

Specialist High Skills Major (SHSM)**TEMPLATE: Contextualized Learning Activities (CLAs)**

For the “other required credits” in the bundle of credits, students in a Specialist High Skills Major program must complete learning activities that are contextualized to the knowledge and skills relevant to the economic sector of the SHSM. Contextualized learning activities (CLAs) address curriculum expectations in these courses.

Contact Information	
Board	Waterloo Catholic DSB
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Contact person	Susan Benedetto Krista Vrolyk
Position	Health Care Teacher, St. Mary’s High School Health Care and Science Teacher, St. David’s High School
Phone	519-745-6891 519-885-1340
Fax	519-745-2256 519-885-1345
E-mail	Susan.benedetto@wcdsb.ca Krista.vrolyk@wcdsb.ca

Specialist High Skills Major	Health and Wellness
Course code and course title	SBI 3U Biology – University Preparation
Name of contextualized learning activity/activities	How Healthy Are You? Take Care Of Your Body, It’s The Only Place You Have To Live!
Brief description of contextualized learning activity/activities	The Ministry of Health is conducting research on lifestyle choices of adolescents and the effects they have on their health. As a consultant, you have been hired to assess the health and wellness of students in your high school. Students will learn skills required to conduct a formal lab on various vital signs to extend their knowledge of the circulatory and respiratory systems. They will write a lab report and then explore related factors that affect these systems and keep them healthy.
Duration	6 hours

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Overall expectations	<p>E. Anatomy of Mammals</p> <p>E1. analyse the relationships between changing societal needs, technological advances, and our understanding of internal systems of humans;</p> <p>E2. investigate, through laboratory inquiry or computer simulation, the functional responses of the respiratory and circulatory systems of animals, and the relationships between their respiratory, circulatory, and digestive systems</p> <p>E3. demonstrate an understanding of animal anatomy and physiology, and describe disorders of the respiratory, circulatory and digestive systems.</p>
Specific expectations	<p>E1.2 assess how societal needs lead to scientific and technological developments related to internal systems.</p> <p>E2.1 use appropriate terminology related to animal anatomy, including, but not limited to: systolic, diastolic, diffusion gradient, inhalation, exhalation, coronary, cardiac, ulcer, asthma, and constipation.</p> <p>E2.3 use medical equipment to monitor the functional responses of the respiratory and circulatory systems to external stimuli.</p> <p>E3.1 explain the anatomy of the respiratory system and the process of ventilation and gas exchange from the environment to the cell.</p> <p>E3.3 explain the anatomy of the circulatory system and its function in transporting substances that are vital to health.</p> <p>E3.4 describe some disorders related to the respiratory, digestive, and circulatory systems.</p>
Catholic graduate expectations (if applicable)	<p>CGE2b – reads, understands and uses written materials effectively;</p> <p>CGE2c – presents information and ideas clearly and honestly and with sensitivity to others;</p> <p>CGE3c – thinks reflectively and creatively to evaluate situations and solve problems;</p> <p>CGE4f – applies effective communication, decision-making, problem-solving, time and resource management skills;</p> <p>CGE5a – works effectively as an interdependent team member;</p> <p>CGE5e – respects the rights, responsibilities and contributions of self and others;</p> <p>CGE5g – achieves excellence, originality, and integrity in one’s own work and supports these qualities in the work of others;</p>
Essential Skills and work habits	<ul style="list-style-type: none"> • Reading Text • Writing • Computer Use • Numeracy <ul style="list-style-type: none"> ○ <u>Measurement and Calculation</u> ○ <u>Data Analysis</u> • Thinking Skills <ul style="list-style-type: none"> ○ <u>Job Task Planning and Organizing</u> ○ <u>Decision Making</u> ○ <u>Problem Solving</u> ○ <u>Finding Information</u> • Working Safely • Teamwork • Reliability • Working Independently • Initiative • Organization

Specialist High Skills Major (SHSM)**Instructional/Assessment Strategies****Teacher's notes**

This realistic activity has been designed for Grade 11 University Biology students who are currently enrolled in the Health & Wellness Specialist High Skills Major program. Students should have already learned the anatomy and physiology of the circulatory and respiratory systems. It is expected that students will require 6 class hours to complete all components of this activity, however up to 10 hours is allowed to complete a CLA.

Students will work both independently and as part of a team in preparing their Lab Report. Students will then work collaboratively to create a poster on keeping the circulatory and respiratory systems healthy. The components of this activity provide several different opportunities for assessment. Once completed, all sections of the activity are to be submitted to the instructor for evaluation and feedback. All rubrics have been included in the Appendices of this document as noted below.

Teachers will require a regular classroom for day 1.

Teachers need either a science lab or a regular classroom for days 2 through 5.

Teachers need to book a computer lab for day 6.

Context

This learning unit is contextualized specifically for students in the health and wellness sector. This is accomplished by emphasizing the monitoring of the functional responses (ie. vital signs) of the respiratory and circulatory systems to external stimuli as a nurse, fitness consultant or respiratory therapist would do in an everyday setting. Students then explore related factors that affect these systems and how to keep them healthy.

