

**West Linn-Wilsonville School District
Middle (Grades 6-8) Science
Framework for Planning Instruction and Inquiry**

Grade Level: 7 **Unit of Study:** Life Science - Human Body

Concepts: *Function & Interdependence; Complexity; Owner's Manual*

Exploration & Focus Questions	Essential Content	Activities to Provide Students w/Essential Background	Activities That Prompt Students' Questions	Developing Reading and Writing Skills	Experiments & Inquiry Ideas	Demonstrating Learning	Materials
<p>How does my body work?</p> <p>What does my body do?</p> <p>How do I keep my body healthy?</p>	<p>Body Organization:</p> <ul style="list-style-type: none"> • Cells • Tissue • Organs • Organ systems • Organisms <p>Core Systems:</p> <ul style="list-style-type: none"> • Immune • Cardio-vascular • Skeletal • Muscular • Digestive • Nervous • Respiratory • Reproductive <p>Whole Organism:</p> <ul style="list-style-type: none"> • Interdependency of systems <p>NOTE: Conceptual understanding is the focus (more so than memorization of parts)</p>	<p>KWL: what we already know, what we want to know, what we learned</p> <p>Reading</p> <p>Viewing</p> <p>Basic textual research</p> <p>Guest speakers</p> <p>Vocabulary</p>	<p>Labs</p> <p>Data collection and analysis</p> <ul style="list-style-type: none"> • Vernier probes • Journals <p>Field trips</p> <p>Current events</p>	<p>Reading:</p> <ul style="list-style-type: none"> • Current events • Reading strategies • Technical, scientific text • Validity of resources • Vocabulary • Synthesis <p>Writing:</p> <ul style="list-style-type: none"> • Organization • Synthesis • Scientific writing • Lab write-up • Citing sources <p>Note-taking and retention strategies</p>	<p>Background information</p> <p>What can impact/affect systems?</p>	<p>Data and/or statistical analysis and application</p> <p>Sharing research project</p> <p>Formal writing</p> <p>Building models</p> <p>Giving speeches</p>	<p>“Teaching Reading in the Content Area”</p> <p><i>Nonfiction Matters</i></p> <p>CREST anatomy models</p> <p>Computers and calculators</p> <p>Vernier probes</p> <p>Digital Library/online resources</p> <p>Textbook</p> <p>Community partnerships</p> <p>Basic lab equipment</p> <p>Parent communication</p>

**West Linn-Wilsonville School District
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Grade Level: 7 **Unit of Study:** Life Science - Cells

Concepts: *Every living thing is made of cells; how cells work*

Exploration and Focus Questions	Essential Content	Activities to Provide Students with Essential Background	Activities That Prompt Students' Questions	Developing Reading and Writing	Experiments & Inquiry Ideas	Demonstrating Learning	Materials
<p>What is a cell?</p> <p>How does a cell work?</p> <p>What roles do cells play in living things?</p>	<p>Cell theory</p> <p>Characteristics of cells:</p> <ul style="list-style-type: none"> • Plant • Animal • Bacteria <p>Differences between types of cells</p> <p>Basic cellular structure and function:</p> <ul style="list-style-type: none"> • Cell membrane • Cell wall • Nucleus • Ribosome • ER • Chloroplast • Mitochondria • Golgi Complex • Cytoplasm • Vacuoles • Lysosome <p>Cell processes:</p> <ul style="list-style-type: none"> • Osmosis • Diffusion • Respiration • Reproduction 	<p>Cell model</p> <p>Looking at cells:</p> <ul style="list-style-type: none"> • Cheek • Onion • Pond water • Prepared bacterial slides <p>Mitosis slides</p> <p>Comparisons and analogies (ex. more cells in your body than people on the planet)</p>	<p>Plasmolysis (onion exposed to salt water)</p>	<p>Reading:</p> <ul style="list-style-type: none"> • Current events • Reading strategies • Technical, scientific text • Validity of resources • Vocabulary • Synthesis <p>Writing:</p> <ul style="list-style-type: none"> • Organization • Synthesis • Scientific writing • Lab write-up • Citing sources <p>Note-taking and retention strategies</p> <p>Observing, sketching, and labeling</p>	<p>Cancer</p> <p>What is a healthy cell?</p> <p>What is an unhealthy cell?</p> <p>Form and function</p> <p>Comparisons and analogies (ex. more cells in your body than people on the planet)</p>	<p>Cell analogies</p> <p>Cell model (with formal writing)</p> <p>Observing, sketching, and labeling</p>	<p>Flexcam (projecting microscope)</p> <p>Slides</p> <p>Textbook</p> <p>Digital Library/online resources</p> <p>Community partnerships</p> <p>Basic lab equipment</p>

