



Gasconade R-2
Objective Course Curriculum Report for: Biology I -
Tenth Grade

Generated on 11/23/2015

Name

Biology I Objective 1

Unit Objective

The student will develop controlled experiments related to biological topics, analyze from tables and graphs, and communicate findings and conclusions.

Created By

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Creation Date

5/19/2013 7:18:06 PM +00:00

Modified By

System

Modification Date

11/19/2013 3:26:28 PM +00:00

Sequence

1

Assessment Methods

Essential Questions

Course

Biology I

Unit

01 Scientific Inquiry

Objective used to assess students

Formative Assessment Activities

The student will perform experiments they have developed related to a topic in biology. They will acquire information and record in well constructed tables, graph relationships between variables and write conclusions for the problem. Their work may be communicated in class presentation or in project report format.

Depth of Knowledge

75

Learning Activity

1. Given a scenario students will design and perform an experiment using the proper steps of the scientific method and then analyze the data from tables and graphs. Also, they will form a conclusion and evaluate the experiment for validity and areas of improvement.
2. The students will complete worksheets over the scientific method. The students will play a game on the smartboard to review concepts.
3. Students will answer "Bell Work" questions throughout the year related to this objective.

Research-based Instructional Strategies

1. The teacher will describe the steps of the scientific method
2. The teacher will model the correct way to make a graph and data table explaining the correct style graph based on data.
3. The teacher will lecture over the differences between quantitative and qualitative research.
4. Examples will be provided to the class as a whole and for the students individually.
5. Time and materials will be provided for students to follow all steps of the scientific method to provide proof for a problem related to biology such as factors related to rate of photosynthesis.
6. The project may also be done related to analyzing nutrients in foods.

Supporting Resources

Biology, Glencoe 2007 edition with teacher resource package Several Smart Board and PowerPoint presentations are available in the following folders:

Correction Exercise

The students will work additional reinforcement worksheets on the concepts. Bell Work will be tailored to needs depending on student success.

Enrichment Exercise for Accelerated Learners

The student will devise their own experiment and conduct it with the teacher's permission and supervision.

Remediation for Struggling Learners

IEP students will be peer grouped with students of higher ability.

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Code	Subject	Grade	RI
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Show-Me Standards

Code	Subject	Grade	Standard	Goal
7	Science	Grades: K-12	processes of scientific inquiry (such as formulating and testing hypotheses)	
8	Science	Grades: K-12	impact of science, technology and human activity on resources and the environment	
1.2	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Conduct research to answer questions and evaluate information and ideas
1.3	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Design and conduct field and laboratory investigations to study nature and society
2.1	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to communicate effectively within and beyond the classroom.	Plan and make written, oral and visual presentations for a variety of purposes and audiences
3.1	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Identify problems and define their scope and elements

1.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Discover and evaluate patterns and relationships in information, ideas and structures
1.8	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Organize data, information and ideas into useful forms (including charts, graphs, outlines) for analysis or presentation
2.7	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to communicate effectively within and beyond the classroom.	Use technological tools to exchange information and ideas
3.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Reason inductively from a set of specific facts and deductively from general premises

Grade and Course Level Standards

Code	Subject	Grade	Strand	Standard	Concept	Expectation
7.1.A.a	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry includes the ability of students to formulate a testable question and explanation, and to select appropriate investigative methods in order to obtain evidence relevant to the explanation	Formulate testable questions and hypotheses
7.1.A.b	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry includes the ability of students to formulate a testable question and explanation, and to select appropriate investigative methods in order to obtain evidence relevant to the explanation	Analyzing an experiment, identify the components (i.e., independent variable, dependent variables, control of constants, multiple trials) and explain their importance to the design of a valid experiment

7.1.A.c	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry includes the ability of students to formulate a testable question and explanation, and to select appropriate investigative methods in order to obtain evidence relevant to the explanation	Design and conduct a valid experiment
7.1.A.d	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry includes the ability of students to formulate a testable question and explanation, and to select appropriate investigative methods in order to obtain evidence relevant to the explanation	Recognize it is not always possible, for practical or ethical reasons, to control some conditions (e.g., when sampling or testing humans, when observing animal behaviors in nature)

7.1.A.e	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry includes the ability of students to formulate a testable question and explanation, and to select appropriate investigative methods in order to obtain evidence relevant to the explanation	Acknowledge some scientific explanations (e.g., explanations of astronomical or meteorological phenomena) cannot be tested using a controlled laboratory experiment, but instead by using a model, due to the limits of the laboratory environment, resources, and/or technologies
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7.1.A.f	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry includes the ability of students to formulate a testable question and explanation, and to select appropriate investigative methods in order to obtain evidence relevant to the explanation	Acknowledge there is no fixed procedure called "the scientific method", but that some investigations involve systematic observations, carefully collected and relevant evidence, logical reasoning, and some imagination in developing hypotheses and other explanations
7.1.A.g	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry includes the ability of students to formulate a testable question and explanation, and to select appropriate investigative methods in order to obtain evidence relevant to the explanation	Evaluate the design of an experiment and make suggestions for reasonable improvements

7.1.B.f	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry relies upon gathering evidence from qualitative and quantitative observations	Recognize observation is biased by the experiences and knowledge of the observer (e.g., strong beliefs about what should happen in particular circumstances can prevent the detection of other results)
7.1.B.e	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry relies upon gathering evidence from qualitative and quantitative observations	Calculate the range, average/mean, percent, and ratios for sets of data
7.1.B.d	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry relies upon gathering evidence from qualitative and quantitative observations	Judge whether measurements and computation of quantities are reasonable

7.1.B.c	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry relies upon gathering evidence from qualitative and quantitative observations	Determine the appropriate tools and techniques to collect, analyze, and interpret data
7.1.B.b	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry relies upon gathering evidence from qualitative and quantitative observations	Measure length to the nearest millimeter, mass to the nearest gram, volume to the nearest milliliter, force (weight) to the nearest Newton, temperature to the nearest degree Celsius, time to the nearest second

7.1.B.a	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry relies upon gathering evidence from qualitative and quantitative observations	Make qualitative and quantitative observations using the appropriate senses, tools and equipment to gather data (e.g., microscopes, thermometers, analog and digital meters, computers, spring scales, balances, metric rulers, graduated cylinders)
7.1.C.d	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry includes evaluation of explanations (laws/principles, theories/models) light of evidence (data) and scientific principle (understandings)	Analyze whether evidence (data) and scientific principles support proposed explanations (laws/principles, theories/models)

7.1.C.c	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry includes evaluation of explanations (laws/principles, theories/models) light of evidence (data) and scientific principle (understandings)	Identify the possible effects of errors in observations, measurements, and calculations, on the validity and reliability of data and resultant explanations (conclusions)
7.1.C.b	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry includes evaluation of explanations (laws/principles, theories/models) light of evidence (data) and scientific principle (understandings)	Analyze experimental data to determine patterns, relationships, perspectives, and credibility of explanations (e.g., predict/extrapolate data, explain the relationship between the independent and dependent variable)

