

Occupational Health and Safety 3203

Curriculum Guide 2015

Education
and

Early Childhood Development



***Department of Education
Mission Statement***

By March 31, 2017, the Department of Education will have improved provincial early childhood learning and the K-12 education system to further opportunities for the people of Newfoundland and Labrador.

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Section One: Newfoundland and Labrador Curriculum

Introduction

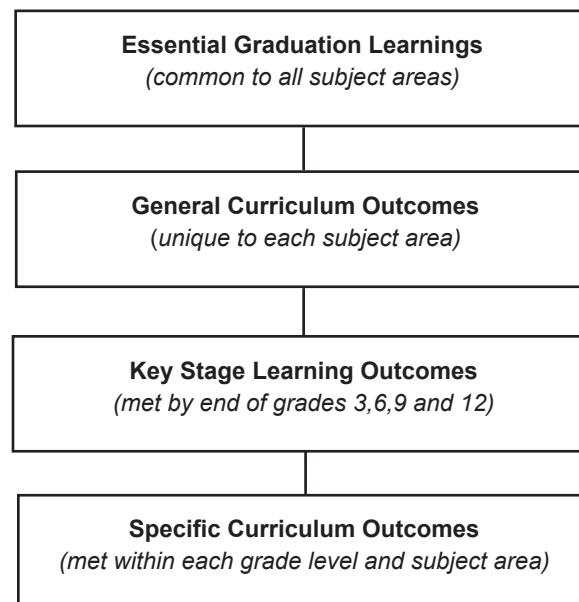
There are multiple factors that impact education including: technological developments, increased emphasis on accountability, and globalization. These factors point to the need to consider carefully the education our children receive.

The Newfoundland and Labrador Department of Education believes that curriculum design with the following characteristics will help teachers address the needs of students served by the provincially prescribed curriculum:

- Curriculum guides must clearly articulate what students are expected to know and be able to do by the time they graduate from high school.
- There must be purposeful assessment of students' performance in relation to the curriculum outcomes.

Outcomes Based Education

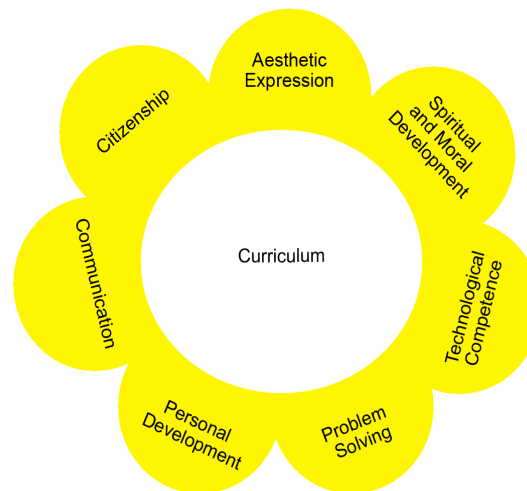
The K-12 curriculum in Newfoundland and Labrador is organized by outcomes and is based on *The Atlantic Canada Framework for Essential Graduation Learning in Schools* (1997). This framework consists of Essential Graduation Learnings (EGLs), General Curriculum Outcomes (GCOs), Key Stage Curriculum Outcomes (KSCOs) and Specific Curriculum Outcomes (SCOs).



Essential Graduation Learnings

Essential Graduation Learnings (EGLs) provide vision for the development of a coherent and relevant curriculum. The EGLs are statements that offer students clear goals and a powerful rationale for education. The EGLs are delineated by general, key stage, and specific curriculum outcomes.

EGLs describe the knowledge, skills, and attitudes expected of all students who graduate from high school. Achievement of the EGLs will prepare students to continue to learn throughout their lives. EGLs describe expectations, not in terms of individual subject areas, but in terms of knowledge, skills, and attitudes developed throughout the curriculum. They confirm that students need to make connections and develop abilities across subject areas if they are to be ready to meet the shifting and ongoing demands of life, work, and study.



Aesthetic Expression - Graduates will be able to respond with critical awareness to various forms of the arts and be able to express themselves through the arts.

Citizenship - Graduates will be able to assess social, cultural, economic, and environmental interdependence in a local and global context.

Communication - Graduates will be able to think, learn, and communicate effectively by using listening, viewing, speaking, reading, and writing modes of language(s), and mathematical and scientific concepts and symbols.

Problem Solving - Graduates will be able to use the strategies and processes needed to solve a wide variety of problems, including those requiring language, and mathematical and scientific concepts.

Personal Development - Graduates will be able to continue to learn and to pursue an active, healthy lifestyle.

Spiritual and Moral Development - Graduates will demonstrate understanding and appreciation for the place of belief systems in shaping the development of moral values and ethical conduct.

Technological Competence - Graduates will be able to use a variety of technologies, demonstrate an understanding of technological applications, and apply appropriate technologies for solving problems.

Curriculum Outcomes

Curriculum outcomes are statements that articulate what students are expected to know and be able to do in each program area in terms of knowledge, skills, and attitudes.

Curriculum outcomes may be subdivided into General Curriculum Outcomes, Key Stage Curriculum Outcomes, and Specific Curriculum Outcomes.

General Curriculum Outcomes (GCOs)

Each program has a set of GCOs which describe what knowledge, skills, and attitudes students are expected to demonstrate as a result of their cumulative learning experiences within a subject area. GCOs serve as conceptual organizers or frameworks which guide study within a program area. Often, GCOs are further delineated into KSCOs.

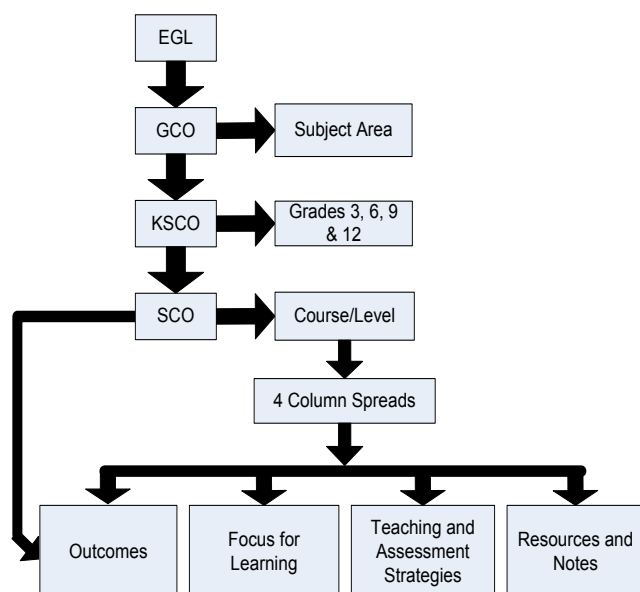
Key Stage Curriculum Outcomes (KSCOs)

Key Stage Curriculum Outcomes (KSCOs) summarize what is expected of students at each of the four key stages of Grades Three, Six, Nine, and Twelve.

Specific Curriculum Outcomes (SCOs)

SCOs set out what students are expected to know and be able to do as a result of their learning experiences in a course, at a specific grade level. In some program areas, SCOs are further articulated into delineations. **It is expected that all SCOs will be addressed during the course of study covered by the curriculum guide.**

EGLs to Curriculum Guides



Context for Teaching and Learning

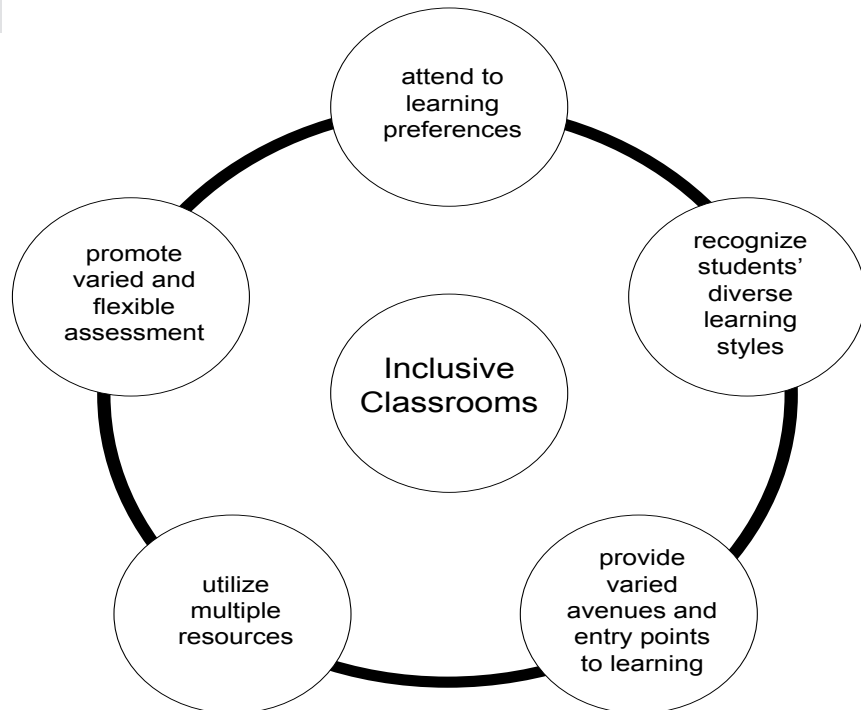
Teachers are responsible to help students achieve outcomes. This responsibility is a constant in a changing world. As programs change over time so does educational context. Factors that make up the educational context in Newfoundland and Labrador today: inclusive education, support for gradual release of responsibility teaching model, focus on literacy and learning skills in all programs, and support for education for sustainable development.

Inclusive Education

Valuing Equity and Diversity

Effective inclusive schools have the following characteristics: supportive environment, positive relationships, feelings of competence, and opportunities to participate (The Centre for Inclusive Education, 2009).

All students need to see their lives and experiences reflected in their school community. It is important that the curriculum reflect the experiences and values of all genders and that learning resources include and reflect the interests, achievements, and perspectives of all students. An inclusive classroom values the varied experiences, abilities, social, and ethno-cultural backgrounds of all students while creating opportunities for community building. Inclusive policies and practices promote mutual respect, positive interdependencies, and diverse perspectives. Learning resources should include a range of materials that allow students to consider many viewpoints and to celebrate the diverse aspects of the school community.



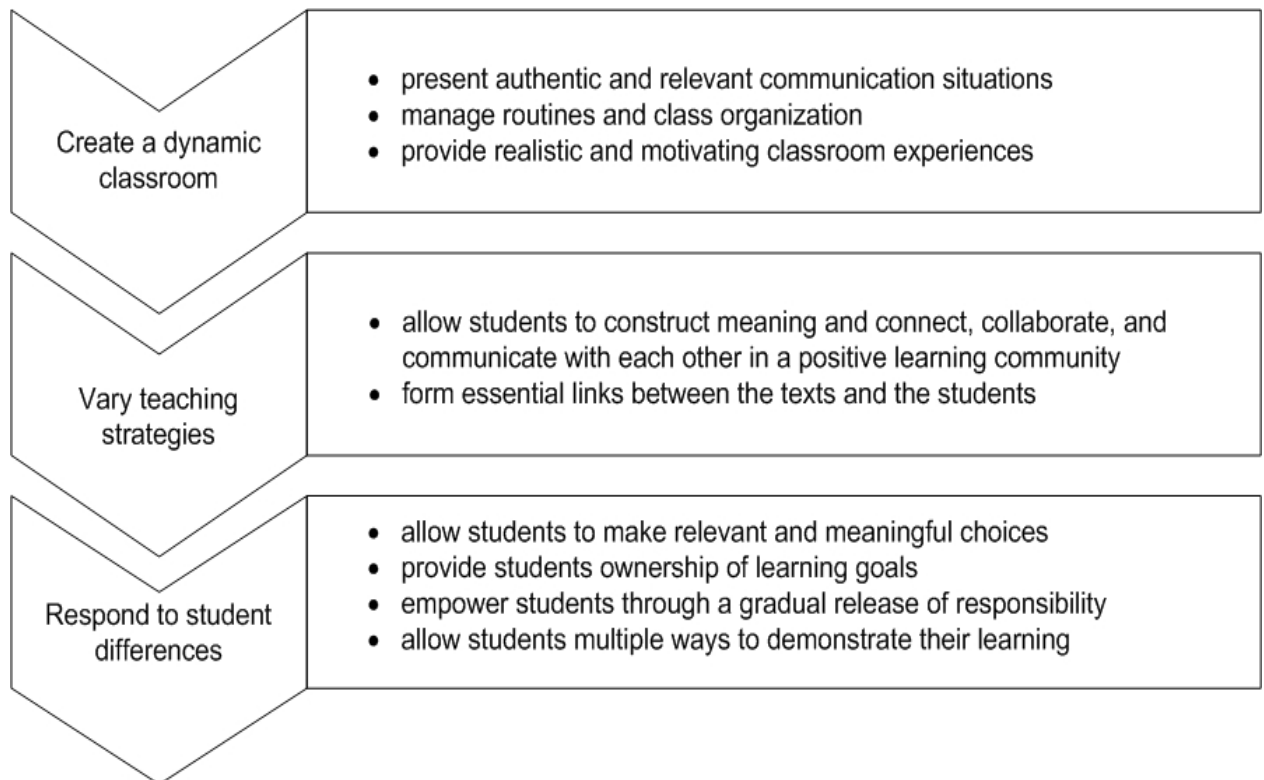
Differentiated Instruction

Differentiated instruction is a teaching philosophy based on the premise that teachers should adapt instruction to student differences. Rather than marching students through the curriculum lockstep, teachers should modify their instruction to meet students' varying readiness levels, learning preferences, and interests. Therefore, the teacher proactively plans a variety of ways to 'get it' and express learning (Carol Ann Tomlinson).

