Science Sauce Online

A source for free flipped learning lessons

Flipped learning reverses the traditional classroom process of “learn it in school, practice at home”. Flipped learning involves students learning new content at home through a video, reading, listening or other activity. They then come to class with the foundation knowledge, ready to really engage with the topic. This is a flipped learning lesson with self-study materials and suggested class activities.

Resources for this lesson, including the student tasks, can be found at: **ScienceSauceOnline.com**	Enter lesson code: **01500**

Lesson Topic:

Gas Exchange

Recommended age: 14-16

Self-study input method: Video

Self-study task: Question sheet

Classwork prep time: Near zero

STUDENT PRE-CLASS TASK

- Watch the video: “Alveoli: Gas Exchange”.
- Answer the questions on the student homework task sheet.

IN-CLASS TASKS

1. **Poster + writing:** "A tale of two gases". Students work in groups to create a story giving first person accounts of the experiences of an oxygen molecule carbon dioxide molecule as it goes on its "journey" into the body. Within each group, a poster is created to give a visual aspect to their story to aid when presenting to the class. Students should be encouraged to described the movements of carbon dioxide as well, which could be described in terms of what the oxygen molecule sees as it goes along its journey.

Time (mins)	Students...	Teacher...
(before students enter)		Board: "In what ways are students entering the classroom similar to and different from gas exchange in the lungs"?
4	Discuss answers to the boarded task with a partner as soon as they enter the class. (See below for suggested answers).	Monitors then elicits answers
2	In groups of about 4 or 5, review answers to the homework task.	Monitors.
3	Review answers (and make corrections if necessary).	Gives answers to the student task sheet.
20	Work in groups of 3-5 to create a first person narrative (referring to the oxygen molecule as "me" and "I") detailing the journey of an oxygen molecule from air to blood. Students should be instructed that they will read out their story to the class, and need a visual aid (a poster) to support their story. They should be instructed that this is a competition, and awards (e.g. a merit / house point) are given out in categories (Most funny, most detailed, best poster).	Monitors and gives support and ideas.
15 (dependent on class size)	Take it in turns to read out their story in groups. They are encouraged to refer to their poster throughout.	Monitors and offers feedback after each presentation
	For each presentation given, the observing students should rate the presentation out of 10 for each category: humour, scientific detail, quality of poster.	
5	Refer to score sheets and vote for most funny, most detailed, and best poster. For each category, write group number/name on a small piece of paper and hand in.	Collects voting slips and counts up.
5	Awards ceremony – collect house points.	Announces the winning group of each category and gives out house points/merits.

Possible answers to the warmer activity

Similarities

- They enter a room that is initially free of students, which is similar to going from an area of high concentration to an area of low concentration (diffusion).
- They pass through a single doorway, analogous to a thin gas exchange surface.
- There is a regular flow of students into and out of a classroom throughout the day, analogous to good ventilation in the lungs.

Differences

- They use energy to walk in, but gas exchange is passive (diffusion).
- They will exit the class at the end of the lesson, but oxygen is "used up" when it enters the body and doesn't leave.
- There is no "flow" of students to another room from this one, but oxygen will flow away from the lungs once it has entered the blood.
- They only pass through one layer (a single doorway) but gases go through 5 membranes.

RESOURCES

- Poster paper (A3 sheets/coloured paper etc.)
- OPTIONAL: coloured pens, glitter… (any appropriate stationery for the poster)
- Small pieces/scraps of paper (for student voting slips)

ANSWERS TO STUDENT TASK

Answers to the student task sheet will be relatively obvious for subject teachers, and can all be found by reviewing the student self-study resources.

Answers are not published here, as these sheets are easily accessible by students. If you need clarification on any of the questions please feel free to email me and I'll get back to you ASAP.

contact@sciencesauceonline.com