



# Instructional Unit Overview

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**Unit Focus:** Science - Classifying Living Things

**Grade Level:** 4th Grade

**Duration of Unit:** 3 weeks

**Essential Question:**

What forms does life take?

**Goals:**

Students should be able to

- Identify living things by their characteristics.
- Learn the basic structure of cells and differentiate between plant and animal cells.
- Access information from print, non-print, and Internet resources

**Alignment with Standards/Frameworks:**

Salem School District Science and Technology Proficiencies that pertain to this unit are outlined in the objectives.

# Learner and Context Analysis Form

<u>Name:</u> Arlene Brown	
<u>Unit Focus/Topic:</u> Classification of living things - cells	<u>Target learners:</u> (check one) <input checked="" type="checkbox"/> Classroom Unit <input type="checkbox"/> Professional Development
	<u>Level/Grade:</u> Grade 4
<u>Preliminary Unit Goals:</u> Integrate research skills and technology with the science unit identifying and classifying plant and animal cells	

Category	Descriptor	Task	Implications for the design of your Instructional Unit
<b>LEARNER ANALYSIS</b>			
Entry Behaviors	What skills/ concepts have learners already mastered that are associated with the goal of your instructional unit?	List 3-5 skills/ concepts: Living vs. non-living, Characteristics of a living thing, Basic research skills, Basic computer skills	The study of cells will be new. The use of the Internet for research will need to be introduced. Newly acquired research skills will be applied.
Prior Knowledge	What do learners already know about the content that you plan to teach?	List 3-5 areas of overlap: Cells are alive, How to compare, Use reference sources to find information	Introduction of cells will need to be on a simple level. Emphasize contrast. Expand knowledge of reference sources.
Attitudes toward Content	What impressions or attitudes do learners have about the topic of your instructional unit?	Describe your learners' attitude toward the content of your instructional unit: Curious, eager to learn about science and computers, apprehensive about researching.	Incorporate ways of teaching research that are fun and make them feel successful.

Category	Descriptor	Task	Implications for the design of your Instructional Unit
Academic Motivation	How relevant is your instructional goal to your learners?	Describe your learners' motivation to learn the content proposed in your instructional unit: Eager to please, science and computers are fun, understand the need to find answers to questions	Simplifies teaching when students are enthusiastic. Keep this unit simple but make it one where students want to learn more.
Education and Ability	What are the achievement and general ability levels of your learners?	Describe your learners' achievement and general ability levels: On grade level	Expectations are that this unit will work with most 4th graders and will be able to be shared.
Learning Preferences	What are your learners' learning skills and preferences?	Describe your learners' learning skills and preferences: Heterogeneous group with different learning styles, prefer hands -on approach in science	Present materials that teach to a variety of learning styles and allow successful presentation of the material.
Group Characteristics	What are the overall differences or levels of heterogeneity within the group?	List 3 – 5 areas of difference among your learners: Computer skills, reading levels, verbal skills, confidence as learners	Needs to be challenging enough for more skilled students without being above the levels of the lesser skilled students.

Category	Descriptor	Task	Implications for the design of your Instructional Unit
<b>CONTEXT ANALYSIS</b>			
<b>Analysis of Performance Setting</b>			
Social Aspects	What is the social context in which skills/knowledge contained in your instructional unit are to be learned/ applied by learners?	Describe the social context in which knowledge/ skills are to be learned/ applied: Students will work in cooperative groups in the classroom and library.	Group students in such a way that all students contribute and take ownership for their work
Physical Aspects	What is the physical context in which skills/knowledge contained in your instructional unit are to be learned/ applied by learners?	Describe or list features of the environment which may affect instruction: Number of computers, availability of resources, time	Coordinate the schedules of several teachers, constructive uses of available resources and technology.
Relevance	Do the skills/knowledge you will teach in your instructional unit have application for learners in other contexts (home, community, etc.)?	Describe 3-5 areas of relevance: Researching, computer skills, ability to compare and contrast, observation skills, understanding of life at its simplest level	Skills must be taught in such a way that students become comfortable with them and use them throughout their lives. Skills for life-long learning.
<b>Analysis of Learning Environment</b>			
Adaptability and Accessibility	How can you increase the accessibility of the knowledge/skills in your instructional unit to all learners?	Describe methods/approaches/resources you will use to increase access of knowledge/ skills to all learners.  Content not available at this time.	