Curriculum is designed and implemented to provide learning opportunities for all according to student abilities, needs, and interests. Teachers must be aware of and responsive to the diverse range of learners in their classes. Differentiated instruction is a useful tool in addressing this diversity.

Differentiated instruction responds to different readiness levels, abilities, and learning profiles of students. It involves actively planning so that: the process by which content is delivered, the way the resource is used, and the products students create are in response to the teacher's knowledge of whom he or she is interacting with. Learning environments should be flexible to accommodate various learning preferences of the students. Teachers continually make decisions about selecting teaching strategies and structuring learning activities to provide all students with a safe and supportive place to learn and succeed.

Teachers should...



Differentiating the Content

Differentiating content requires teachers to pre-assess students to identify those who require pre-requisite instruction, as well as those who have already mastered the concept and may, therefore, proceed to apply the concepts to problem solving or further use. Another way to differentiate content is to permit students to adjust the pace at which they may progress through the material. Some students may require additional time while others may move through at an increased pace and thus create opportunities for

enrichment or more indepth consideration of a topic of particular interest.

Teachers should consider the following examples of differentiating content:

- meet with small groups to re-teach an idea or skill or to extend the thinking or skills
- present ideas through auditory, visual, and tactile means
- use reading materials such as novels, web sites, and other reference materials at varying reading levels

Differentiating the Process

Differentiating the process involves varying learning activities or strategies to provide appropriate methods for students to explore and make sense of concepts. A teacher might assign all students the same product (e.g., giving a presentation) but the process students use to create the presentation may differ. Some students could work in groups while others meet with the teacher alone. The same assessment criteria can be used for all students.

Teachers should consider flexible groupings of students such as whole class, small group, or individual instruction. Students can be grouped according to their learning styles, readiness levels, interest areas, and the requirements of the content or activity presented. Groups should be formed for specific purposes and be flexible in composition and short-term in duration.

Teachers should consider the following examples of differentiating the process:

- offer hands-on activities for students who need them
- provide activities and resources that encourage students to further explore a topic of particular interest to them
- use activities in which all learners work with the same learning outcomes, but proceed with different levels of support, challenge, or complexity

Differentiating the Product

Differentiating the product involves varying the complexity and type of product that students create to demonstrate learning outcomes. Teachers provide a variety of opportunities for students to demonstrate and show evidence of what they have learned.

Teachers should consider the following examples of differentiating by product:

- encourage students to create their own products as long as the assignments contain required elements
- give students options of how to express their learning (e.g., create an online presentation, write a letter, or develop a mural)

Allowing students to choose how they demonstrate their understanding in ways that are appropriate to their learning needs, readiness, and interests is a powerful way to engage them.

Differentiating the Learning Environment

The learning environment includes the physical and the affective tone or atmosphere in which teaching and learning take place, and can include the noise level in the room, whether student activities are static or mobile, or how the room is furnished and arranged. Classrooms may include tables of different shapes and sizes, space for quiet individual work, and areas for collaboration.

Teachers can divide the classroom into sections, create learning centres, or have students work both independently or in groups. The structure should allow students to move from whole group, to small group, pairs, and individual learning experiences and support a variety of ways to engage in learning. Teachers should be sensitive and alert to ways in which the classroom environment supports their ability to interact with students.

Teachers should consider the following examples of differentiating the learning environment:

- develop routines that allow students to seek help when teachers are with other students and cannot provide immediate attention
- ensure there are places in the room for students to work quietly and without distraction, as well as places that invite student collaboration
- establish clear guidelines for independent work that match individual needs
- provide materials that reflect diversity of student background, interests, and abilities

The physical learning environment must be structured in such a way that all students can gain access to information and develop confidence and competence.

Meeting the Needs of Students With Exceptionalities

All students have individual learning needs. Some students, however, have exceptionalities (defined by the Department of Education) which impact their learning. The majority of students with exceptionalities access the prescribed curriculum. Details of these exceptionalities are available at:

www.gov.nl.ca/edu/k12/studentsupportservices/exceptionalities.html

Supports for these students may include:

1. accommodations
2. modified prescribed courses
3. alternate courses
4. alternate programs
5. alternate curriculum

For further information, see Service Delivery Model for Students with Exceptionalities at www.cdli.ca/sdm/

Classroom teachers should collaborate with instructional resource teachers to select and develop strategies which target specific learning needs.

*Meeting the Needs
of Students Who are
Highly Able*

** includes gifted and
talented*

Some students begin a course or topic with a vast amount of prior experience and knowledge. They may know a large portion of the material before it is presented to the class or be capable of processing it at a rate much faster than their classmates. All students are expected to move forward from their starting point. Many elements of differentiated instruction are useful in addressing the needs of students who are highly able.

Some strategies which are often effective include:

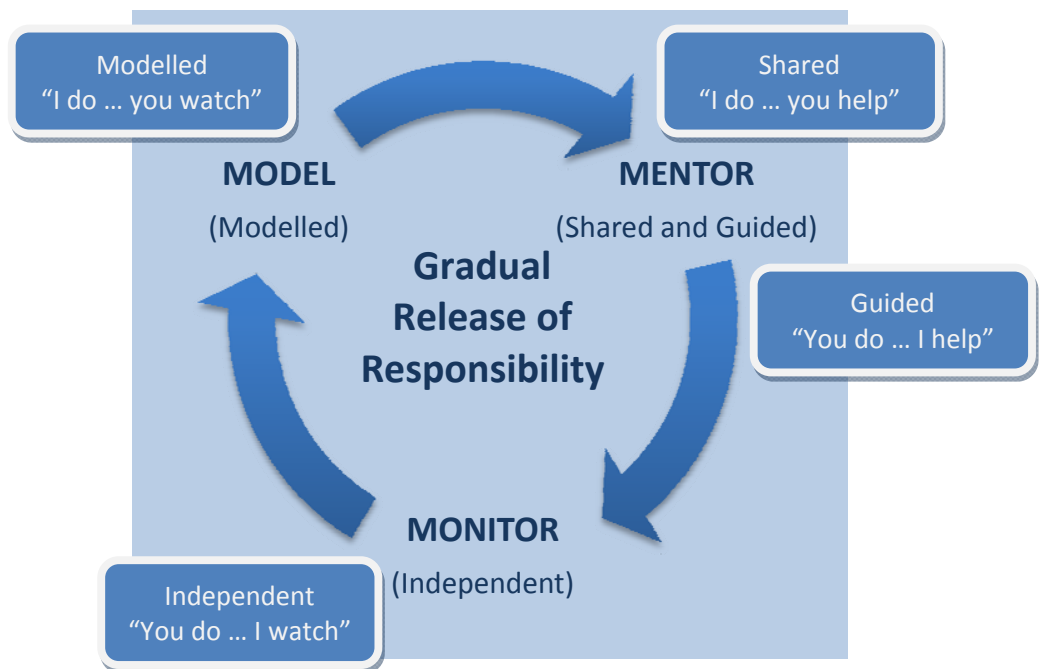
- independent study to increase depth of exploration in an area of particular interest .
- curriculum compacting to allow for an increased rate of content coverage commensurate with a student's ability or degree of prior knowledge.
- similar ability grouping to provide the opportunity for students to work with their intellectual peers and elevate discussion and thinking, or delve deeper into a particular topic
- tiering of instruction to pursue a topic to a greater depth or to make connections between various spheres of knowledge

Highly able students require the opportunity for authentic investigation and become familiar with the tools and practices of the field of study. Authentic audiences and tasks are vital for these learners. Some highly able learners may be identified as gifted and talented in a particular domain. These students may also require supports through the Service Delivery Model for Students with Exceptionalities.

Gradual Release of Responsibility

Teachers must determine when students can work independently and when they require assistance. In an effective learning environment, teachers choose their instructional activities to model and scaffold composition, comprehension and metacognition that is just beyond the students' independence level. In the gradual release of responsibility approach, students move from a high level of teacher support to independent work. If necessary, the teacher increases the level of support when students need assistance. The goal is to empower students with their own learning strategies, and to know how, when, and why to apply them to support their individual growth. Guided practice supports student independence. As a student demonstrates success, the teacher should gradually decrease his or her support.

Gradual Release of Responsibility Model



Literacy

UNESCO has proposed an operational definition which states, "Literacy is the ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society". To be successful, students require a set of interrelated skills, strategies and knowledge in multiple literacies that facilitate their ability to participate fully in a variety of roles and contexts in their lives, in order to explore and interpret the world and communicate meaning (The Plurality of Literacy and its Implications for Policies and Programmes, 2004, p.13).

Reading in the Content Areas

Literacy is:

- a process of receiving information and making meaning from it
- the ability to identify, understand, interpret, communicate, compute, and create text, images, and sounds

Literacy development is a lifelong learning enterprise beginning at birth that involves many complex concepts and understandings. It is not limited to the ability to read and write; no longer are we exposed only to printed text. It includes the capacity to learn to communicate, read, write, think, explore, and solve problems. Literacy skills are used in paper, digital, and live interactions where people:

- analyze critically and solve problems
- comprehend and communicate meaning
- create a variety of texts
- read and view for enjoyment
- make connections both personally and inter-textually
- participate in the socio-cultural world of the community
- respond personally

These expectations are identified in curriculum documents for specific subject areas as well as in supporting documents, such as *Cross-Curricular Reading Tools (CAMET)*.

With modelling, support, and practice, students' thinking and understandings are deepened as they work with engaging content and participate in focused conversations.

The focus for reading in the content areas is on teaching strategies for understanding content. Teaching strategies for reading comprehension benefits all students, as they develop transferable skills that apply across curriculum areas.

When interacting with different texts, students must read words, view and interpret text features and navigate through information presented in a variety of ways including, but not limited to:

- | | | |
|---------------------|------------------|--------------------|
| • Books | • Documentaries | • Speeches |
| • Poems | • Movies | • Podcasts |
| • Songs | • Music videos | • Plays |
| • Video games | • Advertisements | • Web pages |
| • Magazine articles | • Blogs | • Online databases |

Students should be able to interact with and comprehend different texts at different levels.

There are three levels of text comprehension:

- Independent level – students are able to read, view, and understand texts without assistance
- Instructional level – students are able to read, view, and understand most texts but need assistance to fully comprehend some texts
- Frustration level – students are not able to read or view with understanding (i.e., texts may be beyond their current reading level)

Teachers will encounter students working at all reading levels in their classrooms and will need to differentiate instruction to meet their needs. For example, print texts may be presented in audio form; physical movement may be associated with synthesizing new information with prior knowledge; graphic organizers may be created to present large amounts of print text in a visual manner.

