

COMMUNITY UNIT SCHOOL DISTRICT 200

Science Curriculum Philosophy

We believe that science education allows all students to experience the richness and excitement of knowing about and understanding the natural world. Through the use of appropriate scientific processes and principles, students will understand how science applies to everyday life. Students will also use appropriate technology during inquiry as they become critical thinkers so that they become contributing members of society.

THIRD GRADE

1. Subject expectation (State Goal 11) The student will understand the processes of scientific inquiry and technological design to investigate questions, conduct experiments, and solve problems.

Essential Learning 1 (Learning Standard A)	Know and apply the concepts, principles, and processes of scientific inquiry
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- Critical Content**
- 11.A.2a** a. brainstorm and refine questions on a specific science topic
 - 11.A.2b** b. create a hypothesis statement
 - 11.A.2c** c. propose procedural steps to investigate the hypothesis
 - 11.A.2d** d. collect data for investigations using scientific process skills including observing, estimating, and measuring
 - 11.A.2d** e. coordinate evidence to build and refine theories
 - 11.A.2e** f. construct charts, tables or notebooks to record data or use diagrams, figures, visualizations, and mathematical representations to convey complex ideas, patterns, or trends
 - 11.A.2f** g. analyze data trends and summarize inferences
 - 11.A.2f** h. produce reasonable explanations for or against models and theories
 - 11.A.2g** i. present the results of the observations and explanations orally or in written format

Essential Learning 2 (Learning Standard B)	Know and apply the concepts, principles, and processes of technological design
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- Critical Content**
- 11.B.2a** a. identify a design problem and propose possible solutions and questions *such as* how light is a reflection
 - 11.B.2b** b. develop a plan, design and procedure to address the problem identifying constraints *such as* time, materials, technology *such as* an ice keeper
 - 11.B.2c** c. build a prototype of the design using available tools and materials
 - 11.B.2d** d. test the prototype using suitable instruments, techniques, and quantitative measurements to record data
 - 11.B.2e** e. assess test results and the effectiveness of the design using given criteria and noting possible sources of error
 - 11.B.2f** f. report test design, test process, and test results

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NOTE: *such as* = an example used for clarification, but not a mandatory concept

including = a mandatory concept

Essential Learning 3	*	Use reading and writing strategies to comprehend expository materials
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- Critical Content**
- * a. activate background information using *pre-reading* strategies *such as*
 - skimming the headings, charts, and paragraph openings
 - asking questions before reading
 - predicting words in the text
 - setting a purpose for reading
 - * b. use the organizing principles of a text in order to aid comprehension and recall
 - format features within a text
 - identify and know the relationship between text features such as unit, chapter, and heading
 - discern where a section of text starts and stops using organizational visual cues
 - distinguish headings from boldfaced vocabulary words
 - identify nonfiction text features and describe their purpose including
 - *skill pages
 - *captions
 - *review section
 - *charts
 - *graphs
 - *comparisons
 - *cutaways
 - *maps
 - *close-ups
 - *glossary
 - *table of contents
 - *index
 - recognize common text structures to monitor comprehension
 - enumeration (listing)
 - time/order (chronology)
 - comparison/contrast
 - cause/effects
 - problem/solutions
 - examine topic sentences and words that clue the reader to specific structures
 - * c. adjust one’s reading rate to the reading task
 - skimming
 - scanning
 - retelling
 - * d. develop and apply appropriate strategies simultaneously *during* reading to understand expository text