This document is based on the work of:  
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# Performance Objectives & Assessment Criteria

*Italicized objectives are the Salem School District Proficiencies that I am teaching in this unit.*

<p><b>1) <i>Relate structure and function of parts of an object in a system to the object as a whole.</i></b> Using the information in their textbooks, students will create a diagram that depicts the parts of an organ system, describing how cells, tissues and organs combine to form the human digestive system.</p> <p><b>Addressed and Assessed During</b> √ Introduction/Pre-Instruction    √ Instructional Activities</p>
<p><b>2) <i>Describe the interrelationships among the parts of an object.</i></b> Using a variety of resources, students will make 3-D models of a plant and animal cell, accurately identifying and depicting the parts of each cell, and adding a key that explains the functions of each part.</p> <p><b>Addressed and Assessed During</b> √ Instructional Activities</p>
<p><b>3) <i>Identify and gather information needed to make a decision on a science related issue.</i></b> As a group, students will brainstorm the answers to the question "What do you have in common with a tree?" This will be a pre and post activity to the unit, which will demonstrate prior knowledge as well as a final assessment.</p> <p><b>Addressed and Assessed During</b> √ Introduction/Pre-Instruction    √ End Product/Activity</p>
<p><b>4) <i>Use research techniques to locate, evaluate and synthesize information found in library and Internet resources.</i></b> Working in small groups in the library, students will research an organism and give at least one example of each of the five basic life functions.</p> <p><b>Addressed and Assessed During</b> √ Instructional Activities</p>
<p><b>5) <i>Compare and contrast life processes in plants and animals.</i></b> Students will use their cell models and the results of their organism research to discover the similarities and differences between plants and animals.</p> <p><b>Addressed and Assessed During</b> √ Instructional Activities</p>

# Instructional Activities and Assessment Methods

Instructional Activities	Assessment Methods
<p><b><u>Introduction/Pre-Instruction:</u></b> As a class, students will be asked the question "What do you have in common with a tree?" Using <i>Inspiration</i>, we will list as many ideas as we can and organize them. We will save this information for a later comparison.</p> <p>We will introduce the concepts of what makes something alive and how living things are identified by their specific characteristics.</p> <p><b>Objective/s Addressed</b>  <div style="text-align: right;"> <input type="checkbox"/> #1    <input type="checkbox"/> #2    <input checked="" type="checkbox"/> #3    <input type="checkbox"/> #4    <input checked="" type="checkbox"/> #5 </div> </p>	<p>We will determine what students already know about living things and the differences between plants and animals.</p>
<p><b><u>Instructional Activities:</u></b> Learning that cells are the building blocks of life, students will diagram a model of the human digestive system, showing how groups of cells make up tissue, groups of tissues make up an organ, and groups of organs make up an organ system. Students will use classroom resources to make this diagram.</p> <p>Using several interactive websites on cells, students will learn the major parts of a plant and animal cell and how each part works together to form a living cell. Students will each sketch a model of a plant and animal cell in their science journals. Working in small groups, students will then construct 3-D posters of each cell, using a variety of materials. Students will label their posters and be able to explain commonalities and differences.</p> <p>Using library and Internet resources and again working in small groups, students will research different organisms and find as many examples as possible of each life function (grow and develop, use energy, reproduce, respond to their environment, eliminate waste).</p> <p>As a class, we will review the cell models and each group's results of their organism research. Individually, students will write in their science journals what they believe are the most important differences and similarities between plants and animals.</p> <p><b>Objective/s Addressed</b>  <div style="text-align: right;"> <input checked="" type="checkbox"/> #1    <input checked="" type="checkbox"/> #2    <input type="checkbox"/> #3    <input checked="" type="checkbox"/> #4    <input checked="" type="checkbox"/> #5 </div> </p>	<p>Assess student understanding of performance objective #1 by evaluating diagrams for content and accuracy.</p> <p>Evaluate student understanding of cell structure by reading their journal entries and observing their participation in group work. Rubric for posters.</p> <p>Observe and evaluate students' choice of resources, the efficiency of use, and their ability to come up with good answers.</p> <p>Assess students' basic understanding of the concepts of this unit by reading and evaluating each journal entry.</p>
<p><b><u>Assessable End Product/Activity:</u></b> As a class, students will again be asked the question "What do you have in common with a tree." Using <i>Inspiration</i>, we will list as many ideas as we can and organize them. We will compare our first answers to the current answers and describe what we have learned.</p> <p><b>Objective/s Addressed</b>  <div style="text-align: right;"> <input type="checkbox"/> #1    <input type="checkbox"/> #2    <input checked="" type="checkbox"/> #3    <input type="checkbox"/> #4    <input type="checkbox"/> #5 </div> </p>	<p>Question students on what they now know about the similarities between plants and animals and have them explain why some of their original ideas have changed. End of unit written test.</p>