StrategiesDay 1 - Classroom

Teacher directed review of the Circulatory and Respiratory Systems needed for CLA (See Appendix A)
Review includes:

- completing worksheets on terminology related to circulatory and respiratory systems (eg. pulse, blood pressure, respiration, breathing)
- labelling diagrams of parts of the circulatory and respiratory systems
- reading text Chapter 7 pp. 250-268 and Chapter 8 pp. 280-289
- answering assigned questions

Day 2 – Science Lab (if available)

Skills lab for the Circulatory System (See Appendix B)

Includes Part A : Heart Sounds – How to Use a Stethoscope

Part B: Blood Pressure – How to Use a Sphygmomanometer

Day 3 – Science Lab (if available)

Skills lab for the Respiratory System (See Appendix C)

Includes Part A: The Mechanics of Breathing

Part B: Lung Volume and Capacity – How to Use a Spirometer

Day 4 and 5 – Science Lab (if available)

Complete data collection and formal lab report on various vital signs. (Appendix D)

Day 6 - Computer Lab

Research – Investigate ways of keeping the circulatory and respiratory systems healthy.
(See Appendix E)

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<p>Modes of Learning:</p> <p>Independent research/finding information Teacher-directed instruction & demonstration Guided group investigation & inquiry</p>
<p>Differentiated Instruction:</p> <p>For students who are not progressing:</p> <ul style="list-style-type: none"> • provide video resources & guided feedback sheet with questions related to the videos instead of formal review • invite a representative from the Regional Health Department or Heart and Stroke Foundation or Canadian Lung Association to speak to the class • provide pulse rate, blood pressure, respiratory rate, and lung capacity data for analysis instead of collecting their own data • student could present research findings on related factors that affect the circulatory and respiratory systems and lifestyle choices that help keep them healthy orally rather than written

Assessment and Evaluation of Student Achievement

Strategies/Tasks	Purpose
1. Completing the Circulatory/Respiratory Terminology Worksheets	Formative assessment of prior learning
2. Labelling Diagrams Worksheet	Formative assessment of prior learning
3. Reading Text and Answering Questions	Diagnostic assessment of student understanding of concepts
4. Individual Preparing Lab Introduction	Diagnostic assessment of student understanding of concepts
5. Collaborative Developing a Hypothesis and Method	Diagnostic assessment of student understanding of the purpose of the inquiry
6. Collaborative Lab Report – complete a practical laboratory-based inquiry	Summative assessment of collaboration, practical skill and ability to make connections
7. Independent Researching and Preparing of a Health and Wellness Poster	Summative assessment of knowledge, research, written and visual communication skills
<p>Assessment tools</p> <p>Written Review, Skills Demonstrations, Rubrics, Peer Evaluation, Essential Skills and Work Habits Self-Reflection Checklists</p>	

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Additional Notes/Comments/Explanations

Lab notes:

If a wet spirometer is not available, teachers can use a lung volume bag set to measure lung capacity. Teachers may choose to use electronic blood pressure devices if their school has them.

Add-on or “Reach Ahead” options to add interest or additional information for students:

Students could graph class data of pulse and respiratory rates, blood pressure and vital capacity and look for trends in the data according to various factors such as gender, age, ethnicity, level of fitness, and lifestyle choices.

Interesting facts and statistics:

Did You Know? According to the Canadian Heart and Stroke Foundation:

In 2006, the HSFO identified childhood obesity as a critical issue for the future heart health of Ontario. With 28% of Ontario’s children overweight and obese, today’s children are at risk of developing long-term health effects such as heart disease, high blood pressure and type 2 diabetes at a much too early age – through no fault of their own.

Only 20% of youth get the recommended vegetables and fruit in their diet.

Over 30% of youth are exposed to second-hand smoke, mostly in their own homes.

Over 50% of youth are physically inactive.

85% of adult smokers started in their teens.

The average youth watches more that 28 hours of television each week and an additional 14 hours in front of the computer or playing video games.

Resources

Authentic workplace materials

Sphygmomanometer manual

Spirometer manual

Human resources

Speaker from the Regional Health Department, Heart and Stroke Society or the Canadian Lung Association – Speaker’s Bureau

Print

Biology 11, Nelson, 2003. pp. 240-321

Glencoe Health, Merki and Merki, 1999 pp.395-406

Video

Incredible Human Body: National Geographic Video: Warner Home Video, c2002.

Websites

www.heartandstroke.ca
www.healthcanada.ca
www.kytechcurriculum.org/lp_main.asp
www.lung.ca
www.lessontutor.com/jm_respiratory.html
www.enchantedlearning.com/subjects/anatomy/heart/labelinterior/label.shtml
www.publichealth.gc.ca
www.teenhealthandwellness.com
www.kidshealth.org
www.lifeclinic.com/focus/blood/whatisit.asp

Accommodations

- provide computer access for students requiring literacy support, eg. Kurzweil
- provide video resources & guided feedback sheet with questions related to the videos
- invite a representative from the Regional Health Department or Heart and Stroke Foundation or Canadian Lung Association to speak to the class
- provide pulse rate, blood pressure, respiratory rate, and lung capacity data for analysis
- orally present research findings on related factors that affect the circulatory and respiratory systems and lifestyle choices that help keep them healthy, rather than written

List of Attachments

Appendix A: Review Sheets and Answer Keys (7 pages)
Appendix B: Skills Lab 1 – Circulatory System (2 pages)
Appendix C: Skills lab 2 – Respiratory System (2 pages)
Appendix D: Various Vital Signs Student Lab (3 pages)
Appendix E: Health and Wellness Poster (3 pages)
Appendix F: Essential Skills and Work Habits Checklists (1 page)