When interacting with information that is unfamiliar to students, it is important for teachers to monitor how effectively students are using strategies to read and view texts. Students will need to:

- analyze and think critically about information
- determine importance to prioritize information
- engage in questioning before, during, and after an activity related to a task, text, or problem
- make inferences about what is meant but not said
- make predictions
- synthesize information to create new meaning
- visualize ideas and concepts

Learning Skills for Generation Next

Generation Next is the group of students who have not known a world without personal computers, cell phones and the Internet. They were born into this technology. They are digital natives.

Students need content and skills to be successful. Education helps students learn content and develop skills needed to be successful in school and in all learning contexts and situations. Effective learning environments and curricula challenge learners to develop and apply key skills within the content areas and across interdisciplinary themes.

Learning Skills for Generation Next encompasses three broad areas:

Learning and Innovation Skills

Learning and innovation skills enhance a person's ability to learn, create new ideas, problem solve, and collaborate. These skills will help foster lifelong learning. They include:

- Collaboration
- Communication
- Creative Thinking
- Critical Thinking

Literacy Skills

In addition to the literacy aspects outlined in the previous section, three areas are crucial for Generation Next. These areas are:

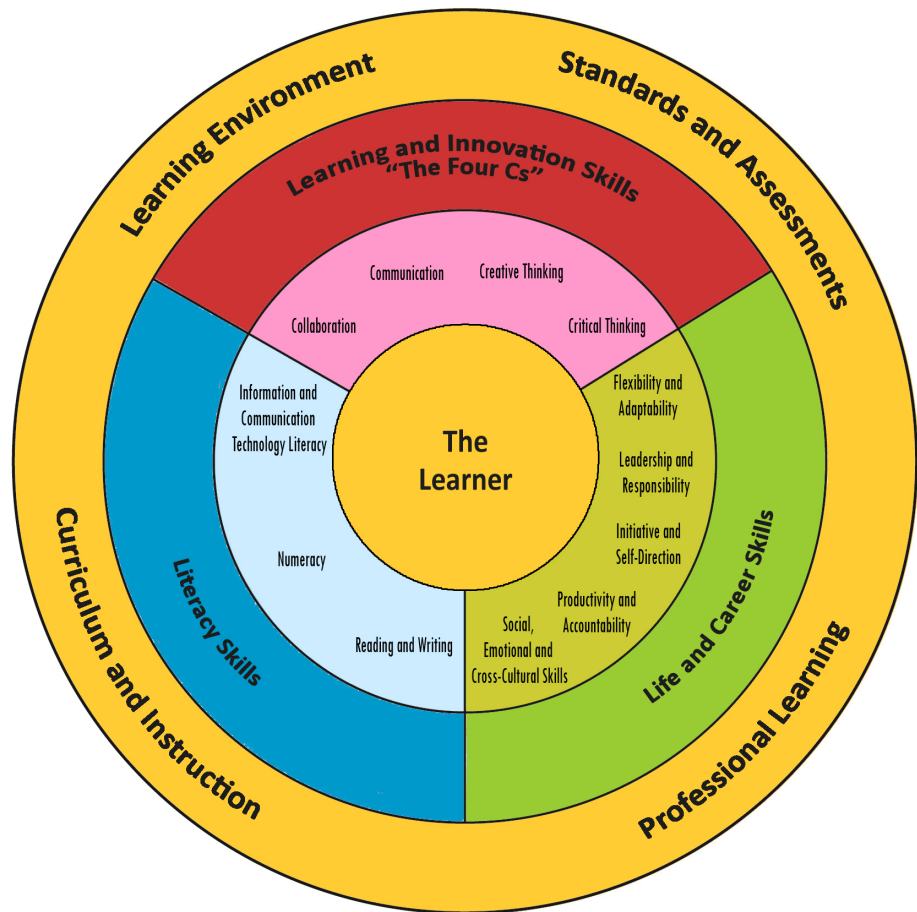
- Information and Communication Technology Literacy
- Numeracy
- Reading and Writing

Life and Career Skills

Life and career skills are skills that address leadership, the interpersonal, and the affective domains. These skills include:

- Flexibility and Adaptability
- Initiative and Self-Direction
- Leadership and Responsibility
- Productivity and Accountability
- Social and Cross-Cultural Skills

The diagram below illustrates the relationship between these areas. A 21st century curriculum employs methods that integrate innovative and research-driven teaching strategies, modern learning technologies, and relevant resources and contexts.



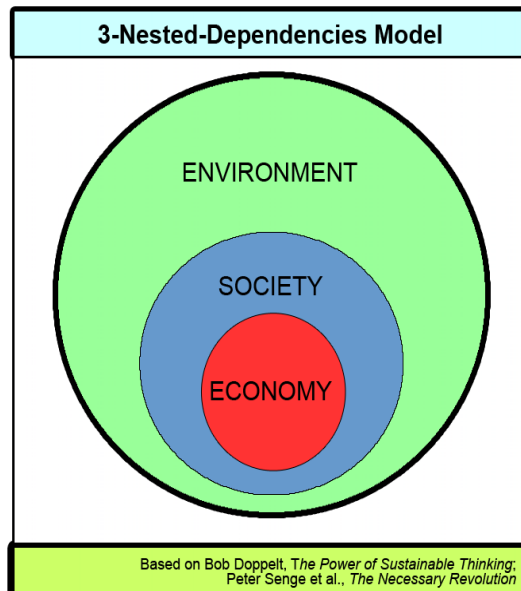
Support for students to develop these abilities and skills is important across curriculum areas and should be integrated into teaching, learning, and assessment strategies. Opportunities for integration of these skills and abilities should be planned with engaging and experiential activities that support the gradual release of responsibility model. For example, lessons in a variety of content areas can be infused with learning skills for Generation Next by using open-ended questioning, role plays, inquiry approaches, self-directed learning, student role rotation, and Internet-based technologies.

All programs have a shared responsibility in developing students' capabilities within all three skill areas.

Education for Sustainable Development

Sustainable development is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Our Common Future, 43).

Sustainable development is comprised of three integrally connected areas: economy, society, and environment.



As conceived by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) the overall goal of Education for Sustainable Development (ESD) is to integrate the knowledge, skills, values, and perspectives of sustainable development into all aspects of education and learning. Changes in human behaviour should create a more sustainable future – a future that provides for environmental integrity, economic viability, and results in a just society for both the present and future generations.

ESD is not teaching about sustainable development. Rather, ESD involves teaching for sustainable development – helping students develop the skills, attitudes, and perspectives to meet their present needs without compromising the ability of future generations to meet their needs.

Within ESD, the knowledge component spans an understanding of the interconnectedness of our political, economic, environmental, and social worlds, to the role of science and technology in the development of societies and their impact on the environment. The skills necessary include being able to assess bias, analyze consequences of choices, ask questions, and solve problems. ESD values and perspectives include an appreciation for the interdependence of all life forms, the importance of individual responsibility and action, an understanding of global issues as well as local issues in a global context. Students need to be aware that every issue has a history, and that many global issues are linked.

Assessment and Evaluation

Assessment

Assessment is the process of gathering information on student learning.

How learning is assessed and evaluated and how results are communicated send clear messages to students and others about what is valued.

Assessment instruments are used to gather information for evaluation. Information gathered through assessment helps teachers determine students' strengths and needs, and guides future instruction.

Teachers are encouraged to be flexible in assessing student learning and to seek diverse ways students might demonstrate what they know and are able to do.

Evaluation involves the weighing of the assessment information against a standard in order to make a judgement about student achievement.

Assessment can be used for different purposes:

1. assessment for learning guides and informs instruction
2. assessment as learning focuses on what students are doing well, what they are struggling with, where the areas of challenge are, and what to do next
3. assessment of learning makes judgements about student performance in relation to curriculum outcomes.

1. Assessment for Learning

Assessment for learning involves frequent, interactive assessments designed to make student learning visible. This enables teachers to identify learning needs and adjust teaching accordingly. It is an ongoing process of teaching and learning.

Assessment for learning:

- includes pre-assessments that provide teachers with information of what students already know and can do
- involves students in self-assessment and setting goals for their own learning
- is not about a score or mark
- is used to inform student learning
- provides descriptive and specific feedback to students and parents regarding the next stage of learning
- requires the collection of data, during the learning process, from a range of tools to learn as much as possible about what a student knows and is able to do

2. Assessment as Learning

Assessment as learning involves students' reflecting on their learning and monitoring of their own progress. It focuses on the role of the student in developing and supporting metacognition.

Assessment as learning:

- enables students to use information gathered to make adaptations to their learning processes and to develop new understandings
- engages students in their own learning as they assess themselves and understand how to improve performance
- prompts students to consider how they can continue to improve their learning
- supports students in analyzing their learning in relation to learning outcomes

3. Assessment of Learning

Assessment of learning involves strategies designed to confirm what students know, in terms of curriculum outcomes. It also assists teachers to determine student proficiency and their future learning needs. Assessment of learning occurs at the end of a learning experience that contributes directly to reported results.

Traditionally, teachers relied on this type of assessment to make judgements about student performance by measuring learning after the fact and then reporting it to others. Used in conjunction with the other assessment processes previously outlined, however, assessment of learning is strengthened.

Assessment of learning:

- confirms what students know and can do
- occurs at the end of a learning experience using a variety of tools
- provides opportunities to report evidence to date of student achievement in relation to learning outcomes, to parents/guardians, and other stakeholders
- reports student learning accurately and fairly, based on evidence obtained from a variety of contexts and sources

Involving Students in the Assessment Process

Students should know what they are expected to learn as outlined in the specific curriculum outcomes of a course as well as the criteria that will be used to determine the quality of their achievement. This information allows students to make informed choices about the most effective ways to demonstrate what they know and are able to do.

It is important that students participate actively in assessment by co-creating criteria and standards which can be used to make judgements about their own learning. Students may benefit from examining various scoring criteria, rubrics, and student exemplars.

Students are more likely to perceive learning as its own reward when they have opportunities to assess their own progress. Rather

than asking teachers, “What do you want?”, students should be asking themselves questions such as:

- What have I learned?
- What can I do now that I couldn’t do before?
- What do I need to learn next?

Assessment must provide opportunities for students to reflect on their own progress, evaluate their learning, and set goals for future learning.

Assessment Tools

In planning assessment, teachers should use a broad range of tools to give students multiple opportunities to demonstrate their knowledge, skills, and attitudes. The different levels of achievement or performance may be expressed as written or oral comments, ratings, categorizations, letters, numbers, or as some combination of these forms.

The grade level and the activity being assessed will inform the types of assessment teachers will choose.

Types of Assessment Tools:

- | | | |
|-----------------------------------|----------------------|--------------------|
| • Anecdotal Records | • Exemplars | • Projects |
| • Audio/video clips | • Graphic Organizers | • Questions |
| • Case Studies | • Journals | • Quizzes |
| • Checklists | • Literacy Profiles | • Role Plays |
| • Conferences | • Observations | • Rubrics |
| • Debates | • Podcasts | • Self Assessments |
| • Demonstrations | • Portfolios | • Tests |
| • Documentation using photographs | • Presentations | • Wikis |

Assessment Guidelines

It is important that students know the purpose of an assessment, the type, and the marking scheme being used. The following criteria should be considered:

- a rationale should be developed for undertaking a particular assessment of learning at a particular point in time
- all students should be provided with the opportunity to demonstrate the extent and depth of their learning
- assessments should measure what they intend to measure
- criteria used in the assessment should be shared with students so that they know the expectations
- evidence of student learning should be collected through a variety of methods and not be based solely on tests and paper and pencil activities
- feedback should be descriptive and individualized to students
- learning outcomes and assessment criteria together should provide a clear target for student success

Evaluation

Evaluation is the process of analyzing, reflecting upon, and summarizing assessment information, and making judgements or decisions based on the information gathered. Evaluation is conducted within the context of the outcomes, which should be clearly understood by learners before teaching and evaluation take place. Students must understand the basis on which they will be evaluated and what teachers expect of them.

