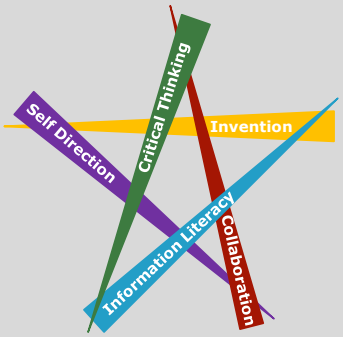
Curriculum Development Course at a Glance
Planning for Kindergarten Science

Content Area	Science	**Grade Level**	Kindergarten
Course Name/Course Code			

Standard	**Grade Level Expectations (GLE)**	**GLE Code**
1. Physical Science	1. Objects can move in a variety of ways that can be described by speed and direction	SC09-GR.K-S.1-GLE.1
	2. Objects can be sorted by physical properties, which can be observed and measured	SC09-GR.K-S.1-GLE.2
2. Life Science	1. Organisms can be described and sorted by their physical characteristics	SC09-GR.K-S.2-GLE.1
3. Earth Systems Science	1. The sun provides heat and light to Earth	SC09-GR.K-S.3-GLE.1

Colorado 21st Century Skills



Critical Thinking and Reasoning: *Thinking Deeply, Thinking Differently*

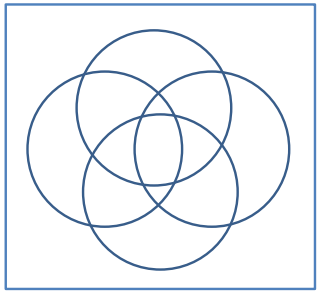
Information Literacy: *Untangling the Web*

Collaboration: *Working Together, Learning Together*

Self-Direction: *Own Your Learning*

Invention: *Creating Solutions*

Intragrated Curriculum Design: This intradisciplinary approach matches basic elements in each of the science strands – physical, life, earth systems sciences - forming overlaps in instruction of certain topics and concepts in an authentic integrated model.



Unit Titles	**Length of Unit/Contact Hours**	**Unit Number/Sequence**
Characteristics and Properties of Organisms and Objects	On-going	1
Motion	On-going	2
The Sun	On-going	3

Curriculum Development Overview
Unit Planning for Kindergarten Science

Unit Title	**Characteristics and Properties of Organisms and Objects**		**Length of Unit**	On-going
Focusing Lens(es)	Patterns	**Standards and Grade Level Expectations Addressed in this Unit**	SC09-GR.K-S.2-GLE.1 SC09-GR.K-S.1-GLE.1	
Inquiry Questions (Engaging-Debatable):	• What would life be like if organisms had everything in common and there were no detectable patterns? (SC09-GR.K-S.2-GLE.1; IQ.1) • Why is there strength in diversity? (SC09-GR.K-S.2-GLE.1; IQ.2) • How do you decide which properties are most important when putting objects into groups?(SC09-GR.K-S.1-GLE.1; IQ.2)			
Unit Strands	Life Science, Physical Science			
Concepts	characteristics, organisms, patterns, properties, objects			

Generalizations **My students will Understand that…**	**Guiding Questions** **Factual**	**Conceptual**
Patterns emerge through sorting of characteristics of organisms and properties of objects (SC09-GR.K-S.1-GLE.2-EO.a) and (SC09-GR.K-S.2-GLE.1-EO.a,b)	What is the difference between an organism and an object? (SC09-GR.K-S.1-GLE.2) and (SC09-GR.K-S.2-GLE.1) What is the difference between a property and a characteristic? (SC09-GR.K-S.1-GLE.2) and (SC09-GR.K-S.2-GLE.1) What is the difference between an object and a property? (SC09-GR.K-S.1-GLE.2) and (SC09-GR.K-S.2-GLE.1) What is the difference between an organism and a characteristic? (SC09-GR.K-S.1-GLE.2) and (SC09-GR.K-S.2-GLE.1)	What is a pattern? (SC09-GR.K-S.2-GLE.1; IQ.1; RA.1) How do you sort to make a pattern? (SC09-GR.K-S.2-GLE.1; IQ.1; RA.1)
Characteristics group and describe organisms so that patterns can be detected (SC09-GR.K-S.2-GLE.1; IQ.2; N.1,3)	What does an organism look like? What is the same about of group of organisms? What is different about a group of organisms?	How can organisms be described? How can organisms be sorted in groups?
Objects have and are grouped by properties (SC09-GR.K-S.1-GLE.2-EO.a;IQ.1)	What is the same about of group of objects? What is different about a group of objects? What does an object look like? What does an object feel like?	How can objects be sorted in groups? How can objects be described? How can objects belong to more than one group?(SC09-GR.K-S.1-GLE.1; IQ.1)

