

Asthma **

Avian flu

Chronic obstructive pulmonary disease (COPD)**

Common cold **

Croup

Cystic fibrosis

Emphysema **

Flu (influenza) **

Hantavirus

Legionnaire's disease/legionellosis

Lung cancer

Pneumonia **

Pulmonary embolus **

Respiratory distress syndrome

Respiratory syncytial virus (RSV) **

Severe acute respiratory syndrome (SARS)

Sleep apnea

Sudden infant death syndrome (SIDS)

Tuberculosis**

4. Assessment Activity.

Instruction

a) Make an audio tape of abnormal breath sounds, or if you have a tape of breath sounds, play some abnormal sounds and ask students if they can figure out what is going on. Sounds can be made by using a straw to blow into a glass of water for gurgling, or imitate Cheyne-Stokes respirations or other sounds.

b) Tell students that the sounds you heard may occur in the system you will be studying, which is the respiratory system. Ask if anyone has ever had trouble breathing and how that made them feel?

c) Have students define the vocabulary associated with this unit.

d) Give students diagram of the respiratory system and have them label and color. Discuss the performance task with students and give assignments. Give students rubric for assignment and set due date.

e) Discuss the structures and function of the respiratory system

f) Ask students if they could name some other body systems that may depend on the respiratory system and what other systems the respiratory system depends on to function?

g) Discuss the interdependence of body systems.

h) Discuss common disorders of the respiratory system, including etiology, signs & symptoms, and treatment (exclude disorders assigned to students for presentation.

Attachments for Learning Experiences:

Notes & Reflections:

CULMINATING PERFORMANCE TASK (Optional)

Culminating Unit Performance Task Title:

The Missing Oxygen Investigation

Culminating Unit Performance Task Description/Directions/Differentiated

In this performance task, students will investigate why oxygen is missing from the body and develop a solution to the problem. Students will be divided in teams of investigators to research why an assigned respiratory system disorder is causing problems including the nature of the problem and explain what can be done to correct the problem.

This can be set up so students have to present to a guest speaker from respiratory therapy or report in an English, Social Studies or Science Related Class. Students must include in their presentation the process of internal and external respiration making sure they name the structures in correct sequence for external respirations and explain the gas exchange that takes place internally. They must also report their findings by pinpoint the site of the problem for the assigned disorder and why it caused a problem with oxygen. Sample disorders include Spinal Cord Injury at C3 of the spine, Multi-Drug Resistant Tuberculosis, Asthma, COPD, Pulmonary Embolus, SIDS, SARS, Hantavirus, Avian Flu, Pneumocystis Carinii Pneumonia

Attachments for Culminating Performance Task

UNIT RESOURCES

Web Resources:

- http://www.lungusa.org/site/pp.asp?c=dvLUK9O0E&b=22576 American Lung Association
- http://www.lungusa.org/site/pp.asp?c=dvLUK9O0E&b=40743 interactive how breathing works
- http://www.cdli.ca/~dpower/resp/exchange.htm#Breathing great explanation of gas exchange
- http://www.cdli.ca/~dpower/resp/control.htm respiratory center in brain
- http://www.cdli.ca/~dpower/resp/struct~1.htm respiratory structures
- http://www.le.ac.uk/pathology/teach/va/anatomy/case2/frmst2.html anatomy and physiology of respiration
- http://www.le.ac.uk/pathology/teach/va/titlpag1.html virtual autopsy, This interactive website would be great to use at the end of the unit for the whole class if you have access to a projector, Case 3 would be a great reinforcement for students to understand forensics medicine and what appears to be a case involving the respiratory system.

Attachment(s):

Materials & Equipment:

- Instruction sheet for performance task and rubric
- Diagram of Respiratory system
- Vocabulary List
- Unit Outline for respiratory system
- Textbook
- Internet
- Computer
- Projector or Interactive board
- Anatomy Mannequin with lungs

What 21st Century Technology was used in this unit:

	Slide Show Software		Graphing Software		Audio File(s)
	Interactive Whiteboard		Calculator		Graphic Organizer
	Student Response System		Desktop Publishing		Image File(s)
	Web Design Software		Blog		Video
	Animation Software		Wiki		Electronic Game or Puzzle Maker
	Email	X	Website		