

Physical Science/Chemistry – Portfolio Entry Slip

Assignment career project

Student _____

Class chemistry I

Teacher _____

Grade Level 11th

Date of Assignment January 5, 2006

Entry Slip Date March 15, 06

Purpose: What new things did I learn, or what skills/knowledge did I improve by completing this assignment?

By completing this assignment I learned a variety of different skills including: learning about a career of interest, how to successfully complete a project based on specific rules and recognizing certain aspects of the career.

Connection to EALR/GLE: What specific GLE or EALR does this particular assignment address? How?

It specifically relates to GLE 3.2.3 simply because I had to analyze the scientific, mathematical, and technological knowledge, training, and experience needed for occupational/career areas of interest by researching and completing a presentation.

Evaluation: What did I do well on this assignment? If I were going to do this again, what would I do differently?

Overall I feel that I have completed this assignment well because I reached my goal of successfully learning the material given and completing the assignment presented.

Assessment: Where I am on the Physical Science/Chemistry rubric? (Circle one)

Beginning Approaching Meeting Exceeding

How do I know what level I am at?

I know that I am at this level simply because I researched a career of interest and created a report on the educational requirement associated with the specific career I chose. I also examined the scientific, mathematical and technological knowledge, training, and experience needed for this career of interest.

Name: ⁶ 

Class: chemistry (p. 6) Date:

Careers Using Chemistry Research Project

Meeting Standards:

GLE 3.2.3 Analyze the scientific, mathematical and technological knowledge, training, and experience needed for occupational/career areas of interest.

- Research and report on educational requirements associated with an occupation(s)/career(s) of interest.
- Examine the scientific, mathematical and technological knowledge, training, and experience needed for occupational/career areas of interest.

Objectives:

1. Students will choose two careers based on interests and style.
2. Students will research two careers to find facts based on nature of the work, educational and training requirements, employment outlook, working conditions, salary, and other factors.
3. Students will conduct an interview or prepare a descriptive career report.
4. Students will present information learned to the rest of the class.
5. Students will self-evaluate their project.

Steps:

1. **Task 1 - Find and print information from the internet on 2 of the careers that you research.**

Highlight all important information. These sheets must be included in your research packet. Following are some helpful web pages:

- iseek Web site
<http://www.iseek.org/sv/11999.jsp>
- College Board Web page
www.CollegeBoard.com
- Department of Labor's web site (<http://www.bls.gov/oco/>)
- American Chemical Society Careers Page
(<http://www.chemistry.org/portal/a/c/s/1/acdisplay.html?DOC=vc2%5C3wk%5Cwk3.html>)

↑ chemistry related
example: fire fighters

Fill out information about the career that most interest to you in the Career Search Sheet.

2. **Task 2 - Find and print one classified advertisement from a newspaper or from the internet on the career you chose to include in Career Search Sheet.**

Highlight educational requirements, training, experience, and other important information needed for the career. This advertisement/printed sheet must be included in your research packet.

Following are some helpful web pages:

Career Search Sheet

Directions: DO NOT WRITE ON THIS SHEET UNTIL YOU ARE CERTAIN OF WHAT YOU WISH TO WRITE. NEATNESS COUNTS!

- 1. Title or Name of the career of interest:**
chemical engineer
- 2. What is the nature of the career/occupation?**
they design and operate the process for large-scale production of chemical products. one must know chemistry, physics, and mathematical equations to solve problems and must design ways to produce products.
- 3. What will you actually do in this job? (This refers to skills you would use on the job such as the terms: organize, write, teach, operate, investigate, participate, etc.)**
you must be able to design ways to produce products, research, process control, sales, economic analysis, and management.
- 4. What school subjects or courses would help you prepare for this career?**
if you have strong interests in chemistry, physics, and math. Each are vital in order to be successful.
- 5. What educational requirements associated with occupation/career of interest? (How much and what kind of education will you need?)**
chemistry, physics, and math are educational requirements. chemical engineers must have at least a 4-year bachelors degree in chemical engineering including a course in physics, math, and computers. chemical engineers should also have touched base in heat & mass transfer, thermodynamics, fluid dynamics, process design & control and electronics.
- 6. What kind of training and experience will be required for this career?**
Both economics, ~~the~~ psychology, and political science come in handy for a chemical engineer but most of their knowledge comes from job training.
- 7. List other required qualifications such as licensing, certifications, etc.**
to become a professional engineer, one must graduate from an approved four-year engineering program, complete 4 to 6 years of supervised engineering work, pass the Fundamentals of Engineering Exam, and pass the Professional Engineer Exam.

