

**ORAL ROBERTS UNIVERSITY
COLLEGE OF EDUCATION
TEACHER WORK SAMPLE:
ANALYSIS OF STUDENT LEARNING**

CANDIDATE'S NAME:

DATE SUBMITTED:

NAME OF SCHOOL:

CONTENT AREA:

GRADE:

TWS NUMBER:

_____ (TO BE FILLED IN BY STAFF)

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Factor I: Contextual Information and Learning Environment

I. Contextual Information Sheet

The *learning context* for my students is quite diverse. In this Biology class, there are students who range from 9th to 11th grade and from ages 15 to 17 years old. The older students are re-taking this class to fulfill an unmet graduation requirement. Out of the 27 students, there is an average of 25 students present each day. Since the school is on a “block schedule”, the students meet 2-3 times a week with an extended class period of 90 minutes.

Every student in this class comes from a lower socio-economic status. Sixty-seven percent of students are African American, thirty percent Hispanic (all of which are ESL –except for one which is a non-English speaking student), and less than one percent is Indian. Fifty-one percent of the students are male and forty-nine percent are female. Although all of the students are qualified as “at grade level”, sixty-three percent of the students are reading below grade level (17 out of 27, 2 students were not tested).

Throughout the class there are many disruptions such as visitors, cell phone usage, disruptive behavior, other teachers needing work/signatures, and announcements. These disruptions create a significant challenge, as a teacher, to ensure a focused learning environment in the classroom. Each classroom is equipped with numerous resources for student learning. My classroom is one of the few within the school which has 8 student computers (and two teacher computers). Since this educational site is a Title I school, the classroom is furnished with a variety of resources and materials to enhance the students’ learning, especially in a biology classroom (like mine) which requires various supplies for lab experiments and activities. My CT has a SPED instructional

assistant (not present in the classroom) as a resource if there are questions or further modifications needed in relation to a student on an IEP.

The immediate community offers very limited opportunities for students to stay occupied after school. Many of the surrounding businesses, as well as a nearby community center, are boarded up and are no longer in use. There is nothing for students to do after school, which often results in many students getting into trouble with the law. Survival is the mentality for many students in this inner-city environment, which consequently leads to further gang involvement for the physical and social protection of one’s own well-being. Dysfunctional families are prevalent in this community - often a result of drugs and violence in the home. Students try (administration does not allow it) to linger around the school after hours in effort to minimize and avoid time spent at home.

II. Contextual Information Narrative

A. Description of the Learning Environment

Contextual and Environmental Factors	Identify source of Factor: <i>Community, District, School, or Classroom</i>	Implications for Instruction
Inner-city with gang activity	Community and School	Encourage positive social relationships outside the classroom – cooperative learning groups in the classroom.
Low Socio-economic Community	Community	Be selective as to what type of supplies students are asked to bring to class. Many students work jobs to support the family – be mindful of how much homework is assigned.
Drug activity is a way of life for many students and their families	Community	Include various aspects of drug effects on personal health. Encourage positive choices in and outside the classroom.
Student within a mile vicinity of the school must walk to school (bus transportation is not provided)	School	Be selective with what students have to bring home for homework since they have to walk and carry their belongings (rain or shine). Attendance is affected by this as well.

One non-English speaking student	Classroom	Seat this student next to another classmate who can help translate/explain questions or information.
Twenty-six percent of students are ELL	Classroom	Write out words on the board (don't just verbalize) and frequently check to verify that these students understand the content.
Most students come from a racial minority background	Classroom	Provide opportunities for students to study and discuss accomplished people from their ethnic/racial background.
14 boys, 13 girls	Classroom	Divide students during activities into groups with both boys and girls.
17 students below grade level in reading	Classroom	Provide opportunities for students to develop reading skills, ensuring that an extended amount of time for this will be needed. Emphasize vocabulary in each unit to help students develop the language of biology.
Twenty-six percent of students are on an IEP	Classroom	Consider a variety of modifications for an assignment prior to introducing it.

The factors discussed in Part I will have a significant impact on my teaching methods, instructions, assessments, and activities. My teaching methods will be modified to support the learning of students which cannot read at the appropriate grade level or are ELL individuals. I will incorporate, and emphasize, literacy/vocabulary component to each content area. During instruction, I will use group work (group activities with students helping one another) to further support the challenges that many of my ELL students have in understanding the language of the content being taught. Non-ELL students will be dispersed with the ELL students to further help their progress. Since most of the students read below grade level, I will ensure that if there are long reading passages on an exam that I allot the students the time necessary to complete the assessment. After an assessment, I will go over the quiz/exam in class to give students the opportunity to understand how to identify the correct answer (if they got it incorrect) and

emphasize good test-taking skills which will be important when students take the End Of Instruction (EOI) exams at the end of the year, as well as college entrance exams.

One of the most prevalent learning needs of my students is the literacy component of my subject area. Therefore, I will provide opportunities in class for review of vocabulary words and times of reading/comprehension of the content introduced. When using large words (common in the sciences) I will make the effort to “break-down” words into more familiar root words during instruction to be sure that the terms are clearly understood by all students. One-quarter of the class is on an IEP; therefore I must be aware of the individual student’s needs when giving an assignment. For example, my class is studying the function and structure of a cell. For a student on an IEP due to a certain learning disability, I would give this individual a simplified version of a cell diagram to label (compared to a complex diagram with extra components).

The majority of students cannot sit still for more than 15 – 20 minutes; therefore, I will plan activities for no more than 20 minutes to allow students to get up and move around periodically throughout the 90 minute class period. I will constantly be in communication with the SPED teacher, prior to giving assignments, confirming that my modifications are appropriate for the individual needs of students on an IEP.

II. Specificity

Due to the fact that the vast majority of students do not read at, or above, their grade level, many students have poor self-efficacy towards their ability to thrive in academics. The parents of these students probably did not go to college, and therefore the parents do not expect these students to go to college either. The personal identity which these students accept as their true identity comes from both their parents and their peers. The social aspect of adolescence can be

used to enhance an individual's self-efficacy towards their personal achievement in the classroom.

Students entering adulthood also want close-knit relationships. In effort to enhance academic achievement, there must be a "safety zone" within the classroom where students feel connected and encouraged to not just pass their class but do their best because it is expected of them. Consequently, this sense of community and camaraderie that must be developed will aid in a heightened sense of importance which the individual student must place on their personal education.

Every student has a unique learning style. It is important that those students with special learning needs are frequently assessed (in an informal manner) to ensure that there is positive cognitive growth occurring. I will strategically place students in the classroom to minimize distraction and support focused learning. For example, I will place special needs students at a table with another student that can help clarify and answer questions for that student. I will also place most of these special need students near the front of the room so that there is less distraction between the teacher and him or herself.

Factor II: Unit Learning Goals and Objectives – Biology, 10th grade

A) Unit Goal: The students will gain an understanding of the events of cellular respiration, including how energy is produced in animal cells, the importance of this process in relation to the body carrying out its daily functions, and how this process is directly connected to photosynthesis.

Low level Objectives

Level Goal: The students will provide a basic understanding of the events involved in, and the terms used, in cellular respiration.

Cognitive: **State* the three events of cellular respiration.

**Write* the equation for cellular respiration

**Define* cellular respiration.

**State* where cellular respiration occurs in a cell.

Affective: The students acknowledge the difference in energy gained from various foods and how this might affect their dietary choices.

Psychomotor: The students show how to measure CO₂ levels in a beaker.

Middle Level Objectives

Goal: The students will utilize previous knowledge gained concerning photosynthesis and relate it to cellular respiration. Students will also compare cellular respiration to fermentation.

Cognitive: **Compare* and *contrast* cellular respiration and photosynthesis.

**Explain* the source of glucose in cellular respiration.

**Compare* cellular respiration with fermentation.

Interpret the effect low oxygen levels have on cellular respiration.

Affective: The students show an awareness of how their energy levels are affected by the food they eat.

Psychomotor: The students will show how carbon dioxide levels can be measured and create a graph of the data.

High Level Objectives

Goal: The students will synthesize newly acquired knowledge with previously learned content and show the connection between these two important biological processes and the effect of cellular respiration on the human body.

Cognitive: *Create* a model which represents the three main events in cellular respiration.

**Write* an explanation as to why plant cells must go through cellular respiration even though chemical energy is available within its cells.

**Evaluate* how exercising affects the rate of cellular respiration.

**Evaluate* an effect on the human body if CO₂ was not efficiently released from the body after cellular respiration.

Affective: The students will discuss how exercise affects their body, what causes the soreness in their body after working out, and provide an answer as to how to get rid of this soreness.

Psychomotor: The students will perform an experiment, displaying how to test for the presence of fermentation.

B) The objectives previously stated were selected from the teacher's edition of the biology textbook (*Biology: The Dynamics of Life*). Some of those which were obtained have been modified to fulfill the P.A.S.S standards for the state of Oklahoma. However, some of the objectives (all of the affective and psychomotor) were assembled by the student teacher, but are recognized in the concepts articulated in the teacher's edition. These specific objectives were selected in effort to address the basic concepts of this unit. Three key areas which are addressed in these objectives are: what students need to know (cognitive), how this information affects their personal decisions (affective), and what the students should be able to perform (psychomotor). Therefore, the cognitive objectives measure what specific information the students must know in order to be proficient in this specific content area (cellular respiration); the affective objectives evaluate the change in behavior due to the newly acquired information; and the psychomotor objectives communicate what the students can do related to this knowledge. Additionally, these objectives reflect the specific standards which will be assessed by the state required End of Instructions exams.

* TWS Objectives

Factor III: Instructional Design

I. Instructional Design Table

Time-line: The variance in dates is due to block scheduling (alternating Friday schedules)	Learning Objectives	Instructional Activities, including interdisciplinary activities	Assessments	Resources and Technology
Day 1 - Wed., Feb. 12	<p>Obj. 1. <i>Write</i> the equation for cellular respiration.</p> <p>Obj. 2. <i>State</i> the location of cellular respiration.</p> <p>Obj. 3. <i>Define</i> cellular respiration</p> <p>Obj. 4. <i>State</i> the events of cellular respiration.</p> <p>Obj. 5. <i>Evaluate</i> how exercising affects the rate of cellular respiration</p>	<p>Due now: article – exercise and cellular respiration.</p> <p>Reiterate the idea of energy – relate it to electricity.</p> <p>Activity with “energy stick”.</p> <p>Activity – students volunteer and are given an activity which they have to act out in front of the class. The class then evaluates the relative amount of energy used for each.</p> <p>Lecture – introduction to cellular respiration.</p>	<p>Exit slip:</p> <ol style="list-style-type: none"> 1. Written evaluation of Obj. 1-4 – students turn in (no grade). 2. Informal verbal evaluation from students during lecture. 	<ul style="list-style-type: none"> • “energy stick” • Textbook • Smart board/computer • Small pieces of paper with activities written on it.

