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7-24-2006

### Enzyme Process

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#### Repository Citation

Ibezin, Samuel, "Enzyme Process" (2006). *Lesson Plans*. 84.

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Name: Samuel Ibezim

Grade Level: 9-12

Subject Taught: Biology and Chemistry

Objectives: 1. 90% of the students will be able to understand the enzyme process.  
2. Students will describe the process that take place when enzyme is exposed to different temperatures.

Procedure: I will introduce the lesson by exploring the previous knowledge of the students. Initiate a discussion using the following statements.

1. I will ask the students to reflect on what happens to their body temperature if it rises to 102 degrees Fahrenheit.
2. What will parents or family doctor prescribe to reduce the body temperature?

Mini-lesson: The teacher will show an interactive activity that will simulate the formation of the enzyme substrate complex. Use this simulation to encourage students to define the meaning of the following terms. 1. Enzyme.

(<http://www.bbc.co.uk/school/gcsebitesize>)

2.

Active site (<http://www.stolaf.edu/people/giannini/flashanimat/enzymes/enzyme.swf>)

3. <http://www.biologyinmotion.com/minilec/wrench.html>

4.

3. Enzyme Substrate complex.

<http://www.wiley.com/legacy/college/boyer/0470003790/animations/animations.htm>

1. The teacher discusses the examples of enzyme.
2. Teacher performs a simple experiment to help students understand enzyme process using Hydrogen peroxide and chicken liver.
3. Teacher encourages students to work in groups of four.
4. He assigns each group a lab tray that contains 2ml of hydrogen peroxide, 2 grams of chicken liver, and thermometer.
5. Teacher instructs students to add 2ml of hydrogen peroxide to test tube containing chicken liver and observe reaction.
6. Teacher instructs students to use thermometer to measure the temperature at every 30 seconds.
7. Teacher instructs students to collect data and record it in the data table.
8. Students are instructed to use the data to develop a graph of the temperature and time of the reaction.

Class work.

1. Teacher instructs the students to figure out why the liver in the reaction is changing shape at different temperatures. Use Ti-84 calculator to graph Time and Temperature of the enzyme reaction.
2. Teacher instructs the students to write their observation of each stage of the temperature change and why the molecule collision between each enzyme and substrate slows down or quickens. ( probably use developed Agent sheet simulation to show this )

Conclusion:

Using modeling packages from. I plan on having my students design a simulation on how enzyme locks onto chemicals and active site to form enzyme substrate complex. The simulation will also explain the process of how the heat energy causes more

collision between enzyme and the substrate. It will also explore what happens at the optimum temperature and enzyme denaturalization.