7.1.C.a	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	Scientific inquiry includes evaluation of explanations (laws/principles, theories/models) light of evidence (data) and scientific principle (understandings)	Use quantitative and qualitative data as support for reasonable explanations (conclusions)
7.1.D.b	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	The nature of science relies upon communication of results and justification of explanations	Communicate and defend a scientific argument

7.1.D.c	Science	Biology I	Scientific Inquiry	Science understanding is developed through the use of science process skills, scientific knowledge, scientific investigation, reasoning, and critical thinking	The nature of science relies upon communication of results and justification of explanations	Explain the importance of the public presentation of scientific work and supporting evidence to the scientific community (e.g., work and evidence must be critiqued, reviewed, and validated by peers; needed for subsequent investigations by peers; results can influence the decisions regarding future scientific work)
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Common Core Standards

Version

1

Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 2

Unit Objective

The student will illustrate how matter and energy flow through the ecosystem.

Created By

System

Creation Date

Modified By

System

Modification Date

11/19/2013 5:40:05 PM +00:00

Sequence

2

Assessment Methods

Essential Questions

Course

Biology I

Unit

03 Principles of Ecology-Flow of matter and energy

Objective used to assess students

Formative Assessment Activities

The student will produce a diagram of the major cycles of nature using textbook and internet resources such as food webs, water and nutrient cycles. Assessment may also include test from Glencoe 2007 that include cycles of nature analysis questions.

Depth of Knowledge

Learning Activity

1. The students will analyze and diagram the carbon cycle, water cycle, nitrogen cycle, phosphorus cycle, and energy flow cycle.
2. Students will use Smart Board interactive lessons to practice identifying biomes from illustrations.

Research-based Instructional Strategies

1. The teacher will discuss the flow of matter and energy in the ecosystem using web sites and video clips.
2. The teacher will show United Streaming video series "The Cycle Series: The Oxygen Story, The Nitrogen Cycle, and The Carbon Cycle."
3. The teacher will instruct the students to read in the textbook over Ch 2.
4. Use biologygmh.com allowing students to interact with water cycle. The site also provides animation of other nutrient cycles.

Supporting Resources

1. Glencoe Biology 2007 edition with teacher resource package
2. Videos downloaded from unitedstreaming.com
3. Folder Ch 3 Communities & Biomes X drive
4. Wnuk Rademacher
5. Wnuk
6. Rademacher

Correction Exercise

The students will work additional reinforcement worksheets on the nutrient cycles such as "Section Quick Check" worksheets.

Enrichment Exercise for Accelerated Learners

Students will research the use of crop rotation and its effects on the nitrogen cycle.

Remediation for Struggling Learners

Smart Board, VCR, Review & Reinforcement worksheets.

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Show-Me Standards

Code	Subject	Grade	Standard	Goal
4	Science	Grades: K-12	changes in ecosystems and interactions of organisms with their environments	
1.1	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Develop questions and ideas to initiate and refine research
1.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Discover and evaluate patterns and relationships in information, ideas and structures
1.10	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Apply acquired information, ideas and skills to different contexts as students, workers, citizens and consumers
3.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Reason inductively from a set of specific facts and deductively from general premises

Grade and Course Level Standards

Common Core Standards

Version

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Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 3

Unit Objective

The student will analyze how populations living together within a community interact with one another and with their environment in order to survive and maintain a balanced ecosystem.

Created By

System

Creation Date

5/19/2013 7:18:06 PM +00:00

Modified By

System

Modification Date

11/19/2013 5:40:09 PM +00:00

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Assessment Methods

Essential Questions

Course

Biology I

Unit

02 Principles of Ecology-Organisms and their relationships

Objective used to assess students

Formative Assessment Activities

The student will demonstrate ability to analyze different relationships between organisms in an ecosystem by examining food webs and/or making analysis from a problem situation including analysis of symbiotic and predator/prey relationships. Recommended test from Glencoe 2007 includes sections with concept application questions.

Depth of Knowledge

80

Learning Activity

1. Students will do a vocabulary building activity (with rhyming & drawing a cartoon).
2. Students will watch video clips and answer questions on a worksheet over the "Living Together" video.
3. Students will complete worksheets to analyze energy flow in different food webs.
4. Students will complete MiniLab "Construct a Food Web" p. 41
5. Students will complete Concept Mapping "Organisms and Energy" p. 48.
6. Students will complete Study Guides Section 1 and 2 from Glencoe

Research-based Instructional Strategies

Supporting Resources

1. Biology 2007 edition with teacher resource package
2. Video "Trials of Life: Living Together"
3. Folder Ch 2 Ecology from X drive
4. Wnuk Rademacher
5. Wnuk
6. Rademacher

Correction Exercise

The students will work additional reinforcement worksheets on the concepts.

Enrichment Exercise for Accelerated Learners

Students will diagram a food web showing organisms found in Missouri Ozark forest.

Remediation for Struggling Learners

1. The students can have cards with organism pictures to manipulate at their desk to illustrate food webs.
2. Smart Board Lessons that allow student involvement in practice of relationships

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Show-Me Standards

Code	Subject	Grade	Standard	Goal
4	Science	Grades: K-12	changes in ecosystems and interactions of organisms with their environments	
1.4	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Use technological tools and other resources to locate, select and organize information
1.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Discover and evaluate patterns and relationships in information, ideas and structures
4.1	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to make decisions and act as responsible members of society.	Explain reasoning and identify information used to support decisions

Grade and Course Level Standards

Common Core Standards

Version

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Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 4

Unit Objective

The student will identify and explain the limiting factors that may affect the carrying capacity of a population within an ecosystem along with predicting how populations change in number and/or structure in response to hypothesized changes in biotic and/or abiotic factors.

Created By

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Creation Date

5/19/2013 7:18:06 PM +00:00

Modified By

System

Modification Date

11/19/2013 3:05:33 PM +00:00

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Assessment Methods

Essential Questions

Course

Biology I

Unit

04 Community Ecology

Objective used to assess students

Formative Assessment Activities

Student will explain how limiting factors affect the carrying capacity of a population.

Depth of Knowledge

75

Learning Activity

1. Interaction with smart board lessons over population studies.
2. The students will complete section 1 and 2 worksheets summarizing how limiting factors affect carrying capacity.
3. The students will complete worksheets that compare and contrast exponential and linear population growth.