Critical Content: **My students will Know…**	**Key Skills:** **My students will be able to (Do)…**
• The observable characteristics of organisms (SC09-GR.K-S.2-GLE.1-EO.a) • Patterns in the natural world (SC09-GR.K-S.2-GLE.1; RA.1) • Ways to classify a group of organisms (SC09-GR.K-S.2-GLE.1; RA.2) • Physical properties of objects (SC09-GR.K-S.1-GLE.2-EO.a) • How physical properties help determine an object's uses(SC09-GR.K-S.1-GLE.2; RA.1,) • The reasons why scientists try to be clear and specific when they describe things(SC09-GR.K-S.1-GLE.2; N.1)	• Communicate and justify an evidence-based scientific rationale (SC09-GR.K-S.2-GLE.1-EO.b) • Ask questions about physical characteristics that will help them sort organisms (SC09-GR.K-S.2-GLE.1; N.1) • Share scientific ideas verbally in a clear way (SC09-GR.K-S.2-GLE.1; N.2) • Question peers about reasons for how they sort organisms and encourage them to use evidence to support their ideas. (SC09-GR.K-S.2-GLE.1; N.3) • Use scientific tools such as magnifying glasses and rulers in investigations and play (SC09-GR.K-S.2-GLE.1; N.4) • Observe, describe and investigate how objects can be sorted using their physical properties(SC09-GR.K-S.1-GLE.2-EO.a) • Explain why objects are sorted into categories(SC09-GR.K-S.1-GLE.2-EO.b) • Sort a set objects based on their physical characteristics (SC09-GR.K-S.1-GLE.2-EO.c) • Share clear and precise observations with others like scientist(SC09-GR.K-S.1-GLE.2; N.2)

Critical Language: includes the Academic and Technical vocabulary, semantics, and discourse which are particular to and necessary for accessing a given discipline.
EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: *"Mark Twain exposes the hypocrisy of slavery through the use of satire."*

A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):	*Living things can be sorted in many different ways.* *Things can be sorted by how they look and feel.*
Academic Vocabulary:	same, different, sort, observe, describe, investigate, explain, communicate
Technical Vocabulary:	organism, living thing, fur, feathers, scales, objects, hard, smooth, shiny characteristic, attribute, properties

Curriculum Development Overview
Unit Planning for Kindergarten Science

Unit Title	Motion		**Length of Unit**	On-going
Focusing Lens(es)	Change	**Standards and Grade Level Expectations Addressed in this Unit**	SC09-GR.K-S.1-GLE.1	
Inquiry Questions (Engaging-Debatable):	• What can change how fast or slow an object travels? • What indicates which objects will be easier or harder to move?			
Unit Strands	Physical Science			
Concepts	speed, direction, object, push, pull, force			

Generalizations **My students will Understand that…**	**Guiding Questions** **Factual**	**Conceptual**
Speed and direction can change an object's motion (SC09-GR.K-S.1-GLE.1)	What is speed? What is direction? What is motion? (SC09-GR.K-S.1-GLE.1-EO.a)	How does changing an objects speed influence its motion? (SC09-GR.K-S.1-GLE.1-EO.a; IQ.1; RA.2) How does changing an objects direction influence its motion? (SC09-GR.K-S.1-GLE.1-EO.a; IQ.1; RA.2)
The act of pushing and pulling alters the motion of an object due to competing forces (SC09-GR.K-S.1-GLE.1)	What does push mean? (SC09-GR.K-S.1-GLE.1; IQ.2; RA.1) What does pull mean? (SC09-GR.K-S.1-GLE.1; RA.1)	How does pushing and/or pulling affect motion? (SC09-GR.K-S.1-GLE.1; RA.1,2; N.2,3)