Day 2 - Fri., Feb. 14 (“B” day)	<p>Obj. 6. <i>Compare</i> and <i>contrast</i> cellular respiration and photosynthesis.</p> <p>Obj. 7. <i>Explain</i> the source of glucose in cellular respiration.</p> <p>Obj. 8. <i>Evaluate</i> the effect on the human body if CO₂ was not efficiently released from the body after cellular respiration.</p> <p>Obj. 9. <i>Write</i> an explanation as to why plant cells must go through cellular respiration even though chemical energy is available within its cells.</p>	<p>Obj. 6. Group activity - Create a Venn diagram or Concept map comparing cellular respiration/photosynthesis.</p> <p>Obj. 7. Partner work – put the main events of glycolysis in order, including photosynthesis.</p> <p>Obj. 8-9. Partner/individual work: answer critical thinking questions from worksheet and present answers to the class.</p> <p>Obj. 7-9. Class discussion.</p>	<p>Do now: Review content from previous day.</p> <p>Obj.5. Informal assessment – The teacher will walk from group to group evaluating the diagram/map each group created.</p> <p>6 - 8. Informal - verbal assessment</p> <p>Obj. 1-4 Exit Slip –</p>	<ul style="list-style-type: none"> • Large lined paper • Textbook • Smart board/computer • Cut-out/laminated words of the molecules involved in glycolysis
Day 3 – Tue., Feb. 18	Obj. 10. <i>Compare</i> cellular respiration with fermentation.	<p>Lecture: fermentation</p> <p>Fermentation illustration</p> <p>Obj. 10. Group activity</p>	<p>Formal Assessment: quiz – cell respiration.</p> <p>Verbal assessment</p>	<ul style="list-style-type: none"> • Textbook • Apple Juice • Yeast • Water • Pipette • Metal Washer
Day 4 – Thurs., Feb. 20	Obj. 1-9	<p>Review for exam on Friday</p> <p>Various exam games – Jeopardy, group review, etc.</p>	Due Now: Review	<ul style="list-style-type: none"> • Smart board • White boards
Day 5 – Fri., Feb. 21 (“A” day)	Obj. 1-9	Exam	Exam	<ul style="list-style-type: none"> • Copy exams

II. Instructional Design Narrative

A. Multiple Instructional Strategies

The instruction will address multiple learning strategies which include all multiple intelligences (interpersonal, intrapersonal, kinesthetic/body, verbal/linguistic, logical/mathematical, musical/rhythmic, visual/spatial, and nature/world). The various teaching methods will require students to interact as a full class, small groups, pairs, and individually. With the use of the smart board (including videos and power point), physical models, hands-on activities, and diagrams which will help students organize information (this will be done both in a group and individually) related to the complex processes in this unit. The students will be challenged to think critically, problem solve, and perform by relating the content to real-world scenarios; looking at diagrams and predicting the result or outcome, and teaching other students the newly acquired information (show mastery/understanding).

B. Adapt Instructional Strategies

There are several ways in which the instructional plan will be adapted for individual students, small groups, and the class based on the contextual information. Eight students are considered ELL and one of those students do not speak English; therefore, I will include various pictures which will help to explain complex words and relate abstract concepts to concrete ideas, and when the students are put into small groups I will ensure that the non-English speaking student is with another student who can help translate for him or her (this will help the learning of the translator as well). With the awareness that one-third of the students are ELL and over sixty-percent of the students do not read at a 10th grade reading level, it is important that I

emphasize vocabulary words on a continual basis, in lecture, informal/formal assessments, and during times of reviewing content.

C. Active Inquiry

The techniques I will apply to foster active inquiry and supportive classroom interaction will include asking individual students to answer questions related to the topic (concerning the real-world), ask thought provoking questions to which students have to use critical thinking to formulate an answer, asking students to volunteer to help illustrate an idea or concept, and incorporate at least one article related to the topic on which students have to read and comment. The evidence for checking for understanding will be seen during group work activities (I will go from table to table), formally through a quiz, “due now”, or “exit slip”, and upon the completion of worksheets that are assigned. The instructional resources used for this lesson will include a smart board, visual aids, large lined paper, laminated and cut-out words/molecules, and the textbook. The smart board will provide a visually engaging opportunity, including video in effort to communicate ideas through picture, diagrams, and written content, addressing the visual, auditory, rhythmic, real-world, and logical learning styles.

The visual aids will be used to enhance the visual and kinesthetic learning styles (touching the models). The lined paper and laminated cut-outs will aid in the activities in which students will physically, mentally, and socially engage. The textbook will be a foundational resource and utilized during group activities, lecturing, and time will be allotted for students to read sections from it. The textbook also provides other visual aids (diagrams/charts) to help the students see the process of cellular respiration from a variety of perspectives. In employing these

instructional resources, all learning styles will be incorporated in the learning process with the intent to increase the engagement and understanding of each student.

D. Collaborative/Instructional Groups

Collaborative/instructional groups will be implemented to disaggregate the large class size into a smaller learning environment. Correspondingly, this will aid in the collaboration of ideas to help organize (Venn diagrams/concept maps) and facilitate further understanding of the content. Also, it will provide an opportunity for discussing content and allow students to input ideas in a small (2-4 students), nonthreatening environment (as opposed to sharing in front of the entire class). Further, this will provide an opportunity to walk around and informally assess what the students have learned and how they are applying that knowledge in a manner conducive to an increased level of understanding (based upon Bloom's taxonomy).

Collaborative teaching methods link to instructional goals by providing an occasion for students to discuss the learning objectives, relate the current information to their understanding of prior content, and allowing me to address any learning difficulties. The learning difficulties observed will affect what and how I lecture (breadth and speed) and inform me of areas which need to be reviewed (modify the activities in the following class period).

E. Technology

Technology will be employed to communicate information through power-point, video, and utilized for reviewing content.

F. Knowledge and Factors in the Students' Environment Outside the School

My plan will demonstrate my comprehensive knowledge of factors in the students' environment outside of the school in several ways: by assigning minimal homework (there is no parental support to assure it is completed); using class time for review (providing multiple examples of what a good "study habit" looks like); incorporating visual aids for every component of content taught (especially with vocabulary words) and particularly for the ELL and SPED students; and relate these abstract ideas to concrete concepts which are applicable to the life of a student in a low socio-economic family environment.

G. Alignment of Objectives, Activities, and Assessments

I will ensure that my objectives, activities, and assessments are aligned. First, the objectives framed are written based upon the specific content from the sections covered in this unit from the textbook (my CT has also input in the formation of these objectives). Secondly, the communication of these objectives is explicitly incorporated in all activities within the class. Correspondingly, the assessments (both formal and informal) are constructed and evaluated based upon the objectives initially stated. The objectives will be written on the board daily for both me and the students to be in continual awareness of what should be anticipated and what is expected.

Factor IV: Assessment Plan

Part I:

Assessments	<i>TWS Objectives</i>	Type of Assessment	Adaptations
1. Pre-assessment	All <i>TWS objectives</i>	This assessment has 8 multiple choice, 2 true/false, and 6 (some are A and B) short answer/fill-in the blank science questions. <i>Mastery</i> criteria are 8 out of 10 correct on the multiple choice and true/false (combined) and 5 out of 6 correct on the short answer/fill-in the blank.	Students on an IEP or ELL will be allotted extra time to finish this assessment and 7 out of 10 on the multiple choice and true/false and 4 out of 6 short answer/fill-in the blank is mastery for these two sub-groups of students.
2. Formative Assessment	<p>*<i>Write</i> an explanation as to why plant cells must go through cellular respiration even though chemical energy is available within its cells.</p> <p>*<i>Evaluate</i> how exercising affects the rate of cellular respiration.</p> <p>*<i>Evaluate</i> an effect on the human body if CO₂ was not efficiently released from the body after cellular respiration.</p>	“Do Now” - Daily, students will be assessed on one or more of these three objectives. <i>Mastery</i> criteria are 1 out of 1 correct for each day an individual objective is assessed.	<i>Adaptations for special needs and IEP</i> students will involve substituting some of the writing responses for a drawing of the response (e.g. picture of the process of cellular respiration) and requiring fewer sentences when responding in short answer form. <i>Mastery</i> criteria are 80 percent correct.

<p>3. Formative Assessment</p>	<p>*Write the equation for cellular respiration. *Define cellular respiration. *State where cellular respiration occurs in a cell. *Compare and contrast cellular respiration and photosynthesis.</p>	<p>Stations: group work. The students will work in groups of 4 to provide the answers to various questions which address these objectives. There is not a <i>mastery</i> criterion because this assessment is used to evaluate the overall understanding of groups of students (as opposed to an individual assessment).</p>	<p><i>Special needs</i> students and those on an <i>IEP</i> will be placed in a group with other students who are stronger academically.</p>
<p>4. Formative Assessment</p>	<p>*Write the equation for cellular respiration. *Define cellular respiration. *State where cellular respiration occurs in a cell. *Compare and contrast cellular respiration and photosynthesis. *Explain the source of glucose in cellular respiration. *Compare cellular respiration with fermentation.</p>	<p>Homework worksheet - Students will answer 10 multiple choice/short answer questions which address these five objectives. <i>Mastery</i> criteria are 10 out of 10 of the multiple choice/short answer questions correct. The <i>mastery</i> criteria are 10 out of 10 due to the fact that students can use notes. This assessment will be given two days prior to the test in order for the teacher to assess where each student needs improvement and to provide awareness to the students of which content areas need to be more fully understood to ensure <i>mastery</i> on the test.</p>	<p>The <i>mastery</i> criteria for <i>special needs</i> students and those on an <i>IEP</i> are 9 out of 10. This <i>mastery</i> criterion is higher than previous criteria for special needs due to the fact that students can use their notes to answer the questions.</p>

<p>5. Post-assessment</p>	<p>All <i>TWS objectives</i></p>	<p>This assessment has 8 multiple choice, 2 true/false, and 6 (some are A and B) short answer/fill-in the blank science questions. <i>Mastery</i> criteria are 8 out of 10 correct on the multiple choice and true/false (combined) and 5 out of 6 correct on the short answer/fill-in the blank.</p>	<p>Adaptations for <i>special needs</i> and <i>ELL</i> students will include: fewer sentences required in short answer responses (see Questions #'s 11 & 16); guided words to facilitate the response (limiting the words which the student has to provide while requiring the student to provide the essential content – see Question #'s 15); simplifying some of the essay by re-wording the question (maintaining the content required – see Question #'s 14B & 16); generalized question requiring a response (not as in depth) (see Question 14A); and the point value of the short answer/fill-in the blank are modified to support the relative strength of these students. The <i>mastery</i> criteria for these students are 7 out of 10 correct on the multiple choice and true/false (combined) and 3 out of 6 on the short answer/fill-in the blank.</p>
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Part II:

A. Assessment Plan

The assessment plan specifically addresses the validity of each of the goals/objectives in a variety of ways. The conceptual objectives (a total of three) are assessed by several “Do Now’s” (see #4 Formative Assessment) to support the intrapersonal aspect of learning, as well as emphasizing the individual responsibility of the learner. Stations (see # 2 Formative Assessment) are utilized to assess six of the objectives to provide an opportunity for students to work in a group setting (aiding and evaluating each other in the learning process) and to illustrate which objectives are understood and which ones need to be further emphasized/explained. This is a formative assessment, but it is not assessed on an individual student basis. The teacher will assess the work, but as this strategy is implemented within the class, other classmates will evaluate the response from other students (assessment and learning by both teacher and student).