Research-based Instructional Strategies

1. Teacher will instruct students to read Ch 3.1 and 4.1
2. The teacher will discuss concepts of limiting factors and carrying capacity using Smart Board lessons to illustrate and involve students.
3. The teacher will lecture on how environmental factors effect population growth.
4. Students will watch video clips on human propulation related problems and discuss solutions

Supporting Resources

1. Biology 2007 edition with teacher resource package
2. Access to X folder with developed smart board and powerpoint lessons.
3. Wnuk Rademacher
4. Wnuk
5. Rademacher

Correction Exercise

Concept Mapping "Describing Populations" page 119

Enrichment Exercise for Accelerated Learners

Enrichment Group Project: Human Population Controls, p 117

Remediation for Struggling Learners

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Show-Me Standards

Code	Subject	Grade	Standard	Goal
4	Science	Grades: K-12	changes in ecosystems and interactions of organisms with their environments	
3.1	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Identify problems and define their scope and elements
1.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Discover and evaluate patterns and relationships in information, ideas and structures
3.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Reason inductively from a set of specific facts and deductively from general premises

Grade and Course Level Standards

Common Core Standards

Version

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Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 5

Unit Objective

The student will reaseach a location, describe the biome of the area, identify environment problems or pressures and devise a plan to restore adverse effects to that environment caused by human activities using a multi-step plan.

Created By

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Creation Date

5/19/2013 7:18:06 PM +00:00

Modified By

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Modification Date

11/19/2013 6:17:25 PM +00:00

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Assessment Methods

Essential Questions

Course

Biology I

Unit

05 Terrestrial and Aquatic Biomes

Objective used to assess students

Formative Assessment Activities

Students will select a location, research the area for environmental and social facts, acquire images identify environment problems, and suggest strategies to reduce pollution or other environmental problems brought on by man. They will prepare a presentation to share with the class and be evaluated by peers and teachers. As an alternate assessment test from Glencoe A may be used.

Depth of Knowledge

70

Learning Activity

1. Study Guide Section 1: Biodiversity page 155
2. Study guide Section 2: Threats to Biodiversity, pages 156-158.
3. National Geographic page 132 and biologygmh.com for interactive version.
4. Research location for geographic, biological and ecological factors and problems.

Research-based Instructional Strategies

Supporting Resources

Glencoe Biology 2007 edition with teacher resource package. Access to X folder with developed smart board and powerpoint lessons.

Correction Exercise

Concept map "Threats to Biodiversity" page 154

Enrichment Exercise for Accelerated Learners

Enrichment activity: Analyze a Problem: Should endangered species be protected?
page 153

Remediation for Struggling Learners

The student may be peer grouped with students of higher or complimentary abilities. Computers for reasarch and presentation preparation.

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Code	Subject	Grade	W
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Show-Me Standards

Code	Subject	Grade	Standard	Goal
4	Science	Grades: K-12	changes in ecosystems and interactions of organisms with their environments	
8	Science	Grades: K-12	impact of science, technology and human activity on resources and the environment	
1.2	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Conduct research to answer questions and evaluate information and ideas
3.3	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Develop and apply strategies based on one's own experience in preventing or solving problems
1.4	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Use technological tools and other resources to locate, select and organize information
1.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Comprehend and evaluate written, visual and oral presentations and works

1.7	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Evaluate the accuracy of information and the reliability of its sources
1.8	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Organize data, information and ideas into useful forms (including charts, graphs, outlines) for analysis or presentation
1.10	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Apply acquired information, ideas and skills to different contexts as students, workers, citizens and consumers
3.7	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Evaluate the extent to which a strategy addresses the problem
3.8	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Assess costs, benefits and other consequences of proposed solutions

Grade and Course Level Standards

Common Core Standards

Version

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Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 6

Unit Objective

The student will predict and explain how natural or human caused changes (biological, chemical and/or physical) in one ecosystem may affect other ecosystem natural mechanisms (e.g. global wind patterns, water cycle, ocean currents, global warming).

Created By

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Creation Date

5/19/2013 7:18:06 PM +00:00

Modified By

System

Modification Date

11/19/2013 3:39:58 PM +00:00

Sequence

6

Assessment Methods

Essential Questions

Course

Biology I

Unit

06 Conserving Biodiversity

Objective used to assess students

Formative Assessment Activities

The students will analyze the effects a natural disaster (e.g. forest fire or volcano) or a man caused environmental problem has on the population and biodiversity of the area. Alternately, Glencoe 2007 assessments for chapter 5.

Depth of Knowledge

70

Learning Activity

Research-based Instructional Strategies

The teacher will outline objective points using smart board and power point presentations. Select video from United Streaming with emphasis on human activities that lead to reduction in populations of species and possible extinction.

Supporting Resources

Biology: The Dynamics of Life, Glencoe 2000 edition with teacher resource package unitedstreaming.com "Biologix: Succession and Climax Communities" Access to X folder with developed smart board and powerpoint lessons. Wnuk Rademacher

Correction Exercise

The students will work additional reinforcement worksheets on the concepts.

Enrichment Exercise for Accelerated Learners

Research forest fires in National Parks and report on how the Forest Service controls these types of natural disasters.

Remediation for Struggling Learners

The students will have more time to complete the learning activities.

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Show-Me Standards

Code	Subject	Grade	Standard	Goal
4	Science	Grades: K-12	changes in ecosystems and interactions of organisms with their environments	
8	Science	Grades: K-12	impact of science, technology and human activity on resources and the environment	
3.1	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Identify problems and define their scope and elements
3.2	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Develop and apply strategies based on ways others have prevented or solved problems
3.3	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Develop and apply strategies based on one's own experience in preventing or solving problems
3.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Examine problems and proposed solutions from multiple perspectives
3.7	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Evaluate the extent to which a strategy addresses the problem

Grade and Course Level Standards

Common Core Standards

Version

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Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 7

Unit Objective

The student will relate the structure of an atom to how it interacts with other atoms.

Created By

System

Creation Date

5/19/2013 7:18:06 PM +00:00

Modified By

System

Modification Date

11/19/2013 3:09:56 PM +00:00

Sequence

7

Assessment Methods

Essential Questions

Course

Biology I

Unit

07 Atoms, Elements, and Compounds

Objective used to assess students

Formative Assessment Activities

The student will be assessed using constructed response and selected response test where they will relate the structure of the atom to how it interacts with other atoms forming compounds and mixtures.

Depth of Knowledge

75

Learning Activity

Students will in small group activity: diagram basic atomic structure identify valence electron number predict whether compounds are covalent or ionic identify compound as organic or inorganic classify matter as substance or mixture Investigate in laboratory acid/base level of mixtures related to living things Students will watch a video showing basic chemistry and atomic structure. (AV collection in Science office or United Streaming) Read pages 144-155 Complete Reinforcement & Study Guide 6.1 reviewing atomic structure, isotopes and bonding.

Research-based Instructional Strategies

The teacher will model and discuss the structure of atoms, the differences between atoms of different elements, electron arrangement and bonding possibility. Explanations about classification categories of matter will be presented.