During evaluation, the teacher:

- interprets the assessment information and makes judgements about student progress
- makes decisions about student learning programs

Section Two: Curriculum Design

Rationale

Every year approximately 1000 Canadians die in workplace accidents. According to the Association of Workers' Compensation Boards of Canada (AWCBC) there were 1014 in 2010, of which 32 fatalities occurred in Newfoundland and Labrador. Canada has more than three times as many workplace fatalities as the United Kingdom, which has twice the population. Of the annual total of about one million mishaps at work, about one half results in loss work time. Treatment of occupational injuries in Canada cost about \$1.2 billion a year.

Work related injuries are estimated to cost the Canadian economy more than \$10 billion annually. Why do so many accidents happen? Research has shown that most accidents that result in injuries to people and damage to property are predictable and preventable.

How can we prevent accidents before they happen? Firstly, people need to develop a healthy attitude towards safety in their non-work lifestyle so that safety becomes second nature to them in the workplace. This issue can be most effectively addressed through the education of our youth - in a workplace safety course and in other subject areas across the curriculum. In presenting this course to high school students, teachers should link the subject of safety to existing and previous learning. Connections could be made to existing subjects in skilled trades, career development, physical education, home economics, technology and the primary, elementary and intermediate health and science curricula.

This Occupational Health and Safety Course is designed to help high school students bridge the gap between high school and the workplace. When young people enter the workforce, as employers and employees, they must realize the importance of safety and the effects of occupational accidents upon society. In this Occupational Health and Safety Course, students will be exposed to real life occupation-related safety issues. Students will be certified in various safety programs, which are required in a variety of workplaces. Specifically, students will receive emergency first aid training and worker health and safety (WH&S) representative/ workplace health and safety (WH&S) designate training.

It is the aim of schools to prepare students for the "competitive" world. Studies have identified as one of the deterrents to youth employment the mismatch that frequently exists between the skills of high school graduates and those needed by the employers. This course can help increase the skills of the graduate to meet the needs of today's employers. Occupational Health and Safety 3203 will benefit the student, the employer and society as a whole by generating an increased level of safety awareness in the world of work.

Course Overview

Occupational Health and Safety 3203 is designed to introduce students to occupational health and safety principles as they prepare to enter the workplace. Students learn the required skills, knowledge and attitudes in problem-solving and decision making regarding their occupational health and safety and that of others. Occupational health and safety is an evolving discipline that requires 21st century workers to be constantly learning new skills and knowledge as a lifelong learner to manage the technological changes in workplace processes. Incorporating occupational health and safety principles into all aspects of work and the workplace is a fundamental step in the working process.

Occupational Health and Safety is grounded in knowledge and concepts from various disciplines, including science and health sciences, technology, social studies and psychology. Many OH&S practices and procedures in current workplaces have been developed by a multi-discipline team approach where the workplace is examined to determine the most appropriate controls for workers. Controls are the activities and processes that employers use to eliminate hazards or reduce risk to workers. Education and training on how to properly use these controls is critical to working in a safe and healthy manner. This course will give students the opportunity to interact and practice to problem-solve and make decisions on the most appropriate control for identified workplace conditions. The four units are:

- Introduction to Occupational Health and Safety
- Occupational Health and Safety Systems and Processes
- Occupational Health
- Occupational Health and Safety Hazards

Suggested Yearly Plan

Occupational Health and Safety 3203, is broken down into 4 units. Each of the units constitutes one or more modules. The modules are self-contained instructional pieces that can be taught to meet learning outcomes in other courses. In this course all modules are required.

Unit 1 contains a single module. This unit should require approximately 17 hours of instructional time. A breakdown of the suggested hours of instruction are found below

Module Name	# of classes
Fundamentals of Occupational Health and Safety	17

It is expected that Unit 1 will be taught as an introduction to this course..

It is also suggested that the first module in Unit 2 follow closely after the completion of Unit 1. Sequencing after that is at the teacher's discretion.

Unit 2 consists of 5 modules. This unit should require approximately 25 hours of instructional time. A breakdown of the suggested hours of instruction are found below

Module Name	# of classes
Hazard Recognition, Evaluation and Control	7
Workplace Inspections	6
Incident Investigations	3
Emergency Preparedness and Response	3
Personal Protective Equipment	6

Unit 3 consists of 5 modules. This unit should require approximately 41 hours of instructional time. A breakdown of the suggested hours of instruction are found below

Module Name	# of classes
Occupational Health and Disease Prevention	22
Mental Health	5
Ergonomics	4
First Aid	5*
Working Alone and Workplace Violence	5

* First Aid is intended to be taught by a certified instructor over a continuous 1-day period.

Unit 4 consists of 7 modules. Module 12, WHMIS, is required. Of the remaining modules, 4 of 6 are required to be completed. This unit should require approximately 27 hours of instructional time. A breakdown of the suggested hours of instruction are found below

Module Name	# of classes
WHMIS	7
Fire Protection	5
Electrical Safety	5
Machine Safeguarding	5
Confined Space Entry	5
Hearing Conservation	5
Outdoor Safety	5

How to Use the Four Column Curriculum Layout

Outcomes

Column one contains specific curriculum outcomes (SCO) and accompanying delineations where appropriate. The delineations provide specificity in relation to key ideas.

Outcomes are numbered in ascending order

Delineations are indented and numbered as a subset of the originating SCO.

All outcomes are related to general curriculum outcomes.

Focus for Learning

Column two is intended to assist teachers with instructional planning. It also provides context and elaboration of the ideas identified in the first column.

This may include:

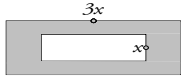
- references to prior knowledge
- clarity in terms of scope
- depth of treatment
- common misconceptions
- cautionary notes
- knowledge required to scaffold and challenge student's learning


Sample Performance Indicator(s)

This provides a summative, higher order activity, where the response would serve as a data source to help teachers assess the degree to which the student has achieved the outcome.

Performance indicators are typically presented as a task, which may include an introduction to establish a context. They would be assigned at the end of the teaching period allocated for the outcome.

Performance indicators would be assigned when students have attained a level of competence, with suggestions for teaching and assessment identified in column three.

SPECIFIC CURRICULUM OUTCOMES	
<i>GCO 1: Represent algebraic expressions in multiple ways</i>	
<p>Outcomes</p> <p><i>Students will be expected to</i></p> <p>1.0 model, record and explain the operations of multiplication and division of polynomial expressions (limited to polynomials of degree less than or equal to 2) by monomials, concretely, pictorially and symbolically. [GCO 1]</p> <p>1.2 model division of a given polynomial expression by a given monomial concretely or pictorially and record the process symbolically.</p> <p>1.3 apply a personal strategy for multiplication and division of a given polynomial expression</p>	<p>Focus for Learning</p> <p>From previous work with number operations, students should be aware that division is the inverse of multiplication. This can be extended to divide polynomials by monomials. The study of division should begin with division of a monomial by a monomial, progress to a polynomial by a scalar, and then to division of a polynomial by any monomial.</p> <p>Division of a polynomial by a monomial can be visualized using area models with algebra tiles. The most commonly used symbolic method of dividing a polynomial by a monomial at this level is to divide each term of the polynomial by the monomial, and then use the exponent laws to simplify. This method can also be easily modelled using tiles, where students use the sharing model for division.</p> <p>Because there are a variety of methods available to multiply or divide a polynomial by a monomial, students should be given the opportunity to apply their own personal strategies. They should be encouraged to use algebra tiles, area models, rules of exponents, the distributive property and repeated addition, or a combination of any of these methods, to multiply or divide polynomials. Regardless of the method used, students should be encouraged to record their work symbolically. Understanding the different approaches helps students develop flexible thinking.</p> <p>Sample Performance Indicator</p> <p>Write an expression for the missing dimensions of each rectangle and determine the area of the walkway in the following problem:</p> <ul style="list-style-type: none"> • The inside rectangle in the diagram below is a flower garden. The shaded area is a concrete walkway around it. The area of the flower garden is given by the expression $2x^2 + 4x$ and the area of the large rectangle, including the walkway and the flower garden, is $3x^2 + 6x$. 

SPECIFIC CURRICULUM OUTCOMES	
<i>GCO 1: Represent algebraic expressions in multiple ways</i>	
<p>Sample Teaching and Assessment Strategies</p> <p>Teachers may use the following activities and/or strategies aligned with the corresponding assessment tasks:</p> <p>Modeling division using the sharing model provides a good transition to the symbolic representation. For example, $\frac{3x+12}{3} = \frac{3x}{3} + \frac{12}{3}$. To model this, students start with a collection of three x-tiles and 12 unit tiles and divide them into three groups.</p>  <p>For this example, $x + 4$ tiles will be a part of each group, so the quotient is $x + 4$.</p> <p>Activation</p> <p>Students may</p> <ul style="list-style-type: none"> Model division of a polynomial by a monomial by creating a rectangle using four x^2-tiles and eight x-tiles, where $4x$ is one of the dimensions. <p>Teachers may</p> <ul style="list-style-type: none"> Ask students what the other dimension is and connect this to the symbolic representation. <p>Connection</p> <p>Students may</p> <ul style="list-style-type: none"> Model division of polynomials and determine the quotient <ol style="list-style-type: none"> $(6x^2 + 12x - 3) \div 3$ $(4x^2 - 12x) \div 4x$ <p>Consolidation</p> <p>Students may</p> <ul style="list-style-type: none"> Draw a rectangle with an area of $36a^2 + 12a$ and determine as many different dimensions as possible. <p>Teachers may</p> <ul style="list-style-type: none"> Discuss why there are so many different possible dimensions. <p>Extension</p> <p>Students may</p> <ul style="list-style-type: none"> Determine the area of one face of a cube whose surface area is represented by the polynomial $24s^2$. Determine the length of an edge of the cube. 	<p>Resources and Notes</p> <p>Authorized</p> <ul style="list-style-type: none"> <i>Math Makes Sense 9</i> Lesson 5.5: Multiplying and Dividing a Polynomial by a Constant Lesson 5.6: Multiplying and Dividing a Polynomial by a Monomial ProGuide: pp. 35-42, 43-51 CD-ROM: Master 5.23, 5.24 See It Videos and Animations: <ul style="list-style-type: none"> Multiplying and Dividing a Polynomial by a Constant, Dividing Multiplying and Dividing a Polynomial by a Monomial, Dividing SB: pp. 241-248, 249-257 PB: pp. 206-213, 214-219

Resources and Notes

Column four references supplementary information and possible resources for use by teachers.

These references will provide details of resources suggested in column two and column three.

Suggestions for Teaching and Assessment

This column contains specific sample tasks, activities, and strategies that enable students to meet the goals of the SCOs and be successful with performance indicators. Instructional activities are recognized as possible sources of data for assessment purposes. Frequently, appropriate techniques and instruments for assessment purposes are recommended.

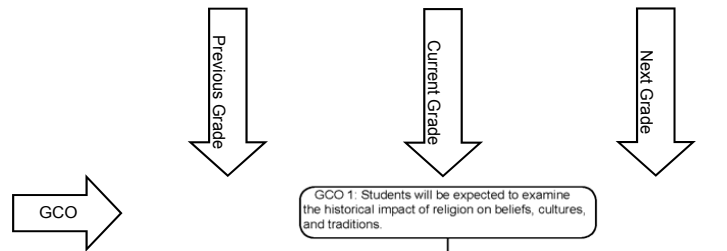
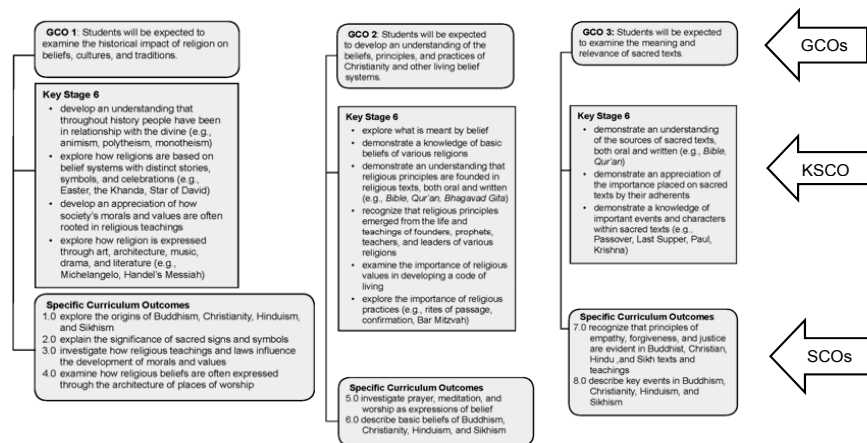
Suggestions for instruction and assessment are organized sequentially:

- **Activation** - suggestions that may be used to activate prior learning and establish a context for the instruction
- **Connection** - linking new information and experiences to existing knowledge inside or outside the curriculum area
- **Consolidation** - synthesizing and making new understandings
- **Extension** - suggestions that go beyond the scope of the outcome

These suggestions provide opportunities for differentiated learning and assessment.