8. What is the employment outlook for this career? (What is the job market like in this field? Will you have to compete heavily for the position or will you find one easily?) Since the demand for chemical engineers at major chemical and pharmaceutical companies is expected to continue, there will be more opportunities for chemical engineers.

9. List the places where people in this occupation may work.

Chemical engineers are typically employed by every type of company involving chemical process industry. There are some employment for chemical engineers in petroleum refineries and pharmaceutical, biotechnology and service industries.

10. What aspects of your personality fit into this career? (This occupation interests me because :)

I consider achievement important, like seeing my work completed and then reflecting upon it and reviewing its success. I work hard and efficiently both alone and with a team. I like to try my ideas and see where they will take me. I like to be a busy-body and love good working conditions.

11. What would a starting salary be in this career? (Not average annual, but entry level or starting at the bottom level.)

A starting salary for this career is \$42,000 per year with a bachelors degree, \$45,000 per year for those with a masters degree, and \$59,000 per year for those with a Ph.D.

12. How do you use scientific, mathematical and technological knowledge in your career?

One uses scientific, mathematical, and technological knowledge in this career. One must know how to choose mathematical methods/formulas to solve problems. ~~and~~ chemical engineers must be able to use scientific methods or math skills to solve problems and be able to add, subtract, multiply, and divide quickly and correctly.

(Adapted from <http://www.ncusd203.org/north/depts/applsci/familysc/career/search.htm>)

Chemical Engineer: A Written Report

Overview:

A chemical engineer is a person who basically designs and operates the processes for enhancing production of chemical products. They are required to be well educated in chemistry, physics, and math in order for them to successfully solve real problems. Chemical engineers must learn to design various ways to produce chemical products both securely and economically.

Working Conditions:

Chemical engineers are generally employed in manufacturing plants as well as research laboratories or pilot plant facilities. They are placed in large-scale production equipment which are both indoors and outdoors. Majority are required to wear safety protective gear such as hard hats, goggles, and steel-toe shoes in order to keep them safe from any harmful or hazardous chemicals. The workday consists of moving around within the facility. Some chemical engineers who are found working in businesses and management offices are still required to visit production and research facilities. Though this job takes a lot of independence, what is critical in the success of projects is the interaction between others as a part of a team.

Education and Training Requirements:

In order to be successful in this field, a chemical engineer must have at least a four-year bachelor's degree in chemical engineering including course work in physics, math, and computers. Though the curriculum of a chemical engineer is similar to that of a chemist, it requires other course work such as heat and mass transfer, thermodynamics, fluid dynamics, process design and control, and electronics all of which are areas that are engineering-related. Other study areas such as economics, psychology, and political science assist chemical engineers in understanding the impact of technology on society. Most chemical engineers learned many theories in the classroom, but admitted that most of their knowledge came from on-the-job training.

The Scientific, Mathematical, and Technological Knowledge Required:

There is scientific, mathematical, and technological knowledge required for this career.

- **Scientific:** a chemical engineer must understand the concepts of chemistry and physics and learn how to apply them to the production of the products.
- **Mathematical:** a chemical engineer must learn to choose mathematical methods and formulas to solve problems.
- **Technological:** a chemical engineer must understand that in order to become a chemical engineer, one must know how to use a computer because it is very

beneficial.

Employment Outlook:

The demand for chemical engineers at major chemical and pharmaceutical companies is at a state of continuous expectancy. Opportunities for chemical engineering have been expanding as the biotechnology industries continue to expand. With the development of a large-scale accomplishment of new energy sources which are designed to substitute for the world's diminishing supply of petroleum and natural gases, the need for chemical engineers is researched as becoming of much importance.

Earning Potential:

It can be concluded that the salaries of a chemical engineer vary.

The starting salaries for chemical engineers are as follows:

- \$42,000 per year for those with a Bachelor's degree in chemical engineering.
- \$45,000 per year for those with a Master's degree.
- \$59,500 per year for chemical engineers with a Ph.D.
-

The median yearly salaries for industrial chemical engineers are as follows:

- \$48,000 per year or those with a Bachelor's degree in chemical engineering and 10 years of experience.
- \$54,000 for those with a Master's degree and 10 years of experience.
- \$64,000 for those with a Ph.D and 10 years of experience.

Graphs/Pictures:



