

Hey there Biology Experts!

In this training, we'll provide you with an overview of the Biology Session flows and some best practices to keep in mind for these sessions.

Let's start with the types of questions that students may (and will) post. Through our review of Biology questions that students already submit and in speaking with Biology subject matter experts, we see that there are really two types of questions that students may ask you.

LEARNING QUESTION	HOMEWORK QUESTION
These questions are essentially about a particular concept or term that the Student wants to learn about.	These questions require a formal answer or solution and are based on a concept or term.
Examples: <i>Describe three different biomes, and explain how they differ.</i> <i>What is cellular respiration?</i>	Examples: <i>A forest fire eliminates all life in an area, but the soil and terrain are still intact, what type of succession will occur as a result?</i> <i>If a mother expresses an X-linked recessive trait, how likely is it that her son will express that trait?</i>

We'll need to make sure that we're prepared to successfully take both types of questions and provide a great session experience for all students.

Session Phases

Generally speaking, the same session phases that we use in PhotoStudy will be the structure of these Biology sessions going forward. In order to accommodate the question types outlined above, we'll make some slight adjustments.

STUDY QUESTION	HOMEWORK QUESTION
PHASE 1: CONCEPT - Provide a polite, welcoming greeting then share a written statement describing the general concept of the problem	
PHASE 2: Explanation of Concept - a more detailed explanation of the	PHASE 2a: Explanation of 'problem' - if the student posted a homework problem, deliver the explanation or steps toward the solution

concept that allows for deeper understanding and learning	PHASE 2b: Final solution of ‘problem’ - if the student posted a homework problem, deliver the final solution
PHASE 3: Summary & Additional Q&A - invite the student to ask any remaining questions about the concept or the posted problem	

Sessions will be capped at 20 minutes, but we anticipate that each session lasts approximately 10-15 minutes.

Best practices for conducting sessions

We know that we'll learn a lot as we conduct more sessions with real students. For now, here's a handy guide with some Best Practices to help you deliver great sessions! (Sample messages you can use are in **PURPLE** - when copying and pasting, be sure to remove the bullet points.)

STUDY QUESTION	HOMEWORK QUESTION
<p>PHASE 1:</p> <p>Greeting</p> <ul style="list-style-type: none"> Polite welcome → <ul style="list-style-type: none"> Welcome to PhotoStudy! I'm ready to help you with your biology today. Set expectations → <ul style="list-style-type: none"> In today's session, I'll give a general overview of the concept and then we'll dig into the details. You can ask questions along the way! <p>Overview of Concept</p> <ul style="list-style-type: none"> If the concept is a process, provide an overview of the steps of the process → <i>Example: The four steps of cellular respiration are... I'll go into detail with each of these in just a moment...</i> If the concept is a term or definition, provide a formal definition of the term → <ul style="list-style-type: none"> This question is about evolution. Let me define evolution for you then I can provide some more detail. 	
<p>PHASE 2: Explanation of Concept</p> <ul style="list-style-type: none"> Explain the concept in greater detail Invite the student to ask questions → <ul style="list-style-type: none"> Do you have any questions so far? 	<p>PHASE 2a: Explanation of ‘problem’</p> <ul style="list-style-type: none"> Restate the problem in your own words → <ul style="list-style-type: none"> This problem is essentially asking us to... Provide the step-by-step solution → <ul style="list-style-type: none"> First we need to remember that... Next, we'll apply the concept of...

<ul style="list-style-type: none"> ● Check for student understanding → <ul style="list-style-type: none"> ○ <i>Does that make sense so far?</i> 	<ul style="list-style-type: none"> ○ <i>Lastly, we can put those ideas together and get...</i> ● Invite the student to ask questions → <ul style="list-style-type: none"> ○ <i>Do you have any questions so far?</i> <p>PHASE 2b: Final solution of ‘problem’</p> <ul style="list-style-type: none"> ● Clearly state the final solution → <ul style="list-style-type: none"> ○ <i>So then the final response to your posted problem is....</i>
<p>PHASE 4: Summary & Additional Q&A</p> <ul style="list-style-type: none"> ● Provide a summary of what was discussed → <ul style="list-style-type: none"> ○ <i>Let me summarize. Today we covered...</i> ● Ask if they have any additional questions → <ul style="list-style-type: none"> ○ <i>Are there any more questions that I can answer for you?</i> ● Close the session → <ul style="list-style-type: none"> ○ <i>Thank you for visiting PhotoStudy today - have a great day!</i> 	

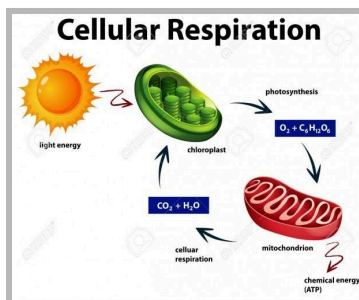
Some final reminders and guidelines...

When you believe an image or diagram or drawing can enhance your explanation of the concept or the problem, you have a few options.

- Use the workspace drawing tools to create and send the drawing to the student
- Use another drawing tool or application (perhaps Google Drawings), take a screenshot of your drawing and upload it to the student in the session
- Find an image from the internet search, download it and upload it into the session to send to the student.

When using an image from the internet be sure to give the location of the image proper attribution. Also, use images that are not text-heavy - remember you are the one that should be authoring the messages and not using an image to send text. Here are some examples:

Correct Use → Simple diagram, easily viewable on a student’s mobile device



Message to Student:

Here's a quick diagram I got from an online search on Pinterest that shows the major components of cellular respiration. Let me explain what is going on here.

Incorrect Use → Image is all text, the student should not have to READ the image.

Cellular Respiration

Therefore, cellular respiration can be defined as a long complicated process that breaks down the food molecules to release energy.

- Food molecules are **glucose** specifically.
- We also need **oxygen** to oxidize thoroughly.
- Cell respiration also enables us to breathe out **carbon dioxide** and the **water** that has made off to the side.
- But the **adenosine triphosphate** is what we are concerned about.

RELEASE ENERGY
Eating Food = Eating Glucose

$$C_6H_{12}O_6 + 6O_2 \xrightarrow{\text{SUNLIGHT}} 6CO_2 + 6H_2O + ATP$$

Oxygen acts as oxidizing agent because it accepts electrons to form water, the waste product of cellular respiration.

Resources

We've compiled a few resources to help you brush up on the typical Biology questions we anticipate seeing. The concept descriptions found below will also be accessible for you in the Expert workspace → Reusable content.

- [Taxonomy of All Biology Concepts](#)
- [High School Biology - Concept Descriptions](#)
- [AP BIOLOGY - Concept Descriptions](#)