

Brick Township Public Schools SCIENCE CURRICULUM

Eighth Grade

Aligned to the Next Generation Science Standards (NGSS)

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

**BRICK TOWNSHIP PUBLIC SCHOOLS
SCIENCE CURRICULUM**

Content Area: Middle School Science

Grade Level: Eighth Grade

Unit	Timeframe
Unit 1: Structure and Properties of Matter	45 Days
Unit 2: Chemical Reactions	45 Days
Unit 3: Structure, Function, and Information Processing	45 Days
Unit 4: Growth, Production, and Reproduction of Organisms	45 Days

**Date Created:
June 21, 2017**

**Board Approved
on: 9/14/17**

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BRICK TOWNSHIP PUBLIC SCHOOLS SCIENCE: UNIT 1	
Content Area: Science	
Unit Title: Unit 1: Structure and Properties of Matter	
Grade Level: Grade 8	
<p>Unit Summary Students build understandings of what occurs at the atomic and molecular scale. Students apply understanding that pure substances have characteristic properties and are made from a single type of atom or molecule. They also provide a molecular level account to explain states of matter and changes between states. Students demonstrate proficiency in developing and using models and obtaining, evaluating, and communicating information. Students use these scientific and engineering practices to demonstrate understanding of the core ideas.</p>	
<p>Primary interdisciplinary connections: <i>ELA/Literacy, Mathematics, Technology</i></p>	
<p>21st Century Themes:</p> <ul style="list-style-type: none"> • Creativity and innovation • Critical thinking and problem solving • Communication • Collaboration • Information literacy • Media literacy • Information and communications technology (ICT) • Literacy • Flexibility and adaptability • Initiative and self-direction • Social and cross cultural skills • Productivity and accountability • Leadership and responsibility 	
<p>Technology Connections: <i>Prentice Hall Science Explorer (online textbooks) – www.pearsonsuccessnet.com</i> <i>eScience3000 – www.escience3000.com</i></p>	
Next Generation Science Standards (NGSS)	
Performance Expectations (PEs)	Student Learning Objectives (SLO)
MS-PS1-1	Develop models to describe the atomic composition of simple molecules and extended structures.
MS-PS1-3	Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.

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MS-PS1-4	Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	
NGSS Disciplinary Core Ideas (DCI)		
PS1.A: Structure and Properties of Matter	<ul style="list-style-type: none"> Each pure substance has characteristic physical and chemical properties (for any bulk quantity under given conditions) that can be used to identify it. (MS-PS1-2) <i>(Note: This Disciplinary Core Idea is also addressed by MS-PS1-3.)</i> 	
PS1.B: Chemical Reactions	<ul style="list-style-type: none"> Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants. (MS-PS1-2), (MS-PS1-5) <i>(Note: This Disciplinary Core Idea is also addressed by MS-PS1-3.)</i> The total number of each type of atom is conserved, and thus the mass does not change. (MS-PS1-5) Some chemical reactions release energy, others store energy. (MS-PS1-6) 	
ETS1.B: Developing Possible Solutions	<ul style="list-style-type: none"> A solution needs to be tested, and then modified on the basis of the test results, in order to improve it. <i>(secondary to MS-PS1-6)</i> 	
ETS1.C: Optimizing the Design Solution	<ul style="list-style-type: none"> Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process - that is, some of the characteristics may be incorporated into the new design. <i>(secondary to MS-PS1-6)</i> The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution. <i>(secondary to MS-PS1-6)</i> 	
Unit Essential Questions <ul style="list-style-type: none"> What happens when new materials are formed? What stays the same and what changes? 	Unit Enduring Understandings <i>Students will understand that...</i> <ul style="list-style-type: none"> what occurs at the atomic and molecular scale during chemical reactions changes the substance. 	
Unit Objectives <i>Students will know...</i> <ul style="list-style-type: none"> each pure substance has characteristic physical and chemical properties (for any bulk quantity under given conditions) that can be used to identify it. 	Unit Objectives <i>Students will be able to...</i> <ul style="list-style-type: none"> analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. develop and use a model to describe how 	

