

Anatomy and Physiology

FOR ENGLISH LANGUAGE LEARNERS

Learning Activities

It is important that you do not lecture all of the time. If you employ a variety of teaching styles, your students will stay focused better and they will find it easier to process the information you present in class. This section is designed to give you some ideas how to present and reinforce the material.

Read and Recite

In pairs, one student reads a paragraph or a short passage. The other student listens and then summarizes what s/he has heard. Several passages can be read and summarized in this fashion. Then, after completing all of the reading, students can take turns asking each other comprehension questions, or the teacher can ask comprehension questions to the whole class.

Listen and Write

Students listen to the professor lecture for no more than 10 minutes. Then in pairs, students compile a list of the main points the teacher taught. The whole class can generate a list of main points on the board.

That's Interesting

After listening to a short lecture or reading a passage, students write down two pieces of information that they found interesting and hadn't known before. They then stand up, find a partner and exchange the information they noted. For example: *I learned that blood is mostly comprised of plasma. I learned that hair in the nose is part of the body's defense system.* Students can move around sharing their same two pieces of new information with several different partners in class.

Question Cards

To review information for a quiz, the instructor passes out one index card to each student. Each card has a different question on it that covers the information studied previously. Students stand up and in pairs ask and answer the questions. Then each pair exchanges cards. Now each student has a new question and goes to a new partner. The process can be repeated a few times.

Test Questions

To prepare for a test, students create 4-6 questions covering the information they think will be on the test, and then form groups to quiz each other. For example, to prepare for a test on the circulatory system, students might write down questions such as: *Where does blood go after it leaves the right atrium? What is the name of the vessel that brings blood from the upper part of the body to the heart?*



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Does that Sound Right?

Students are given a list of sentences. Some of them are correct and some of them are factually incorrect. Students decide in small groups if the sentences are correct or not. If they are not correct, students correct them. For example: *Most absorption of nutrients occurs in the stomach.* That is not correct, so students would have to change the sentence to: *Most absorption of nutrients occurs in the small intestine.*

Learning Chart.

After listening to a lecture or reading a passage, students fill out this chart. This is especially good to do in preparation for an examination.

What I know for sure	What I think I know but am not sure about	What I don't understand and need to learn

Students share their charts in groups and see if they can help each other answer their unknown questions. The teacher walks around and helps as needed.

Sentence Formation

Students are given three words and are instructed to construct sentences using the three words.

For example: chamber ventricles atria

“The top two **chambers** of the heart are the **atria**, and the bottom two chambers are the **ventricles**.”

Myofibrils actin myosin

“**Myofibrils** are comprised of **actin** and **myosin**.”

The sentences are shared in class. Students can take turns writing their sentences on the board.

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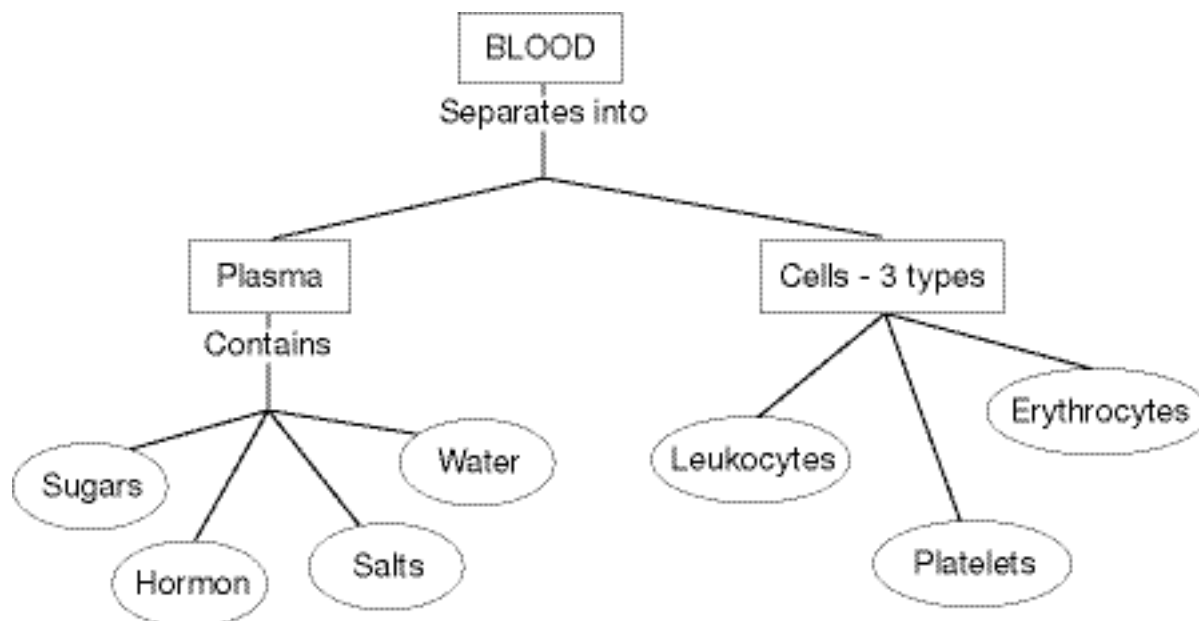
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Teach Me

To review information taught in class, students are put into groups and each student is given a different concept; for example different disorders of the reproductive system, such as impotence, infertility and yeast infection. They are instructed to teach each other the concept. Students can also be encouraged to use the board or a piece of paper to draw the concept in some way.

