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Oklahoma State Department of Education

CARGo

Curriculum

Access

Modified

Resource

Guide

A Modified Approach to Teaching Priority Academic Student Skills (*PASS*)

Science

Grades 5-End- of- Instruction

oklahoma state department of education
special education services
"changing times in special education"

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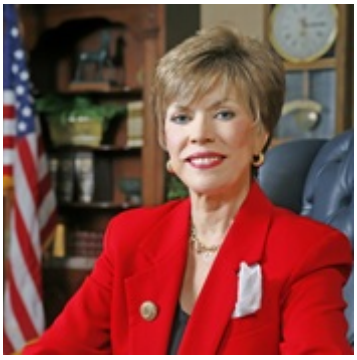
A Message from

State Superintendent

Sandy Garrett



Curriculum Access Resource Guide – Modified
CARG-M

It is with great pleasure as Oklahoma's State Superintendent of Public Instruction, that I present to you the new Curriculum Access Resource Guide that is aligned to *Priority Academic Student Skills (PASS)* standards for students with disabilities. The Oklahoma State Department of Education, Special Education Services, is always striving to provide curriculum that is challenging and appropriate for our students on Individualized Education Programs (IEPs).

The CARG-M is intended to provide access to the general curriculum for students with disabilities, who can make significant progress but may not reach grade-level achievement standards within the same time frame as other students, even after receiving the best designed instructional interventions from highly trained teachers.

Priority Academic Student Skills

Adapted for Grade 5

Science

The skills should be taught by investigating content, concepts and principles of major themes in Physical, Life and Earth/Space Science.

Process Standard 1: Observe and Measure - Observing is the first action taken by the learner to acquire new information about an object, organism, or event. Opportunities for observation are developed through the use of a variety of scientific tools. Measurement allows observations to be quantified. The student will accomplish these objectives to meet this process standard.

Modified Academic Indicators (MAIs):

5.1.1 Observe and measure objects, organisms, and/or events (e.g., mass, length, time, volume, temperature) using Systems International (SI) units (i.e., grams, meters, kilometers, liters, and degrees Celsius).

5.1.2 Compare similar and/or different characteristics (e.g., color, shape, size, texture) in a given set of objects, or organisms.

Classroom Activities

The student:

5.1.1a Creates an ongoing science journal for scientific terms.

5.1.1b Prepares note cards in index form with scientific terms.

5.1.1c Uses a balance to measure the mass of various classroom objects in grams (coins, erasers, markers, etc.).

5.1.1d Uses a meter stick to measure classroom objects (e.g., pencil, chalkboard, length and width of room, height of peers).

5.1.1e Participates in a "Turtle Race," bringing and timing their turtle walking from a center circle to an outer circle.

5.1.1f Observes the same volume of liquid in containers of various shapes.

5.1.1g Uses a graduate cylinder to measure the volume of oddly shaped objects by water displacement (rock, marble).

5.1.1h Learns the mnemonic for the metric (SI) units: King Henry Died Drinking Chocolate Milk (KHDDCM), where K=Kilo, H=Hecta, D=Deca, D=Deci, C=Centi, and M=Milli.

5.1.2a Sorts familiar objects and organisms by color, shape and size (e.g., buttons, pencils, student's pets).

5.1.2b Sorts objects and organisms by texture (grades of sand paper, classroom surfaces, rocks) and discusses similarities and differences (outer coverings of small animals, cats, dogs, lizards, snakes, turtles, frogs, fish).

Process Standard 2: Classify - Classifying establishes order. Objects, organisms, and events are classified based on similarities, differences, and interrelationships. The student will accomplish these objectives to meet this process standard.

Modified Academic Indicators (MAIs):

5.2.1 Classify a set of objects, organisms, and/or events using observable properties (e.g., simple dichotomous keys).

5.2.2 Arrange objects, organisms, and/or events in serial order (e.g., least to greatest, fastest to slowest).

Classroom Activities:

The student:

5.2.1a Uses pictures of various organisms to group similar organisms together.

5.2.1b Identifies similar characteristics of each group of objects or organisms.