The assessments specifically address each of the objectives by requiring students to prove an understanding of each objective based on both the level of and content covered by each objective. All three forms of formative assessment provided multiple ways to address not just different content, but the same objectives using a different method (multiple intelligences).

Each assessment is appropriate for the learning objectives and for the students I have assessed for many reasons. The “Due Now”, Homework, and Stations allow students with multiple intelligences to express their mastery of the content in a variety of ways. The “Due Now” is performed in an individual manner. However, the homework was completed in pairs and the Stations allowed for a group effort for each response. The assessments were almost exactly word-for-word of the objectives. These objectives mainly covered the general concepts of the chapter. The contextual information (reading level, number of ELL students and those on an IEP) provided a basis for the depth of knowledge addressed in the objectives/assessments.

The Pre and Post-Assessment was written directly from the *TWS objectives* to ensure the congruity of each. Just as the formative assessments provided a variety in the method of assessing student learning, the Pre and Post-Assessment followed this same standard. Almost every objective was incorporated more than once in the Pre and Post-Assessment, which allowed for most of the objectives to be assessed by more than one approach (e.g. a table and essay).

Technology was not used for collecting and analyzing student data because it did not provide the best manner for doing so. Otherwise, it was most fitting to use pencil and paper to draw or write a response for each type of assessment. This also provided a further opportunity for students to write-out answers to practice good writing skills and promote literacy in this subject area. However, if the assessments were only multiple choice questions I might have used technology for collecting and analyzing data.

B. Types of Assessments

The Pre and Post-Assessment (test) is reliable, valid, and accurately measures the cognitive ability of the students. Each objective is specifically addressed in the test and directly addresses each of the *TWS objectives*. The test promoted literacy within this subject area by requiring the students to write out answers in complete sentences. Students not only needed to be able to identify the terms but to also be able to use the terms in an academic manner. Only cognitive objectives were addressed due to the nature of the content covered (the content was dense with many new terms and concepts). Each objective is assessed for mastery by the use of multiple questions,. The alterations made for ELL and special needs students allowed for differentiated assessment while still preserving the necessary content objectives they needed to learn.

The “Due Now” was not necessarily chosen but is a requirement for all of the teachers school-wide. Therefore, it was fitting to use this essential requirement as one of the formative

assessments. Secondly, the Station provides a less-specific form of assessment but is a good gauge of how much learning the class, as a whole, has gained. If each group struggles with the same specific assessment than it is evident that further instruction in that area needs to occur.

C. Assessment Challenge

The assessments are challenging for students because they require repetitive interaction with the content in order to remember it, short answers responses which show that students can not only identify the correct answer (as in multiple choice) but they are required to provide the appropriate terms in the answer. The post-assessment requires students to answer conceptual questions related to the “big idea” for the unit (cellular respiration). This allows me to see if the students can apply their current understanding to a new situation which was not specifically addressed in the lecture (a measure of higher levels of learning).

The special adaptations for special needs students are made continuously throughout the class period and instruction. During lecture, I emphasize the terms (breaking each word into simpler terms) and show pictures to help these students relate the abstract ideas, represented by the terms, to concrete ideas or pictures which they are familiar with. As part of the lecture and post-assessment, I have incorporated drawing pictures of the processes which are discussed. This allows students to see the processes and provides a necessary modification for ELL students and special needs students who do understand the information but struggle in articulating the content.

The information asked on assessment instruments come directly from the objectives covered in the class. This ensures that all material during the lecture corresponds to the material assessed throughout and at the end of the unit. The assessments do cover essential content and skills from all those addressed during instruction

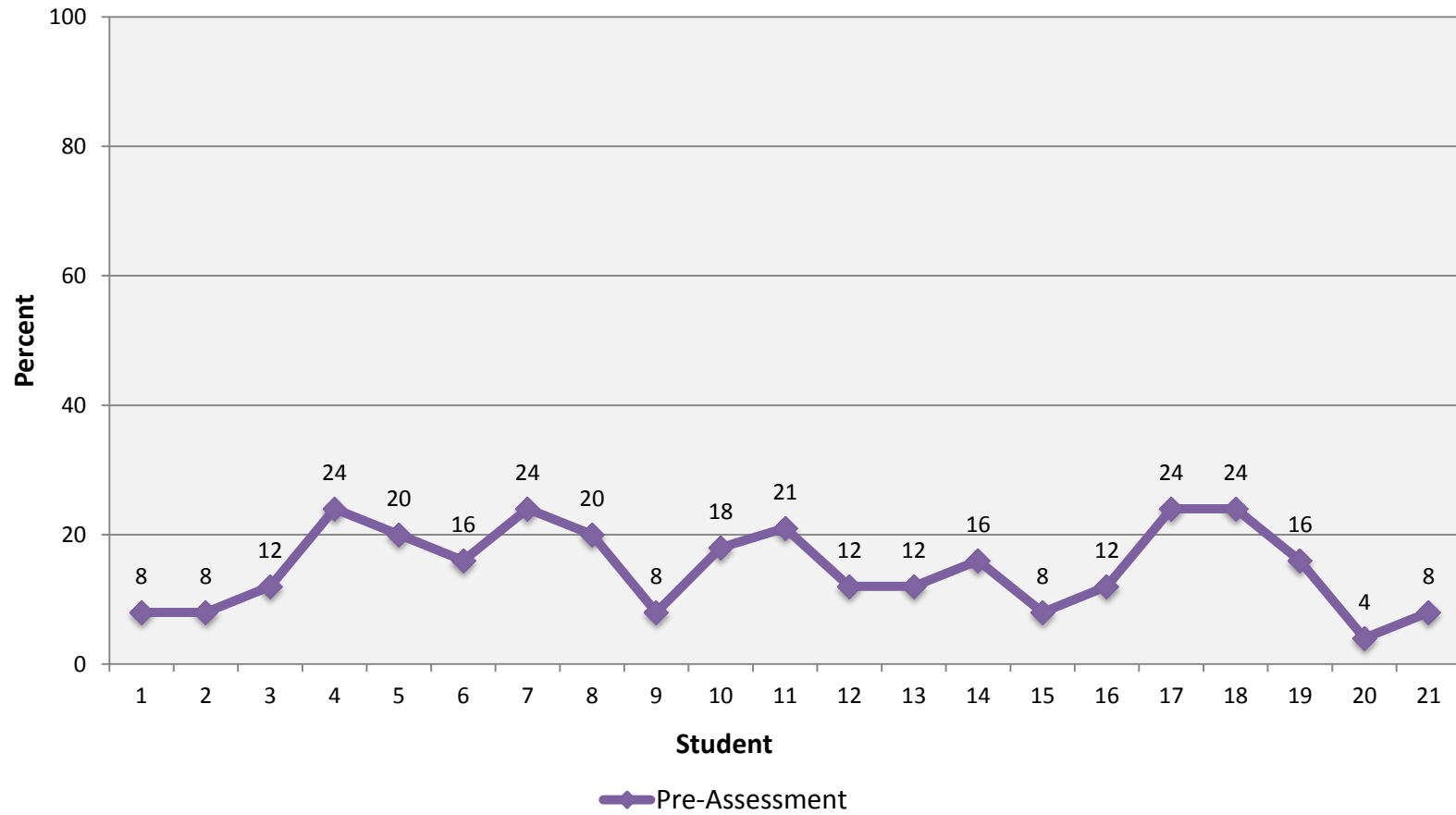
Factor V: Analysis of Pre-Assessment Results and Instructional Adjustments

I. Pre-Assessment Table and Graph

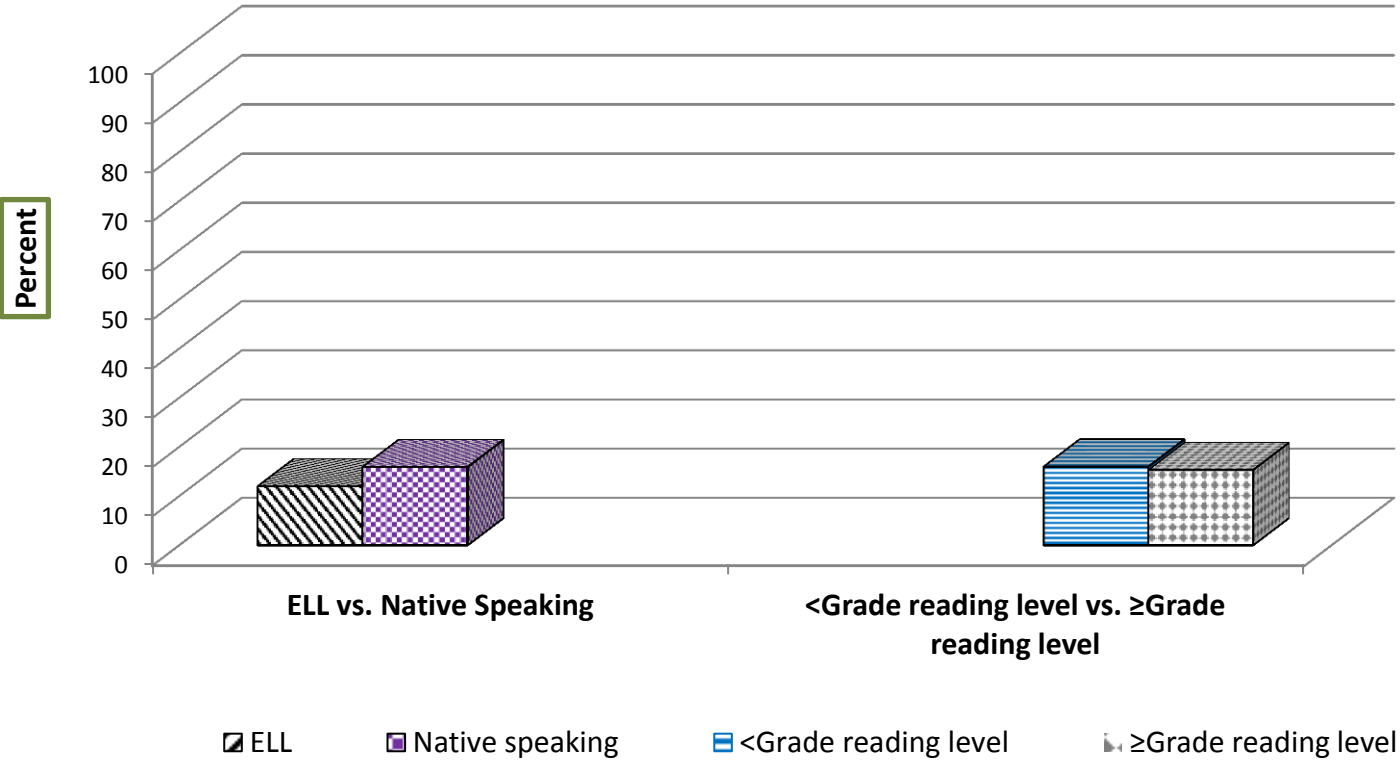
Student Identification Code	Pre-Assessment Number Correct (out of 50 points)	Pre-Assessment Percentage Correct	Student Identification Code	Pre-Assessment Number Correct (out of 50 points)	Pre-Assessment Percentage Correct
1.	4	8%	12.	6	12%
2.	4	8%	13.	6	12%
3.	6	12%	14.	8	16%
4.	12	24%	15.	4	8%
5.	10	20%	16.	6	12%
6.	8	16%	17.	12	24%
7.	12	24	18.	12	24%
8.	10	20%	19.	8	16%
9.	4	8%	20.	2	4%
10.	9	18%	21.	4	8%
11.	10.5	21%			

