



Center for the Environment at Catawba College
Campaign for Clean Air
Clean Air in the Classroom

Competency Goals Met In This Unit

Seventh Grade Science

Competency Goal 1: The learner will design and conduct investigations to demonstrate an understanding of scientific inquiry.

1.01 Identify and create questions and hypotheses that can be answered through scientific investigations.

1.02 Develop appropriate experimental procedures for:

- Given questions.
- Student generated questions.

1.03 Apply safety procedures in the laboratory and in field studies:

- Recognize potential hazards.
- Manipulate materials and equipment.
- Conduct appropriate procedures.

1.04 Analyze variables in scientific investigations:

- Identify dependent and independent.
- Use of a control.
- Manipulate.
- Describe relationships between.
- Define operationally.

1.05 Analyze evidence to:

- Explain observations.
- Make inferences and predictions.
- Develop the relationship between evidence and explanation.

1.06 Use mathematics to gather, organize, and present quantitative data resulting from scientific investigations:

- Measurement.
- Analysis of data.
- Graphing.
- Prediction models.

1.07 Prepare models and/or computer simulations to:

- Test hypotheses.
- Evaluate how data fit.

1.08 Use oral and written language to:

- Communicate findings.
- Defend conclusions of scientific investigations.

1.09 Use technologies and information systems to:

- Research.
- Gather and analyze data.
- Visualize data.
- Disseminate findings to others.

1.10 Analyze and evaluate information from a scientifically literate viewpoint by reading, hearing, and/or viewing:

- Scientific text.
- Articles.
- Events in the popular press.

Competency Goal 2: The learner will demonstrate an understanding of technological design.

2.02 Use information systems to:

- Identify scientific needs, human needs, or problems that are subject to technological solution.
- Locate resources to obtain and test ideas.

2.03 Evaluate technological designs for:

- Application of scientific principles.
- Risks and benefits.
- Constraints of design.
- Consistent testing protocols.

*Note: Competency Goals 1 and 2 are the same for grades 6 and 8.

Competency Goal 3: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of the atmosphere.

3.01 Explain the composition, properties and structure of the atmosphere:

- Mixture of gases.
- Stratified layers.
- Each layer has distinct properties.
- As altitude increases, air pressure decreases.
- Equilibrium.

3.02 Describe properties that can be observed and measured to predict air quality:

- Particulate matter.
- Ozone.

3.03 Conclude that the good health of environments and organisms requires:

- The monitoring of air quality.
- Taking steps to maintain healthy air quality.
- Stewardship.

3.04 Evaluate how humans impact air quality including:

- Air quality standards.
- Point and non-point sources of air pollution in North Carolina.
- Financial and economic trade-offs.
- Local air quality issues.

3.06 Assess the use of technology in studying atmospheric phenomena and weather hazards:

- Satellites.
- Weather maps.
- Predicting.
- Recording.
- Communicating information about conditions.

Competency Goal 4: The learner will conduct investigations, use models, simulations, and appropriate technologies and information systems to build an understanding of the complementary nature of the human body system.

4.03 Explain how the structure of an organ is adapted to perform specific functions within one or more systems.

- Lung

4.08 Explain how understanding human body systems can help make informed decisions regarding health.

Competency Goal 5: The learner will conduct investigations and utilize appropriate technologies and information systems to build an understanding of heredity and genetics.

5.01 Explain the significance of genes to inherited characteristics:

- Genes are the units of information.
- Parents transmit genes to their offspring.
- Some medical conditions and diseases are genetic.

5.02 Explain the significance of reproduction:

- Sorting and recombination of parents' genetic material.
- Potential variation among offspring.

5.03 Identify examples and patterns of human genetic traits:

- Dominant and recessive.
- Incomplete dominance.

5.04 Analyze the role of probability in the study of heredity:

- Role of each parent in transfer of genetic traits.
- Analysis of pedigrees.

5.05 Summarize the genetic transmittance of disease.

5.06 Evaluate evidence that human characteristics are a product of:

- Inheritance.
- Environmental factors, and
- Lifestyle choices.

Seventh Grade Language Arts

Competency Goal 1: The learner will use language to express individual perspectives in response to personal, social, cultural, and historical issues.

1.02 Respond to expressive materials that are read, heard, and/or viewed by:

- monitoring comprehension for understanding of what is read, heard, and/or viewed.
- making connections between works, self and related topics.
- drawing inferences and/or conclusions.

- determining the main idea and/or significance of events.
- creating an artistic interpretation that connects self and/or society to the selection.

1.04 Reflect on learning experiences by:

- analyzing personal learning growth and changes in perspective.
- examining changes in self throughout the learning process.
- determining how personal circumstances and background shape interaction with text.

Competency Goal 2: The learner will synthesize and use information from a variety of sources.

2.01 Respond to informational materials that are read, heard, and/or viewed by:

- monitoring comprehension for understanding of what is read, heard and/or viewed.
- analyzing the characteristics of informational works.
- summarizing information.
- determining the importance of information.
- making connections to related topics/information.
- drawing inferences and/or conclusions.
- generating questions.

2.02 Use multiple sources of print and non-print information in designing and developing informational materials (**such as brochures, newsletters, and infomercials**) through:

- identifying and using appropriate primary and secondary sources.
- comparing, contrasting, and evaluating information from different sources about the same topic.
- evaluating information for extraneous details, inconsistencies, relevant facts, and organization.

Seventh Grade Mathematics

Competency Goal 1: The learner will understand and compute with rational numbers.

1.01 Develop and use ratios, proportions, and percents to solve problems.

1.02 Develop fluency in addition, subtraction, multiplication, and division of rational numbers.

- Analyze computational strategies.
- Describe the effect of operations on size.
- Estimate the results of computations.
- Judge the reasonableness of solutions.

1.03 Develop flexibility in solving problems by selecting strategies and using mental computation, estimation, calculators or computers, and paper and pencil.

Competency Goal 4: The learner will understand and use graphs and data analysis.

4.01 Collect, organize, analyze, and display data (including box plots and histograms) to solve problems.

4.05 Solve problems involving two or more sets of data using appropriate statistical measures.