

# 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.

### SECOND 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.1a** a. describe an observed event
  - 11.A.1b** b. develop questions on scientific topics and predict conditions that can influence change
  - 11.A.1c** c. collect data for investigations using measuring instruments and technologies
  - 11.A.1c** d. draw conclusions from data
  - 11.A.1d** d. record and store data using available technologies *such as* science journals, inquiry logs, lab reports
  - 11.A.1e** e. organize and analyze data into logical patterns and describe the patterns
  - 11.A.1f** f. compare observations of individual and group results
  - 13.A.1b** g. identify reasons for differences or discrepancies in data
  - h.

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.1a** a. given a simple design problem, formulate possible solutions and questions *such as* if I change the level of water, then will the sound change?
  - 11.B.1b** b. design a device that will be useful in solving the problem *such as* a musical instrument
  - 11.B.1c** c. build the device using the materials and tools provided
  - 11.B.1d** d. test the device and record results using given instruments, techniques and measurement methods after repeated trials *such as* various placement of rubber bands changes pitch
  - 11.B.1e** e. communicate the design of the device, the test process and the results in solving a given problem

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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*
  - previewing
  - predicting
  - setting a purpose
  - questioning
- \* b. use the organizing principles of a text in order to aid comprehension and recall:
  - format features within a text
    - identify headings and the purpose
    - identify where a section of text starts and stops using organizational visual cues
    - distinguish headings from boldfaced vocabulary words
    - identify features unusual to the specific text
      - \*captions
      - \*charts
      - \*graphs
      - \*illustrations
      - \*atlas
      - \*timelines
    - identify the purpose and usage of
      - \*glossary
      - \*table of contents
      - \*index
  - recognize and apply various text structure
    - time order (chronology)
    - comparison/contrast
    - cause/effects
    - problem/solutions
    - fact/opinion (fiction/nonfiction)
- \* c. adjust one's reading rate to the reading task:
  - skimming
  - scanning
  - retelling
- \* d. develop and apply appropriate strategies *during* reading to understand expository text:
  - 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

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- 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, and 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
- context clues
  - word recognition strategies
  - glossary usage
  - root word
  - affixes
  - synonym/antonym
- \* f. check for understanding of expository text *after* reading, using various strategies *such as*
- summarize important information in internal, oral, or written formats
  - paraphrase information in oral or written formats
  - make generalizations from text in oral or written formats
  - form reasoned arguments/judgments from text in oral or written formats
  - decide what's important information in a text including the main idea
- \* g. produce written products for a variety of purposes and audiences *such as*
- lab reports
  - notebooking
  - research reports
  - essays
  - formulate answers to open-ended questions
- \* h. know vocabulary associated with lab reports

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

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- atlas
- timeline
- \* c. locate and organize information using a variety of resources *such as*
  - encyclopedia
  - periodicals
  - atlas
  - almanac
  - non-fiction books
  - computer technology
  - videos
  - newspaper
  - approved Internet sites
  - community resources *such as* speakers and museums
- \* d. consider the credibility of sources, especially Internet Sources
- \* e. gather and synthesize information from multiple sources
- \* f. record title and author of references

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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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- Critical Content**
- 12.A.1a** a. label and identify the parts of a plant including root, stem, leaf, flower and seed and their major functions
  - 12.A.1a** b. explain what plants need to thrive
  - 12.A.1a** c. know that plants make their own food
  - 12.A.1a** d. match plant adaptations to changing seasons or climatic change

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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- Critical Content**
- 12.B.1a** a. describe and compare characteristics of plants in relationship to their environments
  - 12.B.1a** b. explain the function of the parts of a plant as they relate to their habitat such as broad leaf plant in a forest and cactus spine in a desert
  - 12.B.1a** c. classify plants by characteristics that help them survive in their environment
  - 12.B.1a** d. compare the characteristics of common habitats including the plants
  - 12.B.1a** e. identify which plants would most likely be found in certain habitats including woodlands, forest, desert, arctic and tundra
  - 12.B.1a** f. infer what would happen if a group of plants were removed from a habitat
  - 12.B.1b** g. describe simple life cycles of plants and the similarities and differences of their offspring
  - 12.B.1b** h. describe how living things depend on one another for survival
  - 12.B.1b** i. compare the various ways that plants pollinate *such as* wind, birds or insects
  - 12.B.1b** j. associate common plant products made from plants *such as* paper is made from a tree

Essential Learning 3 (Learning Standard C)	Know and apply concepts that describe properties of matter and energy and the interactions between them
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- Critical Content**
- 12.C.1a** a. know that sound, heat and light are forms of energy
  - 12.C.1a** b. identify what causes shadows
  - 12.C.1a** c. identify and compare sources of energy