Identification code numbers 1, 2, 17, 18, 19, and 20 are ELL students. Identification code numbers 1, 2, 4, 12, 13, 15, 17, 20, and 21 are below a 10th grade reading level (each student is in a remedial reading class).

Pre-Assessment Results



Disaggregated Pre-Assessment Results



II. Instructional Design Adjustments

Design for Instruction Table

Time-line: block schedule (alternating Friday schedules)	Learning Objectives	Instructional Activities, including interdisciplinary activities	Assessments	Resources and Technology	Instructional Adjustments based on Pre-assessment Data
Day 1 - Wed., Feb. 12	<p>Obj. 1. <i>Write</i> the equation for cellular respiration.</p> <p>Obj. 2. <i>State</i> the location of cellular respiration.</p> <p>Obj. 3. <i>Define</i> cellular respiration</p> <p>Obj. 4. <i>State</i> the events of cellular respiration.</p> <p>Obj. 5. <i>Evaluate</i> how exercising affects the rate of cellular respiration</p>	<p>Due now: article – exercise and cellular respiration.</p> <p>Reiterate the idea of energy – relate it to electricity. Activity with “energy stick”.</p> <p>Activity – students volunteer and are given an activity which they have to act out in front of the class. The class then evaluates the relative amount of energy used for each.</p> <p>Lecture – introduction to cellular respiration.</p>	<p>Exit slip:</p> <ol style="list-style-type: none"> 1. Written evaluation of Obj. 1-4 – students turn in (no grade). 2. Informal verbal evaluation from students during lecture. 	<p>“energy stick”</p> <p>Textbook</p> <p>Smartboard/ computer</p> <p>Small pieces of paper with activities written on it.</p>	<p>Incorporate a video to illustrate cellular respiration.</p> <p>Require students to draw a picture of the location and representation of the process.</p>

<p>Day 2 - Fri., Feb. 14 (“B” day)</p>	<p>Obj. 6. <i>Compare</i> and <i>contrast</i> cellular respiration and photosynthesis.</p> <p>Obj. 7. <i>Explain</i> the source of glucose in cellular respiration.</p> <p>Obj. 8. <i>Evaluate</i> the effect on the human body if CO₂ was not efficiently released from the body after cellular respiration.</p> <p>Obj. 9. <i>Write</i> an explanation as to why plant cells must go through cellular respiration even though chemical energy is available within its cells.</p>	<p>Obj. 6. Group activity - Create a Venn diagram or Concept map comparing cellular respiration/photosynthesis.</p> <p>Obj. 7. Partner work – put the main events of glycolysis in order, including photosynthesis.</p> <p>Obj. 8-9. Partner/individual work: answer critical thinking questions from worksheet and present answers to the class.</p> <p>Obj. 7-9. Class discussion.</p>	<p>Do now: Review content from previous day.</p> <p>Obj.5. Informal assessment – The teacher will walk from group to group evaluating the diagram/map each group created.</p> <p>Obj.6- 8. Informal - verbal assessment</p> <p>Obj. 1-4 Exit Slip</p>	<p>Large lined paper</p> <p>Textbook</p> <p>Smartboard/ computer</p> <p>Cutout/ laminated words of the molecules</p>	<p>Part of the “Due Now” and notes – draw a picture of the processes discuss.</p> <p>Incorporate many real-life examples how the two processes affect one another</p>
<p>Day 3 – Tue., Feb. 18</p>	<p>Obj. 10. <i>Compare</i> cellular respiration with fermentation.</p>	<p>Lecture: fermentation</p> <p>Fermentation illustration</p> <p>Obj. 10. Group activity</p>	<p>Formal Assessment: quiz – cell respiration.</p> <p>Verbal assessment</p>	<p>Textbook</p> <p>Apple Juice</p> <p>Yeast</p> <p>Water</p> <p>Pipette</p> <p>Metal Washer</p>	<p>In place of the lab, a kinesthetic group activity will be utilized to introduce fermentation.</p>

Day 4 – Thurs., Feb. 20	Obj. 1-9	Review for exam on Friday Various exam games – Jeopardy, group review, etc.	Due Now: Review	Smart board White boards	Give a homework assignment to help prepare for test (otherwise many students may not study)
Day 5 – Fri., Feb. 21 ("A" day)	Obj. 1-9	Exam	Exam	Make copies of the exam	Give a modified test for ELL and special needs students

III. Analysis of Pre-Assessment Results and Instructional Adjustments

Most students scored well on questions 2, 3, 4, and 9; however, the content addressed from question 3 was incorporated in the previous unit covered in the class. Question 2 was a conceptual question which a student who had not received the content from this chapter could figure out if they used a little critical thinking. Question 4 provided information for which students already had some prior knowledge. This question could have been re-structured to ensure the content covered was entirely new (providing more accurate data to what students already knew about the new content). Question 9 was a True/False question, which supports why at least half of the students would answer it correctly.

Overall, I learned that the students retained the information previously taught in question 3, yet the highest score for the entire pre-assessment for any one student was only a 24 percent. Only a couple students even attempted the essay questions. The information gained from the pre-assessment was not as helpful as it should have been because almost half of the questions were not attempted (60 percent of the points available). The students had some prior knowledge of photosynthesis and cells which aided their background knowledge of cellular respiration, but there was little to no prior knowledge of cellular respiration.

The analysis of the pre-assessment data did not greatly change how I designed the learning activities for my class as a whole. This data only supported what I already knew about the challenges of the various subgroups in the class. The contextual information that guided the type of learning activities includes: all students come from a lower socio-economic status, thirty percent of the class is ELL, sixty-three percent of the students are reading below grade level,

and twenty-six percent of the students are on an IEP. Based upon this information I designed learning activities which emphasized vocabulary, incorporated pictures to correlate with the terms, review games (low-socio-economic students often have to baby-sit younger siblings or work, causing many students to not study in the evenings, therefore I reduced the load of homework in the evenings), created a modified version of the test for special needs and ELL, and allowed a variety of opportunities for partner or group involvement (ELL students paired together when one of the two had a very limited English vocabulary).

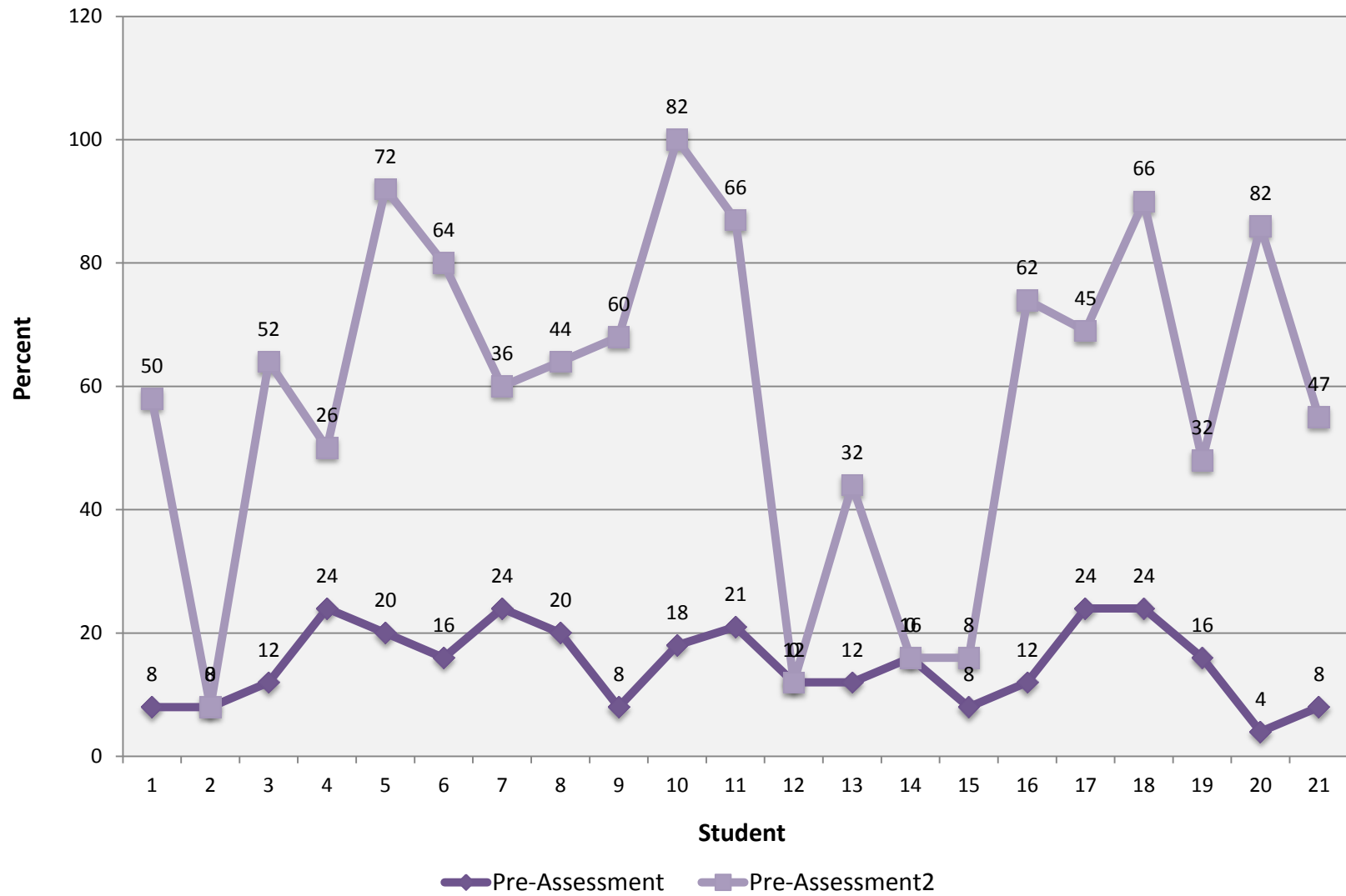
The resources I used did not require adaptations because the necessary modification could be accomplished without a change in these resources. Almost all adaptations were performed based upon the contextual information. The essay portion of the test would have been helpful in identifying what students knew previously (and how to best adapt to the various subgroups), yet most students did not attempt these questions.