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<ul style="list-style-type: none"> • substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants. • the total number of each type of atom is conserved, and thus the mass does not change. • some chemical reactions release energy, others store energy. • a solution needs to be tested, and then modified on the basis of the test results, in order to improve it. • the iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution. • although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process that is, some of the characteristics may be incorporated into the new design. 	<p>the total number of atoms does not change in a chemical reaction and thus mass is conserved.</p> <ul style="list-style-type: none"> • undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes. • design qualitative investigations to differentiate between physical and chemical changes in matter. • provide molecular level accounts to explain that chemical reactions involve regrouping of atoms to form new substances, and that atoms rearrange during chemical reactions. • apply an understanding of the design and the process of optimization in engineering to chemical reaction systems. • demonstrate proficiency in developing and using models, analyzing and interpreting data, and designing solutions. (geochemical reactions) and how many geoscience processes (such as earthquakes, volcanoes, and meteor impacts) usually behave gradually but are punctuated by catastrophic events. • analyze and interpret data that include similarities of rock and fossil types on different continents, the shapes of the continents (including continental shelves), and the locations of ocean structures (such as ridges, fracture zones, and trenches).
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Evidence of Learning

Formative Assessments

- Graphic organizers
- Guided note-taking
- Directed reading
- Cooperative group learning
- Homework
- Journal entries

Summative Assessments

- Unit tests and quizzes
- Labs and engineering based projects

Modifications (ELLs, Special Education, Gifted and Talented)

- Follow all IEP modifications/504 plan

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- Teacher tutoring
- Peer tutoring
- Cooperative learning groups
- Modified assignments
- Differentiated instruction
- Tiered assignments

Curriculum Development Resources/Instructional Materials

Prentice Hall Science Explorer – Chemical Interactions, Chemical Building Blocks *Online textbooks* – <http://www.pearsonsuccessnet.com>
eScience3000 – <http://www.escience3000.com>

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**BRICK TOWNSHIP PUBLIC SCHOOLS
SCIENCE: UNIT 2**

Content Area: Science

Unit Title: Unit 2: Chemical Reactions

Grade Level: Grade 8

Unit Summary

Students understand what occurs at the atomic and molecular scale during chemical reactions. Students provide molecular level accounts to explain that chemical reactions involve regrouping of atoms to form new substances and that atoms rearrange during chemical reactions. Students are also able to apply an understanding of the design and the process of optimization in engineering to chemical reaction systems. In these performance expectations, students are expected to demonstrate proficiency in developing and using models, analyzing and interpreting data, and designing solutions. Students use these scientific and engineering practices to demonstrate understanding of the core ideas.

Primary interdisciplinary connections:

ELA/Literacy, Mathematics, Technology

21st Century Themes:

- Creativity and innovation
- Critical thinking and problem solving
- Communication
- Collaboration
- Information literacy
- Media literacy
- Information and communications technology (ICT)
- Literacy
- Flexibility and adaptability
- Initiative and self direction
- Social and cross cultural skills
- Productivity and accountability
- Leadership and responsibility

Technology Connections:

*Prentice Hall Science Explorer (online textbooks) – www.pearsonsuccessnet.com
eScience3000 – www.escience3000.com*

Learning Targets

Next Generation Science Standards (NGSS)

Performance Expectations (PEs)	Student Learning Objectives (SLO)
MS-PS1-2	Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
MS-PS1-5	Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

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MS-PS1-6	Undertake a design project to construct, test, and modify a device that either releases or absorbs the thermal energy by chemical processes.
NGSS Disciplinary Core Ideas (DCI)	
PS1.A: Structure and Properties of Matter	<ul style="list-style-type: none"> Each pure substance has characteristic physical and chemical properties (for any bulk quantity under given conditions) that can be used to identify it. (MS-PS1-2) <i>(Note: This Disciplinary Core Idea is also addressed by MS-PS1-3.)</i>
PS1.B: Chemical Reactions	<ul style="list-style-type: none"> Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants. (MS-PS1-2), (MS-PS1-5) <i>(Note: This Disciplinary Core Idea is also addressed by MS-PS1-3.)</i> The total number of each type of atom is conserved, and thus the mass does not change. (MS-PS1-5) Some chemical reactions release energy, others store energy. (MS-PS1-6)
ETS1.B: Developing Possible Solutions	<ul style="list-style-type: none"> A solution needs to be tested, and then modified on the basis of the test results, in order to improve it. <i>(secondary to MS-PS1-6)</i>
ETS1.C: Optimizing the Design Solution	<ul style="list-style-type: none"> Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process - that is, some of the characteristics may be incorporated into the new design. <i>(secondary to MS-PS1-6)</i> The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution. <i>(secondary to MS-PS1-6)</i>
Unit Essential Questions <ul style="list-style-type: none"> What happens when new materials are formed? What stays the same and what changes? 	Unit Enduring Understandings <i>Students will understand that...</i> <ul style="list-style-type: none"> what occurs at the atomic and molecular scale during chemical reactions changes the substance.
Unit Objectives <i>Students will know...</i> <ul style="list-style-type: none"> each pure substance has characteristic physical and chemical properties (for any bulk quantity under given conditions) that can be used to identify it. substances react chemically in 	Unit Objectives <i>Students will be able to...</i> <ul style="list-style-type: none"> analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. develop and use a model to describe how the total number of atoms does not change

