

## Microteach #1: Learning Objectives

Emily Lane

This lesson reflects a 45 minute lesson with about 10-20 minutes of instructional lecture provided.

<b>Component</b>	<b>Description</b>
<b>Learning objectives -</b>	In this lesson you will learn how to: <ul style="list-style-type: none"><li>• State what enzymes are</li><li>• Explain the mode of action of enzymes</li></ul>
<b>Gain attention and tap into prior knowledge -</b>	<p>A warm up question: "What factors would speed up a chemical reaction" will be on the board for students to answer in the first few minutes of class. Students should have prior knowledge to answer these kinetic theory questions from tenth grade chemistry and biology.</p> <p>This should get the students thinking about energy and reaction rates. I will then show a picture of pushing a big rock up a hill from the bottom, the middle, or the top and discuss which one of these would require less energy input to get the ball to roll down the hill.</p> <p>While they are answering this warm up, I will walk around the classroom and spot check their homework questions. This is a routine that students are used to by this point in the course.</p>
<b>Input/teaching -</b>	<p>Teaching will be a lecture with a power-point presentation with content increasing in complexity beginning with the foundational catalyst and enzyme knowledge from their prerequisite courses. I will then ask the class what will the easiest way to cut a small booklet of paper of about 20 sheets of paper (I will be holding this). I will then pick a student to respond to my question who is a lower performing student. Likely this student will answer scissors or a knife, or I will help them identify this answer. I will then ask what changes when the paper is cut – the scissors or the paper? This will then become the running example. The paper is the "substrate" and it changes, while the scissors are the "enzyme". I will then ask if the scissors could have cut the paper if I didn't put the paper in between the blades? The answer is obviously "no". This now becomes the active site.</p> <p>My lecture will then begin by teaching about structure and mode of action of enzymes whose purpose is to "lyse" (cut) biological molecules. The students will then need to think about what structures or modes of actions other biological processes might require and what the enzyme assisting in these reactions might need to do. I will have students work with their neighbor to propose possible structures and modes of actions for a set of 3 biological processes and report one of their answers on the board.</p> <p>I will then discuss the answers to these problems on the board and use them to lead them to the lock and key hypothesis and summarize the mode of action of enzymes.</p>
<b>Guided practice with feedback -</b>	Throughout the lesson, there are various activities that involve teacher-student interaction and peer-peer interaction. These will provide opportunities for feedback to be provided by both me, and their peers.
<b>Independent practice/assessment -</b>	Homework will be to complete 5 practice problems from their textbook and one past paper question (previous Cambridge exam question) from the external exam they are ultimately studying to pass. I will check their homework in the following class and go over

	the answers. They will also be expected to read and take notes on the reading necessary for the next class, generally about 5-10 pages of reading.
<b>Closure/wrap-up -</b>	I will conclude the lesson with a quick summary of what we learned today, a reminder of their homework, and some feedback on their performance. Generally, the feedback is praise for their participation or a quick encouragement to do better in class tomorrow.