Factor VI: Analysis of Learning and Assessment Procedures

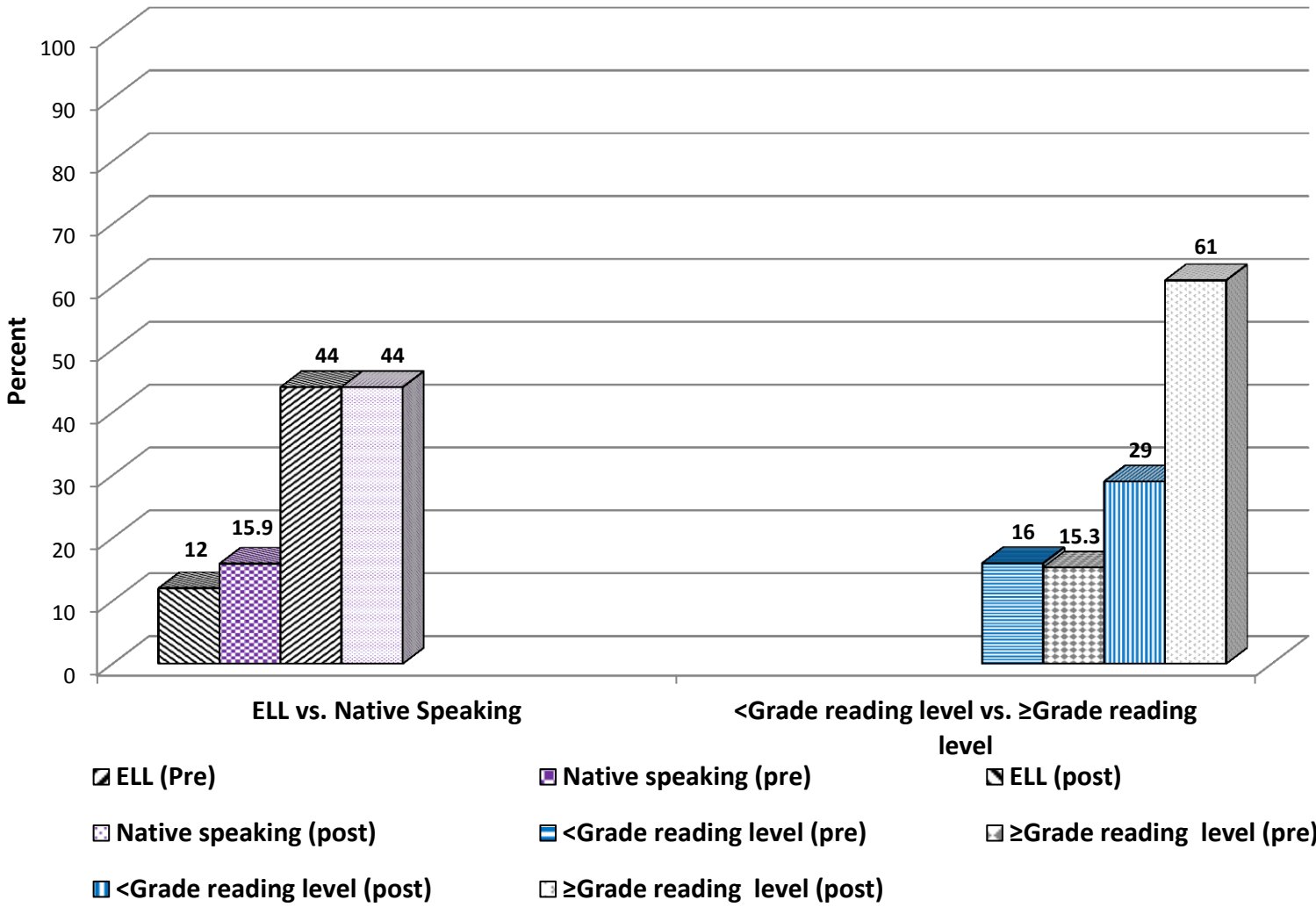
I. Pre & Post Assessment Table and Graph

Student Identification Code	Pre-Assessment Number Correct (out of 50 points)	Post-Assessment Number Correct (out of 50 points)	Pre-Assessment Percentage Correct	Post-Assessment Percentage Correct	Learning Gain Scores
1.	4	25	8	50	0.46
2.	4	0	8	0	-0.09
3.	6	26	12	52	0.45
4.	12	20.5	24	26	0.03
5.	10	36	20	72	0.65
6.	8	32	16	64	0.57
7.	12	18	24	36	0.16
8.	10	22	20	44	0.30
9.	4	29	8	60	0.57
10.	9	41	18	82	0.78
11.	10.5	33	21	66	0.57
12.	6	0	12	0	-0.14
13.	6	16	12	32	0.23
14.	8	0	16	0	-0.19
15.	4	4	8	8	0.00
16.	6	31	12	62	0.57
17.	12	22.5	24	45	0.28
18.	12	33	24	66	0.55
19.	8	13	16	32	0.19
20.	2	41	4	82	0.81
21.	4	23.5	4	47	0.45

Pre-Assessment vs. Post-Assessment Results



Disaggragated Pre-Assessment vs. Post-Assessment Results



II. Analysis of Learning Results Narrative

A. Evaluation of Learning Results:

Student progress was monitored with *pre*, *formative*, and *post assessments* data and the appropriate modifications were implemented. The *pre-assessment* data did not provide beneficial information for modifications due to the lack of effort on the behalf of the students. With the exception of about three students, sixty-percent of the points available were not even attempted. Consequently, the most useful data for making modifications in instructional decision-making came from the two *formative* assessments: the “due now” and the homework.

The “due now” was a daily assessment of what the students either understood or could apply from the previous day’s content. My instruction was modified by re-addressing certain content areas which seemed unclear during the “due now”. Frequently, the “due now” served not only as an assessment but also a review of previous content. There seemed to be a direct correlation between those students that did well on the “due now” and those that did better than average on the post-assessment. In the case of one particular student, this individual was selected to write the answers to the “due now” on the board. While writing the information, the student had an “ah-ha” moment related to the content he was writing in front of the class. As a result, this student was one of the few individuals who answered a specific question on the post-assessment correctly (this was almost the exact same question as the “due now” he answered during class).

The adjustments made based on the *formative* assessments did not yield the expected results. Many of the students, who portrayed no enthusiasm for learning, did below par on the formative assessments. However, those students who did poorly on the *formative* assessments, and did not pay attention in class, also did poorly on the *post-assessment*. The effort on behalf of

the students seemed to be the most significant factor in determining an individual student's achievement. Those that wanted to be attentive and learn did well; however, those that chose to be disruptive and did not pay attention had a limited degree of learning.

TWS objectives 1, 2, 3, and 4 were achieved by most (about 60%) of the students, at a level of mastery (80% or better). *TWS objectives* 5, 6, 7, and 8 were addressed by short answer/essay questions, and less than twenty-five percent of the students achieved a level of mastery or better. This is in part due to the lack of effort on behalf of the students to write a full response to these questions. *TWS objective* 9 was addressed in a due now and very few (about 5%) of the students had an appropriate answer. This objective was not addressed in the *post-assessment* in effort to reduce the amount of questions and the depth of the content assessed (this was a modification based upon the *formative assessment* data).

Students with a below grade level reading proficiency did very poorly on *TWS objectives* 6, 7, and 8. Some of the students in this sub-group (as well as several of the ELL students) did not understand how to answer these short answer/essay questions which addressed the aforementioned objectives. The higher level thinking objectives, such as *TWS objectives* 6, 7, 8, and 5 were not mastered by a majority of the students who are below grade reading level. Students were relatively unsuccessful in understanding the higher level thinking of these *TWS objectives* which were at the application level and higher of Bloom's Taxonomy.

The instructional time was adequate to cover all the stated learning goals and objectives. However, the behavioral issues in each of the classes minimized the amount of good quality learning each ninety minute class period (about 20-30 minutes of good quality learning occurred most days in each class). The results do not accurately reflect the degree of learning students

demonstrated during the classroom activities because most students did not study (to refresh the content), did not come prepared (many students seemed surprised that we had a test when it was given), and did not put forth the effort to thoroughly answer each question on the test.

B. Interpretation of student learning:

The extent to which each of the learning goals were met is not completely evident by the assessments given, but over seventy-five percent of the students illustrated a mastery level for the *TWS objectives 1-4*. *TWS objectives 5-9* would have been mastered by more students if there was a greater focus during the instructional time.

The greatest barriers to achieving learning results for all the whole group was behavioral problems, the lack of at-home study and the desire to want to learn. Only a handful of students, out of the total 150 students, even studied the content one time outside of the classroom. The sub-group of students who are below grade level in reading was challenged with a literacy barrier; therefore it was difficult for these students to understand the written content, as well as construct a response on paper. Since the ELL students did not fare any worse than the native speaking students, I have concluded that their lack of achievement is a direct result of the barriers mentioned pertaining to the whole class.

C. Insights on best practices and assessments as related to students: Using Instructional Design prompt and rubric, analyze the effects that each of the following had on the success or barriers to student learning.

Student motivation and behavior was the greatest barrier affecting student learning. There is limited academic support on behalf of the parents, towards the individual student, which affects the degree to which any studying occurs after school. Additionally, most of these students are provided minimal discipline at home, limiting the understanding the individual students possess

regarding the appropriate behavior and practices necessary for success in an academic environment.

Social interaction and self-motivation are significant learning barriers to the academic achievement of these students. Regardless of the activities and learning strategies implemented by a teacher, the student must have the self-motivation to want to learn (even if it is just to pass the state test) or all that will occur in a classroom is teaching, rather than learning. The students are highly influenced by the social interaction of their peers. It is not acceptable to be a high achiever in academics for these students. Those student that undeniably need help, often do not ask for fear of the opinions of his or her peers.