Supporting Resources

1. Glencoe Biology 2007 edition with teacher resource package
2. Physical Science, Glencoe 1999 edition with teacher resources
3. Access to X folder with developed smart board and powerpoint lessons
4. Wnuk Rademacher
5. Wnuk
6. Rademacher

Correction Exercise

The students will work additional reinforcement worksheets on the concepts.

Enrichment Exercise for Accelerated Learners

Students will be given a research project of the history behind the discovery of elements.

Remediation for Struggling Learners

Student use models of atoms during class discussion and be peer grouped with students of higher or complementary ability.

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Code	Subject	Grade	T
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Show-Me Standards

Code	Subject	Grade	Standard	Goal
1	Science	Grades: K-12	properties and principles of matter and energy	
1.4	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Use technological tools and other resources to locate, select and organize information
1.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Comprehend and evaluate written, visual and oral presentations and works
1.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Discover and evaluate patterns and relationships in information, ideas and structures
3.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Reason inductively from a set of specific facts and deductively from general premises

Grade and Course Level Standards

Common Core Standards

Version

Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 8

Unit Objective

The student will explain the composition of organic molecules and identify carbohydrates, proteins, lipids, and nucleic acids from illustrations and relate their structure to the role each plays in living organisms.

Created By

System

Creation Date

5/19/2013 7:18:07 PM +00:00

Modified By

System

Modification Date

11/19/2013 5:54:13 PM +00:00

Sequence

8

Assessment Methods

Essential Questions

Course

Biology I

Unit

08 The building blocks of life

Objective used to assess students

Formative Assessment Activities

The student will explain the composition of organic molecules and identify carbohydrates, proteins, and fats from illustrations and relate their structure to the role each plays in living organisms.

Depth of Knowledge

75

Learning Activity

1. Students will use wooden models to construct simple examples of organic compounds.
2. Students will watch and answer questions on a worksheet over the video describing elements in organisms.
3. Complete coloring activity that illustrates each category of organic molecules.
4. Working in small groups, given illustrations of various compounds, students will summarize the composition of each (formula) and classify each as carbohydrate, lipid, protein, or nucleic acid.
5. Students will complete worksheet(6.3) identifying structure of organic compounds.
6. Students will complete lab investigation to show the action of acids and bases on organic molecules.
7. Students will complete laboratory investigation using techniques to identify the presence of certain organic compounds in foods.

Research-based Instructional Strategies

Supporting Resources

Glencoe Biology 2007 edition with teacher resource package Access to X: folder with developed SMART board and PowerPoint lessons. Wnuk Rademacher

Correction Exercise

The students will work additional reinforcement worksheets on the concepts such as coloring pages and identification worksheets.

Enrichment Exercise for Accelerated Learners

The student will research the synthetic sweeteners comparing their molecular structure to that of natural carbohydrates.

Remediation for Struggling Learners

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Code	Subject	Grade	RI
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Show-Me Standards

Code	Subject	Grade	Standard	Goal
3	Science	Grades: K-12	characteristics and interactions of living organisms	
1.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Discover and evaluate patterns and relationships in information, ideas and structures
3.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Reason inductively from a set of specific facts and deductively from general premises
4.1	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to make decisions and act as responsible members of society.	Explain reasoning and identify information used to support decisions

Grade and Course Level Standards

Common Core Standards

Version

1

Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 9

Unit Objective

The student will explain the interactions of cell parts and organelles, compare and contrast different types of cells.

Created By

System

Creation Date

5/19/2013 7:18:07 PM +00:00

Modified By

System

Modification Date

11/19/2013 5:12:27 PM +00:00

Sequence

9

Assessment Methods

Essential Questions

Course

Biology I

Unit

09 Cell Organelles-Plant and Animal Cells

Objective used to assess students

Formative Assessment Activities

Students will be assessed on their ability to explain the interactions of cell parts and organelles and compare and contrast different types of cells in a PowerPoint presentation created by gathering images and information from the internet.

As an alternative assessment, students will take test assembled from Glenco data base to show their comprehension of structures and functions of cellular components.

Depth of Knowledge

80

Learning Activity

1. Students will use coloring worksheets to illustrate the composition of the cell membrane.
2. Students will complete a worksheet using vocabulary related to cell membrane structure.
3. Students will identify cellular structures on a diagram.
4. The students will use microscopes and slides to compare cells with cell walls versus cells without cell walls.
5. Students will use microscopes and visuals to observe cells to compare and contrast cell structures of plant and animal cells.
6. Students will create a PowerPoint presentation comparing plant and animal cells and showing the structure and function of the parts.

Research-based Instructional Strategies

1. The teacher will present models of the cell structures and organelles describing their structure and function.
2. The teacher will show video over cell structure from the science office or United Streaming.
3. Provide equipment and explanations for lab activity of cell structure.
4. Provide illustrations of cellular organelles and relationship of part to the function it serves.
5. Provide directions for creation of a powerpoint presentation over cellular organelles.

Supporting Resources

Glencoe Biology 2007 edition with teacher resource package
Access to X: folder with developed SMART board and PowerPoint lessons
Wunk Rademacher

Correction Exercise

The students will work additional reinforcement worksheets on the concepts.

Enrichment Exercise for Accelerated Learners

Investigate human disease conditions caused by problems in cell structure.

Remediation for Struggling Learners

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Show-Me Standards

Code	Subject	Grade	Standard	Goal
3	Science	Grades: K-12	characteristics and interactions of living organisms	
2.1	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to communicate effectively within and beyond the classroom.	Plan and make written, oral and visual presentations for a variety of purposes and audiences
3.2	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Develop and apply strategies based on ways others have prevented or solved problems
1.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Comprehend and evaluate written, visual and oral presentations and works
1.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Discover and evaluate patterns and relationships in information, ideas and structures

Grade and Course Level Standards

Common Core Standards

Version

Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 10

Unit Objective

The student will analyze results of experiments showing the role of the plasma membrane on homeostatic mechanisms of the cell.

Created By

System

Creation Date

5/19/2013 7:18:07 PM +00:00

Modified By

System

Modification Date

11/19/2013 6:35:15 PM +00:00

Sequence

10

Assessment Methods

Essential Questions

Course

Biology I

Unit

10 Plasma Membrane

Objective used to assess students

Formative Assessment Activities

The students will analyze results of experiments showing the role of the plasma membrane on homeostasis.

Depth of Knowledge

75

Learning Activity

1. The student will complete a concept map on transport of materials through membranes.
2. The student will complete a worksheet that allows them to analyze transfer methods across a cell membrane.
3. Students will complete a laboratory investigation that compares Elodea cells in an environment that contains different concentrations of solutes.
4. The student will complete a laboratory investigation and analyze the results showing the role of the plasma membrane on homeostatic mechanisms.(Grape and membrane lab)

Research-based Instructional Strategies

1. The teacher will provide background information about the structure of the cell membrane related to its function in controlling transport of materials using SB lessons.
2. The teacher will instruct students to read pages 201 - 206 of their text.
3. The teacher will provide video clips illustrating changes in cells placed in different environments.