5.2.1c Categorizes organisms by the way they acquire energy through food.

5.2.2a Arranges a life cycle in correct sequence by using pictures (chicken, butterfly, frog, plant, etc.).

5.2.2b Graphs speeds attained in various events (e.g., animal race, peer race, car race).

Process Standard 3: Experiment - Experimenting is a method of discovering information. It requires making observations and measurements to test ideas. The student will accomplish these objectives to meet this process standard.

Modified Academic Indicators (MAIs):

5.3.1 Ask questions about the world and formulate an orderly plan to investigate questions.

5.3.2 Discuss the design of a scientific investigation.

5.3.3 Conduct a scientific investigation.

5.3.4 Recognize potential hazards and practice safety procedures in all science investigations.

Classroom Activities:

The student:

5.3.2a Finishes partially completed templates (for gathering data, recording data, graphing, etc.).

5.3.2b Develops a hypothesis and identifies materials needed for an experiment.

5.3.4 Learns about potential hazards and safety procedures through classroom discussion, signs, posters, and universal symbols, such as eye wash station, biohazard, fire.

Process Standard 4: Interpret and Communicate - Interpreting is the process of recognizing patterns in collected data by making inferences, predictions, or conclusions. Communicating is the process of describing, recording, and reporting experimental procedures and results to others. Communication may be oral, written, or mathematical and includes organizing ideas, using appropriate vocabulary, graphs, other visual representations, and mathematical equations. The student will accomplish these objectives to meet this process standard.

Modified Academic Indicators (MAIs):

5.4.1 Report data using tables, line, bar, and/or simple circle graphs.

5.4.2 Discuss data tables, line, bar, and/or simple circle graphs.

5.4.3 Make predictions based on patterns in experimental data.

5.4.4 Communicate the results of investigations.

Classroom Activities:

The student:

5.4.2 Practices interpreting data in data tables, line, bar and/or simple circle graphs.

5.4.3 Determines cause and effect and documents in various ways (list, tape record, highlight cause and effect from student/group notes, etc.).

5.4.4 Reports experiment/investigation results in various ways, such as oral presentation, video presentation, multimedia, poster, flip chart.

Process Standard 5: Inquiry - Inquiry can be defined as the skills necessary to carry out the process of scientific or systemic thinking. In order for inquiry to occur, students must have the opportunity to ask a question, formulate a procedure, and observe phenomena. The student will accomplish these objectives to meet this process standard.

5.5.1 Use different ways to investigate questions.

5.5.2 Use measurement tools and technology.

5.5.3 Share a general statement to represent the data.

5.5.4 Share results of an investigation.

Priority Academic Student Skills

Adapted for Grade 8

Science

The skills should be taught by investigating content, concepts and principles of major themes in Physical, Life and Earth/Space Science.

Process Standard 1: Observe and Measure - Observing is the first action taken by the learner to acquire new information about an object, organism, or event. Opportunities for observation are developed through the use of a variety of scientific tools. Measurement allows observations to be quantified. The student will accomplish these objectives to meet this process standard.

Modified Academic Indicators (MAIs):

8.1.1 Identify qualitative or quantitative changes given conditions (e.g., temperature, mass, volume, time, position, length) before, during, and after an event.

8.1.2 Use appropriate tools (e.g., metric ruler, graduated cylinder, thermometer, balances, spring scales, stopwatches) when measuring objects, organisms, and/or events.

8.1.3 Use appropriate System International (SI) units (i.e., grams, meters, liters, degrees Celsius, and seconds when measuring objects, organisms and/or events).

Classroom Activities:

The student:

8.1.1a Creates an ongoing science journal for scientific terms.

8.1.1b Develops note cards in index form with scientific terms.

8.1.1c Observes and records changes in matter – solid, liquid, gas (e.g., melting ice/boiling water).

8.1.1d Makes observations from a teacher-provided template.

8.1.1e Highlights a set of observations provided by the teacher during a classroom activity.

8.1.2a Matches pictures/words or words/words (e.g., ruler – students height, thermometer – temperature).

8.1.2b Uses a balance to measure the mass of various classroom objects in grams (coins, erasers, markers, etc.).