Active engagement of student learning is one of the greatest barriers, yet it provides one of the most significant opportunities for success. I encountered a constant challenge to keep students actively engaged with the activities I implemented. Often, students might like the type of strategy used, but they often do not cooperate when they are told to do the activity. The students want to do the activity of their choice, at their time, and in the manner they choose; otherwise, they often disengage with what is expected of them by the teacher.

According to Robert Marzano and D. Pickering (2003),, in the co-authored book called *Classroom management that works: Researched-based strategies for every teacher*, which states, “Research in the last 35 years demonstrates that effective schools can have a profound impact on student achievement” and the most significant factor affecting student achievement is the degree of effectiveness on behalf of the teacher in the classroom. However, the achievement of a student is not limited to the effectiveness of the teacher yet the impact of an effective teacher supersedes the other variables present in a learning environment. Marzano also suggests that a teacher can

only be effective when there are clearly communicated procedures and consequences in a classroom.

One of the challenges affecting my ability to effectively teach the students during my placement was the inability to communicate these procedures and consequences from the beginning of the school year (since I was not present then). My CT did have set procedures and consequences, yet these were somewhat different than what I would have implemented from the beginning. As a result, there were behavioral challenges which would have been minimized and contributed to greater student achievement (although the degree is not easily quantifiable).

Stright, Neitzel, Sears, and Hok-Sinex wrote a book titled, *Instruction begins in the home: Relations between parental instruction and children's self-regulation in the classroom*, relating how crucially important it is for parents to play an active role in supporting their children which “results impact school success favorably” due to the individual positive impact upon student success. Consequently, the adverse effect of a lack of parental support can result in “attention problems, social problems, passivity, and poor grades”. These findings support the experience I had with students who do not have strong parental support; each barrier and success previously discussed is a direct result of the deficiency of parental support for their child in my classroom.

D. Alignment of learning goals with *assessment data*:

The learning goals associated with each objective provided the structure from which all instructional strategies were built and all three forms of assessment (pre-, formative, and post-assessments) were constructed, ensuring the congruency of assessment and instruction, as well as the reliability of the data obtained.

Factor VII: Reflection on Teaching and Learning

A. Impact on Student Learning

The activities in which my students were most successful were the kinesthetic exercises and the “due now”. The kinesthetic activities were utilized to introduce two aspects of cellular respiration. The two activities involved the light stick activity and the competition to perform the highest number of push-ups and the longest wall-sit. These activities provided an opportunity for students who might not normally be actively engaged in a discussion about the related content, but are willing to engage in a seemingly, “un-academic activity”. The success of this activity was evident by the post-assessment. Many students did not do well on the test; however, many students portrayed a general understanding of the specific content introduced by these two activities. The second reason for the success of these two kinesthetic activities can be contributed to the connection each activity made to the natural world. Particularly in the area of the sciences, many students become disengaged when the content is too abstract or disconnected to their everyday life.

The “due now” was the most relatively successful assessment due to its regularity (daily) and the nature of how it was utilized for both assessment and review. Most of these students do not study at home; therefore, it was pertinent that I incorporated a daily review/study opportunity for students to think about the content discussed in the previous day, as well as use this opportunity to challenge the students to apply the content learned to a new situation or question. The success of the students from this activity was evident by the result of the test; those that participated and put forth effort during the “due now”, did relatively better (than their peers) on the test.

The assessment in which the students were least successful was on the test as a whole, yet this lack of success was evident by the test score of individual students who chose to misbehave, did not study, and did not participate in a positive manner during class time (a combination of all three). The misbehavior during class resulted in many students sent out of the room, reducing the amount of time each of these students had to participate in the class. Although, if I had I not sent these students out of the classroom there would have been a significantly reduced degree of learning occurring in the classroom. My focus (as well as other students) and energy was greatly diverted by the misbehavior. I came to the realization that I had to carefully guard the learning environment of those students who showed interest in learning, often allowing several misbehaving students to be physically separated from the class for an extensive amount of time. Each of these students who were separated from the class on a consistent basis did very poorly on the test. These factors were partially under my control because I am the one who allowed the students to be sent out for an extensive amount of time. After reflecting on the lack of success of these students, it would have been fitting to give a quiz several days before the test, with the intent that the students might gain a better understanding of the reality of the degree of learning which had occurred (a wake-up call).

My instructional decisions had an impact on student learning in a variety of ways. These decisions were centered on my unit objectives; however, my original instructional decisions were significantly altered by the amount of time of productive learning which occurred each day. There were numerous mid-unit adaptations made throughout this section, including: eliminating the cellular respiration lab, reducing the breadth of content covered, and eliminating a couple of the review games. Each of the three adaptations were an effect due to the minimal focused learning time which occurred each class period, as well as the lack of study on behalf of the

students. Unfortunately, many students who wanted to learn missed out on these valuable learning opportunities.

B. Implications for future teaching:

In effort to improve my students' learning, it is necessary to increase the structure and rigidity of the learning environment. Due to the undisciplined home-life of these students, in order for optimal learning to occur, it is necessary to provide a secure, stable, and rigid environment which off-sets the lack thereof at home. Correspondingly, I should modify how immediately I address behavioral problems which would eliminate the third and fourth chances I gave to some students (reducing the number of chances to only one or two).

In the future I would plan for shorter, varied activities which frequently require a change of pace in the classroom. These students were not self-directed learners; therefore a large portion of the time in class was used (and wasted) for re-directing students to the activity and/or behavior appropriate in the moment.

The activities which need further strengthening and modification are the lecture component and the opening and closing portion of the class. When the class period starts efficiently (classroom management and instruction), the rest of the class time is more productive. The consistent challenge in each class period was getting the students to settle down and re-focused for learning. Additionally, the end of the class period seemed to finish too abruptly. This is one area I can consciously work on to ensure there is proper closer for the content covered and the activities executed during class. The lecture component needs to be modified by sectioning it into smaller chunks of time. Many students seem to "check-out" during this portion of class. Subsequently, this is very unproductive time for the vast majority of students. I can modify

lecture time by placing an activity before and after, as well as incorporating more videos and engaging questions throughout the lecture.

C. Implications of a Christian Worldview affected the learning community

My disposition positively affected the learning community in several different ways. There were three inherent personal qualities (of mine) which supported this. These qualities are my ability to love, show patience, and my drive to never give up or back down. During one of the weekly meetings I had with my advisor, she shared the importance of loving the students I teach (and will teach in the future), placing love on the forefront of all I do. Ironically, the day following this meeting my cell phone was stolen (an immediate test of love). However, this is a fundamental quality in my disposition which I have continually sought to develop. During my time at McLain, “love” was at the very foundation of everything I did, seeking to allow this characteristic to be at the core of every facet of mine, as well as the students’, learning experience. This was a key strength to the relative success I had with this particular group of students (inner-city and low socio-economic).

The daily encounters I had with my students varied, yet included teaching students who were recently in jail (with an ankle monitor still on their leg), aggressively defiant, severely emotionally and mentally disturbed, pregnant, depressed, abused emotionally and verbally at home, living a lifestyle of a gang member and violence, and more evident than anything else, they seemed utterly hopeless for any positive outcome in their life. These issues affected the way students operated in the classroom. As the teacher, it was crucial that I reflected a different kind of person, a “transformed educator”. Regardless of the behavior of the students, my response was always firm, consistent, and for the good of each student.

Patience is an inherent quality which allowed me to work with challenging students, and within a significantly different educational environment than what I have ever experienced. In part, my patience with the students was a result of empathizing with those who felt incapable of learning the content. I could honestly assure them that they would learn the material as long as they would put forth the necessary effort. In addition, there was a substantial degree of patience necessary to continually deal with behavioral issues without “losing my cool”. My US (university supervisor) commented (after my first evaluation) on the poise I displayed as I dealt with one behavioral issue after another (for a good portion of the ninety-minute class period), exerting a significant amount of energy (addressing each issue) while responding with kindness.

Finally, my personal drive was an essential component of my disposition which compelled me to show up each day. There were moments where I could have easily given up (as I repeatedly felt defeated). Regardless of my feelings or thoughts, my Christian Worldview constantly drove me to not just believe in my capability to teach, but to further believe that I was making a positive difference in the lives of my students. It was this perspective that sustained me to face a consistently difficult situation with a positive attitude – to be the difference for those students who desperately need it. The feedback I received from various students confirmed the impact I had made. During my last week at McLain, a couple of the most challenging students personally (at their own will and on their own time) apologized for their inappropriate behavior. It was in that moment I came to the realization that I had made a difference.

My decisions, practices, and actions constantly reflected the Christian Worldview which I previously discussed. In moments where I would have preferred to react in an unloving and impatient manner, I was constrained by my Christian Worldview, compelling me to act from love and patience. For example, as I mentioned previously, one of the two students who

apologized for the inappropriate behavior would have never done this had I responded in any manner different than love and patience. The very fact that an apology was given, the student acknowledged that I was not “out to get her”, but that I indeed was responding with great patience and in an appropriate way.

D. Implications for professional development:

The professional skills which would improve my performance in teaching this unit are: the ability to effectively implement the lesson plans (including instruction, activities, and assessments) and to gain experience in communicating content in a simple and precise manner. One of the daily challenges I encountered was the ability to successfully implement the various components of my lesson plan. I want to learn how to be more successful in motivating students to actively engage in the classroom activities. Consequently, many students had missing work and incomplete notes which resulted in many students who did not pass the post-assessment (with a 60 percent or better).

The second personal challenge I have come to recognize is the improvement of my ability to verbally communicate in the classroom. Often, I find myself articulating instruction in a way which is can be hard to follow. For example, when a student asks me a question, I frequently do not directly answer the question but explain the answer in an indirect way. I do not want to give students answers; I want them to critically think about the question and come to the answer on their own. In an effort to help a student come to an answer, sometimes the student gets lost in the critical thinking part.

Two personal, professional learning goals that emerged from my insights and experiences as a student teacher/intern while teaching this unit are: to be highly effective in the implementation of my lesson plan (each aspect as previously mentioned) and to increase the effectiveness of my

instruction and direction in the classroom. Three activities I will undertake to improve my performance in the critical areas I identified are: consciously analyze and practice communicating outside the classroom (in everyday conversation), read and write frequently (avid readers and excellent writers tend to be good verbal communicators), and read research and books on how to effectively implement a lesson plan.