Supporting Resources

Glencoe Biology 2007 edition with teacher resource package
Access to X: folder with developed SMART board and PowerPoint lessons. Wnuk Rademacher

Correction Exercise

The students will work additional reinforcement worksheets on the concepts.

Enrichment Exercise for Accelerated Learners

The student will research the use of fertilizer showing how it affects plant cells.

Remediation for Struggling Learners

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Show-Me Standards

Code	Subject	Grade	Standard	Goal
3	Science	Grades: K-12	characteristics and interactions of living organisms	
1.4	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Use technological tools and other resources to locate, select and organize information
1.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Comprehend and evaluate written, visual and oral presentations and works
1.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Discover and evaluate patterns and relationships in information, ideas and structures
1.8	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Organize data, information and ideas into useful forms (including charts, graphs, outlines) for analysis or presentation
3.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Reason inductively from a set of specific facts and deductively from general premises

Grade and Course Level Standards

Common Core Standards

Version

1

Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 11

Unit Objective

The student will explain how cells use the complementary processes of photosynthesis and respiration to fuel metabolic processes in organisms.

Created By

System

Creation Date

5/19/2013 7:18:07 PM +00:00

Modified By

System

Modification Date

11/19/2013 3:02:03 PM +00:00

Sequence

11

Assessment Methods

Essential Questions

Course

Biology I

Unit

11 Photosynthesis and Respiration

Objective used to assess students

Formative Assessment Activities

The student will compare and contrast photosynthesis and respiration noting the synthesis and decomposition of molecules as energy is moved from level to level.

Depth of Knowledge

75

Learning Activity

1. Students will complete an illustration showing the cyclic nature of materials with input of energy from the sun.
2. Students will complete a worksheet (9.1) correctly using the vocabulary that explains how energy is transferred in the cell.
3. Students will design an experiment using Elodea and computer sensors to determine the effect of light intensity on the rate of photosynthesis.
4. Students will analyze experimental results showing the effects of temperature on the rate of photosynthesis and predict other environmental factors that may affect the process.
5. Students will complete coloring assignments to emphasize the structure of mitochondria and their role in energy conversion in the cell.
6. Students will compare lactic acid fermentation, alcoholic fermentation and aerobic respiration in terms of the amount of energy released from each process.
7. Students will construct a chart comparing and contrasting all factors related to photosynthesis and respiration.

Research-based Instructional Strategies

Supporting Resources

Glencoe Biology 2007 edition with teacher resource package. Access to X: folder with developed SMART board and PowerPoint lessons. Wnuk Rademacher

Correction Exercise

The student will work additional reinforcement worksheets on the concepts

Enrichment Exercise for Accelerated Learners

The student will complete Critical Thinking/Problem solving worksheet analyzing factors affecting photosynthesis.

Remediation for Struggling Learners

1. IEP students will be given additional time to complete assignments and take into account their individual abilities in evaluating assignments.
2. During laboratory work students are peer grouped to their advantage.
3. Computers, sensors, elodea must be set up prior to the class time

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Code	Subject	Grade	T
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Show-Me Standards

Code	Subject	Grade	Standard	Goal
3	Science	Grades: K-12	characteristics and interactions of living organisms	
1	Science	Grades: K-12	properties and principles of matter and energy	
1.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Comprehend and evaluate written, visual and oral presentations and works
1.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Discover and evaluate patterns and relationships in information, ideas and structures
3.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Reason inductively from a set of specific facts and deductively from general premises

Grade and Course Level Standards

Common Core Standards

Version

1

Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 12

Unit Objective

The student will conclude that new cells form from duplication and separation of chromosomes during the cell cycle forming somatic cells genetically identical to the original cell.

Created By

System

Creation Date

5/19/2013 7:18:07 PM +00:00

Modified By

System

Modification Date

11/19/2013 5:22:08 PM +00:00

Sequence

12

Assessment Methods

Essential Questions

Course

Biology I

Unit

12 Cell Cycle

Objective used to assess students

Formative Assessment Activities

The student will conclude that new cells form from duplication and separation of chromosomes forming somatic cells during mitosis by organizing illustrations of cells sequentially showing increasing number of cells. Folder Ch 8 Mitosis Worksheets & Tests

Depth of Knowledge

80

Learning Activity

1. Students will complete a diagram showing the sequences of changes in the cell cycle and the relative amount of time spent in each phase.
2. Students will complete a worksheet (8.2) using vocabulary related to cell reproduction.
3. Students will use microscopes and prepared slides to observe structural differences in cells from different phases of the cell cycle.
4. After watching a video representing cell division, students will explain and diagram the changes in chromosomes in the process.
5. Students will identify cells from different tissues types and predict an organ of which they are a part.

Research-based Instructional Strategies

1. The teacher will provide background information about the makeup of organisms from organism to the cellular stage.
2. Show video segments illustrating changes in chromosomes during the cell cycles resulting in increase in growth of an organisms.
3. Provide examples of cells, tissues, and organs illustrating the levels of an organism.
4. Emphasize the chromosome behavior and changes during mitosis.

Supporting Resources

Glencoe Biology 2007 edition with teacher resource package. Folder Ch 8 Mitosis including PowerPoint presentations, Smart Board lessons, Wnuk RademacherUnited Streaming video, worksheets and tests.

Correction Exercise

The student will work additional reinforcement worksheets on the concepts

Enrichment Exercise for Accelerated Learners

The student will use internet to research cancer as a disease of uncontrolled cell division.

Remediation for Struggling Learners

Students will be peer grouped and given extra time to complete assignments.

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Show-Me Standards

Code	Subject	Grade	Standard	Goal
3	Science	Grades: K-12	characteristics and interactions of living organisms	
1.4	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Use technological tools and other resources to locate, select and organize information
1.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Discover and evaluate patterns and relationships in information, ideas and structures
1.8	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Organize data, information and ideas into useful forms (including charts, graphs, outlines) for analysis or presentation
3.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Reason inductively from a set of specific facts and deductively from general premises

Grade and Course Level Standards

Common Core Standards

Version

Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 13

Unit Objective

The student will infer that sexual reproduction results in organisms having heritable variations resulting from recombination of chromosomes during meiosis and fertilization.

Created By

System

Creation Date

5/19/2013 7:18:07 PM +00:00

Modified By

System

Modification Date

11/19/2013 5:05:23 PM +00:00

Sequence

13

Assessment Methods

Essential Questions

Course

Biology I

Unit

13 Meiosis

Objective used to assess students

Formative Assessment Activities

1. Students will infer from diagrams that sexual reproduction produces organisms having heritable variations resulting from recombination of chromosomes during meiosis and fertilization.
2. Students will also sequence general steps in the process of meiosis and fertilization identifying events that lead to variation in the offspring.

Depth of Knowledge

75

Learning Activity

1. Students will complete worksheet (10.2) inferring that meiosis produces gametes that have half the number of chromosomes of the parent cell.
2. Students will complete coloring worksheet to model the production of gametes.
3. Students will create an illustration showing that chromosome number of a species is restored at fertilization.
4. Using a provided illustration and after watching video from United Streaming on genes and reproduction, students will explain how sexual reproduction creates recombination of genes because of chromosome recombination at fertilization.

Research-based Instructional Strategies

1. The teacher will explain the end result of sexual reproduction,
2. Model changes in chromosomes leading to formation of sex cells in meiosis using smartboard lessons and video clips from United Streaming
3. Show Meiosos Square Dance video from United Streaming as a review.
4. Provide examples of cell phases for student interaction in group setting.

Supporting Resources

Glencoe Biology 2007 edition with teacher resource package. Folder 10.2 Meiosis with Smart Board Lessons Wnuk Rademacher, worksheets, activities and videos from United Streaming.

Correction Exercise

The student will work additional reinforcement worksheets on the concepts

Enrichment Exercise for Accelerated Learners

Students will create a concept map comparing mitosis and meiosis.

Remediation for Struggling Learners

Students are allowed extra time to complete assignments and will have the test items abbreviated and read allowed as needed. They will be peer grouped to compliment their abilities.

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Show-Me Standards

Code	Subject	Grade	Standard	Goal
3	Science	Grades: K-12	characteristics and interactions of living organisms	
1.4	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Use technological tools and other resources to locate, select and organize information
1.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Comprehend and evaluate written, visual and oral presentations and works
1.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Discover and evaluate patterns and relationships in information, ideas and structures
3.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Reason inductively from a set of specific facts and deductively from general premises

Grade and Course Level Standards

Common Core Standards

Version

Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 14

Unit Objective

The student will describe how, after fertilization, the zygote develops into a mature organism through the processes of mitosis and leading to differentiation creating specific tissues, organs, organ systems, and organism.

Created By

System

Creation Date

5/19/2013 7:18:07 PM +00:00

Modified By

System

Modification Date

11/19/2013 3:29:10 PM +00:00

Sequence

14

Assessment Methods

Essential Questions

Course

Biology I

Unit

14 Reproduction and development

Objective used to assess students

Formative Assessment Activities

The student will identify stages of development observed in vertebrate organisms from fertilization to birth. The student will explain why cells differentiate at different stages of development.

Depth of Knowledge

80

Learning Activity

1. The student will watch video over cell differentiation and answer question summarizing the similarities in stages of development from fertilization of birth.
2. From illustrations in smartboard lesson, students will match the embryonic stage to a vertebrate organisms.
3. Students will complete summary worksheet over control of the cell cycle. (9.3)
Students will complete summary worksheet over 36.2 and 36.3.

Research-based Instructional Strategies

The teacher will direct students to read lesson 9.3 and 38.2.

Supporting Resources

Glencoe Biology 2007 edition with teacher resource package. Folder 38 & 8.3
Growth & Development

Correction Exercise

The student will work additional reinforcement worksheets on the concepts

Enrichment Exercise for Accelerated Learners

Remediation for Struggling Learners

Modifications will be based on a student's IEP or special needs

District Defined

Objective is A+

Missouri School Improvement Program

Show-Me Standards

Code	Subject	Grade	Standard	Goal
3	Science	Grades: K-12	characteristics and interactions of living organisms	
1.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Discover and evaluate patterns and relationships in information, ideas and structures
3.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Reason inductively from a set of specific facts and deductively from general premises

Grade and Course Level Standards

Common Core Standards

Version

1

Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 15

Unit Objective

The student will diagram the structure of DNA and the replication process showing how it carries the hereditary information in all living organisms.

The student will explain how the DNA code determines the sequence of amino acids necessary for protein synthesis and recognize the functions of proteins in cell structure and function.

Created By

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Creation Date

5/19/2013 7:18:07 PM +00:00

Modified By

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Modification Date

11/19/2013 5:45:49 PM +00:00

Sequence

15

Assessment Methods

Essential Questions

Course

Biology I

Unit

15 DNA

Objective used to assess students

Formative Assessment Activities

The student will diagram and label the structure of DNA showing the replication process and how DNA carries the hereditary information in all living organisms.

Depth of Knowledge

70

Learning Activity

The student will manipulate structures on the SmartBoard to diagram the structure of DNA. The student will complete a worksheet that diagrams the structure of DNA. The student will complete a color page that outlines the DNA structure.

Research-based Instructional Strategies

Supporting Resources

Glencoe Biology 2007 edition with teacher resource package. Access to X: folder with developed smart board and powerpoint lessons by Wnuk & Rademacher

Correction Exercise

The student will work additional reinforcement worksheets on the concepts

Enrichment Exercise for Accelerated Learners

Students will research how mistakes in DNA replication cause abnormalities in humans and animals

Remediation for Struggling Learners

Students will be given manipulative models of DNA for longer periods of time.

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Code	Subject	Grade	G
MSIP Equity Concepts	Equity Concepts	Gender	W

Show-Me Standards

Code	Subject	Grade	Standard	Goal
3	Science	Grades: K-12	characteristics and interactions of living organisms	
2.1	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to communicate effectively within and beyond the classroom.	Plan and make written, oral and visual presentations for a variety of purposes and audiences
1.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Comprehend and evaluate written, visual and oral presentations and works
1.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Discover and evaluate patterns and relationships in information, ideas and structures
3.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Reason inductively from a set of specific facts and deductively from general premises

Grade and Course Level Standards

Common Core Standards

Version

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Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 17

Unit Objective

The student will analyze laboratory results of investigations that utilize DNA technology.

Created By

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Creation Date

5/19/2013 7:18:07 PM +00:00

Modified By

System

Modification Date

11/19/2013 3:12:57 PM +00:00

Sequence

16

Assessment Methods

Essential Questions

Course

Biology I

Unit

16 DNA Technology

Objective used to assess students

Formative Assessment Activities

The student will analyze laboratory results of investigations that utilize DNA techniques and technology.

Depth of Knowledge

75

Learning Activity

1. The student will complete gel electrophoresis to evaluate DNA.
2. Students will summarize the results of the investigation identify the guilty party of the crime based on electrophoresis results.

Research-based Instructional Strategies

1. The teacher will create a fake crime scene.
2. Prepare students by reviewing similar crime scene investigations
3. Provide instruction on techniques of electrophoresis.

Supporting Resources

Glencoe Biology 2007 edition with teacher resource package. Access to X: folder with developed lessons using smart board and power point by: Wnuk & Rademacher

Correction Exercise

The students will provide additional reinforcement worksheets on the concepts

Enrichment Exercise for Accelerated Learners

The student will research court cases where DNA analysis has convicted or acquitted defendants.