8.1.2c Uses a meter stick to measure classroom objects (pencil, textbook, chalkboard, length and width of room and height of peers).

8.1.2d Uses a thermometer to measure temperature both inside and outside the classroom.

8.1.3a Uses a meter stick to measure classroom objects (pencil, textbook, chalkboard, length and width of room, and height of peers).

8.1.3b Observes the same volume of liquid in containers of various shapes.

8.1.3c Uses a graduated cylinder to measure the volume of oddly shaped objects by water displacement (rock, marble, etc.).

8.1.3d Reviews the mnemonic for the metric (SI) units: King Henry Died Drinking Chocolate Milk (KHDDCM), where K=Kilo, H=Hecta, D=Deca, D=Deci, C=Centi, and M=Milli.

8.1.3e Matches appropriate unit with what is being measured using picture/word or word/word (e.g., ruler – cm, graduated cylinder – ml, scale – g).

Process Standard 2: Classify - Classifying establishes order. Objects, organisms, and events are classified based on similarities, differences, and interrelationships. The student will accomplish these objectives to meet this process standard.

Modified Academic Indicators (MAIs):

1. Using observable properties, place an object, organism, and/or event into a simplified classification system (e.g., simple dichotomous keys).
2. Identify properties by which a set of objects, organisms, and/or events could be ordered.

Classroom Activities:

The student:

8.2.1a Participates in sorting activities using a simplified dichotomous key (5 or fewer traits).

8.2.1b Identifies objects/pictures of organisms by answering teacher-made questions relating to a simple dichotomous key.

8.2.2a Identifies objects/organisms sets, given a list of identifying properties (color, size, shape, texture, etc.).

8.2.2b Observes a set of objects (e.g., buttons, insects, flowers) to develop a dichotomous key using 5 or fewer traits.

8.2.2c Uses dichotomous keys created by other small groups to identify objects/organisms.

Process Standard 3: Experiment - Experimenting is a method of discovering information. It requires making observations and measurements to test ideas. The student will accomplish these objectives to meet this process standard.

Modified Academic Indicators (MAIs):

1. Ask questions about the world.
2. Discuss the design of a scientific investigation.
3. Discuss variables and/or controls in an experimental setup.
4. Determine the hypothesis for an experiment.
5. Conduct experiments.
6. Recognize potential hazards and practice safety procedures in all science activities.

Classroom Activities:

The student:

8.3.2a Discusses scientific methods and steps involved.

8.3.2b Examines a problem which could be solved by applying the scientific method.

8.3.2c Develops a list of steps needed to solve a hypothetical problem.

8.3.2d Finishes a partially completed template (for gathering data, recording data, graphing, etc.).

8.3.2e Develops a hypothesis and identifies materials needed for an experiment.

8.3.3a Introduces variables and controls in an experiment using examples.

8.3.3b Identifies the variables and controls in teacher-provided experiment examples (highlighting, sorting, labeling, etc.).

8.3.6 Learns about potential hazards and safety procedures through classroom discussion, signs, posters, and universal symbols, such as eye wash station, biohazard, fire.

Process Standard 4: Interpret and Communicate - Interpreting is the process of recognizing patterns in collected data by making inferences, predictions, or conclusions. Communicating is the process of describing, recording, and reporting experimental procedures and results to others. Communication may be oral, written, or mathematical and includes organizing ideas, using appropriate vocabulary, graphs, other visual representations, and mathematical equations. The student will accomplish these objectives to meet this process standard.

Modified Academic Indicators (MAIs):

1. Report data in an appropriate method.
2. Interpret data tables, line, bar, and/or circle graphs.
3. Use data to share explanations and/or predictions.
4. Accept or reject hypotheses when given results of an investigation.
5. Communicate scientific procedures and explanations.

Classroom Activities:

The student:

8.4.2a Reports findings in various ways (journals, orally, graphs, pictures, video, tape recorder, etc.).

8.4.2b Practices interpreting data on data tables, line, bar and/or simple circle graphs.

8.4.2c Interprets findings recorded from their simplified scientific investigations.