Critical Content: **My students will Know…**	**Key Skills:** **My students will be able to (Do)…**
• That objects can move (SC09-GR.K-S.1-GLE.1-EO.a) • That objects move in different directions (SC09-GR.K-S.1-GLE.1-EO.b) • That objects move at different speeds (SC09-GR.K-S.1-GLE.1-EO.b)	• Observe, investigate, and describe how different objects move (SC09-GR.K-S.1-GLE.1-EO.a) • Describe the motion of a child who is sitting versus playing (SC09-GR.K-S.1-GLE.1-EO.b) • Recognize that scientists try to be clear and specific when they describe things (SC09-GR.K-S.1-GLE.1; N.1)

Critical Language: includes the Academic and Technical vocabulary, semantics, and discourse which are particular to and necessary for accessing a given discipline. EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: *"Mark Twain exposes the hypocrisy of slavery through the use of satire."*	
A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):	*An object moves by pushing or pulling.*
Academic Vocabulary:	observe, investigate, describe, recognize
Technical Vocabulary:	object, speed, direction, motion, push, pull

Curriculum Development Overview
Unit Planning for Kindergarten Science

Unit Title	The Sun			**Length of Unit**	On-going
Focusing Lens(es)	Interdependence	**Standards and Grade Level Expectations Addressed in this Unit**	SC09-GR.K-S.3-GLE.1		
Inquiry Questions (Engaging-Debatable):	• What would happen to Earth if there was no Sun? • If the Earth did not rotate around the Sun, would the Earth have light?				
Unit Strands	Earth Science				
Concepts	sun, temperature, heat, light, rotation				

Generalizations **My students will Understand that…**	**Guiding Questions** **Factual**	**Conceptual**
The Sun influences the temperature on Earth due to Earth's rotation (SC09-GR.K-S.3-GLE.1-EO.b,c; IQ.1)	What is the temperature during the day? (SC09-GR.K-S.3-GLE.1-EO.b,c; IQ.1; N.1) What is the temperature at night? (SC09-GR.K-S.3-GLE.1-EO.b,c; IQ.1; N.1)	Why is the temperature different during the day and at night? (SC09-GR.K-S.3-GLE.1-EO.b,c; IQ.1; N.1) How does the Sun impact Earth? (SC09-GR.K-S.3-GLE.1; IQ.1)
The Sun provides the heat and light upon which life on Earth depends (SC09-GR.K-S.3-GLE.1-EO.a)	What is heat? What is light?	Why does the Earth need heat? (SC09-GR.K-S.3-GLE.1-EO.a;IQ.2; RA.1,2) Why does the Earth need light? (SC09-GR.K-S.3-GLE.1-EO.a;IQ.2; RA.1,2) What happens with the Sun's light is blocked? (SC09-GR.K-S.3-GLE.1; IQ.2)

Critical Content: **My students will Know…**	**Key Skills:** **My students will be able to (Do)…**
• The difference between heat and light (SC09-GR.K-S.3-GLE.1-EO.a) • The differences in temperature during the day and at night (SC09-GR.K-S.3-GLE.1-EO.b) • Reasons why light and heat from the sun may change (e.g., when the sun is blocked by clouds, buildings, etc.) (SC09-GR.K-S.3-GLE.1-EO.c, d)	• Investigate, explain, and describe the difference between heat and light (SC09-GR.K-S.3-GLE.1-EO.a) • Analyze and interpret temperature data between day and night (SC09-GR.K-S.3-GLE.1-EO.b) • Investigate and communicate findings about what happens when the Sun's light is blocked (SC09-GR.K-S.3-GLE.1-EO.c) • Investigate and communicate the effect of varying heat and light on the growth of plants through a scientific study (SC09-GR.K-S.3-GLE.1-EO.d)

Critical Language: includes the Academic and Technical vocabulary, semantics, and discourse which are particular to and necessary for accessing a given discipline.
EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: *"Mark Twain exposes the hypocrisy of slavery through the use of satire."*

A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):	*The Sun gives us heat and light.*
Academic Vocabulary:	investigate, interpret, explain, question, communicate
Technical Vocabulary:	heat, light, Earth, Sun, temperature, day, night, cool, warm, hot