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- monitoring for meaning- know when a concept is understood and know when a concept is not understood
 - using and creating schema-making connections between the new and the known, building and activating background knowledge
 - asking questions-generating questions before, during, and after reading that lead deeper into the text
 - determining importance-deciding what matters most, what is worth remembering
 - inferring-combining background knowledge with information from the text to predict, conclude, make judgments, interpret
 - using sensory and emotional images-creating mental images to deepen and stretch meaning
 - synthesizing-creating an evolution of meaning by combining understanding with knowledge from other texts/sources
- * e. use vocabulary strategies to determine text meaning *such as*
- apply knowledge of prefixes, suffixes, and roots
 - context clues
 - word recognition strategies
- * f. check for understanding of expository text *after* reading, using various strategies *such as*
- summarize important information in oral or written formats
 - asking questions that lead you further into the text
 - make generalizations from text in oral or written formats
 - form reasoned arguments/judgments from text in oral or written format
 - determine important information from the text
 - identify the author's purpose
- * g. produce written products for a variety of purposes and audiences *such as*
- note taking
 - outlining
 - summarizing
 - research reports
 - expository essays
 - persuasive essays
 - recording information or data
 - note-booking
 - illustrating
 - formulate answers to open-ended questions
- * h. know vocabulary associated with lab reports

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Essential Learning 4	*	Access, use, and evaluate information from a variety of sources
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- Critical Content**
- * a. self-select appropriate research materials
 - * b. recognize and understand the function of parts of a book and use appropriately *such as*
 - table of contents
 - index
 - glossary
 - * c. locate and organize information using a variety of resources *such as*
 - encyclopedia
 - periodicals
 - atlas
 - non-fiction books
 - videos
 - newspaper
 - internet
 - * d. compare and contrast information from different sources for credibility
 - * e. gather & synthesize information from multiple sources
 - * f. cite sources used in research

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2. Subject expectation (State Goal 12) The student will understand the fundamental concepts, principles and interconnections of the life, physical, and earth/space sciences.

Essential Learning 1 (Learning Standard A)	Know and apply concepts that explain how living things function, adapt and change
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This content is not taught at this grade level.

Essential Learning 2 (Learning Standard B)	Know and apply concepts that describe how living things interact with each other and with their environment
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This content is not taught at this grade level.

Essential Learning 3 (Learning Standard C)	Know and apply concepts that describe properties of matter and energy and the interaction between them
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This content is not taught at this grade level.

Essential Learning 4 (Learning Standard D)	Know and apply the concepts that describe force and motion and the principles that explain them (Force and Motion)
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This content is not taught at this grade level.

Essential Learning 5 (Learning Standard E)	Know and apply concepts that describe the features and processes of the Earth and its resources
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Critical Content 12.E.1a

- a. identify components and describe diverse features of the Earth’s land, water, and atmospheric systems
 - identify basic materials found on and within the Earth including rocks, soil, minerals, and water
 - identify major sources/locations of water on the planet
 - identify major earth and atmospheric features from photographs including those from satellites
 - investigate local atmospheric features including the type of clouds that are seen on any given day *such as* cumulus, cirrus, stratus, and nimbus

12.E.2a

- b. identify and explain natural cycles of the Earth’s land, water and atmospheric systems including rock cycle, water cycle, weather patterns, storms
 - describe erosion and weathering
 - compare and contrast the different types of soil *such as* sandy soil, clay soil, top soil
 - describe the water cycle and its relationship to the amount of water on earth

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- describe weather as the interaction between water, atmosphere, land, and the sunlight
 - explore whether a feature of the Earth was produced by erosion or weathering *such as* erosion is caused by moving water
- * c. compare and contrast natural phenomenon with real life experiences *such as* the water cycle and a pot of boiling water
- 12.E.1b** d. identify and describe patterns of weather and seasonal change
- illustrate natures and water cycles
 - identify local weather patterns
 - interpret weather maps and predict regional weather patterns
 - recognize the Earth’s four seasonal positions and the Earth’s tilt during its yearly orbit
 - discover that the Earth’s relationship to the Sun (tilted toward or away) is what causes the change in seasons
 - model the Earth’s motion in relation to the Sun during the day, night, and year
 - recognize the Sun’s path in the sky during the summer and winter
- 12.E.2b** e. describe and explain short-term and long-term interactions of the Earth’s components *such as* earthquakes, types of erosion, volcanoes
- identify the “earth structure” (inner-core, outer core) mantel, crusts “earth layers”
 - describe different types and uses of earth’s rocks, soils, and minerals
 - identify basic minerals *such as* quartz, calcite, biotite-rock forming minerals especially those found in the Midwest
 - classify rock types *such as* sedimentary, metamorphic, igneous
 - describe erosion of rocks and deposition of sediments to form new rocks
 - identify habitats based on fossil remains on the buried sediments
 - understand the changes that have been recorded in the earth’s deposits through time
 - demonstrate that continents have moved through time through the analysis of continent shapes and analysis of fossils in the rocks
- 12.E.2c** f. identify and classify recyclable materials
- 12.E.1c** g. classify renewable and non-renewable resources
- 12.E.1c** h. map natural resources from around the Midwest region
- 12.E.2c** i. examine the effects of recycling and pollution on Earth’s cycles
- 12.E.2c** j. list recycling methods routinely used at home and at school