8.4.3 Reports results in various ways, such as oral presentation, video presentation, multimedia, poster, flip chart.

Process Standard 5: Inquiry - Inquiry can be defined as the skills necessary to carry out the process of scientific or systemic thinking. In order for inquiry to occur, students must have the opportunity to ask a question, formulate a procedure, and observe phenomena. The student will accomplish these objectives to meet this process standard.

Modified Academic Indicators (MAIs):

8.5.1 Use observations and make accurate measurements.

8.5.2 Use technology to gather data and communicate results of investigations.

8.5.3 Review data to form logical conclusions.

8.5.4 Discuss explanations proposed by evidence.

Priority Academic Student Skills

Adapted for High School

Biology

The *Priority Academic Student Skills (PASS)* should be taught by investigating content, concepts, and principles of major themes in the Biological Sciences.

Process Standard 1: Observe and Measure - Observing is the first action taken by the learner to acquire new information about an organism or event. Opportunities for observation are developed through the use of a variety of scientific tools. Measurement allows observations to be quantified. The student will accomplish these objectives to meet this process standard.

Modified Academic Indicators (MAIs):

B.1.1 Identify qualitative and/or quantitative changes in organisms, populations, and ecosystems given conditions (e.g., temperature, mass, volume, time, position, length, quantity) before, during, and after an event.

B.1.2 Use appropriate tools (e.g., microscope, pipette, metric ruler, graduated cylinder, thermometer, balances, stopwatches) when measuring cells, organisms, populations, and ecosystems.

B.1.3 Use appropriate System International (SI) units (i.e., grams, meters, liters, degrees Celsius, and seconds); and SI prefixes (i.e., micro-, milli-, centi-, and kilo-) when measuring cells, organisms, populations, and ecosystems.

Classroom Activities:

The student:

B.1.1a Creates an ongoing science journal for scientific terms.

B.1.1b Prepares note cards in index form with scientific terms.

B.1.1c Uses a teacher-provided template for observations.

B.1.1d Highlights observations made during activity.

B.1.1e Observes/records changes in organisms, populations, and ecosystems (e.g., osmosis, natural selection, predator and prey, pollution).

B.1.2a Matches pictures/words or words/words (e.g., cell – microscope, temperature - thermometer).

B.1.2b Uses a microscope and a partially completed template to identify and record parts of a cell.

B.1.2c Uses a thermometer to measure temperature of organisms.

B.1.3a Matches appropriate unit with what is being measured.

B.1.3b Completes matching activities with SI prefixes (millimeters - mm, kilograms - kg)

B.1.3c Uses the metric system to complete various activities.

B.1.3d Reviews the mnemonic for the metric (SI) units: King Henry Died Drinking Chocolate Milk (KHDDCM), where K=Kilo, H=Hecta, D=Deca, D=Deci, C=Centi, and M=Milli.

Process Standard 2: Classify - Classifying establishes order. Organisms and events are classified based on similarities, differences, and interrelationships. The student will accomplish these objectives to meet this process standard.

Modified Academic Indicators (MAIs):

B.2.1 Using observable properties organisms, and/or events into a simple biological classification system.

B.2.2 Identify the properties by which a biological classification system is based.

Classroom Activities:

The student:

B.2.1a Uses a simple biological classification system when observing properties of organisms and/or events.

B.2.1b Identifies organisms using teacher-provided organisms and questions.

B.2.2a Identifies properties of living organisms and their traits using a teacher/peer generated list.

B.2.2b Observes a set of objects and develops a simple biological classification system using seven traits or less.

B.2.2c Uses a simple biological classification system to identify objects/organisms.

Process Standard 3: Experiment - Experimenting is a method of discovering information. It requires making observations and measurements to test ideas. The student will accomplish these objectives to meet this process standard.

Modified Academic Indicators (MAIs):

B.3.1 Discuss the design of a biology laboratory investigation.

B.3.2 Discuss the variables and controls in an experiment.

B.3.3 Explore mathematics to show simple relationships within a given set of observations.

B.3.4 Discuss a hypothesis for a given problem in biology investigations.

B.3.5 Recognize potential hazards and practice safety procedures in all biology activities.