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- observe various sources of energy as they apply to different situations including seasonal patterns match energy sources to the objects they power
- conduct simple experiments to show how energy causes change for example clapping hands lightly produces soft sound versus clapping hands harder produces louder sound
- identify ways that heat, light and sound are produced naturally and artificially (sunlight versus electrical light versus battery energy)

Essential Learning 4 (Learning Standard D)	Know and apply concepts that describe force and motion and the principles that explain them
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- Critical Content**     **12.D.1a**     a. identify examples of motion
- demonstrate various examples of motion including moving in a straight line, vibrating, and rotating
  - use different materials to discover how sound is produced by vibrating objects
  - relate various types of rotations including the Earth’s rotation

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.1c**     a. identify renewable and nonrenewable natural resources
- describe common conservation for natural resources
  - explain ways natural resources can be recycled or reused
  - describe methods to conserve natural resources
  - evaluate ways to recycle, reuse or reduce the amount of resources at home and at school
- 12.E.1c**     b. investigate the importance of renewable and nonrenewable 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.1a**     a. identify and describe characteristics of the Sun, Earth and Moon as familiar objects in the solar system
- compare the size of the Earth, the Sun, and the Moon
  - describe the features of the Moon
  - compare and contrast components of the Solar System including the Earth, the Moon, and the Sun
  - observe the phases of the Moon

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- identify the pattern created by the moon’s orbit every 29 days
  - discuss that the moon in the Illinois night sky is the same moon in another state’s night sky *such as* Florida
- 12.F.1b** b. identify daily, seasonal and annual patterns related to the Earth’s rotation and revolution
- compare the daytime and nighttime sky
  - compare shadows at different times
  - describe how the Earth’s rotation affects day and night
  - recognize the Sun’s path in the sky during the summer and winter
  - recognize that the Earth revolves around the sun
- 12.C.1a** c. relate the Earth’s dependence on the sun for heat

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 | <b>13.A.1a</b> | <ul style="list-style-type: none"> <li>a. apply the appropriate principles of safety               <ul style="list-style-type: none"> <li>• explain the dangers of electricity to applicable classroom and home situation</li> <li>• refrain from tasting unknown substances</li> <li>• map pathways to leave classroom or home in case of fire or severe weather situations</li> <li>• identify safety hazards associated with classroom science inquiry or design investigations</li> </ul> </li> </ul>   |
|                  | <b>13.A.1b</b> | <ul style="list-style-type: none"> <li>b. apply scientific habits of mind               <ul style="list-style-type: none"> <li>• propose ways to test student-generated predictions for science-conceptual relationships</li> <li>• practice how scientists generate questions for possible studies</li> <li>• relate knowledge that was gained through careful, repeated observations by classmates</li> <li>• distinguish hypotheses from guesses</li> <li>• know that ideas can be evaluated through observation and measurement</li> <li>• rely on reasoning to connect ideas and data</li> <li>• explain why similar results are expected when procedures are done the same way</li> </ul> </li> </ul> |
|                  | <b>13.A.1b</b> | <ul style="list-style-type: none"> <li>c. discuss the relevance of an idea <i>such as</i> the color of the flower is not important in recording data, but how much it grew when in the sunlight is important</li> </ul>   |
|                  | <b>13.A.1c</b> | <ul style="list-style-type: none"> <li>d. participate productively in scientific conversations</li> </ul>   |

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 | <b>13.B.1b</b> | <ul style="list-style-type: none"> <li>a. explore scale models as a representation of ideas <i>such as</i> the globe is a model of the earth</li> </ul>                     |
|                  | <b>13.B.1a</b> | <ul style="list-style-type: none"> <li>b. explain the uses of common scientific instruments <i>such as</i> ruler, thermometer, balance, probe, computer</li> </ul>          |
|                  | <b>13.B.1b</b> | <ul style="list-style-type: none"> <li>c. explain how using measuring tools improves the accuracy of estimates</li> </ul>   |
|                  | <b>13.B.1c</b> | <ul style="list-style-type: none"> <li>d. describe a scientist and his or her contributions to science and technology</li> </ul>  |
|                  | <b>13.B.1d</b> | <ul style="list-style-type: none"> <li>e. identify and describe ways that science and technology affect people’s everyday lives <i>such as</i> community workers</li> </ul> |
|                  | <b>12.E.1c</b> | <ul style="list-style-type: none"> <li>f. demonstrate ways to reduce, reuse and recycle materials</li> </ul>  |

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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

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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