CONTEXTUAL INFORMATION SHEET

Please indicate:

Semester (Fall or Spring): **Spring** Year: **2014**

Your certification/licensure level (check all that apply):

- | | |
|--|---|
| <input type="checkbox"/> Early Childhood (Birth - Grade 3) | <input checked="" type="checkbox"/> Secondary (Grades 6 - 12) |
| <input type="checkbox"/> Elementary (Grades K - 6)
PK - 12) | <input type="checkbox"/> Dual (Elem. and Secondary, Grades |
| <input type="checkbox"/> Middle School (Grades 5 - 8) | |

Your certification/licensure area(s) (check all that apply):

- | | | |
|--|--|--|
| <input type="checkbox"/> Art | <input type="checkbox"/> Lang. Arts, Middle Level | <input type="checkbox"/> Physics |
| <input checked="" type="checkbox"/> Biology | <input type="checkbox"/> French | <input type="checkbox"/> Psychology |
| <input type="checkbox"/> Business | <input type="checkbox"/> Health | <input type="checkbox"/> Science, General |
| <input type="checkbox"/> Chemistry | <input type="checkbox"/> Journalism | <input type="checkbox"/> Science, Middle Level |
| <input type="checkbox"/> Early Childhood Ed. | <input type="checkbox"/> Mathematics | <input type="checkbox"/> Social Studies-Middle Level |
| <input type="checkbox"/> Early Child.,
handicap | <input type="checkbox"/> Mathematics, Middle Level | <input type="checkbox"/> Social Studies |
| <input type="checkbox"/> Earth-Space Science | <input type="checkbox"/> Music | <input type="checkbox"/> Spanish |
| <input type="checkbox"/> Elementary | <input type="checkbox"/> Physical Education | <input type="checkbox"/> Speech and Theatre |
| <input type="checkbox"/> Language Arts | <input type="checkbox"/> Physical Science | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> ESOL | | |

Identify the course, unit content area, (e.g., “Language Arts,” “Biology,” “Math,” “Social Science,” etc.), and grade level(s) of your Teacher Work Sample.

Course: **Biology I**

Content Area: **Biology**

The grade(s)/level of students in your classroom (check all that apply):

- | | | |
|--|--|--|
| <input type="checkbox"/> Preschool | <input type="checkbox"/> 4 th Grade | <input checked="" type="checkbox"/> 9 th Grade |
| <input type="checkbox"/> Kindergarten | <input type="checkbox"/> 5 th Grade | <input checked="" type="checkbox"/> 10 th Grade |
| <input type="checkbox"/> 1 st Grade | <input type="checkbox"/> 6 th Grade | <input checked="" type="checkbox"/> 11 th Grade |

____ 2nd Grade
____ 3rd Grade

____ 7th Grade
____ 8th Grade

____ 12th Grade

Please note: Some of the following information must be obtained directly from the teacher or the school's administrator(s)

A. Class/Classroom Information

Grade levels in class (List all that apply.) 9th, 10th, and 11th

Ages in class (List all that apply.) 15, 16, and 17

Number of students enrolled in class 27

Number of students typically present 25

Time available each day to teach all students (in this class) **90 minutes (every other day – “block schedule”)**

How would you rate the overall socio-economic status represented in classroom?
(Provide approximate percentages of students that represent each category.)

Upper class	<u>0%</u>
Middle class	<u>0%</u>
Lower class	<u>100%</u>

Ethnicity(ies)/Cultures represented (please specify):

<u>Ethnicity</u>	<u>Number of Students</u>
African American	<u>18</u>
Asian	<u>0</u>
Hispanic	<u>8</u>
Caucasian	<u>0</u>
Pacific Islander	<u>0</u>
Other: Indian	<u>1</u>

Gender make-up:

Number of males	<u>14</u>
Number of females	<u>13</u>

Number of students who perform at the following levels:

Below grade level	<u>0</u>
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At grade level	<u> 27 </u>
Above grade level	<u> 0 </u>

If students are above or below grade level, identify the different grade levels represented.

All students in the class perform at the grade level of the class; however, there are students who have previously failed (such as the 11th graders) who are re-taking this class. My CT stated that each student in the class performs at grade level although some students are classified at a higher grade level.

Teaching interruptions (ex. frequent intercom messages, student, parents, or teachers who enter class etc.):

Few	<u> </u>
Some	<u> </u>
Many	<u> X </u>

Announcements occur during this class period (extra class time is allotted in the class period). Frequently, the phone will ring, requesting a particular student to temporarily leave the classroom (e.g. the attendance office); students from other classrooms periodically come in to use the computers (often students doing Credit Recovery); ISS (In School Suspension) monitors will come in to request materials for students; adjacent teachers will request keys or shared materials for their class; and students will leave to use the restroom/get a drink of water (with permission).

B. Resources (equipment and supplies) available for this class (Mark all that apply.)

Overhead/Elmo projector	<u> 0 </u>
Number of computer(s)	<u> 10 </u>
Video projector	<u> 1 </u> (Smartboard)
Phone/intercom	<u> 1 </u>
TV	<u> 1 </u>

Please list additional resources (ex. maps, lab equipment, manipulatives, reading resources, etc.—please list):

- **Lab equipment – microscopes, scales, diagrams, petri dishes, beakers/flasks, pipettes, and a separate lab area with sinks (separate from lecture desks).**
- **Response clickers (e.g. CPS clickers)**

C. Personnel resources available to you (Indicate all that apply.)

Instructional assistants(s)	<u> 1 </u>
Peer (student) tutors	<u> 0 </u>
Parent volunteers	<u> 0 </u>

Resource Teachers (describe) 1
(SPED – aid for students on an IEP)
Other (describe) 0

D. Individual Differences

Number of ESL students in class 7
(Students can speak basic or broken English; however, their primary language is NOT English)

Number of non-English speaking students 1
(Students who do not speak English at all)

Number of students in class with IEP's 7
(Students who have an Individualized Education Plan on file with the teacher or school)

Number of identified 504 students in class 0
(Students who have been officially tested and are physically or mentally impaired in some fashion)

Number of identified gifted students in class 0

E. Number of students in pull-out or supplementary programs

Title I 0
Gifted 0

Other (please list, for example: remedial reading, math, etc.)

McLain High School does not have “pull-out” or “supplementary programs” but 63% (17 students) of students are below their grade level in Reading. This is an area of tremendous opportunity for the school.

F. Please briefly describe the school’s immediate community:

Population (city or town) **Tulsa: 393,987 (99% urban, 1% rural)** *The immediate community population is not given/known by my CT*

Please list major industry(ies) (ex. oil, farming, steel mills, technology, automotive, etc.):

There are no major industries in the immediate community.

Please list major employer(s) (ex. American Airlines, IBM, Wal-Mart, etc.)

There are no major employers in the immediate community. Those that work in this area would be employed by small businesses such as fast food restaurants/Walgreens/and

locally owned businesses (automotive shops). Most often, adults go outside of the immediate community to find work.

Students in your classroom mostly from:

Rural areas	_____
Urban areas	<u> X </u>
Suburban areas	_____

Describe the school district:

Number of elementary schools	<u> 54 </u>
Number of junior high or middle schools	<u> 14 </u>
Number of high schools	<u> 11 </u>
Other types of school configurations (i.e. 4th & 5th grade centers, etc.)	

- **McLain Jr. High (included in the previous totals) - 7th grade academy, 8th grade academy**
- **Charter Schools (4 total, in addition to the previous totals)**
 - **Tulsa School of Arts (9-12)**
 - **Dove Science Academy (6-12)**
 - **Deborah Brown Community School (K-12)**
 - **Discovery School of Tulsa (K-8)**

Are there any of the following in your community? (Mark all that apply):

Community Colleges	None
Career Technology schools	1 vocational college (students can do “credit recovery” here as well)
Colleges or University	None

Appendix B: Assessments

Name: _____ Class period: _____ Date: _____

Cellular Respiration Test: Ch. 9

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question and write it in the blank next to the number of the question. Each question is worth 2 points.

_____ 1. The main organelle in which cellular respiration occurs is the _____.

- a. chloroplast
- b. mitochondria
- c. nucleus
- d. golgi body

_____ 2. Organisms need a way of storing energy because _____.

- a. a cell can't always immediately use all the energy it gets
- b. an organisms often has times when no energy is used
- c. a cell can release only stored energy
- d. a cell cannot create energy and must get it from elsewhere in the organism

_____ 3. In order to move molecules in your kidneys, your body needs _____.

- a. sunlight
- b. energy
- c. heat
- d. cold

_____ 4. Which of the following equations best represents cellular respiration?

- a. $\text{HOH} + \text{CO}_2 \rightarrow \text{O}_2 + \text{H}_2\text{O}$
- b. $\text{O}_2 + \text{H}_2\text{O} \rightarrow \text{HOH} + \text{CO}_2$
- c. $\text{C}_6\text{H}_{12}\text{O}_6 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$
- d. $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$

_____ 5. Energy is stored in ATP within the _____ of the molecule.

- a. bonds
- b. carbohydrates
- c. molecules
- d. proteins

_____ 6. Place the following steps of cellular respiration in order.

- I. Glycolysis
 - II. Electron Transport Chain
 - III. Krebs's cycle (Citric acid cycle)
 - IV. 36 ATP produced
- a. II, III, IV, I
 - b. III, IV, I, II
 - c. I, III, II, IV
 - d. I, III, IV, II

_____ 7. The difference/similarity between cellular respiration and fermentation is _____.

- a. cellular respiration occurs in an anaerobic environment while fermentation occurs in an aerobic environment
- b. both occur in an aerobic environment
- c. fermentation occurs in an anaerobic environment while cellular respiration occurs partly in an anaerobic environment and partly in an aerobic environment

_____ 8. How many ATP are produced by the process of cellular respiration?

- a. 20 or 22
- b. 26 or 28
- c. 32 or 33
- d. 36 or 38

True or False. Write "True" or "False" to answer questions 9 – 10.

Each question is worth 2 points.

_____ 9. Only animal cells carry out cellular respiration.

_____ 10. Glucose is the end product of cellular respiration.

Short answer response. Answer each question with a short answer. The point value is given for each individual question.

11. Explain how photosynthesis and cellular respiration are related (*worth 3 points*).

12. A) Write the chemical equation of cellular respiration in both words and symbols (*worth 2 points*). *Two points extra credit will be earned if you correctly identify the products and reactants.*

13. Fill in the chart to compare cellular respiration and photosynthesis (*worth 4 points*).

	Photosynthesis	Cellular Respiration
Location within the cell (organelle)		
Reactants (use words or symbols)		
Products (use words or symbols)		
General process: include the direct source of energy and the main role of this process.		

14. A) Explain the source of glucose in 3 sentences and draw a picture of this process in connection with cellular respiration (*worth 6 points*).

B) Explain how the food we eat affects the amount of glucose in our body. Why do we get hungry after we exercise (minimum of 3 sentences) (*worth 6 points*)?

15. Evaluate how the level of CO₂ in the atmosphere is affected by cellular respiration (minimum of 3 sentences) (*worth 3 points*).

16. A) Explain the reason as to why animal cells must go through cellular respiration (minimum of 3 sentences) (*worth 3 points*).

