SCIENCE AND CAREERS

Performance Standard 13B/12A-F/13A.I

Students will apply the interactions of the concepts, principles and interconnections of the life, physical and earth/space sciences to analyze career and occupational decisions accordingly:

- *Knowledge*: Identify and describe the interconnections of science associated with occupational skills.
- *Application*: Examine how scientific concepts influence specific career and occupation decisions.
- *Communication*: Present foundational scientific concepts and applications in specific on-the-job processes.

Procedures

1. ***In order to know and apply concepts that describe the interaction between science, technology, and society (13B), and the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences (12A-F),*** students should experience sufficient learning opportunities to develop the following:
   - Identify and describe the science-related knowledge in common use in any of the occupational skill clusters.
   - Interview people from a variety of occupations to determine how knowledge of science influences their daily work.
   - Correlate the pure science foundations to the applied science connections in daily use.

   Note to teacher: This activity integrates information as suggested in standard 13B at stage J. It should incorporate information from the life, environmental, chemical, physical, earth and space concepts from Goal 12. The format for this activity could be incorporated into all goal 12 units to assure the understanding of the applications of science in the real-world. Additional applications into the accepted practices of science in standard 13A may be integrated as well.
2. Have students review and discuss the assessment task and how the rubric will be used to evaluate their work.
3. Set the scope for this careers research project. Each student will gather information about the particular application of scientific concepts in careers through research and interviews. An interview format is provided. Students should present their findings with appropriate visual aids and documented occupational skill standards which require knowledge and application of performance elements. Following presentations, students should infer the common denominators associated with scientific knowledge, skills and behaviors in career settings for discussion and personal journal reflections.
4. Suggestions from the **National Standards for Family Consumer Science Education** Cluster Content Standards include:
   - From the Life Sciences: Use of the Hazard Analysis Critical Control Point (HACCP) during all food handling processes to minimize the risks of food-borne illness (Food Science, Dietetics, and Nutrition Competency 9.2.4).
   - From the Environmental Sciences: Manage physical space to maintain a safe and healthy environment; apply safe and healthy practices that comply with state regulations; implement basic health practices and prevention procedures for workers and children regarding childhood illness and communicable diseases *relating to the disposal of infant diapers, for instance* (Early Childhood, Education and Services Competencies 4.4.1, 2, and 6).
   - From the Chemical Sciences: Examine federal and state regulations regarding the handling, use and storage of chemicals; apply Occupational Safety and Health Administration (OSHA) regulations to situations in which blood-borne pathogens exist and need to be labeled; execute a pest-control system appropriate for the facility (Facilities Management and Maintenance Competencies 5.3.2, 3 and 4).
   - From the Physical Sciences: Evaluate external support systems that provide services for parents *relating to the selection, use and necessity of infant and toddler car seats* (Parenting Competencies 15.3.3).
   - From the Earth Sciences: Examine environmental trends and issues affecting families and future generations; examine behaviors that conserve, reuse, and recycle resources to maintain the environment (Consumer and Family Resources Competencies 2.2.2, 3).
   - From the Space Sciences: Utilize various factors that affect food preferences; implement procedures that affect quality product performance; conduct sensory evaluations of food products; conduct testing for safety of food products utilizing available technology *for the development and testing of foods for space travel* (Food Science, Dietetics, and Nutrition Competencies 9.5.1,5, 6, and 7).

- From Safety policies in 13B: Demonstrate food safety and sanitation procedures; apply risk management procedures to food safety, food testing and sanitation (Food Production and Services Competency 8.2 and Food Science, Dietetics and Nutrition Competency 9.2.).

All Occupational Skill Standards may be accessed through *www.isbe.net; http://www.standards.siu.edu/* and purchased from the Curriculum Publications Clearinghouse, Horrabin Hall 46, Western Illinois University, #1 University Circle, Macomb, IL 61455-1390*, (www.wiu.edu/users/micpc).*

5. Evaluate each student's work using the Science to determine the performance level:
   - *Knowledge*: The descriptions of the interconnections of science with occupational skills were complete, detailed and accurate.
   - *Application*: The scientific influences in specific career and occupational decisions were insightful and thorough.
   - *Communication*: The presentation was well-focused, well-organized, and thoroughly explained on-the-job process applications.

Examples of Student Work not available

Time Requirements

- 1 day to orient expectations; 3-5 days for research (in or out of class); 2-3 days for 10-minute career presentations, discussions and reflections

Resources

- Career interview suggestion page
- Career Interest Areas Overview (for teachers)
- Science Rubric

INTEGRATING SCIENCE AND TECHNOLOGY CAREER INTERVIEW

STUDENT DIRECTIONS

Conduct an interview with an individual in a Science/Technology career. Develop a list of questions to use during the interview. Use the questions given below as a guide; modify or add to them to meet your needs. Be prepared to present your findings from the interview, either written, or orally to the class.

SAMPLE INTERVIEW QUESTIONS

Career Description

- Describe your job.
- How does knowledge of science affect your job?
- Describe any specific regulations in your job that have a scientific basis. What is the regulatory agency which enforces these regulations?
- How do you see technology affecting your job in the past 5-10 years? In the next 5-10 years?

Education & Training Requirements

- What special education or training is required to perform your job? What kind of high school training, post-secondary or on-the-job training have you had or would be helpful?
- What science skills are needed in your job? Does your job require expertise in assembling, maintaining, and repairing instruments? Does your job require you to do troubleshooting, analysis, recording, collecting data, or monitoring equipment or processes? How did you learn to do this?
- What kinds of mathematics skills are needed in your job?
- What communication skills are needed in your job?
- What were your career goals when you were in elementary, middle and high school? What about summer or part-time jobs?

Teamwork, Problem Solving, and Decision Making

- In your position, do you more often function as an individual or as part of a team?
- When working on a team, do you have the responsibility for making final decisions? How is the responsibility shared?
- Do you generate new ideas, solve problems, make decisions? Please describe the kind of processes you use with your colleagues to follow through with the new ideas, reach cooperative consensus, or find answers.
- Describe the ideal work atmosphere for teamwork, problem-solving and decision-making.