Statewide Career Pathways Basic Skills Curriculum:

Contextualized Science Module

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FOUNDATIONS FOR DESIGN

- ✓ Instruction emphasizes learning by doing through projects and simulations; therefore, the instructor is a facilitator or learning coach.
- ✓ Each module emphasizes communication, teamwork, and critical thinking.
- ✓ Content is contextualized for career pathways basic skills.
- ✓ Learning outcomes often require learners to engage in collaborative and individual projects involving authentic materials and resources and complete documents and writing tasks for career paths with the guidance of learning facilitators.
- ✓ Specific units within modules may serve as precursors for additional units within the module. Many lessons and units may be repeated and expanded from one module to another.
- ✓ Self-advocacy and continual self-assessment and self-monitoring are inherent to each module while students must be introduced to, required to meet with, and encouraged to consult with program coordinator as well as academic and employment professionals.
- ✓ Guest speakers and conferences with employment and academic professionals are integral to the relevance and value of the program for students.

ASSUMPTIONS

- ✓ Each agency or instructor who may use these modules or this program will adapt instructional strategies, content level of difficulty, learning activities and projects to meet the needs of the program's target population and adult learners of lower and higher academic levels.
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- ✓ Referenced resources, relevant Internet links, learning activities (created, suggested, attached, or referenced) will be used, modified, or omitted based on student need and restraints of class time and resources.
- ✓ This curriculum will work in established internal partnerships within the academic community as well as external partnerships/relationships in the employment community.
- ✓ Units and lessons will be adapted to fit within varying contact hours of a program.

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Module Description: The Contextualized Science Module is designed to provide students with an understanding of how science as a whole fits in and is used within a wide variety of careers and that a basic understanding of science will serve them well within an employment context.

Module Objectives:

Students will:

- Research
- Problem solve
- Think critically
- Write hypotheses
- Conduct experiments
- Define terms
- Develop inquiry skills
- Graph results

Methods of Instruction

- Lecture
- Small and large group discussions
- Role playing
- Group presentations
- Online research
- Guest speakers
- Experimentation

Methods for Evaluating Student Performance

- Individual and group presentations
- Written and oral summaries
- Peer evaluations
- Lab experiments
- Teacher observation logs

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Module Overview

- Reasoning/Problem Solving
- Earth Science
- Geology
- Energy Transfer
- Bioremediation/Soil contamination
- Life Science
- Muscular/Skeletal system
- Space exploration
- Sound properties
- Healthcare/Breathing

Module Outline

1. Explore careers and learn scientific process skills
   a. Think Like a Scientist worksheet
   b. Discuss career choices vis-à-vis skills
   c. Communication in Action extension activity

2. Evaluate the forces that shape the lithosphere
   a. Explore earthquakes, plate tectonics, and safety
   b. Earthquake Job Information Sheet
   c. Presentation of findings

3. Describe use of earth materials, including the economic use of rocks and minerals
   a. Research “Mineral and Gemstone Kingdom”
   b. Rocks and Minerals worksheet
   c. Discuss products and occupations dealing with rocks and minerals

4. Apply concepts and design solutions for conduction, convection, and radiation
   a. Conduct heating/cooling experiment
   b. Apply principles and concepts to engineering career

5. Explain how engineers use pH to measure cellular respiration
   a. pH worksheet/experiment; Breathing Bubbles
   b. Discuss bioremediation expenses and resources
   c. Compare bioremediation v. land removal
   d. Research and discuss jobs using chemical balance

6. Understand cycle of matter and careers in soil science
    a. Earthworm Student Sheet
    b. Discuss role of soil conservationists and related fields.

7. Understand how muscles and bones work together
    a. Create skeletal drawing.
    b. Discuss bone structure and how they move.
    c. Making Muscles Move experiment and worksheet
    d. Discuss careers in which muscle/bone knowledge is essential

8. Describe and research space exploration careers
    a. Research career from the International Space Station
    b. Discuss space travel and inventions that made it possible.
    c. Complete "The Slinky®" lesson.

9. Explore concepts of sound and how they can be applied to a career in music
    a. Review knowledge and concepts of sound properties and how they relate to musical instruments
    b. Student Study Guide: Nature of Sound, Properties of Sound, and Combining Sound Waves
    c. Discuss careers in the music industry.
    d. Complete sound experiment "Musical Notes"

10. Analyze law of conservation of energy
    a. Complete "Energy Transfer Relationship"
        i. Skateboard Scenario
        ii. A Bright Idea: Energy Conservation
        iii. Energy Job Information Sheet
    b. Discuss and research energy conservation jobs.

11. Explore lung volume and capacity
    a. Discuss athletic training.
    b. Explore lung capacity concepts.
    c. Brainstorm professions in which lung capacity is essential.
    d. Discuss factors that can influence lung capacity.
    e. Complete "What Is Your Lung Capacity" experiment and worksheet