Remediation for Struggling Learners

Gel electrophoresis materials and equipment.

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Code	Subject	Grade	T
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Show-Me Standards

Code	Subject	Grade	Standard	Goal
3	Science	Grades: K-12	characteristics and interactions of living organisms	
7	Science	Grades: K-12	processes of scientific inquiry (such as formulating and testing hypotheses)	
8	Science	Grades: K-12	impact of science, technology and human activity on resources and the environment	
2.1	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to communicate effectively within and beyond the classroom.	Plan and make written, oral and visual presentations for a variety of purposes and audiences
1.4	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Use technological tools and other resources to locate, select and organize information
1.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Discover and evaluate patterns and relationships in information, ideas and structures

1.8	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Organize data, information and ideas into useful forms (including charts, graphs, outlines) for analysis or presentation
1.10	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Apply acquired information, ideas and skills to different contexts as students, workers, citizens and consumers
2.7	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to communicate effectively within and beyond the classroom.	Use technological tools to exchange information and ideas
4.1	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to make decisions and act as responsible members of society.	Explain reasoning and identify information used to support decisions

Grade and Course Level Standards

Common Core Standards

Version

Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 18

Unit Objective

The student will make predictions as to probabilities and patterns of inheritance of organisms using the principles of Mendelian genetics.

Created By

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Creation Date

5/19/2013 7:18:07 PM +00:00

Modified By

System

Modification Date

11/19/2013 7:10:08 PM +00:00

Sequence

17

Assessment Methods

Essential Questions

Course

Biology I

Unit

17 Genetics and Inheritance

Objective used to assess students

Formative Assessment Activities

The student will make predictions as to the probabilities and patterns of inheritance of characteristics by completing questions that require the use of the principles of Mendelian genetics. To complete the questions, Punnett squares will be used to show possible combinations of traits and the probability of those traits occurring in the offspring. File: 10.1 New Test 2007

Depth of Knowledge

80

Learning Activity

1. Students will complete notes following presentation from smartboard lesson and make predictions as to probabilities of characteristics in offspring.
2. Students will in small groups complete monohybrid genetics problems.
3. Students will complete worksheet (10.2) summarizing principles of Mendelian genetics.
4. Students will make predictions as the probability and patterns of inheritance for sex-linked traits using a worksheet and Mendelian genetics.
5. Students will complete a concept map (11) on human autosomal genetic disorders.
6. Students will analyze a pedigree chart and make predictions the the occurrence of a trait in future generations.
7. Students will create pedigree charts showing the occurrence of traits in generations.
8. Students will complete Punnett squares showing probability of inheritance of sex-linked traits

Research-based Instructional Strategies

1. The teacher will explain how predictions as the the inheritance of characteristics can be made using the principles of Mendelian inheritance.
2. Show video on the background of Gregor Mendel including development of the science based on his work.
3. Model a problem showing to answer questions related to the probability of a characteristic appearing in an organism.
4. The teacher will in lecture using smartboard explain that traits on a chromosome are linked.
5. Model the problem solving process to show that certain traits must be a part of the sex chromosomes.
6. Present PP lessons presenting information initially on basic monohybrid inheritance, dihybrid inheritance, sex-linked traits, codominance and incomplete dominance.

Supporting Resources

Glencoe Biology 2007 edition with teacher resource package. Smart Board Lessons, PowerPoint Presentations and AV are in the folders. Folder 10.1 Basic Genetics Wnuk Rademacher Folder 12 Human Genetics & Patterns Wnuk Rademacher

Correction Exercise

The student will work additional reinforcement worksheets on the concepts

Enrichment Exercise for Accelerated Learners

Students will predict probability of the occurrence of two traits occurring together in an organisms

Remediation for Struggling Learners

Students will be peer grouped to assist in reading and math abilities related to probabilities.

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Code	Subject	Grade	D
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Show-Me Standards

Code	Subject	Grade	Standard	Goal
3	Science	Grades: K-12	characteristics and interactions of living organisms	
3.1	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Identify problems and define their scope and elements
3.2	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Develop and apply strategies based on ways others have prevented or solved problems
1.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Comprehend and evaluate written, visual and oral presentations and works
1.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Discover and evaluate patterns and relationships in information, ideas and structures
1.8	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Organize data, information and ideas into useful forms (including charts, graphs, outlines) for analysis or presentation

Grade and Course Level Standards

Common Core Standards

Version

1

Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Unit Objective

The student will analyze evidence for evolution that is found in anatomical and molecular characteristics of organisms and in the fossil record.

Created By

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Creation Date

5/19/2013 7:18:08 PM +00:00

Modified By

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Modification Date

11/19/2013 3:24:19 PM +00:00

Sequence

18

Assessment Methods

Essential Questions

Course

Biology I

Unit

Objective used to assess students

Formative Assessment Activities

The student will analyze evidence for evolution that is found in anatomical and molecular characteristics of organisms and in the fossil record.

Depth of Knowledge

75

Learning Activity

1. Students will complete an outline worksheet as they read lesson 14.1 over the fossil record and geologic time table.
2. Students will complete a worksheet (14.4 Critical Thinking Skills) to analyze the law of superposition
3. Students will construct a scale model of the geological time scale in groups.

Research-based Instructional Strategies

1. The teacher will introduce evolution by relating it to variation in characteristics of organisms created by mutation and sexual reproduction.
2. Lecture presentation will focus on development of the geologic timetable using fossil record and radioactive dating as evidence.

Supporting Resources

Biology: The Dynamics of Life, Glencoe 2000 edition with teacher resource package. Access to X: folder with developed smart board and power point lessons by: Wnuk Rademacher

Correction Exercise

The student will work additional reinforcement worksheets on the concepts

Enrichment Exercise for Accelerated Learners

Students will create a concept map showing the formation of a fossil.

Remediation for Struggling Learners

Students will be peer grouped during activities to complement their abilities.

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Show-Me Standards

Code	Subject	Grade	Standard	Goal
4	Science	Grades: K-12	changes in ecosystems and interactions of organisms with their environments	
3.2	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Develop and apply strategies based on ways others have prevented or solved problems
1.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Comprehend and evaluate written, visual and oral presentations and works
1.6	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to gather, analyze and apply information and ideas.	Discover and evaluate patterns and relationships in information, ideas and structures
3.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Reason inductively from a set of specific facts and deductively from general premises

Grade and Course Level Standards

Common Core Standards

Version

Files

Date Range

Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

Guiding Questions

Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 20

Unit Objective

The student will predict the effects of the different types of natural selection on the gene pools of organisms and how it produces variation among individuals and diversity among species.

Created By

System

Creation Date

5/19/2013 7:18:08 PM +00:00

Modified By

System

Modification Date

11/19/2013 3:16:07 PM +00:00

Sequence

19

Assessment Methods

Essential Questions

Course

Biology I

Unit

19 Natural Selection

Objective used to assess students

Formative Assessment Activities

Students will predict how natural selection results in evolution of a species. They will infer how different types of natural selection affect the gene pool.