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<p>characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants.</p> <ul style="list-style-type: none"> the total number of each type of atom is conserved, and thus the mass does not change. some chemical reactions release energy, others store energy. a solution needs to be tested, and then modified on the basis of the test results, in order to improve it. the iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution. although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process that is, some of the characteristics may be incorporated into the new design. 	<p>in a chemical reaction and thus mass is conserved.</p> <ul style="list-style-type: none"> undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes. design qualitative investigations to differentiate between physical and chemical changes in matter. provide molecular level accounts to explain that chemical reactions involve regrouping of atoms to form new substances, and that atoms rearrange during chemical reactions. apply an understanding of the design and the process of optimization in engineering to chemical reaction systems. demonstrate proficiency in developing and using models, analyzing and interpreting data, and designing solutions.
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Evidence of Learning

Formative Assessments

- Graphic organizers
- Guided note-taking
- Directed reading
- Cooperative group learning
- Homework
- Journal entries

Summative Assessments

- Unit tests and quizzes
- Labs and engineering based projects

Modifications (ELLs, Special Education, Gifted and Talented)

- Follow all IEP modifications/504 plan
- Teacher tutoring
- Peer tutoring
- Cooperative learning groups

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- Modified assignments
- Differentiated instruction
- Tiered assignments

Curriculum Development Resources/Instructional Materials

Prentice Hall Science Explorer – Chemical Interactions, Chemical Building Blocks

Online textbooks – <http://www.pearsonsuccessnet.com>

eScience3000 – <http://www.escience3000.com>

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BRICK TOWNSHIP PUBLIC SCHOOLS SCIENCE: UNIT 3	
Content Area: Science	
Unit Title: Unit 3: Structure, Function, and Information Processes	
Grade Level: Grade 8	
<p>Unit Summary</p> <p>Students plan and carry out investigations to develop evidence that living organisms are made of cells and to determine the relationship of organisms to the environment. Students use their understanding of cell theory to develop physical and conceptual models of cells. They construct explanations for the interactions of systems in cells and organisms and how organisms gather and use information from the environment. Students understand that all organisms are made of cells, that special structures are responsible for particular functions in organisms, and that for many organisms the body is a system of multiple interacting subsystems that form a hierarchy from cells to the body.</p> <p>Primary interdisciplinary connections: <i>ELA/Literacy, Mathematics, Technology</i></p> <p>21st Century Themes:</p> <ul style="list-style-type: none"> • Creativity and innovation • Critical thinking and problem solving • Communication • Collaboration • Information literacy • Media literacy • Information and communications technology (ICT) • Literacy • Flexibility and adaptability • Initiative and self direction • Social and cross cultural skills • Productivity and accountability • Leadership and responsibility <p>Technology Connections: <i>Prentice Hall Science Explorer (online textbooks) – www.pearsonsuccessnet.com eScience3000 – www.escience3000.com</i></p>	
Learning Targets	
Next Generation Science Standards (NGSS)	
Performance Expectations (PEs)	Student Learning Objectives (SLO)
MS-LS1-1	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.
MS-LS1-2	Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.

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MS-LS1-3	Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.
MS-LS1-8	Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.
NGSS Disciplinary Core Ideas (DCI)	
LS1.A: Structure and Function	<ul style="list-style-type: none"> • All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular). (MS-LS1-1) • Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. (MS-LS1-2) • In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. (MS-LS1-3)
LS1.D: Information Processing	<ul style="list-style-type: none"> • Each sense receptor responds to different inputs (electromagnetic, mechanical, chemical), transmitting them as signals that travel along nerve cells to the brain. The signals are then processed in the brain, resulting in immediate behaviors or memories. (MS-LS1-8)
<p>Unit Essential Questions</p> <ul style="list-style-type: none"> • How do the structures of organisms contribute to life's functions? • What do all living things have in common? 	<p>Unit Enduring Understandings <i>Students will understand that...</i></p> <ul style="list-style-type: none"> • living organisms are composed of cellular units that carry out functions required for life. • cellular units are composed of molecules, which also carry out biological functions. • in multicellular organisms the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions.
<p>Unit Objectives <i>Students will know...</i></p> <ul style="list-style-type: none"> • the parts and use of a compound microscope. • know the major contributors to cell theory. • cell structure and specialized function of each organelle in a plant and animal cell. • multicellular organisms begin as a single cell. • organisms grow and develop as a result of 	<p>Unit Objectives <i>Students will be able to...</i></p> <ul style="list-style-type: none"> • demonstrate how to correctly use the compound microscope. • describe the structure and function of each organelle in a plant and animal cell. • compare and contrast structures of different types of cells and relate the structures to the functions the different cells perform. • understand the different levels of

