Seven: Alternative models are recognized and analyzed…

Students will study toothpickase

Breaking toothpicks represents a degradative enzyme, like catalase. This is perhaps the best kinesthetic activity to model enzyme activity. The data you will collect is also biochemically reasonable.

Reference: Access Excellence, AP Biology Exercise

Instructions

Review or introduce enzyme action.
Tell students that for this class, THEY are acting as an enzyme. They will still be students at the end of class!

Materials
Toothpicks (choose round OR flat)
Students

Distribute a small number of toothpicks all over the room (toss them gently). Students will get them broken in no time (Enzyme excess)
Distribute large numbers of toothpicks to each team and time how many are completely broken in a short interval, say 5 seconds.
Repeat this for 10, then 15 seconds, etc. Collect data.
Ask students to put 1 hand behind their back. Their breakage rate will be lower, depending on whether they keep the strong or weak hand in back

(Mutation)
(Severity of mutation)

Collect data at each stage. For time intervals, plot a TIME COURSE (# broken on Y vs X seconds (time point). By using Lineweaver Burk, you can find the rate and maximum rate of reaction.