Classroom Activities:

The student:

B.3.1a Discusses scientific methods and steps involved.

B.3.1b Examines a problem which could be solved by applying the scientific method.

B.3.1c Develops a list of steps needed to solve a hypothetical problem.

B.3.1d Finishes partially completed templates (for gathering data, recording data, graphing, etc.).

B.3.1e Develops a hypothesis and identifies materials needed for an experiment.

B.3.1f Researches a hypothesis.

B.3.2c Discusses variables and controls while surveying examples of experiments.

B.3.2b Identifies the variables and controls in teacher-provided experiments examples (highlighting, sorting, labeling, etc.).

B.3.3a Locates and highlights the observations that will be explored mathematically.

B.3.3b Begins to observe the mathematical relationship between the variables, given a graph or chart.

B.3.3c Answers teacher-generated multiple choice questions (with 2-3 answer choices instead of 4) to show the mathematical relationship in the given data.

B.3.4a Sorts hypotheses and opinions in various activities.

B.3.4b Discusses a method for developing a hypothesis for a given problem.

B.3.4c Investigates a problem and develops a hypothesis.

B.3.5 Learns about potential hazards and safety procedures through classroom discussion, signs, posters, and universal symbols, such as eye wash station, biohazard, fire.

Process Standard 4: Interpret and Communicate - Interpreting is the process of recognizing patterns in collected data by making inferences, predictions, or conclusions. Communicating is the process of describing, recording, and reporting experimental procedures and results to others. Communication may be oral, written, or mathematical and includes organizing ideas, using appropriate vocabulary, graphs, other visual representations, and mathematical equations. The student will accomplish these objectives to meet this process standard.

Modified Academic Indicators (MAIs):

B.4.1 Select appropriate predictions based on previously observed patterns of evidence.

B.4.2 Report data in an appropriate manner.

B.4.3 Interpret data tables, line, bar, and/or circle graphs.

B.4.4 Accept or reject hypotheses when given results of a biological investigation.

B.4.5 Use experimental data to draw the most logical conclusion.

B.4.6 Report results of a biological investigation or event.

B.4.7 Communicate scientific thinking.

B.4.8 Identify and/or create an appropriate graph or chart from collected data.

Classroom Activities:

The student:

B.4.1a Sorts/matches predictions with evidence or patterns.

B.4.1b Finishes a partially completed graph.

B.4.3a Practices interpreting data on data tables, line, bar, and/or simple circle graphs.

B.4.3b Interprets data from teacher provided graphs or tables.

B.4.4a Matches the hypothesis with the correct results of an investigation.

B.4.4b Chooses from three possible multiple-choice answers to match the hypothesis to the conclusion.

B.4.5 Interprets findings recorded from scientific investigations to draw a logical conclusion.

B.4.8 Reports finding in various ways (journals, orally, graphs, pictures, video, tape recorder, etc.).

Process Standard 5: Model - Modeling is the active process of forming a mental or physical representation from data, patterns, or relationships to facilitate understanding and enhance prediction. The student will accomplish these objectives to meet this process standard.

Modified Academic Indicators (MAIs):

B.5.1 Discuss a biological model which explains a given set of observations.

B.5.2 Select predictions based on models such as pedigrees, life cycles and energy pyramids.

B.5.3 Compare a given model to the living world.

Classroom Activities:

The student:

B.5.1a Matches a model of a cell with a written set of observations prepared by the teacher.

B.5.1b Finishes a partially completed template of an organism by referring to a model.

B.5.2a Sorts a model of a life cycle into its proper sequence.

B.5.2b Constructs a four generation family tree after studying the components of animal pedigrees.

Process Standard 6: Inquiry - Inquiry can be defined as the skills necessary to carry out the process of scientific or systemic thinking. In order for inquiry to occur, students must have the opportunity to ask a question, formulate a procedure, and observe phenomena. The student will accomplish these objectives to meet this process standard.

Modified Academic Indicators (MAIs):

B.6.1 Conduct an appropriate experiment relating to the living world.

B.6.2 Use a variety of technologies, such as hand tools, microscopes, measuring instruments.