# The Value of Technology

## What technology do you use and how do you use it?

Summarize the various technologies used in your unit and provide a few sentences describing how they are used. You should include technology used by the instructor to collect, produce, and present information.

- ❖ **The instructor will use *Inspiration* as a brainstorming tool. It will be used to organize student ideas in a pre and post unit activity.**
- ❖ **Students will be using several websites and library databases to locate information on cells and basic life functions of animals.**
- ❖ **Students will view presentations on video and will complete interactive quiz on the Internet or CD-ROM.**

## How does technology add value to the learning experience?

Explain how each technology described above adds value to the learning experience. Why is the use of that particular tool any better than a non-tech tool?

- ❖ ***Inspiration*, whether used by the teacher or students, helps to organize thoughts and ideas. Traditional brainstorming activities require a lot of writing, erasing, and re-writing and are difficult to organize.**
- ❖ **Some information found on the cell websites isn't any better than the print resources. The benefit is in the presentation of the information, which is interactive and engaging.**
- ❖ **The video and CD-ROM that accompany the science textbook allow the class to view or participate in activities that would be difficult to recreate in the classroom.**



*Envisioning: Creating the Big Picture*

How does this instructional unit fit with the rest of your classroom curriculum?

**Within the last several years the Salem School District has adopted a new series of proficiencies for all subject areas and grade levels. They have also purchased new science textbooks at the elementary level to support these proficiencies. The first unit in the textbook on cells and living things is the only section of the text that corresponds to several of the proficiencies.**

*Strategizing Your Implementation & Planning the Timetable*

**Mobilizing resources:** Consider what resources (“things,” people, time) you may need. What other staff do you need to involve as you work toward implementing your instructional unit? Will you use the Library Media Specialist, classroom teachers, your principal, your technology coordinator, parents, or others in your community? How will you use them? What support will they offer? What actions do they need to take? What resources will you need to get? Will you need to think about schedule issues? When do you need to initiate and/or complete your actions?

The chart below will help you get started by highlighting resources you will need in order to successfully implement your instructional unit:

Resources	Actions/Supports Needed	Initiation Date	Completion Date
Classroom Teacher	Arrange times for him to teach several of the classroom activities in this unit.		
Technology Integration Specialist	Attend a workshop on <i>Inspiration</i> .		
Library Assistants	Arrange 2-3 research sessions to assist students		
Library	Schedule library time		
Projector and laptop	Sign up to use for classroom presentations		

### *Acquiring Needed Instructor Skills and Knowledge*

Before implementing your classroom unit or professional development, you may need to acquire new skills or knowledge. These might be technology-based skills, knowledge about learning strategies (i.e. the jigsaw approach to cooperative learning) or an understanding of tools available to help make content more accessible to all learners (universal design considerations). What are these skills? How will you acquire them? What resources will you use? For example, if you are planning to create a WebQuest, what skills or knowledge do you need to acquire?

Action	Skill or knowledge needed	How will you develop this skill or knowledge?
Learn how to use <i>Inspiration</i>	Brainstorming tools	Take workshop with Tech Integration Specialist
Locate cell information on the Internet	Internet search skills	Work with Tech Integration Specialist
Learn the requirements of the science unit	Learn about cells and how they work	Work with classroom teacher; research

### *Monitoring the Results*

How will you know if the design of your instructional unit was successful? What data will you need to collect? What tools will you use? How will you use this information?

Indicator of Success	Benchmarks	Data and Artifacts
Classroom teacher becomes enthusiastic about using teaching this unit	Agrees to teach this unit to other 4th grade students	Create proposal for staff development committee
Students learn science content outlined in the science proficiencies	95% of students have passing test scores	Test and retest if necessary
Students ask to use library resources for other projects	25% of students ask to use resources	Library usage statistics