How to use a Strand overview

At the beginning of each strand grouping there is explanation of the focus for the strand and a flow chart identifying the relevant GCOs, KSCOs and SCOs.



The SCOs Continuum follows the chart to provide context for teaching and assessment for the grade/course in question. The current grade is highlighted in the chart.

SCOs

Grade 4	Grade 5	Grade 6
1.0 explore the origins of Judaism, Christianity, and Islam	1.0 explore the origins of Buddhism, Christianity, Hinduism, and Sikhism	1.0 explore the origins of Bahá'í Faith, Christianity, and Islam
2.0 explain the significance of religious celebrations	2.0 explain the significance of sacred signs and symbols	2.0 examine stories of creation and the afterlife in Aboriginal Spirituality, Christianity, and Islam
3.0 explore how teachings and laws of Christianity, Islam and Judaism influence the development of morals and values	3.0 investigate how religious teachings and laws influence the development of morals and values	3.0 compare the teachings and laws of Christianity and Islam
	4.0 examine how religious beliefs are often expressed through the architecture of places of worship	4.0 examine how religious beliefs are often expressed through art, music, drama, and dance

Section Three:
Specific Curriculum Outcomes

Unit 1: Introduction to
Occupational Health and Safety

Unit1: Introduction to Occupational Health and Safety

Focus

For many students, this will be their first experience with Occupational Health and Safety (OH&S). The primary emphasis should not be on memorizing sections of legislation or lists of terms. Emphasis should be placed on building students' awareness of legislation that outlines the minimum standards for OH&S in the workplace. They should know that the employer has a duty to provide a healthy and safe workplace. As workers they should ask questions and know that they have a duty regarding health and safety for themselves and their co-workers. All workers have such responsibilities and are expected to report unhealthy and unsafe conditions to their supervisors. Young workers have an important role to play in creating and maintaining a positive health and safety culture in their workplaces and in their daily lives generally. A positive health and safety attitude can start at home and at school, long before they get to the workforce.

Suggested Unit Plan

Unit 1 contains a single module.

Module 1 - Fundamentals of Occupational Health and Safety

It is expected that Unit 1 will be taught as an introduction to this course first, before any other units or modules. This unit should require approximately 17 hours of instruction.

Outcomes Framework

Module 1: Fundamentals of Occupational Health and Safety	
1.0	define terms related to occupational health and safety (OH&S)
2.0	outline the elements of an effective OH&S program
3.0	outline the benefits of implementing an OH&S program
4.0	examine historical events that influenced the development of OH&S programs
5.0	explore the important historical events in Canada that led to the development of OH&S legislation
6.0	investigate specific tragedies in Newfoundland and Labrador which emphasize the need for OH&S
7.0	examine the Newfoundland and Labrador OH&S legislation
8.0	examine the <i>Canada Labour Code (Part II)</i> and the Canada Occupational Safety and Health Regulations
9.0	describe how federal and provincial OH&S legislation is enforced in Newfoundland and Labrador
10.0	explain the importance of the Internal Responsibility System (IRS) in the workplace
11.0	summarize the basic rights of a worker
12.0	explain due diligence in relation to the <i>OH&S Act</i> and Regulations
13.0	distinguish between an OH&S Committee, Worker Health and Safety (H&S) Representative, and Workplace Health and Safety (H&S) Designate
14.0	outline the process in establishing an effective OH&S committee
15.0	describe the process for making OH&S recommendations to the employer
16.0	describe the role of the Workplace Health, Safety and Compensation Commission (WorkplaceNL), including the “no fault” system
17.0	illustrate the importance of an early and safe return-to-work process (ESRTW) in returning injured workers to the workplace
18.0	investigate places where OH&S professionals may be employed and explore specific OH&S professions

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

- 1.0 define terms related to occupational health and safety (OH&S)

Focus for Learning

The first step in understanding occupational health and safety (OH&S) is becoming familiar with the language. OH&S is a discipline designed to protect people, property and the environment in a workplace setting. Building understanding around the language of OH&S will make it easier for students to understand the many situations they may encounter in the workplace.

Students who have previous work experience may have prior knowledge of this material and can bring their knowledge of the work world to class discussions. It is important to analyze what these students may bring to the discussions. Consistent application of OH&S can be challenging due to legislation changes and an unfortunate lack of vigilance from some employers. Providing clarity for such misconceptions is important.

Familiarization with the terms is intended to help students become comfortable using the language. In a classroom discussion, emphasize that some industries have terminology that is specific to those industries. When encountering this, workers must exercise their right to know by asking for clarification.

Sample Performance Indicator

Create a word find or crossword puzzle at an elementary level. The definitions should be used as clues with the terms hidden in the body of the word find. This should encompass all of the terms introduced in this outcome.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Engage students in a discussion of their understanding of OH&S.
- Ask students if they know of any terms that may be used in workplaces to describe OH&S activities.
- Ask students to compile a list of common workplace rules and regulations. This is an opportunity to distinguish between health and safety issues, human rights, criminal law and gestures of good faith. Within these rules and regulations, there may be some OH&S terms that students have heard but cannot define. This is a good time to highlight their prior knowledge of OH&S.

Connection

Students may

- Participate in a game of definitions, with the class divided into two or more teams.
- Create a mix and match puzzle game where the term is written on one side and definition on the other. Students have to find the match. Once all terms have been matched, share matches with the class.

Consolidation

Students may

- Post terms and definitions onto a wall in the classroom.
- Create a podcast or blog about basic terms that can be posted on the school's website.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 5, 354-358

(although terms are defined throughout the text)

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix D-1: Definitions

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - Canadian Centre for Occupational Health and Safety
 - Podcasts designed for young workers
 - Safety at Work: Blog
 - Dictionary of terms

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

2.0 outline the elements of an effective OH&S program

Focus for Learning

An OH&S program is a detailed strategy developed and implemented by the employer for preventing accidents/incidents and occupational disease in the workplace. It outlines roles and responsibilities of the employer, supervisor and workers and includes all the required elements of legislation. These elements include, but are not limited to:

- leadership and administration
- hazard recognition, evaluation and control (REC)
- OH&S committees
- safe work practices and procedures
- workplace inspections
- incident investigations
- communication
- education and training
- emergency preparedness and response planning
- disability management

Musculoskeletal injury (MSI) prevention is incorporated through each element of the OH&S program.

Students should also know that a legislated OH&S program is the minimum standard for employers. It is typical for employers to go above and beyond the requirements of an OH&S program and implement an OH&S management system. An OH&S management system applies the same principles of management to OH&S as other facets of the organization.

Students who have experience in the workplace may have prior knowledge of these concepts.

When exploring the *OH&S Act*, teachers should emphasize that:

- OH&S programs are required in workplaces with ten or more workers. For those workplaces with less than ten workers, the employer develops an OH&S policy statement.
- Some workplaces may have more elements than those listed above as it is common for high-risk industries to have more components to their program.
- Some workplaces may call their elements by a different name.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Introduce this topic by reviewing the terms and definitions. Many of these terms are either the names of program elements or are related to one of the elements. Discuss these terms in relation to OH&S regulations, section 12 - program, and section 13 - policy statement, to encourage students to look at how this language fits into the OH&S programs.
- Some terms may fall under more than one heading. For example, a workplace inspection falls under both Workplace Inspections and Hazard REC as they are the means by which hazards are recognized, evaluated and controlled.
- Have a member of the school's OH&S team do a brief presentation on their role in school safety.

Connection

Students may

- Using sections 12 and 13 of the OH&S regulations, work together to create the titles of the ten elements of an OH&S program. Write these titles on colourful sheets of paper and affix to the wall. Place the terms under the correct heading(s).

Consolidation

Students may

- Write a journal entry about how their employer has implemented OH&S into the workplace.
- Write a journal entry explaining the elements of an OH&S program and how important it is to have an OH&S program.

Extension

Students may

- Critique the OH&S policy statement of their school.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 7 - 8 and 29 - 31

OH&S regulations

- sections 12 and 13

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix A-1: Elements of an Occupational Health and Safety Program
 - Appendix B-1: Occupational Health and Safety Terms and Answer Key

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - Basic OH&S Program Elements
 - Workplace Health and Safety Rights and Duties

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

- 3.0 outline the benefits of implementing an OH&S program
- 3.1 investigate the costs associated with workplace injuries

Focus for Learning

An OH&S program outlines roles and responsibilities of the employer, supervisor and workers. This is an important benefit because all workplace parties should know their roles and responsibilities in the workplace. Generally, the employer and supervisor ensure the health and safety of workers where reasonably practicable. Workers are to take reasonable care and cooperate with the employer to protect themselves and others. Emphasize that the more entrenched OH&S is in the workplace, the more employers and workers will benefit.

Additional benefits of effective OH&S programs are:

- safer work environments
- increased work productivity
- increased profits
- efficient work flow due to lower training costs
- fewer work related tragedies
- healthier and happier employees
- reduced financial and human costs of workplace accidents/incidents

Reducing workplace injuries has a cost benefit as well. Statistics quickly demonstrate the negative economic impact of the loss of skilled workers. Encourage students to look deeply into the layers of loss for the worker, employer, and larger community.

Introduce the “iceberg theory” of the costs of accidents. It is one of the most accepted models of direct and indirect accident costs. It is the result of a study done by Frank Bird Jr. and George Germain through the International Loss Control Institute (ILCI).

It is also important to note that some direct costs of injuries can be difficult for employers to measure because not all costs are financial and the cost of human life and suffering cannot be easily measured.

Classroom discussions should focus on real-life incidents. Note: students may have some prior knowledge of these impacts either directly or indirectly and this may elicit emotional responses.

Sample Performance Indicator

Work in small groups to create a scenario using the Injury Costs Calculator. The scenario should focus on a workplace that did not have an OH&S program. In the analysis of the scenario, include how the workplace could have benefited by having such a program in place.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Compare the elements of an OH&S program to the game of Jenga® or putting together a puzzle. Each piece has a specific function and role in building the bigger tower or picture. When using each piece or element in the way it was meant to be used, it becomes a well-developed and functioning system with many benefits. An extension of this activity may involve removing pieces from the puzzle and discussing the real and implicit risks.
- Using a local example of a workplace incident, engage students in a discussion of the direct, hidden and human costs of occupational injuries and occupational diseases. Assign different roles to each of the students: the public, the family, the worker, and the employer.

Connection

Students may

- Work individually or in small groups to create a game of Jenga® or puzzle pieces to illustrate the benefits of an OH&S program. Label each piece as a benefit identified within the class discussion.
- Review the Injury Costs Calculator scenarios with the teacher. Give examples of direct costs associated with injuries and how long it takes an employer to recover costs.
- View “The Curtis Zanussi Story” to reflect upon the emotional suffering of injured workers and their families.

Consolidation

Students may

- Design a video/vignette on the emotional impact of injuries and occupational diseases on workers and their families. Within this video, indicate where an OH&S program may have been able to forestall these incidents. Post the videos/vignettes to the school's website.