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<p>cell division.</p> <ul style="list-style-type: none"> • the levels of organization within an organism. • that each sense receptor responds to different inputs (electromagnetic, mechanical, chemical) transmitting them as signals that travel along the nerve cells to the brain resulting in immediate behaviors and memories. 	<p>organization within an organism.</p>
Evidence of Learning	
<p>Formative Assessments</p> <ul style="list-style-type: none"> • Graphic organizers • Guided note-taking • Directed reading • Cooperative group learning • Homework • Journal entries 	
<p>Summative Assessments</p> <ul style="list-style-type: none"> • Unit tests and quizzes • Labs and engineering based projects 	
<p>Modifications (ELLs, Special Education, Gifted and Talented)</p> <ul style="list-style-type: none"> • Follow all IEP modifications/504 plan • Teacher tutoring • Peer tutoring • Cooperative learning groups • Modified assignments • Differentiated instruction • Tiered assignments 	
<p>Curriculum Development Resources/Instructional Materials <i>Prentice Hall Science Explorer</i> – Cells and Heredity and Human Biology and Health <i>Online textbooks</i> – http://www.pearsonsuccessnet.com <i>eScience3000</i> – http://www.escience3000.com</p>	

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BRICK TOWNSHIP PUBLIC SCHOOLS SCIENCE: UNIT 4	
Content Area: Science	
Unit Title: Unit 4: Growth, Development, and Reproduction of Organisms	
Grade Level: Grade 8	
<p>Unit Summary Students understand how the environment and genetic factors determine the growth of an individual organism. They also demonstrate understanding of the genetic implications for sexual and asexual reproduction. Students develop evidence to support their understanding of the structures and behaviors that increase the likelihood of successful reproduction by organisms. They have a beginning understanding of the ways humans can select for specific traits, the role of technology, genetic modification, and the nature of ethical responsibilities related to selective breeding. At the end of the unit, students can explain how selected structures, functions, and behaviors of organisms change in predictable ways as they progress from birth to old age.</p> <p>Primary interdisciplinary connections: <i>ELA/Literacy, Mathematics, Technology</i></p> <p>21st Century Themes:</p> <ul style="list-style-type: none"> • Creativity and innovation • Critical thinking and problem solving • Communication • Collaboration • Information literacy • Media literacy • Information and communications technology (ICT) • Literacy • Flexibility and adaptability • Initiative and self direction • Social and cross cultural skills • Productivity and accountability • Leadership and responsibility <p>Technology Connections: <i>Prentice Hall Science Explorer (online textbooks) – www.pearsonsuccessnet.com</i> <i>eScience3000 – www.escience3000.com</i></p>	
Learning Targets	
Next Generation Science Standards (NGSS)	
Performance Expectations (PEs)	Student Learning Objectives (SLO)
MS-LS1-4	Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful

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	reproduction of animals and plants respectively.
MS-LS1-5	Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.
MS-LS3-1	Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.
MS-LS3-2	Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.
MS-LS4-5	Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.
NGSS Disciplinary Core Ideas (DCI)	
LS1.B: Growth and Development of Organisms	<ul style="list-style-type: none"> • Organisms reproduce, either sexually or asexually, and transfer their genetic information to their offspring. (secondary to MS-LS3-2) • Animals engage in characteristic behaviors that increase the odds of reproduction. (MS-LS1-4) • Plants reproduce in a variety of ways, sometimes depending on animal behavior and specialized features for reproduction. (MS-LS1-4) • Genetic factors as well as local conditions affect the growth of the adult plant. (MS-LS1-5)
LS3.A: Inheritance of Traits	<ul style="list-style-type: none"> • Genes are located in the chromosomes of cells, with each chromosome pair containing two variants of each of many distinct genes. Each distinct gene chiefly controls the production of specific proteins, which in turn affects the traits of the individual. Changes (mutations) to genes can result in changes to proteins, which can affect the structures and functions of the organism and thereby change traits. (MS-LS3-1) • In sexually reproducing organisms, each parent contributes half of the genes acquired (at random) by the offspring. Individuals have two of each chromosome and hence two alleles of each gene, one acquired from each parent. These versions may be identical or may differ from each other. (MS-LS3-2) • In addition to variations that arise from sexual reproduction, genetic information can be altered because of mutations. Though rare, mutations may result in changes to the structure and function of proteins. Some changes are beneficial, others harmful, and some neutral to the organism. (MS-LS3-1)
LS3.B: Variation of Traits	<ul style="list-style-type: none"> • Variations of inherited traits between parent and offspring arise from genetic differences that result from the subset of chromosomes (and therefore genes) inherited. (MS-LS3-2) • In addition to variations that arise from sexual reproduction, genetic information can be altered because of mutations. Though rare, mutations may result in changes to the structure and function of

