



Lesson Three

Chemistry, Physics and Mathematics

Outcomes

Students will have knowledge of the types of careers that the study of science subjects can lead to.

Students will know how to use resources for researching careers.

Aim of this lesson

Students are made aware of the impact of science on their lives, becoming exposed to a number of careers that relate to and support scientific research.

Materials Required:

- *Careers in Science* booklet (class sets are available by emailing enquiries@ansto.gov.au or calling 02 9717 3168. It is also online at www.careersinscience.gov.au)
- The *Job Guide* developed for the Department of Education Science and Training by the Good Guides and provided to all Australian schools (eight copies minimum), or access to www.jobguide.thegoodguides.com.au
- Access to OZJAC, www.curriculum.edu.au/ozjac/
- Television guide and/or newspaper (optional).

Activities

1. Introduction

The teacher should introduce the lesson with such statements as:

- 'Today we will look at a variety of occupations that the study of chemistry, mathematics and physics can lead us to'
- 'Let's explore and see if these occupations are the kind you may like to pursue'
- 'When researching careers it is always good to ask yourself: is this a career for me?'

Write these questions across the top of the whiteboard:

- What type of environment you would like to work in?
- What level of education is required for this occupation?

2. Exploration

Divide the remainder of the whiteboard into six columns:

- Chemistry
- Occupations
- Maths
- Occupations
- Physics
- Occupations.

The teacher could then say, 'Let's start with a brainstorm about the areas covered by chemistry, mathematics and physics.'

Students should provide a list of words which they believe describe these areas, with the teacher listing them under the appropriate heading.

Leave this on the board as a focus for the students throughout the lesson.

Ask the students to go to the definition of school science subjects in the *Careers in Science* booklet. Read the page 11 entry on 'Physics, Chemistry and Mathematics'. Add to the board anything here that was not covered by the students.

The teacher then asks the students, 'Can you think of any occupations that require knowledge of chemistry, mathematics or physics?'

Add these to the appropriate column on the board.

Remember that VCE Chemistry is a prerequisite for the study of medicine.

3. Examples

Ask the students, 'Can you think of any television programs that depict these professions?'

Possible responses:

- *CSI*
- *Grey's Anatomy*
- *Deal Or No Deal*
- *News*
- *Extreme Makeover*
- *E.R.*
- *The Simpsons*
- *House*
- *Beyond Tomorrow*
- *Myth Busters.*

Working in pairs and using pages 2-7 of the *Careers in Science* booklet, students read through the profiles and write down the name of each person (and their occupation) whose work relates to any of these two areas (some may cover more than one area).

Possible responses:

Chemistry:-

- Renee Lucas (metallurgical engineer)
- Chris Griffith (chemist)
- Suzana Turk (materials engineer)
- John Farrugia (polymer chemist)
- Sir Gustav Nossal (scientist)
- Dr Karl (media personality)
- Dr Peter Doherty (vet).

Physics:-

- Phil Valencia (robotics/electronics engineer)
- Suzy Balogh (uses physics in Olympic shooting)
- Dr Karl (media personality)
- Dr Colin Taylor (Executive Director of Australian Science Innovations).

Mathematics:-

- Matthew Coleman (derivatives trader)
- Renee Lucas (metallurgical engineer)
- Scott Burgess (ecologist)
- Phil Valencia (robotics/electronics engineer)
- Suzana Turk (materials engineer)
- Chris Griffith (chemist)
- John Farrugia (polymer chemist)
- Dr Karl.

Now read 'Some science related jobs' on page ten and add to the list of occupations that may require knowledge of chemistry and/or mathematics and/or physics.

Possible responses:

- Biomedical scientist
- Scientific journalist
- Organic analytical chemist
- Environmental scientist
- Ceramist
- Dietician
- Materials analyst
- Mathematician
- Zoologist
- Research scientist
- Forensic scientist
- Laboratory technician radiographer
- Metallurgical engineer
- Chemist
- Electronics engineer
- Materials engineer
- Polymer chemist

Briefly discuss with the students what the world would be like if these occupations did not exist, helping illustrate the importance of these subjects and their related occupations.

4. A detailed look

Explain to the students that they now have the opportunity to explore one or two occupations of their choice in more detail.

This task can be completed using OZJAC, the *Job Guide* or other sites that supply descriptions of occupations.

Give the students the attached worksheet to work through. Some of this can be done as homework.

An additional task

Choose one occupation you researched and write a half page story entitled, 'A day in the life of a (occupation)'. Include descriptions of the tasks they perform, their dress, type of place they work, and so on. Be creative!

