Name: Kent Morales Date: 10/3/12

Lesson Title/Subject: Biology/ Introduction to Biochemistry Grade(s): 9-12

Anticipated length of time for this lesson: 55 minutes

At what point in the sequence of the unit is this lesson? Check one:

 at the beginning of the unit of study

x between the beginning and the end of the unit of study

 at the end of the unit of study

|  |
| --- |
| PART A: DESCRIBE YOUR STUDENTS |

Grade Level: 9-12

Content Area: Biology

Subject Matter: Introduction to Biochemistry/ Introduction to Enzymes

Age range of students:14-17

Total Number of Students: 28

Number of Male Students:17 Number of Female Students:11

Percentage of students receiving free or reduced lunch:0

Areas in which students live (check all that apply) Urban x Suburban Rural

|  |  |
| --- | --- |
| Ethnicity of students(give numbers) | 6 African American or Black3 American Indian/Alaskan Native1 Asian or pacific Islander10 White8 Hispanic or Latino Other (Specify)  |
| Language proficiency of students (give numbers) | 28 Fluent English Proficient0 English Learner |
| Identified special need categories represented (give numbers) | 3 Specific learning Disability Speech/Language Impaired Hard of Hearing Visually Impaired Deaf Orthopedically Impaired Deaf-Blind Emotionally Disturbed1 Other Health Impaired Mental Retardation Multiple Disabilities Autistic Brain Injury Established Medical Disability (0-5years) |

ENGLISH LANGUAGE LEARNER(S): There is one ELL in the class, Ajay. My goal with this student is to have him actively participate in class lab activity, and also to contribute orally or in writing to lab activity.

STUDENTS with IEPs: Oscar is the IEP student in the class. I will check regularly for understanding.

OTHER STUDENTS: Which students will require additional support with this lesson? Frank is a high-achiever with some difficulty focusing, and he requires regular checks for comprehension. Lorrie is a 504 student with a medical condition. She will be permitted immediate access to the restroom if requested. Mick is an IEP student. I will check frequently for understanding and make sure that he is an active participant in the activity.

|  |
| --- |
| PART B: LINK THE LESSON TO STANDARDS |

ACADEMIC CONTENT STANDARD(S): What academic content standard(s) does this lesson address?

Biology 1h. Students know most macromolecules (polysaccharides, nucleic acids, proteins, lipids) in cells and organisms are synthesized from a small collection of simple precursors.

b. Students know enzymes are proteins that catalyze biochemical reactions without altering the reaction equilibrium and the activities of enzymes depend on the temperature, ionic conditions, and the pH of the surroundings.

Investigation and Experimentation 1d. Formulate explanations by using logic and evidence.

UNIT of STUDY: Describe the UNIT of STUDY that addresses the standards above.

The unit is biochemistry. This unit will teach the students the basic chemical knowledge to understand a variety of chemical reactions that occur in specialized areas of an organism’s cells.

STUDENTS WITH IEPs: Identify the IEP goals for this subject area that will be addressed in this lesson.

Students will participate actively in group learning and lab exercises.

|  |
| --- |
| PART C: PLAN THE LESSON |

ACADEMIC LEARNING GOALS (outcomes/objectives) For This Lesson: What specifically do you expect students to know or be able to do as a result of the lesson? (Goals/outcomes/outcomes must be observable and measurable.)

1. Students will demonstrate knowledge of biological macromolecules by orally answering questions.

2. Students will be able to demonstrate understanding of the experimental procedure by completing lab activity with partners.

3. Students will answer questions in writing about the properties of enzymes and the results of their lab experiment.

LANGUAGE GOALS (outcomes/objectives) For EL Learners: What specific behaviors will the students demonstrate to show they have met the ELD standard(s)? (Outcomes must be observable and measurable.)

1. The students will participate in oral discussion, and will work in a group with other English Learners and Native speakers to write answers to lab activity questions. Teacher will also assist with the writing and speaking portions of the exercise and model academic content language.

STUDENT LEARNING GOALS (outcomes/objectives) for STUDENTS with IEPs: Describe how the Academic Learning Goals will be modified for students with IEPs (if necessary).

1.Students will work with sympathetic peers to create a low anxiety cooperative group exercise.

|  |
| --- |
| PART D: COMPONENTS OF THIS LESSON |
| Think about the sequence of this lesson. Describe your plans for instruction in the order in which they will be implemented. Under “Instructional Strategies,” explain what you will do to present the content to the students. What will you do/say? Under “Student Activities,” explain what the students will do during instruction. |

INTO-STUDENT ACTIVITIES: How will students be engaged during the introduction to the lesson? Consider grouping, pair work, guided practice, individual work, etc.