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	<p>proteins. Some changes are beneficial, others harmful, and some neutral to the organism. (MS-LS3-1)</p> <ul style="list-style-type: none"> • In sexually reproducing organisms, each parent contributes half of the genes acquired (at random) by the offspring. Individuals have two of each chromosome and hence two alleles of each gene, one acquired from each parent. These versions may be identical or may differ from each other. (MS-LS3-2)
LS4.B: Natural Selection	<p>In <i>artificial</i> selection, humans have the capacity to influence certain characteristics of organisms by selective breeding. One can choose desired parental traits determined by genes, which are then passed on to offspring. (MS-LS4-5)</p>
<p>Unit Essential Questions</p> <ul style="list-style-type: none"> • How do organisms grow, develop, and reproduce? 	<p>Unit Enduring Understandings</p> <p><i>Students will understand that...</i></p> <ul style="list-style-type: none"> • the environment and genetic factors determine the growth of an individual organism. • the genetic implications for sexual and asexual reproduction. • there are structures and behaviors that increase the likelihood of successful reproduction by organisms. • the ways humans can select for specific traits, the role of technology, genetic modification, and the nature of ethical responsibilities related to selective breeding (Please note that students are only beginning to understand this concept.) • how selected structures, functions, and behaviors of organisms change in predictable ways as they progress from birth to old age. •
<p>Unit Objectives</p> <p><i>Students will know...</i></p> <ul style="list-style-type: none"> • animals engage in characteristic behaviors that increase the odds of reproduction. • plants reproduce in a variety of ways, sometimes depending on animal behavior and specialized features for reproduction. • genetic factors as well as local conditions affect the growth of the adult plant. • construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. 	<p>Unit Objectives</p> <p><i>Students will be able to...</i></p> <ul style="list-style-type: none"> • use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively. • construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

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<ul style="list-style-type: none">genes are located in the chromosomes of cells, with each chromosome pair containing two variants of each of many distinct genes. Each distinct gene chiefly controls the production of specific proteins, which in turn affects the traits of the individual. Changes (mutations) to genes can result in changes to proteins, which can affect the structures and functions of the organism and thereby change traits.in addition to variations that arise from sexual reproduction, genetic information can be altered because of mutations. Though rare, mutations may result in changes to the structure and function of proteins. Some changes are beneficial, others harmful, and some neutral to the organism.organisms reproduce, either sexually or asexually, and transfer their genetic information to their offspring.in sexually reproducing organisms, each parent contributes half of the genes acquired (at random) by the offspring. Individuals have two of each chromosome and hence two alleles of each gene, one acquired from each parent. These versions may be identical or may differ from each other.in artificial selection, humans have the capacity to influence certain characteristics of organisms by selective breeding. One can choose desired parental traits determined by genes, which are then passed on to offspring.	<ul style="list-style-type: none">develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.
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Evidence of Learning

Formative Assessments

- Graphic organizers
- Guided note-taking
- Directed reading
- Cooperative group learning
- Homework
- Journal entries

Summative Assessments

- Unit tests and quizzes
- Labs and engineering based projects

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Modifications (ELLs, Special Education, Gifted and Talented)

- Follow all IEP modifications/504 plan
- Teacher tutoring
- Peer tutoring
- Cooperative learning groups
- Modified assignments
- Differentiated instruction
- Tiered assignments

Curriculum Development Resources/Instructional Materials

Prentice Hall Science Explorer – Cells and Heredity

Online textbooks – <http://www.pearsonsuccessnet.com>

eScience3000 – <http://www.escience3000.com>