

Probing a Polliwog

Frog Dissection

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Published by *K20 Center*

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Grade Level	9th – 12th Grade	**Time Frame**	2-3 class period(s)
Course	Biology	**Duration**	200 minutes

Essential Question

How are living organisms connected?

Summary

Frog dissections are a classic biology lab. This lesson is best not only after students have had some gross anatomy but also when you trust students enough to let them use scalpels in the classroom.

Snapshot

Engage

Students complete a modified Kick Me over the anatomical positions.

Explore

Students dissect a frog.

Explain

Students follow along as the teacher helps identify the parts.

Extend

Students do research on different body parts and homology to humans.

Evaluate

Students participate in a Four Corners debate about frogs' homology to humans.

Standards

ACT College and Career Readiness Standards - Science (6-12)

IOD203: Find basic information in text that describes a simple data presentation
SIN301: Understand the methods used in a simple experiment

Next Generation Science Standards (Grades 9, 10, 11, 12)

HS-LS4-1: Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.

Oklahoma Academic Standards (Biology)

B.LS3.1.3: Each chromosome consists of a single, very long DNA molecule, and each gene on the chromosome is a particular segment of that DNA.

Attachments

- Anatomical Terms - Spanish.pptx
- Anatomical Terms.pptx
- Frog Dissection External-Internal - Spanish.docx
- Frog Dissection External-Internal.docx
- Frog Research - Spanish.docx
- Frog Research.docx
- Kick Me Anatomical Positions - Spanish.docx
- Kick Me Anatomical Positions.docx

Materials

- Copied Kick Me labels; enough so each lab group has one
- Lab Handouts for dissection; enough for each student
- Frogs for dissection; see resources for shopping options
- scalpels for dissection
- Dissection pans
- Gloves
- Safety googles
- Dissection pins
- Document camera or projecting dissection microscope
- Copies of research tables; enough for each student
- Student devices with internet access
- 4 Corners signs

Engage

Print out enough of the Kick Me labels so that each group can have a set of words (it's three sets per page). The students will be doing a modified Kick Me. That is because they will *not* put one word on each other's back. Rather, each lab team will race to put the anatomical positions correctly on one of their lab group members.

Teacher's Note: Prize Time

We recommend having a prize for the team that gets the answers correct first, but that's because we love a good competition. If you don't want to, you don't have to. Also, it's up to you if you allow them to use technology to help them from the beginning of the activity, after they try one time, or not at all. You know your students and what they should or should not know.

Explore

Teacher's Note: The Magic Happens Here

The Explore of this lesson is the full dissection. Be prepared! This is where you get out your dissection pans, scalpels, gloves, trash bags, and a FIRST AID KIT!

Have students stay in their groups from the Engage activity. Direct them to put on gloves and goggles. Just remember that safety needs to be the first priority.

Pass out a lab handout to each student and pass out a frog to each student. The handout has step-by-step instructions of how to dissect the frog, so try to allow them some autonomy to follow the instructions without turning it into a whole-group dissection.

Teacher's Note: Don't Mess Up!

It is easy to freak out; frogs are expensive. Be sure to explain to the students that they need to be careful, mindful, and respectful of the frogs. If you want to include a behavioral consequence, now would be the time.

As the students work through their dissections, walk around and help as needed.

Teacher's Note: When To Take A Break

The lab handout is formatted in a way that, if time is an issue, it can be separated into two labs: external and internal. The external lab would consist of the first two pages, and the internal lab would be the following pages.

Explain

After the students are done with their dissections, pick a particularly good dissection (either from the students or one that you have cut open yourself), and put it either under a document camera or a projected dissection scope (so all the students in the class can see it). Guide the students by pointing out the different organs to clear up any questions the students had, especially with hard to identify organs.

Extend

Once you feel that the students can identify the organs on their own, pass out a copy of the **Frog Research** work page to each student as well as devices with internet access. Have the students, still in their lab groups, fill out the tables and research the homology between frogs and humans for each organ.

Teacher's Note: How Easy Is This?

Just because the names are different (or the same), doesn't mean that it's automatically not (or is) homologous. Encourage the students to look deeper than just a name to determine homology or not.

Evaluate

Students will do a Four Corners over the statement "Frogs and humans are anatomically similar." The four corners of the classroom should have one sign in each: one corner should say "Agree," one should say "Somewhat Agree," one should say "Somewhat Disagree," and the last one should say "Disagree." Direct students to go to the corner they feel most corresponds to the statement.

Once students have picked their corners, have each opinion group create an argument to defend their choice. Have each group share their argument and allow students to change positions if the argument is compelling enough or helped them change their mind.

When all the arguments are done, tell the students to sit down and write a two-sentence Exit Ticket of what they finally decided the answer to the statement is and why they feel this way.

Resources

- K20 Center. (n.d.). Kick Me. Strategies. https://learn.k20center.ou.edu/strategy/d9908066f654727934df7bf4f505b77c
- Frogs for dissection: http://www.carolina.com/preserved-frogs-bullfrogs-necturus/carolinas-perfect-solution-preserved-frogs-x-jumbo-4-5-in/FAM_227444.pr
- K20 Center. (n.d.). Four Corners. Strategies. https://learn.k20center.ou.edu/strategy/d9908066f654727934df7bf4f5064550
- K20 Center. (n.d.). Bell Ringers and Exit Tickets. Strategies. https://learn.k20center.ou.edu/strategy/d9908066f654727934df7bf4f505d6f2