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Grade Level: 7 **Unit of Study:** Life Science - Genetics/Heredity

Concepts: *Traits are determined by DNA and are passed from one generation to another*

Exploration and Focus Questions	Essential Content	Activities to Provide Students with Essential Background	Activities That Prompt Students' Questions	Developing Reading and Writing	Experiments & Inquiry Ideas	Demonstrating Learning	Materials
<p>How are traits determined?</p> <p>How are traits passed from one generation to another?</p> <p>How am I different/the same as my ancestors?</p>	<p>Hierarchy of:</p> <ul style="list-style-type: none"> • Chromosome • Gene • DNA <p>Structure of DNA/genes:</p> <ul style="list-style-type: none"> • Base pairs • Coding • Sugar/phosphate <p>Mendel and his peas:</p> <ul style="list-style-type: none"> • Punnett squares • Dominant • Recessive • Hybrid • Selective breeding • Co-dominance • Incomplete dominance • Genotype • Phenotype <p>Meiosis and Mitosis (role in genetics)</p>	<p>DNA Model: basic structure*</p> <p>Punnett square crosses</p> <p>*NOTE: Replication DNA model covered in high school Biology</p>	<p>Mutations and genetic diseases/disorders</p> <p>Genetic cross simulations</p> <p>Current events</p> <p>DNA extraction</p>	<p>Reading:</p> <ul style="list-style-type: none"> • Current events • Reading strategies • Technical and scientific text • Validity of resources • Vocabulary • Synthesis <p>Writing:</p> <ul style="list-style-type: none"> • Organization • Synthesis • Scientific writing • Lab write-up • Citing sources <p>Note-taking and retention strategies</p>	<p>Cloning</p> <p>GMOs</p> <p>DNA fingerprinting (not a lab)</p>	<p>Genetic pedigree</p> <p>Speeches</p> <p>Formal writing</p>	<p>“A Monk in the Garden”</p> <p>Microscopes and slides</p> <p>Projecting microscope</p> <p>Digital Library/online resources</p> <p>Community partnerships</p> <p>Basic lab equipment</p>

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Grade Level: 7 **Unit of Study:** Life Science - Evolution

Concept: *Living things are changed over geologic time*

Exploration and Focus Questions	Essential Content	Activities to Provide Students with Essential Background	Activities That Prompt Students' Questions	Developing Reading and Writing	Experiments & Inquiry Ideas	Demonstrating Learning	Materials
<p>What is evolution?</p> <p>Under what conditions do species evolve? (the role of environment, mutation, etc.)</p> <p>What is the difference between adaptation, natural selection, and evolution?</p>	<p>Species do not choose to evolve</p> <p>Charles Darwin</p> <p>Evidence for evolution:</p> <ul style="list-style-type: none"> • Fossil record • Adaptations • Carbon dating • Natural selection (survival of the fittest) • Genome mapping • Speciation <p>Geologic time</p> <ul style="list-style-type: none"> • Time periods and organisms existing during periods • Geologic extinctions <p>Classification</p> <ul style="list-style-type: none"> • Hierarchy • Scientific naming 	<p>Drawing conclusions from physical evidence (examining fossils, etc.)</p> <p>Construct geologic timeline</p> <p>Slide show - climate change in Oregon prompting species adaptation (Wendy)</p>	<p>What is instinct?</p> <p>Nature versus nurture discussion</p> <p>“Are humans evolving?” discussion</p> <ul style="list-style-type: none"> • Height • Hominid skulls • Brain pathways 	<p>Reading:</p> <ul style="list-style-type: none"> • Current events • Reading strategies • Technical and scientific text • Validity of resources • Vocabulary • Synthesis <p>Writing:</p> <ul style="list-style-type: none"> • Organization • Synthesis • Scientific writing • Lab write-up • Citing sources <p>Note-taking and retention strategies</p>	<p>Simulation for natural selection</p> <p>Correlation of a trait and income level (i.e., height, weight, etc.)</p>	<p>Case studies:</p> <ul style="list-style-type: none"> • How might species evolve to adapt to environmental factors? • Survival predictions 	<p>PBS Series: <i>The Journey of Man</i></p> <p>Basic lab equipment</p> <p>John Day fossil kit</p> <p>Textbook</p> <p>Digital Library/online resources</p> <p>The Dalles Discovery Center (mammoth tusk)</p> <p>Tualatin Library (1/2 of mammoth skeleton)</p> <p>Fossil collection (wish list)</p>