Extension

Students may

- Read *Dying Hard* by Elliot Leyton to further their understanding of the toll occupational disease takes on injured workers, families and communities. Write a journal entry in their portfolio describing the direct and human costs of Silicosis to the people of St. Lawrence.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 6-8

Suggested

Dying Hard: The Ravages of Industrial Carnage - Elliot Leyton

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - Creating Jigsaw Puzzles Templates
 - Creating cartoon strip
 - The Curtis Zanussi Story
 - Case Studies: The human cost of workplace injuries
 - Injury costs calculator
 - Alberta injury costs calculator

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

- 4.0 examine historical events that influenced the development of OH&S programs

Focus for Learning

The emphasis of this curriculum outcome is on the development and progression of OH&S from very early Babylonian times through the Industrial Revolution, including the Egyptians, Romans, and 18th century Europeans. The focus is on a critical investigation of reasons for current laws and the possible effects of not having protection for workers in the past.

Focus on the role of organized labour in the safety movement, highlighting how poor working conditions were made public, leading to the rise of labour unions as a means to fight for safer working conditions and compensation for injured workers.

Important dates in OH&S history have been provided in the textbook for reference. Dates have been provided to establish a time line for the progression of OH&S into society and the workplace. Students should be able to cite two or three important influences from a historical perspective.

These should include but are not limited to:

- Establishment of 'Code of Hammurabi' (2000 BC) – damages were assessed against those who injured others.
- Egyptian industrial medical service (1500 BC) – labourers given medical treatment to keep them well
- Roman Sanitary Systems – first public health and safety initiatives
- Mine ventilation (1600s) – documents on diseases suffered by miners and the need for ventilation
- The Industrial Revolution (mid 1800s) – increase in the number of hazards to workers

Sample Performance Indicator

Create a time line that highlights important historical events that led to modern day OH&S practices and legislation.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Provide information on the development and progression of OH&S from ancient times through the Industrial Revolution. This is an expeditious means of moving into an examination of and discussion about reasons why OH&S is critical to the modern day workplace.

Connection

Students may

- Choose their own method of presentation (e.g., poster, skit, poem) to illustrate the time line of OH&S from ancient Babylonia to present.
- Take one development in the history of OH&S and, in a journal entry, provide answers to the following: What may have created this societal viewpoint? What factors contributed to this mind-set? How were workers treated historically? Are there still large numbers in the general population that think this way? Are people significantly safer today than in the past?

Consolidation

Students may

- Write an essay that highlights the role organized labour played in the development of OH&S.
- Tweet links to the classroom newsfeed regarding the evolution of OH&S or positive changes to recent OH&S legislation. The teacher may review these links for classroom discussion.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 9 -16

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - “The Code of Hammurabi Decoded”
 - Films from the History Channel that depict working conditions throughout the centuries
 - Can’t Take No More 1980: history of occupational health and safety in the U.S. from the Industrial Revolution to the 1970s

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

- 5.0 explore the important historical events in Canada that led to the development of OH&S (OH&S) legislation

Focus for Learning

Organized labour and societal pressure played vital roles in the development of current OH&S legislation in Canada as a shared responsibility.

It is important for students to realize that much of the modern day OH&S legislation in this country can trace its roots to a number of important public inquiries, and that those inquiries took place not many years ago. Two significant examples are:

- The Ham Commission (1976) recommendations (based on Cancer and Silicosis in miners in Ontario) led to the modern-day internal responsibility system (IRS) and worker's rights. OH&S legislation is based on the principles of the IRS and the rights of workers are integral to the core of OH&S.
- The Westray Bill and subsequent Bill C-45 were the result of an explosion in the Westray Mine in Plymouth, Nova Scotia, that claimed the lives of 26 men. Bill C-45 is federal legislation that amended the Canadian Criminal Code and became law on March 31, 2004. The bill establishes additional legal duties and responsibilities of corporations, their representatives and those who direct work in keeping workers safe, which adds another important corner stone in OH&S.

Sample Performance Indicator

Create a comparison chart of great disasters in Canadian industry over the past 50 years. One part of the chart will list what the disasters were while a corresponding part will outline what impact the disaster had on the families, community and society.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Play “Remembering Elliot Lake” as a way of introducing students to the history of OH&S and the IRS. The IRS will be covered in detail in the next section. This is also an appropriate time to discuss how this incident was the beginning of a new era in roles and responsibilities in the workplace.
- Summarize information on the Westray Mining Disaster and Bill C-45.

Connection

Students may

- Develop a research project on either Elliot Lake or Westray focusing on how it was the impetus for change in OH&S legislation. This project may be developed in a variety of formats (research paper, poster, video/audio format, short play).

Consolidation

Students may

- Present their projects to the class. Depending on the presentation format they may be posted on the school website or class webpage.

Extension

Students may

- Research events that have led to charges under C-45, Criminal Code (e.g., Metron Construction, Toronto Ontario - swing stage accident in 2009 that led to 4 fatalities, Queen of the North Ferry disaster, British Columbia in 2006)

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 14 - 15

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - History of OH&S in Canada
 - Remembering Elliot Lake
 - Westray Bill
 - Disaster at Westray
 - Ham Commission
 - *Occupational Health and Safety Act*

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

- 6.0 investigate specific tragedies in Newfoundland and Labrador which emphasize the need for OH&S

Focus for Learning

This curriculum outcome asks students to undertake research that should make clear why there is such a need for legislation and regulations that make workplaces as safe as possible. Often it is workplace tragedies that provoke legislative changes to respond and improve workplace health and safety.

Three provincial tragedies stand out for many Newfoundlanders and Labradorians – the St. Lawrence mines and silica dust, the Baie Verte mines and asbestos dust and, the Ocean Ranger Disaster. Despite the fact that each of these events occurred long before students currently studying this module were born, it is likely that some students still have a connection with the tragedies through relatives or their families. A discussion of these tragedies is intended to focus student thinking on the need for OH&S. A more recent example is the crash of a Cougar Helicopter while en route to an oil platform off the east coast of Newfoundland and Labrador, March 12, 2009. The crash, which was the result of mechanical failures, killed 17 of the 18 people on board.

Responses to these disasters were reactive rather than proactive. Historically, proactive measures are implemented as a result of reactive responses to disasters.

Sample Performance Indicator

Document an important historical event that led to modern day OH&S practices and legislation. Within this documentation, explain the impact it had on the families, community and society.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Ask students to brainstorm several workplace tragedies they have heard or read about. From the brainstorming, a list will emerge and types or categories will be revealed.

Connection

Students may

- Research local, provincial, national and international tragedies not included in the initial activity. Working in pairs or small groups will provide opportunity for preliminary discussion about individual instances.

Consolidation

Students may

- Choose one tragedy and present it as an example of the importance of improving workplace safety conditions and of learning from tragedies so that the same mistakes are not repeated.
- View the documentary on the Ocean Ranger Disaster and write a journal entry from the perspective of a family member, crew member, or company executive about the importance of proper training.

Extension

Students may

- Create a time line of events based on the circumstances leading up to the sinking of the Ocean Ranger and subsequent inquiry.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 9 - 16

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - Comprehensive database of disasters
 - Newfoundland Disasters
 - Workplace accidents, NL
 - Once Upon a Mine

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

- 7.0 examine the Newfoundland and Labrador OH&S legislation
 - 7.1 outline the basic structure of the *OH&S Act* and regulations
 - 7.2 summarize the legislative duties of employer, supervisor and workers regarding OH&S

Focus for Learning

The examination of legislation is intended to help students understand there are laws that govern how people function in a workplace and that these laws are intended to keep workplaces safe. In Newfoundland and Labrador, workplaces are governed by the Newfoundland and Labrador *OH&S Act* and Regulations (provincial) or the *Canada Labour Code - Part II* (federal). The *Canada Labour Code - Part II* will be addressed in SCO 10.0.

Few students will have significant knowledge of this material. They might not even realize that the workplace safety “rules” are based on these pieces of legislation.

The *OH&S Act* contains 70 sections and OH&S Regulations contain 43 parts that outline the operational manner in which the requirements of the Act are fulfilled. As well there are other OH&S acts and regulations that may be referenced in OH&S legislation.

The amount of legislation in this section is significant. Students should not be expected to memorize it. Knowledge of the existence of such legislation and where it can be accessed is sufficient at this level.

Teachers are encouraged to exercise creativity to make this section as accessible and interesting as possible for students, until students develop a degree of fluency in reading with understanding the *OH&S Act* and Regulations.

Sample Performance Indicator

Develop a series of “case study” situations in the workplace. Within these situations, reference the section of the *OH&S Act* or other piece of legislation that applies to the situation and the specific and general duties of the employer, supervisor and worker.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Introduce the outcome by asking students to examine their NL OH&S legislation. They should become familiar with the general layout, parts and sections of each publication. They will find the specific and general duties of employers, supervisors and workers in the Act and regulations.
- Access the other related OH&S acts and regulations and show them to students.

Connection

Students may

- Engage in a game of password using their legislation. Select a word from the legislation definitions and try to get a partner to guess what word it is by using descriptions of the word or context from the legislation. Keep these brief, no more than one word descriptions. The same activity could be done as a game of charades.

Consolidation

Students may

- Choose a specific activity associated with work from a prepared list and find the associated legislation (e.g., confined space entry, personal protective equipment (PPE), traffic control, fall protection, ladders, powered mobile equipment). Summarize the sections in their portfolios or journals. Relate this to the specific and general duties of employers, supervisors and workers.

Extension

Students may

- Write a short paragraph explaining why it is important to follow the requirements of legislation and how it has been designed to keep workers safe while performing these work activities.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 18 - 31

OH&S Act

- sections 4, 5, 5.1, 5.2, 6, 7, 8, 36.1, 36.2

OH&S regulations

- section 12,13,14 and 17 for legislative duties

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix D-2: NL OH&S Regulations, Legislative References

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - NL OH&S Act, Regulations
 - Government of Newfoundland and Labrador Occupational Health and Safety Explanation Guide 2009

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

- 8.0 examine the *Canada Labour Code (Part II)* and the Canada Occupational Safety and Health Regulations
- 8.1 summarize the legislative duties of employers and employees regarding OH&S
- 8.2 outline federally regulated workplaces in Newfoundland and Labrador

Focus for Learning

The *Canada Labour Code (Part II)* and the Canada Occupational Safety and Health Regulations only apply to approximately 10% of workplaces in the province which are regulated by the federal government in Ottawa. In Newfoundland and Labrador these would apply to offices such as Canada Customs and the RCMP.

Students are unlikely to have experienced workplaces where this code applies and may become confused by what is provincially governed and what is federally governed. Accentuating the differences and similarities may help to dispel this confusion.

Like provincial OH&S legislation, the Code outlines general and specific duties of the employer and duties of employees. However, in the federal legislation the duties of supervisors are included in the duties of employers, and workers are referred to as employees. To add to the complexity, some workplaces have work activities that are regulated by both federal and provincial regulations.

As in SCO 9.0, the focus is on where and when to access the code rather than memorizing it.

Sample Performance Indicator

As a classroom activity, develop a comparison chart between the federal legislation and provincial legislation, including such items as definitions, applicable workplaces, section and regulation titles and crossovers.

This activity could be used to assess SCO 7.0 and 8.0.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teacher may

- Ensure students have access to the *Canada Labour Code - Part II* and the Canada OH&S Regulations through the Justice Laws - Government of Canada website. Introduce the outcome with a discussion about the various workplaces in the province that fall under federal legislation. Explain what this means and lead into a discussion on the duties of employers and employees in federal legislation.

Connection

Students may

- Work in small groups to find the duties of employer and employee in the *Canada Labour Code (Part II)* and Canada OH&S Regulations. Compare these with the duties of employer, supervisor and worker in the NL *OH&S Act* and Regulations.
- Using the headings of the OH&S program that were identified in SCO 3.0 and working in small groups, identify the element of the OH&S program to which each duty belongs. Some duties may fall under one or more of the elements.

Consolidation

Students may

- Share their work with the rest of the class as a presentation. Students may then write summaries that explain their sections, using common language, and place their work on the course website or blog.

Extension

Students may

- Compare and contrast the duties of employer and employees in federal legislation to the duties of employer, supervisors and workers in provincial legislation.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 18 - 31

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix D-3: Federal Legislative Duties and the OH&S Program

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - *Canada's Labour Code, Part II*, including the Canada Occupational Safety and Health regulations
 - Canada Occupational Health and Safety Regulations
 - Federally Regulated Business in Canada
 - Treasury Board of Canada Secretariat- *Canada Labour Code Part II – Handbook for Managers*

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

- 9.0 describe how federal and provincial OH&S legislation is enforced in Newfoundland and Labrador

Focus for Learning

Both federal and provincial jurisdictions have OH&S Officers whose job is to enforce OH&S legislation and ensure compliance.

