

Biology
College Preparation
(SBI3C)

A Respiratory Health Report

The Task

Students were presented with the following scenario:

You are a respiratory technician who does vital capacity testing across the province. Vital capacity is a measure of an individual's lung capacity, and can be an important indicator of personal health. An individual's breathing system can be affected by environmental factors. Reductions in air quality in many parts of the world have made breathing difficult for many people.

You have been asked by a doctor to come to her community to test the vital capacities of its residents. Over the past few months, the doctor has noticed that many more people than usual have come into her clinic with respiratory problems.

When you arrive in the community, you discover that your equipment has not arrived with you. Instead of wasting valuable time, you decide to build an apparatus to measure the vital capacities of the residents in the community.

Design, build, and test the apparatus. Once your apparatus is working well, compile a data set for the community. Using the data and your research, write a submission to the doctor to describe the results of your study.

Final Product

Each student was to have submitted a respiratory health report that contained the following:

- a labelled scientific diagram of the assembled apparatus (see Appendix A)
- procedural instructions for building and operating the apparatus
- a table organizing the collected data including:
 - qualitative data (e.g., gender, health information)
 - quantitative data (e.g., vital capacity, age, height)
- a written submission to the doctor that uses the collected data and research to provide:
 - graphical information
 - data analysis (e.g., averages, ranges)
 - a description of common factors affecting vital capacity, including respiratory ailments (e.g., asthma, emphysema)
 - an analysis of the implications for the health of the community
 - suggestions for improving vital capacity, or maintaining normal vital capacity, in the community
- a bibliography

Note: Although students were required to submit a bibliography, it was not assessed as part of the exemplar task.

Expectations Addressed in the Exemplar Task

This task gave students the opportunity to demonstrate achievement of all or part of each of the expectations listed below.

Expectations 1 and 5 are from the Animal Anatomy and Physiology strand of the course. Expectations 2, 3, and 4 are from the list of expectations that precedes the strands of the course in the curriculum document and that applies to all strands of the course.

Students will:

1. design and carry out an experiment related to animal physiology, identifying specific variables;
2. communicate the procedures and results of investigations and research for specific purposes using data tables and laboratory reports;
3. demonstrate the skills required to plan and carry out investigations, using laboratory equipment safely, effectively, and accurately;
4. compile, organize, and interpret data, using appropriate formats and treatments, including tables, flow charts, graphs, and diagrams;
5. demonstrate an understanding of the connections among health, preventive measures, and treatment, and of their social and economic implications.

For information on the process used to prepare students for the task and on the materials and resources required, see the Teacher Package reproduced on pages 71–79 of this document.