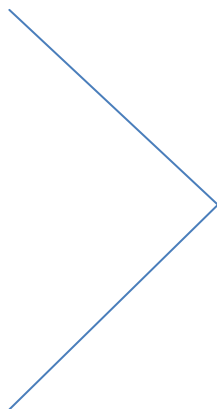
B) What would happen to an animal if its cells did not go through the process of cellular respiration (minimum of 2 sentences) (*worth 3 points*)?

Extra Credit(*2 points*) – Write something you learned from this chapter that I did not ask on the test.

Cellular Respiration Test: Answer Key

(The answers are the same general format and content, yet simplified for the modified test and point values are slightly different but are stated on the actual modified test)

1. B
2. A
3. B
4. D
5. A
6. C
7. C
8. D
9. False
10. False



Questions 1-10 are worth 2 points for a total of 20 points.

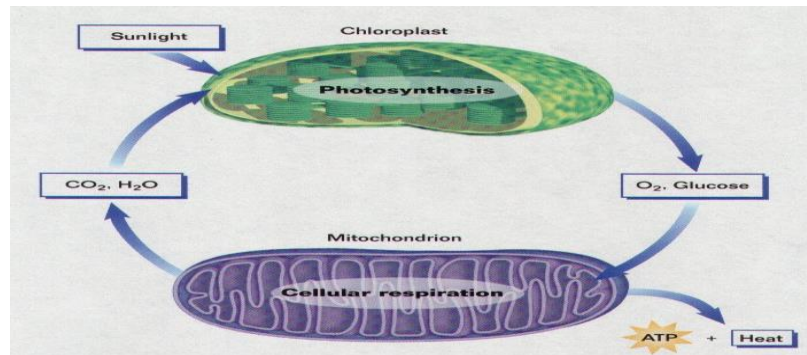
11. Photosynthesis and cellular respiration are **inverse processes (opposite processes)**. Each process is **directly related** to the other. The **products of photosynthesis** are the **reactants of cellular respiration** and the **products of cellular respiration** are the **reactants of photosynthesis**. Worth 3 points.

12. $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$,
glucose + oxygen → carbon **dioxide** + **water** Worth 2 points
 Extra credit: **Reactants = glucose and oxygen**
Products = carbon dioxide and water
Worth 2 points extra credit

13. Worth 4 points

	Photosynthesis	Cellular Respiration
Location within the cell	Chloroplast	Mitochondria
Reactants	CO ₂ & H ₂ O, Carbon dioxide and water	C ₆ H ₁₂ O ₆ & O ₂ , glucose and oxygen
Products	C ₆ H ₁₂ O ₆ & O ₂ , glucose and oxygen	CO ₂ & H ₂ O, Carbon dioxide and water
General process	Light energy converted to chemical energy, forming glucose	Chemical energy from glucose broken down to form energy useful for the cell in the form of ATP

14. A) The source of glucose is **a product of the process of photosynthesis**. In photosynthesis, **light energy is used to convert carbon dioxide and water into glucose**. **Glucose is then used as the source of energy for cellular respiration to occur and produce energy** in the form of **ATP** which the cell can utilize to carry out its necessary functions. **Worth 6 points.**



- B) Most of the food we eat is carbohydrates. These carbohydrates get broken down within our body into glucose (a simple sugar). The more carbohydrates we eat, the more glucose is available within our body. When we exercise, the body utilizes the stored energy (ATP) already formed within the body, as well as breaks down glucose into ATP to make more energy available to our cells. **Worth 3 points.**
15. The level of carbon dioxide in the atmosphere is increased by cellular respiration. One of the two products in cellular respiration is CO₂. As the rate of cellular respiration increases, so will the level of CO₂ increase in the atmosphere (a direct relationship). **Worth 3 points.**
16. A) Cells must go through cellular respiration so that the body can carry out its necessary functions. Cellular respiration produces energy which allows these functions to occur. Animal cells need energy in order for the food to digest, muscles to contract and relax, blood to pump, cells to reproduce, brain to process nerve impulses, etc. **Worth 3 points.**
B) If an animal's cells did not go through the process of cellular respiration the animal would die. An animal would not be able to exercise, eat, sleep, pump blood, replace cells, etc. (any activity which requires energy). **Worth 3 points.**

Name: _____ Class period: _____ Date: _____

Cellular Respiration Test (Modified – IEP & ELL): Ch. 9

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question and write it in the blank next to the number of the question. Each question is worth 2 points.

_____ 1. The main organelle in which cellular respiration occurs is the _____.

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- b. mitochondria
- c. nucleus
- d. golgi body

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- b. an organisms often has times when no energy is used
- c. a cell can release only stored energy
- d. a cell cannot create energy and must get it from elsewhere in the organism

_____ 3. In order to move molecules in your kidneys, your body needs _____.

- a. sunlight
- b. energy
- c. heat
- d. cold

_____ 4. Which of the following equations best represents cellular respiration?

- a. $\text{HOH} + \text{CO}_2 \rightarrow \text{O}_2 + \text{H}_2\text{O}$
- b. $\text{O}_2 + \text{H}_2\text{O} \rightarrow \text{HOH} + \text{CO}_2$
- c. $\text{C}_6\text{H}_{12}\text{O}_6 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$
- d. $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$

_____ 5. Energy is stored in ATP within the _____ of this molecule.

- a. bonds
- b. carbohydrates
- c. molecules
- d. proteins

_____ 6. Place the following steps of cellular respiration in order.

- V. Glycolysis
- VI. Electron Transport Chain
- VII. Kreb's cycle (Citric acid cycle)
- VIII. 36 ATP produced

- a. II, III, IV, I
- b. III, IV, I, II
- c. I, III, II, IV
- d. I, III, IV, II

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_____ 8. How many ATP are produced by the process of cellular respiration?

- b. 20 or 22
- d. 32 or 33
- b. 26 or 28
- d. 36 or 38

True or False. Write "True" or "False" to answer questions 9 – 10.

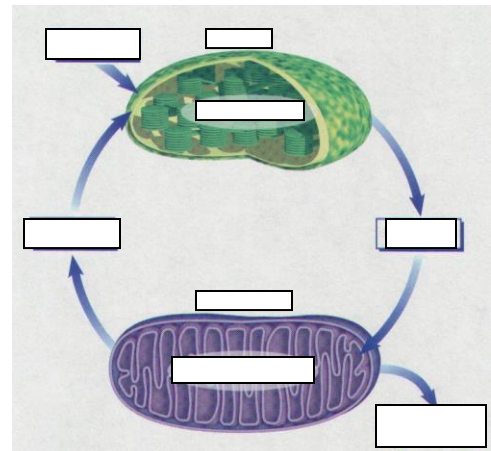
Each question is worth 2 points.

_____ 9. Only animal cells carry out cellular respiration.

_____ 10. Glucose is the end product of cellular respiration.


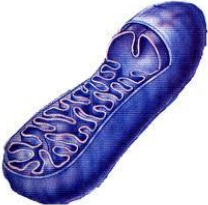
Short answer response. Answer each question with a short answer. The point value is given for each individual question.

11. Explain how photosynthesis and cellular respiration are related (*worth 3 points*).



12. A) Write the chemical equation of cellular respiration in both words and symbols (*worth 2 points*). *Two points extra credit will be earned if you identify the products and reactants.*

13. Fill in the chart to compare cellular respiration and photosynthesis (*worth 8 points*).

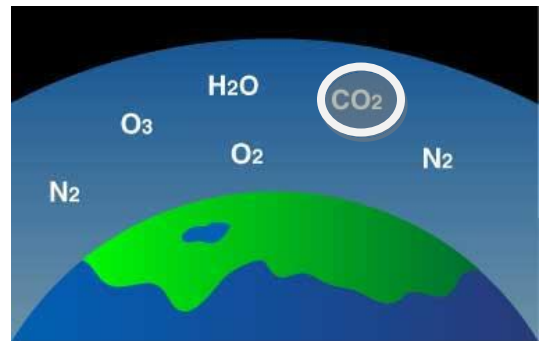
	Photosynthesis	Cellular Respiration
Location within the cell (name the organelle)		
Reactants (words or symbols)		
Products (words or symbols)		

14. A) State the source of glucose in cellular respiration (*worth 2 points*).

B) Explain why we get hungry after/during exercise (minimum of 2 sentences) (*worth 3 points*)?



15. How is the level of CO₂ (carbon dioxide) in the atmosphere affected by cellular respiration (*worth 3 points*).



Atmosphere #3

CO₂ is increased in the atmosphere when

_____.

CO₂ is decreased in the atmosphere when

_____.

16. A) Think about the human body: Why must our cells go through cellular respiration (*worth 4 points*)? List three activities which require the human body to go through cellular respiration.



B) What would happen to a human if its cells did not go through the process of cellular respiration (give a general and specific effect) (*worth 3 points*)?

Extra Credit (*2 points*) – Write something you learned from this chapter that I did not ask on the test.

Cellular Respiration Worksheet

Circle the best answer for each multiple choice question. For each short answer question, provide a clear and thorough written response.

1. The gain of energy from glycolysis is _____.

- a. 4 ATP
- b. 2 ATP
- c. 8 ADP
- d. 6 ATP

2. The first step in releasing the energy of glucose in the cell is known as _____.

- a. fermentation.
- b. glycolysis
- c. the Kreb's cycle.
- d. electron transport.

3. Write a chemical equation for cellular respiration. Use words and symbols.

.

4. Cells use the energy available in food to make a final energy-rich compound called

- a. water.
- b. glucose.
- c. ATP.
- d. ADP.

5. The gain of energy from the entire process of cellular respiration is _____.

- a. 22 ATP molecules
- b. 30 ATP molecules
- c. 32 ATP molecules
- d. 36 ATP molecules

6. Why are cellular respiration and photosynthesis considered opposite reactions?

7. What does it mean if a process is “anaerobic”? Which part of cellular respiration is anaerobic?

8. The Krebs’ s cycle takes place within the _____.

a. chloroplast.

b. nucleus

c. mitochondrion.

d. cytoplasm.

9. Which step of cellular respiration is most efficient in producing energy _____.

a. glycolysis

b. electron transport

c. citric acid cycle

d. kreb’s cycle

10. How are fermentation and cellular respiration similar processes?

Cellular Respiration Worksheet: Answer Key

1. B
2. B
3. Symbols: $6\text{O}_2 + \text{C}_6\text{H}_{12}\text{O}_6 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$
Words: Oxygen + Glucose \rightarrow Carbon dioxide + Water
4. C.
5. C
6. Photosynthesis removes carbon dioxide from the atmosphere, and cellular respiration puts it back. Photosynthesis releases oxygen into the atmosphere, and cellular respiration uses that oxygen to release energy from food.
7. A process is anaerobic if it does not directly require oxygen. Glycolysis is anaerobic.
8. C
9. B
10. Both processes begin with glycolysis and produce ATP.