Statewide Career Pathways Basic Skills Curriculum:

Contextualized Math 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.
- ✓ 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.

Statewide Career Pathways Basic Skills Curriculum: Contextualized Math Module

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

Module Objectives:

Students will:

- Develop study skills in math
- Learn how to work with whole numbers in the context of career paths
- Learn how to work with fractions in the context of career paths
- Learn how to work with decimal fractions in the context of career paths
- Learn how to work with ratios and proportions in the context of career paths
- Learn how to work with percent proportions in the context of career paths
- Learn how to work with percentages, averages, and estimates in the context of career paths
- Learn how to work with exponents and roots with order of operations in applied settings
- Learn how to work with industrial applications of basic measurements
- Learn how to work with graphic representation of data from work settings
- Learn how to work with formulas and equations in the context of career paths
- Learn how to work with practical geometry in the context of career paths

Methods of Instruction

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

Methods for Evaluating Student Performance

- Individual and group presentations
- Written and oral summaries

- Peer evaluations
- Teacher designed rubrics
- Teacher observation logs

Module Overview

- Critical thinking
- Distance measuring
- Decimals
- Geometry
- Algebra
- Fractions
- Integers
- Graphing
- Probability
- Area
- Perimeter
- Data analysis

Module Outline

1. Apply problem-solving skills and the Pythagorean theorem in landscape design
    a. Discuss mathematical concepts necessary in landscape architecture
    b. Landscape Horticulture

2. Design, test, and evaluate results in an engineering role
    a. Discuss engineering role in car design
    b. Create rubber band cars
    c. Measure distance and calculate speed

3. Perform basic math operations with decimals, related to law enforcement careers
    a. Gain basic law enforcement knowledge
    b. To Protect & Serve

4. Alter catering recipes within food service industry
    a. Discuss food service industry.
    b. Apple Pan Dowdy
    c. Present and compare solutions

5. Strategize to protect an endangered species as a wildlife biologist
    a. Discuss mathematical concepts as a wildlife biologist
    b. The Black-Footed Ferret
    c. Ferret Figures

6. Determine weather patterns in meteorology
    a. Life as a Meteorologist
    b. Create spreadsheet and double line graph of monthly highs and lows of a European capital

7. Apply probability concepts to careers in healthcare
    a. Explore probability.
    b. Understand terms and definitions
    c. Let's Review
    d. A Career in the Medical Field Might Be Neat!

8. Apply geometrical concepts to home repair and renovation
    a. Calculate perimeter and total square footage
    b. Discuss mathematical concepts used in general contracting
    c. Research local pricing to create estimates
    d. Explain supply cost, labor cost, and total estimate

9. Create and apply a survey
    a. Discuss the concept of frequency tables
    b. Access information on market researchers
    c. Conduct a survey
    d. Create a frequency table
    e. Design and deliver presentation

10. Use hypothetical scenarios to explore the concept of linear equations
    a. Using phone rate plans, calculate monthly bills
    b. Identify patterns within phone usage
    c. Determine mathematical formulas to calculate usage
    d. Discuss how linear equations are used in career pathways

11. Understand how to use nets (diagrams) to calculate surface area of rectangular prisms
    a. Discuss surface area and how it is used in box manufacturing

b. Examine one- and three-dimensional boxes to determine height, width, and length
c. Calculate area to determine surface area
d. Cardboard Box Factory

12. Interpret and write verbal phrases and sentences as simple algebraic expressions and equations
   a. Discuss addition, subtraction, multiplication, and division and the language of math operations
   b. Brainstorm careers that need to translate expressions/equations
   c. Create four mathematical expressions/equations used in a particular career
   d. Career Cards
   e. Writing Mathematical Expressions and Equations
   f. Make Fifteen