OH&S officers have the authority to inspect workplaces if they have reasonable grounds to believe that the workplace is not in compliance. They can also issue stop work orders if there is an immediate risk to the health and safety of workers. Such an order would require that unsafe conditions be corrected before work can resume at the workplace. A lesser form of enforcement, the directive, can be issued by an inspector if an employer is not complying with OH&S legislation. It outlines the non-compliance with a time-frame for the employer to meet the legislative requirement.

This could be introduced with a guest speaker from OH&S or by mock activities students can participate in themselves. Examples relating this section to actual occurrences will make the material more meaningful for students.

Students should become familiar with Section 26 and 27 of the *OH&S Act* as these two sections deal with this outcome specifically.

Sample Performance Indicator

Compare and contrast the stop work order and the directive. In your explanation, include the investigative powers of the OH&S officer in both cases as well as how the employer must respond and the time frame in each case.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Initiate a discussion with students regarding how legislation and rules are enforced in the operation of motor vehicles. Compare this to legislation that governs workplace health and safety and how this legislation is enforced.
- Invite a guest speaker who has responsibility for OH&S enforcement to class to talk about how OH&S legislation is enforced and discuss powers of investigation, directives and stop work orders.

Connection

Students may

- Explain the relationship between a stop-work order and a directive.
- Use a case study and section 26, powers of investigation, to determine the appropriate steps an OH&S Officer takes when conducting an investigation. Determine the most appropriate action for the OH&S officer to take and reasons why.

Consolidation

Students may

- Research the current number of directives and stop-work orders that have been issued in the province. Answer the following questions:
 - Have the numbers of issued directives increased or decreased?
 - Have the numbers of issued stop work orders increased or decreased?
 - Why do you think they have increased or decreased?
 - How can employers and workers avoid having an OH&S Officer issue directives and stop-work orders?

Extension

Students may

- Write a scenario in their journal or portfolio where they are the OH&S officer who has just issued a stop-work order or directive to a company. Refer to section 26, powers of investigation, to help write this scenario outlining the types of evidence to gather and examinations to conduct.

Resources and Notes

Authorized

Building a Safer Tomorrow

- p. 21

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix C-1: Powers of Investigation

Suggested

Statistics of OH&S in NL

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

- 10.0 explain the importance of the Internal Responsibility System (IRS) in the workplace
- 10.1 explore the general responsibilities and duties of employer, supervisor, and workers in creating a healthy and safe workplace

Focus for Learning

Outcome 5.0 outlined how recommendations from the Ham Commission led to the modern-day internal responsibility system (IRS) and worker's rights. OH&S legislation in all jurisdictions is based on the principles of the IRS. The IRS is based on the following attributes:

- personal and individual responsibility
- cooperation and communication
- worker's rights

The Internal Responsibility System (IRS) is a culture of health and safety where every individual and job position within an organization – employer to worker – has a role and personal responsibility in OH&S. There is a connection to similar responsibilities within the school environment. Students are expected to report hazards in their school to the proper authorities. The same is true at work. In the workplace, however, something that is within the skill and responsibility of the employee to rectify is expected to be dealt with before they report it.

IRS is not specifically found in legislation, because it is the basis of all modern day OH&S legislation. OH&S legislation outlines the roles and responsibilities of employers, supervisors, and workers in creating a healthy and safe work environment. Sections 4, 5.1 and 6 of the Newfoundland and Labrador *OH&S Act* outline the general duties of employers, supervisors and workers respectively. Sections 122 and 124 of the *Canada Labour Code - Part II* outline the general duties of employer and employees.

A series of examples can be used to emphasize the following:

- content and specifics of OH&S legislation throughout Canadian provinces may differ. All workplace parties, however, have the overall responsibility and duty to work in a healthy and safe manner no matter where you live in the country.
- there is a moral and legal obligation to keep ourselves and others safe at work. When moral and legal obligations have been met, then the costs of occupational injuries and diseases will decrease.

Sample Performance Indicator

In small groups, use a chart to differentiate between the employer's, supervisor's, and worker's general responsibilities and duties in OH&S in creating a healthy and safe work environment. Comment in each instance how these general responsibilities and duties have the IRS as a foundation.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Compare and contrast the responsibilities of the principal, teacher and student with the responsibilities of the employer, supervisor and worker. Invite students to brainstorm what they believe principals, teachers and students are responsible for while in schools. Ask students the following questions: What is your personal responsibility while in school? What are the principals' and teachers' responsibilities? How do you know what your responsibilities are? How do you ensure that everyone works together to fulfill their responsibilities? What do responsibilities give us? Why is it important to have written responsibilities?

Connection

Students may

- Use this information and applicable OH&S legislation to write the responsibilities of employers, supervisors and workers in table form in their journals/portfolios.

Consolidation

Students may

- Refer back to the Curtis Zanussi Story and identify what the responsibilities of the employer, supervisor and worker were in that scenario. Identify why this accident happened and how the development of clear and written responsibilities would have prevented this accident.

Extension

Students may

- In small groups use OH&S legislation to illustrate what each workplace parties' responsibility is in one of the following:
 - Identification and control of workplace hazards
 - Education and training programs
 - Safe work practices and procedures
 - Personal protective equipment (PPE) use

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 8, 25 - 27, 29 - 31

OH&S Act

- sections 4, 5, 5.1, 5.2, 6, 8, 36.1

OH&S regulations

- sections 12, 14 and 17.

Canada Labour Code - Part II

- sections 122 and 124

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix D-4: Internal Responsibility System (IRS)

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - Basic information on the IRS
 - Ontario Ministry of Labour IRS
 - Peter Stralendorf - Workplace Safety North Conference, 2013.
 - General responsibilities outlined

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

- 11.0 summarize the basic rights of a worker
 - 11.1 explain how worker's rights are exercised

Focus for Learning

OH&S legislation and the IRS give workers (managers and supervisors included) three important and basic rights. These are:

- right to know
- right to participate
- right to refuse

Section 45-50 of the *OH&S Act* and section 5 of the OH&S Regulations outline the steps to be taken by workers, employers and OH&S committees, worker H&S representatives or workplace H&S designates.

The rights, as in SCO 10.0, have responsibilities attached to them. Employers and supervisors must inform workers of all health and safety hazards, but workers must report all health and safety hazards to their supervisors and employers as well.

Students may sometimes confuse work they are not comfortable doing with unsafe work. If a worker feels uncomfortable it may be because they don't understand what they are required to do, have not been adequately trained and/or do not have the proper controls or understand how to use them. A worker cannot refuse if appropriate controls are in place.

Students need to be aware that a refusal is not a simple process and should only be a last resort. When exercising their right to refuse, workers must report it to their supervisor as the first step. The refusal will only go to the OH&S Committee, Worker Health and Safety (worker H&S) representative or Workplace Health and Safety (workplace H&S) designate if the supervisor is unable to resolve the issue. As well, employers are required to provide written notification of the work refusal to the OH&S Division.

Sample Performance Indicator

Compare and contrast the rights of students (usually outlined in a code of conduct) and the rights of workers. What rights do students have that may be comparable to the right to refuse? Describe the roles and processes available in the school system in this instance and how they compare to the right to refuse process.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Ask students, “What is a right? What are your rights as a student? What are the rights of a worker with respect to workplace safety? Where would you find more information about workers’ rights? How would you exercise your rights?” Students may be directed to sections 5, 5.2, 7, 8 and 45-50 of the *OH&S Act* and section 5 and 17 of the *OH&S Regulations* which outline the duties of workers, what to do when imminent danger is perceived and the procedure for exercising the right to refuse work.

Connection

Students may

- Assemble in small groups of 2-4 and create a two-column table titled “Rights”. In the left-hand column, generate a list of rights that students have in school. In the right-hand side, list the rights of workers. Compare how these are similar. Create scenarios where they determine the best way to exercise these rights and share with the class.
- Engage in role plays and create a scenario in which a person is refusing unsafe work. Take on the role of the worker, employer, OH&S Committee member/worker H&S representative or Workplace H&S designate, or any other worker who is involved in their chosen scenario.

Consolidation

Students may

- Assemble in small groups to complete case studies and/or picture/video analysis of unsafe work conditions to answer the following questions: What hazards should the worker(s) have been made aware of before beginning work? How can the worker participate in improving the safety of the work activity? Would the worker(s) be within their rights to refuse the unsafe work? What is the role of the OH&S Committee/WH&S representative or designate in work refusals? What process does the worker and employer follow in the work refusal?

Extension

Students may

- Write a letter to an employer explaining why workers’ rights are human rights.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 26- 28

OH&S Act

- sections 5, 5.2, 7,8, and 45-50

OH&S regulations

- sections 5 and 17

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix B-2: Internal Responsibility System and Answer Key

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - Right to Know
 - Workers rights and responsibilities
 - Questions and answers on responsibilities
 - Worksmart Ontario - Basic Rights

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

12.0 explain due diligence in relation to the *OH&S Act* and Regulations

Focus for Learning

According to the Canadian Centre for Occupational Health and Safety (CCOHS), due diligence

“is the level of judgement, care, prudence, determination, and activity that a person would reasonably be expected to do under particular circumstances”.

Students should be aware that everyone in the workplace needs to understand and fulfil their legislative roles, responsibilities and duties under the IRS to keep themselves and others safe. Students should be able to make connections to their own home and school roles when discussing this in the classroom.

Connections could also be made to the workplace. Students who are working should be able to recognize elements of due diligence in their work. Through signage, policies, training and other activities their employers are demonstrating due diligence. These employers have established and maintained a strong IRS. They have implemented an OH&S management system that assigns roles and responsibilities while designing policies and procedures with the input of all workplace parties.

Discuss with the students how they, as workers, also contribute to their employer’s due diligence by being aware of and following policy and practice.

Sample Performance Indicator

Itemize what due diligence could mean in the school environment. In this instance, outline what the duty is of each role in the school (teacher, student, custodian, etc.), and how each contributes to the running of the school in a safe and effective fashion.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Show “Due Diligence” from Worksafe BC. This video is based on British Columbia OH&S legislation. It provides viewers with insight into how an employer and supervisor have to provide evidence to show they did everything that a reasonable person would do to prevent accidents from happening.

Connection

Students may

- Participate in a mock trial where each person has been assigned a role: the lawyer, investigator, employer and/or supervisor. Students could also be assigned the role of family members and co-workers to show how a workplace incident affects families and workplaces.
- Assemble in small groups and develop the “Top 10 List for Showing Due Diligence”. This can be presented as a poster, collage, rap song, video, etc.
- Determine from incident reports or case studies what workplace parties could have done to show due diligence and meet their legislative requirements.

Consolidation

Students may

- Identify in their portfolio or journal how they would show due diligence in a specific case in their workplace as a worker, employer and supervisor.

Extension

Students may

- Answer the following question in a research project: How would a person being charged under C-45 show they were duly diligent?

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 26 and 27

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix C-2: Due Diligence
 - Appendix B-3: Due Diligence and Answer key

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - Due diligence resource
 - OH&S Legislation- Due Diligence in Canada
 - WorkSafe BC Video-Due Diligence

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

- 13.0 distinguish between an OH&S Committee, Worker Health and Safety (H&S) Representative, and Workplace Health and Safety (H&S) Designate
- 13.1 summarize the legislative requirements for OH&S Committees, Worker H&S Representatives, and Workplace H&S Designates
- 13.2 outline the duties of the OH&S Committees, Worker H&S Representatives, and Workplace H&S Designates

Focus for Learning

The provincial *OH&S Act* and Regulations indicate that:

- An OH&S committee is established when there are 10 or more workers.
- A Worker H&S representative is established when there is more than one but less than 10 workers; the representative must not be connected with management
- A Workplace H&S designate is established when there is less than six workers; the designate can be linked to owner and management.