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- 12.E.2c k. demonstrate a consistent effort to recycle resources in the classroom
 12.E.2c l. examine the human causes of the diminished supply of resources

Essential Learning 6 (Learning Standard F)	Know and apply concepts that explain the composition and structure of the universe and Earth's place in it
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- Critical Content 12.F.2a** a. identify and explain natural cycles and patterns in the solar system *such as* order of the planets including seasons as related to Earth's tilt and latitude, and where Earth is in its yearly orbit around the sun
- explore the comparative orbits of planets in the solar system
 - use constellation models to explain apparent changes in the night sky
 - describe examples of gravitational pull on earth *such as* tides
- 12.F.2b b. explain the apparent motion of the sun and stars
- 12.F.2c c. identify easily recognizable star patterns including the Big Dipper, North Star, Orion, and the sun
- 12.F.2a d. explore the concepts associated with weightlessness in space flight
- 12.F.2a e. explore the relationships of weight and mass on Earth, the moon or other planets

Essential Learning 7	*	Use reading and writing strategies to comprehend expository materials
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Critical Content Same as Subject Expectation 1, Essential Learning 3

Essential Learning 8	*	Access, use, and evaluate information from a variety of sources
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Critical Content Same as Subject Expectation 1, Essential Learning 4

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3. Subject expectation (State Goal 13) The student will understand the relationships among science, technology and society in historical and contemporary contexts.

Essential Learning 1 (Learning Standard A)	Know and apply the accepted practices of science
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- Critical Content**
- 13.A.2a** a. demonstrate ways to avoid injury when conducting science activities *such as* wearing goggles, fire extinguisher use
 - 13.A.2b** b. know that ideas can be evaluated through observation and measurement
 - 13.A.2b** c. explain why similar results are expected when procedures are done the same way and explain why investigations may not produce similar results
 - 13.A.2c** d. determine and explain relevant information
 - 13.A.2c** e. explain why keeping accurate and detailed records is important
 - 13.A.2b** f. participate productively in scientific discussion

Essential Learning 2 (Learning Standard B)	Know and apply concepts that describe the interaction between science, technology and society
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- Critical Content**
- 13.B.2a** a. explain how scientific technology is used in science for a variety of purposes *such as* sample collection, storage and treatment; measurement; data collection, storage and retrieval; communication of information
 - 13.B.2b** b. describe the effects on society of scientific and technological innovations *such as* antibiotics, steam engine, digital computer
 - 13.B.2c** c. identify and explain ways that science and technology influence the lives and careers of people
 - 13.B.2d** d. compare the relative effectiveness of reducing, reusing, and recycling in actual situations
 - 13.B.2e** e. identify and explain ways that technology changes ecosystems *such as* dams, highways, buildings, communication networks, power plants
 - 13.B.3f** f. analyze how specific personal and societal choices that humans make affect local, regional and global ecosystems *such as* lawn and garden care, mass transit

Essential Learning 3	*	Use reading and writing strategies to comprehend expository materials
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Critical Content Same as Subject Expectation 1, Essential Learning 3

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Essential Learning 4	*	Access, use, and evaluate information from a variety of sources
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Critical Content

Same as Subject Expectation 1, Essential Learning 4

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