Concept Maps

Instructors can use drawings called concept maps to illustrate relationships within a system. These drawings can include a variety of things such as, sequences of physiological processes and relationships among a structure's parts. For example, to illustrate the components of blood:



Here is another example of a concept map. This one shows sequence in terms of the path of food from the mouth to the stomach:

Oral cavity \Rightarrow Pharynx \Rightarrow Esophagus \Rightarrow Pyloric Sphincter \Rightarrow Stomach

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Organizational outlines.

Organizational outlines, which can easily be drawn on the board, illustrate the levels of organization within a system or structure. For example:

Skin

- I. Epidermis =Epithelial tissue
 - a. Keratin
 - b. Melanin
- II. Dermis = Connective tissue
 - a. Blood vessels
 - b. Hair follicles
 - c. Nerves & Sensory receptors
 - d. Glands:
 - i. Sweat Glands
 - ii. Sebaceous Glands
- III. Hypodermis = Adipose tissue

Example 2: Kidney

- I. Capsule
- II. Cortex
 - a. Made of Nephrons. Each nephron contains:
 - i. Glomerulus
 - ii. Afferent arteriole
 - iii. Efferent arteriole
 - iv. Bowman's capsule
 - v. Renal tubule
 - 1. Proximal convoluted tubule (PCT)
 - 2. Loop of Henle
 - 3. Distal convoluted tubule (DCT)
 - b. Many nephrons empty into a collecting duct
- III. Medulla contains collecting ducts
- IV. Pelvis empties into ureter



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Draw It

When you are trying to introduce a structure or process, it is very helpful to draw it on the board in a very simple way, not including all of the smaller structures. For example, to explain the digestive system, you can draw a picture of a person on the board and show: the oral cavity, the esophagus, the liver, the gall bladder, the small intestine and the large intestine. At this general level of drawing, it isn't as important to show the tongue, teeth, the sphincters, the anus, etc.

Also, it is helpful if students are able to draw a picture of a structure from memory.

Name It

The instructor puts a model or models in front of the room. There are numbered labels on different structures on the models. Students identify the structures on the models by writing down the name of each structure on a piece of paper. For example, there is a label on the mitral valve with number 1 on it. Students write: *1-mitral valve* on a piece of paper.

Diagrams can be used if models are not available.

Categorize It

Students are provided with a list of terms in rows of three. They cross out the term that doesn't fit and explain how the other two do fit together. For example,

erythrocytes hormones platelet

Erythrocytes and platelets are blood cells. Hormones are found in plasma.

What Happens If

To require students to extend their knowledge to novel situations, ask them hypothetical questions, such as, "What happens if a person doesn't drink water on a hot day?" "What if someone doesn't get enough calcium in their diet?" "What happens if a person's bone marrow doesn't make enough red blood cells?" This activity is especially useful while discussing disorders.

You be the MD

This activity is useful if you review disorders from two to four chapters. Have one student be the doctor while another student is the patient. The patient gets a card describing the disorder. The doctor has to ask questions and listen to the patient's symptoms and then decide the patient's disorder. For example, if the patient is a smoker and is having a hard time breathing, the doctor can diagnose emphysema.



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Chants

Rhythm and music has long been known to assist people in memorizing information. You can easily create chants, or rhythms to assist students in memorizing anatomical pathways. For example, you can use chants to describe the path of sperm, the path of air or the path of blood in the heart. With a beat you could describe the following process:

“Blood low in oxygen enters the right atrium
Falls to the right ventricle
Travels to the lungs
Oxygen is picked up
Carbon dioxide is released
Blood high in oxygen enters the left atrium
Falls to the left ventricle
Travels to the body.”

I Can Imagine

Using the imagination is a powerful learning strategy. Students can imagine that they are a variety of things moving through a system. For example, students can imagine that they are a virus that makes it all the way to the lungs and describe the defenses it has passed to get there, or they can imagine that they are a piece of food in the digestive tract, or a spermatid which develops into a sperm.

Strip Story

Students receive a set of 6-10 cards whereby each card describes one step of a physiological process. Students must put the cards in order. For example, to describe the process of fluids traveling through the kidney, students would put these cards in order: 1. blood enters the glomerulus through the afferent arteriole, 2. filtrate is filtered out of the glomerulus into the Bowman's capsule, 3. filtrate moves into the PCT, 4. filtrate moves into the Loop of Henle, 5. filtrate moves into the DCT, 6. now the filtrate is urine and it moves into the collecting duct, 7. the collecting ducts empty into the renal pelvis, 8. the renal pelvis sends urine to the ureter.