1. The teacher will prompt the students to write down the day’s agenda.

2. The teacher will ask students to take out previous homework to be reviewed.

THROUGH-INSTRUCTIONAL STRATEGIES:

1. List the steps of your lesson presentation.

3. The teacher will ask the students to clear their desks except for the homework.

4. The teacher will ask students probing questions at random to gauge comprehension of macromolecule homework.

5. The teacher will tell the students, “The content of this homework assignment will appear on the quiz this Friday.” The teacher will remind the students that they will be turning in Food Poisoning Lab next week and that they should be working on that at home.

6. The teacher will ask students to put away that assignment in the appropriate section and remove reading guide questions.

7. The teacher will ask students if they have any questions from the previously assigned questions, pointing out that these will also be seen on the upcoming quiz.

8. The teacher will answer any questions in depth, and assign the remaining questions as homework.

9. The teacher will ask students for background information about enzymes and substrates, using information from the previous assignments that were reviewed.

10. The teacher will introduce the day’s lab activity, “toothpickase”, calling on students to read the directions.

11. The teacher will assign lab groups and tell each group to designate jobs for each member of the group.

12. The teacher will circulate throughout the activity to check for understanding and participation.

13. The teacher will ask the students to clean their stations and return to their seats to answer lab questions.

14. The teacher will remind the students about their homework assignments and upcoming quiz and lab report.

B. What strategies will you use to check for understanding?

The teacher will ask diagnostic questions to assess background knowledge. The teacher will circulate throughout the lesson to check individual student’s participation in group activities and ask questions to assess understanding. Teacher will also check content of student worksheets to assess understanding.

Through-Student Activities: How will students be engaged during each part of the lesson? Consider grouping, pair work, guided practice, individual practice; application, etc.

1. The students will write down the day’s agenda.

2. The students will take out homework to be reviewed.

THROUGH-INSTRUCTIONAL STRATEGIES:

1. List the steps of your lesson presentation.

3. The students will clear their desks except for the homework.

4. The students will answer probing questions at random to demonstrate comprehension of macromolecule homework.

5. The students will be reminded that they will be turning in Food Poisoning Lab next week and that they should be working on that at home.

6. The students will put away that assignment in the appropriate section and remove reading guide questions.

7. The students will ask any questions from the previously assigned questions.

8. The students will answer questions, demonstrating background information about enzymes and substrates, using information from the previous assignments that were reviewed.

9. The students will listen to introduction of the day’s lab activity, “toothpickase”, reading the directions when called upon.

11. The students will listen to assignment of lab groups and designate jobs for each member of the group.

12. The students will actively participate in the lab activity, using toothpicks to model the activity of enzymes under three different conditions.

BEYOND-INSTRUCTIONAL STRATEGIES:

1. How will you close the lesson?

13. The students clean their stations and return to their seats to answer lab questions.

14. The students will be reminded about their homework assignments and upcoming quiz and lab report.

B. Describe any informal/formal assessments used.

Students will be assessed through informal questioning and evaluation of their worksheets as the teacher circulates throughout the classroom.

BEYOND-STUDENT ACTIVITIES:

What are students expected to do before the next lesson or class? Describe homework, if any.

Students will finish any remaining questions from the lab activity and complete homework assignment, Reading guide 2: Q 9-13.

MATERIALS/TECHNOLOGY/RESOURCES:

What materials (supplies, equipment, teaching aids) need to be prepared and available? How will you use aides/volunteers in this lesson, if available? What technology links are made in this lesson?

Toothpicks, nails and rubber gloves will be used for the experiment.

|  |
| --- |
| PART E: ADAPTATIONS |

ENGLISH LANGUAGE LEARNERS: Explain how your lesson plan is adapted according to each of the following components of the SIOP model: Preparation, Building Background, Comprehensible Input/Strategies, Interaction, Practice/Application, Review/Assessment.

Pictures and academic vocabulary have been incorporated into the worksheets to make content comprehensible and develop academic English. Teacher will call on Redesignated ELP’s during review so that they may practice speaking the academic content. Teacher will model proper usage of academic content. During the cooperative group exercises, the teacher will check to ensure that the Redesignated ELP’s are able to participate in the discussion and will provide additional support if needed (rephrasing, modeling correct grammar, questioning).

STUDENTS with IEPS:

List the specific accommodations/adaptations that you have made for your students with IEPs. Explain how these accommodation/adaptations provide access to the Academic Content Standards.

Students will work with sympathetic peers to create a low anxiety cooperative group exercise. More active participation in cooperative group exercises will allow IEP students to activate higher cognitive functions and obtain more content.

Are there other students for whom you want to make adaptations? Explain these adaptations.

Adaptations aren’t necessary for these activities, though teacher will check frequently for understanding with those students. Students will also be paired with students who can provide additional support during group exercise.