Depth of Knowledge

75

Learning Activity

1. Students will analyze the development of Darwin's theory after watching the video "Darwin: evolution's Voice".
2. Students will complete a worksheet (15.1) analyzing Darwin's experiences and identifying the types of structural adaptations and physical evidence of evolution.
3. Students will complete an investigation of the peppered moth as a model of evolution in action.
4. Given an major environmental change, students will predict whether an organism will survive justifying their responses.
5. Students working in groups will investigate how camouflage is an adaptive advantage.

Research-based Instructional Strategies

1. The teacher will provide a history of evolutionary theory by showing the video "Darwin, Evolution's Voice"
2. The teacher will model the types of natural selection using smartboard graphics and provide group practice.
3. The teacher will present a concept map showing the an evolutionaly sequence.

Supporting Resources

Glencoe Biology 2007 edition with teacher resource package. Video: A&E Biography Series: Darwin Evolution's Voice
Access to X: folder with developed power point and smart board lessons by: Wnuk & Rademacher

Correction Exercise

The student will work additional reinforcement worksheets on the concepts

Enrichment Exercise for Accelerated Learners

Remediation for Struggling Learners

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Show-Me Standards

Code	Subject	Grade	Standard	Goal
4	Science	Grades: K-12	changes in ecosystems and interactions of organisms with their environments	
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3.5	Knowledge Standards	Grades: K-12	Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems.	Reason inductively from a set of specific facts and deductively from general premises

Grade and Course Level Standards

Code	Subject	Grade	Strand	Standard	Concept	Expectation
4.3.C.a	Science	Biology I	Changes in Ecosystems and Interactions of Organisms with their Environments	Genetic variation sorted by the natural selection process explains evidence of biological evolution	Natural selection is the process of sorting individuals based on their ability to survive and reproduce within their ecosystem	Identify examples of adaptations that may have resulted from variations favored by natural selection (e.g., long-necked giraffes, long-eared jack rabbits) and describe how that variation may have provided populations an advantage for survival
4.3.C.b	Science	Biology I	Changes in Ecosystems and Interactions of Organisms with their Environments	Genetic variation sorted by the natural selection process explains evidence of biological evolution	Natural selection is the process of sorting individuals based on their ability to survive and reproduce within their ecosystem	Explain how genetic homogeneity may cause a population to be more susceptible to extinction (e.g., succumbing to a disease for which there is no natural resistance)

4.3.C.c	Science	Biology I	Changes in Ecosystems and Interactions of Organisms with their Environments	Genetic variation sorted by the natural selection process explains evidence of biological evolution	Natural selection is the process of sorting individuals based on their ability to survive and reproduce within their ecosystem	Explain how environmental factors (e.g., habitat loss, climate change, pollution, introduction of non-native species) can be agents of natural selection
4.3.C.d	Science	Biology I	Changes in Ecosystems and Interactions of Organisms with their Environments	Genetic variation sorted by the natural selection process explains evidence of biological evolution	Natural selection is the process of sorting individuals based on their ability to survive and reproduce within their ecosystem	Given a scenario describing an environmental change, hypothesize why a given species was unable to survive

Common Core Standards

Version

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Other Standards

Other Diverse Learners

Students Self-Reflection About Personal Goals

Use of Technology

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Guiding Questions Depth of Knowledge

Summative Assessment Activities

Summative Correction Exercise

Family and Community Involvement

Name

Biology I Objective 21

Unit Objective

The student will analyze the modern classification system of organisms by showing how organisms are classified into categories, such as kingdom and phylum, based on evolutionary relationships (e.g. similarities in DNA and protein structures, internal anatomical features, and patterns of development).

Created By

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Creation Date

5/19/2013 7:18:08 PM +00:00

Modified By

System

Modification Date

11/19/2013 5:14:55 PM +00:00

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Assessment Methods

Essential Questions

Course

Biology I

Unit

20 Classification

Objective used to assess students

Formative Assessment Activities

Students will analyze the modern classification system of organisms by describing how organisms are classified into categories. Students will classify organisms into taxonomic categories based on their characteristics. Students will create a dichotomous key to identify organisms given characteristics for those organisms.

Depth of Knowledge

75

Learning Activity

1. Students will evaluate methods of classification by examining the amino acid sequences in different organisms. (Critical Thinking/Problem solving 17.1 Glencoe Biology 2000)
2. Students will use a dichotomous key to classify sharks to family and then create a dichotomous key of a set of bony fish.
3. Students will complete a concept map showing the organization of organisms into today's 3 domain, 6 kingdom system.
4. Students will answer questions analyzing the video "Bring Order to Diversity"
5. Students will engage in presentation explaining need to classify organisms and the contributions of well-known scientists.
6. Students will complete assignments 17.1 Glencoe 2000), BioLab; "How can organisms be grouped on a cladogram?" Glencoe 2007, Real World Analysis--A Dichotomous Key (Glencoe 2007), Concept Map Domains and Kingdoms (Glencoe 2007) and section study guides (Glencoe 2007)

Research-based Instructional Strategies

1. The teacher will introduce classification relating the activity to arrangement of personal things in one's life such as a closet.
2. A video clip will be shown explaining the need to group living things.
3. A SB presentation will be given to engage students in need for all classification.
4. Information will be provided about diversity of organisms contrasting it with their similarities.
5. From that point, the teacher will show the video "Bring Order to Diversity"
6. The teacher will model the use of a dichotomous key.
7. The teacher will model the use categorizing organisms. The teacher will help student classify themselves and other organisms based on their characteristics.
8. The teacher will provide criteria of each category of the 3 domains and 6 kingdom system of organisms.
9. The teacher will establish small group learning situations allowing class time for completion of lab and analysis activity.

Supporting Resources

Glencoe Biology 2007 edition with teacher resource package. Access to X: folder with developed smart board and power point lessons by: Wnuk & Rademacher

Correction Exercise

The student will work additional reinforcement worksheets on the concepts

Enrichment Exercise for Accelerated Learners

Students will be given the opportunity to report on members of a chosen taxa of organisms in a power point presentation

Remediation for Struggling Learners

Students will work with a peer to complete assignments and be given additional time and preferential seating as needed.

English Language Learner

District Defined

Objective is A+

Missouri School Improvement Program

Show-Me Standards

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Code	Subject	Grade	Strand	Standard	Concept	Expectation
3.1.E.a	Science	Biology I	Characteristic and Interactions of Living Organisms	There is a fundamental unity underlying the diversity of all living organisms	Biological classifications are based on how organisms are related	Explain how similarities used to group taxa might reflect evolutionary relationships (e.g., similarities in DNA and protein structures, internal anatomical features, patterns of development)

Common Core Standards

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