There are exceptions to these rules, specifically they do not apply to: a self-employed person; a workplace with no workers-just owners/operators /partners; or workplaces with one worker.

For workplaces that require OH&S committees, there are legislative requirements for structure, membership, training, and meetings. These should be reviewed in detail. It is a common misconception that these matters are voluntary on the part of employers.

Although duties are not written in the *OH&S Act* for Worker H&S representatives and Workplace H&S designates, Section 44 gives them the same duties as an OH&S Committee, which are:

- seek to identify unhealthy or unsafe conditions
- participate in workplace inspections
- make recommendations
- receive complaints
- establish and promote OH&S educational programs
- maintain records of OH&S committee activity
- cooperate with Assistant Deputy Minister or OH&S Officer

One of the complaints that a committee/representative/designate may receive is a work refusal. The investigation of work refusals requires well-developed problem-solving skills. Students should be able to relate to this from their own educational experiences. Problem solving steps that are applicable to this situation include:

- recognize the problem
- analyze
- identify possible causes
- develop possible solutions
- make recommendations
- prepare an action plan

Sample Performance Indicator

Create a training brochure for new employers or employees. Within, outline OH&S duties including: training requirements for the levels of representation, general duties (including dealing with work refusals), membership on committee, frequency of meetings, and meeting rules.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Introduce students to the concepts of the OH&S committee, Worker H&S Representatives or Workplace H&S Designates by reviewing sections 37- 45 of the *OH&S Act* and sections 5 and 25 of the regulations.
- Invite a member of the school OH&S committee, to speak to the class on how the OH&S committee fulfill their duties under the Act. Discuss with students what level of representation exists in the school.
- Organize students into mock OHS committees. These committees can be used everywhere groups are required throughout the course.

Connection

Students may

- Assemble into mock OH&S committees and work within legislative requirements to do the following:
 - Determine the size of the OH&S Committee
 - Schedule first meeting.
 - Elect Co-Chairs.
 - Determine number of members to be trained.
 - Post names of OH&S Committee members.
- Using work refusal scenarios, generate a list of questions that may be asked by the OH&S Committee to workers to help them determine why the work refusal occurred and develop a resolution.

Consolidation

Students may

- Work in small groups to create a comparison chart outlining the differences between an OH&S committee, Worker H&S representative and Workplace H&S designate.
- Brainstorm on how the OH&S committee assists the employer in implementing the OH&S program. Put these thoughts onto a poster, collage, video, etc. and share with the class.
- Using the problem-solving process, outlined in Focus for Learning on p.51, engage in a group research project to identify solutions to assigned work refusal scenarios.
- In their “mock OH&S committees”, respond to an employer with a recommendation on a work refusal scenario.
- Write a letter to the OH&S committee/representative/designate of their school with practical recommendations and ideas on how they can fulfill their legislative duties.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 32 - 36

OH&S Act

- sections 37-50

OH&S regulations

- sections 5 and 25

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix A-2: Requirements for OH&S Committees
 - Appendix B-4: Right to Refuse and Answer Key
 - Appendix B-5: Legislative Duties and Answer Key
 - Appendix B-6: OH&S Introduction and Answer
 - Appendix B-7: Training Requirements and Answer Key
 - Appendix C-3: Work Refusals

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - FAQs WorkplaceNL
 - WorkplaceNL- Docs
 - Joint Health and Safety Committees by Province
 - Committees, Reps and Designates
 - OH&S Committee- Handbook
 - Ontario School Shops and Labs Safety Inspections
 - Nova Scotia OH&S

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

14.0 outline the process in establishing an effective OH&S Committee

Focus for Learning

Although legislation dictates when an OH&S committee will be formed and who will sit on that committee, it cannot ensure effectiveness. Developing an effective committee is essential to a safe workplace.

Students' previous experience with group activities may make a good connection for this outcome. Experience with student government or Roberts Rules of Order will also enable them to add to the conversation. Brainstorm with the students what made their group effective (or ineffective). From this a few essential tasks should follow:

- establishing roles
- planning
- keeping on task
- having rules
- having a clear result

The parallels to an OH&S committee are clear: there are co-chairs, a secretary and members, there are agendas which indicate planning and help keep the meeting on task; there are terms of reference so that the rules are clear; and there are minutes that indicate the results.

All OH&S committee members have a role to play both inside and outside meetings. Essentially an OH&S committee works together to promote OH&S practices and assist the employer with monitoring the OH&S program.

It is important for students to understand that the terms of reference (or rules) are a very important tool for OH&S committees to use as they determine what they can and cannot do.

A common misconception is that these meetings are a place for airing labour-management issues. This is not the case. They are for the resolution of OH&S concerns only. As well, students might not be aware of the fact that OH&S committee meetings must not take place when employer representatives outnumber worker representatives.

Sample Performance Indicator

Design a structure that could improve the effectiveness of all student-based meetings. This structure could be articulated in a brochure for effective meetings or as a poster outlining the tasks that should be followed.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Show the YouTube video ‘Safety Care - How to run an Effective OH&S Meeting’. Note that the OH&S committee in the film is based in another jurisdiction where OH&S committee functions are different than Newfoundland and Labrador.
- Introduce the concept “terms of reference” by asking students to outline the rules of a popular sport or game. Ask them why the rules are in the sport or game and if the events would be successful without them.

Students may

- From the video identify the roles and responsibilities of all OH&S Committee members.

Connection

Students may

- Design a terms of reference according to an assigned workplace scenario.
- Develop an agenda for an OH&S meeting.
- Review the WorkplaceNL OH&S Committee Minute Report Form which would be completed at the end of an OH&S meeting.

Consolidation

Students may

- Conduct a mock OH&S committee meeting. In this activity do the following:
 - follow a terms of reference
 - follow an agenda
 - complete WorkplaceNL OH&S Minutes Report Form and review process for submitting the form

This can be accomplished in tandem with the connection activity above using the tools students have developed themselves.

Extension

Students may

- Write a journal entry on what an employer needs to provide to OH&S committees, Worker H&S representatives and Workplace H&S designates to ensure their effectiveness.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 32-36

OH&S Act

- sections 37, 38, 38.1, 39, 40

OH&S regulations

- section 25

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix B-8: Duties and Responsibilities and Answer Key]
 - Appendix B-9: Terms of Reference and Answer Key
 - Appendix B-10: The Essentials of OH&S Committees, Worker H&S Representative and Workplace H&S Designates and Answer Key
 - Appendix B-11: Auditing the OH&S Committee

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - Effective OH&S committees
 - OH&S Committees Handbook
 - Sample Terms of Reference, Ontario Ministry of Labour
 - Safework Australia
 - Safety Care Online–How to run an OH&S meeting
 - Occupational Health & Safety Committee– Handbook
 - Roberts Rules or Order
 - WorkplaceNL - OH&S Minutes Report Form

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

15.0 describe the process for making OH&S recommendations to the employer

Focus for Learning

Making recommendations to employers is a critical role that OH&S committees, WH&S representatives and designates play in hazard recognition, evaluation and control. Students should be familiar with elements of the process, as they are consistent with safe work practices and have been introduced earlier in this module. The full process includes:

- recognizing the OH&S issue
- gathering information through research
- reviewing information for reasonable and practical solutions
- presenting the recommendations to the employer
- following up and monitor the decision(s) and actions taken

It is important for students to note that Section 5 of the *OH&S Act* requires employers to respond in writing within 30 days of receiving a recommendation from the OH&S committee, Worker H&S representative or Workplace H&S designate. Employers can either accept or reject the recommendation. If they reject, they must provide reasons for this rejection. In addition, they must provide written and periodic updates on the implementation of the recommendation until completed.

A common misconception is that making recommendations to the employer in this instance is a union issue. It is not, as the employer has representation at the table for these committees and input into the recommendations.

Sample Performance Indicator

Within the school, identify a potential OH&S issue (this can be mock or real) and follow the process for making recommendations to an employer. This can be done as part of the mock OH&S committees or individually.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Review the process for making recommendations to employers as a large group discussion. Relate the process to making a recommendation to parents regarding the purchase of a new electronic device, sports equipment, all-terrain vehicle, etc. The issue is different, but the process is similar.

Students may

- Identify the reasons for the purchase introduced above, gather information regarding the product, find practical reasons for making the purchase, present this information to their parents and follow up with their parents to determine if a decision was made.
- Create a template for reporting recommendations to an employer.

Connection

Students may

- Assemble into their mock committee groups to write a formal recommendation regarding one of the following: WHMIS hazardous products, first aid training, respiratory protection, ventilation, noise and fall protection.
- Work independently as a worker H&S representative or workplace H&S designate to develop a formal recommendation.

Consolidation

Students may

- Critique one of the other OH&S committees or worker H&S representatives, or workplace H&S designates through the lens of the employer by following legislative requirements. This should be a constructive peer review.
- Post the OH&S committee recommendation to the class website, blog, etc. Provide feedback on the other OH&S Committee's recommendations.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 32-36

OH&S Act

- section 5

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix A-3: Making Recommendations
 - Appendix B-12: Workplace Complaints and Answer Key

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - OH&S Committees Handbook WorkplaceNL
 - OH&S Committees Handbook PEI
 - OH&S Committees Handbook BC
 - OH&S Committees Handbook NS

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

- 16.0 describe the role of the Workplace Health, Safety and Compensation Commission (WorkplaceNL), including the “no fault” system
- 16.1 demonstrate an understanding of the following with respect to workers’ compensation:
- who funds the workers’ compensation system
 - who is covered and who is not covered
 - the benefits and services available to injured workers

Focus for Learning

The Workplace Health, Safety and Compensation Commission (WorkplaceNL) administers the *Workplace Health, Safety and Compensation (WHSC) Act*. WorkplaceNL encourages and promotes injury/occupational disease prevention and OH&S programs in all workplaces. It provides injured workers, their dependents and employers a no-fault injury insurance program that fosters return-to-work and efficient disability management. WorkplaceNL provides short and long-term disability benefits to injured workers or survivor benefits if a worker dies as a result of an injury.

Students will have little prior knowledge of what “no fault” entails. “No fault” means workers are paid benefits regardless of how the injury occurred. The worker and employer waive the right to sue and there is no argument over responsibility or liability for an injury.

A common misconception is that this system is funded by government. In reality the workers’ compensation system in Newfoundland and Labrador is fully funded by employers. Employer’s rates are based on the type of industry/work done by the company, previous claim costs (associated with injuries/occupational diseases), and the company’s payroll.

There are complex nuances with this system that will need to be simplified so that students form a basic understanding. A simplistic view is that an injured worker gets paid for life. WorkplaceNL requires that an injury or occupational disease be properly reported, claims require significant documentation and detail, and just because a claim is accepted does not mean a person is permanently disabled.

Available benefits and services to injured workers are specific to the individual worker. The type of injury experienced by the worker will determine the specific benefits he or she will receive. Benefits and services may include one or more of the following: health care; wage-loss benefits; modified work; ease-back to work; trial work; accommodations in the workplace; labour market re-entry (LMR); and dependency benefits.

Sample Performance Indicator

Write an information sheet for students who may be entering the workforce and are not in this course. In this sheet, describe the role of WorkplaceNL, including who funds the system, who is covered, what the benefits could include and what “no fault” means in this instance.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Introduce the worker's compensation system by showing the video "The Historic Compromise" available on the Association of Worker's Compensation Boards of Canada (AWCBC) website. This video gives a very short, but effective, synopsis of the history of worker's compensation in Canada and helps to lay the foundation for this overall learning outcome.

Students may

- Review the injury reporting system on WorkplaceNL website. Indicate where to find form 6, 6-S, 7 and 8-10 on the website.
- Briefly review the various benefits that may be available to injured workers.

Connection

Students may

- Assemble in small groups to conduct on-line research on WorkplaceNL to answer the following questions: Who funds the workers' compensation system? Who is covered? Under what conditions are they covered?

Consolidation

Students may

- Assemble into small groups to work on case studies to determine the process for reporting an injury or occupational disease. Each group will be given different case studies. Students will use the injury reporting forms and information on the website for this assignment. In each case, identify the benefits and services that may be available to the workers.

Extension

Students may

- Identify the challenges to completing WorkplaceNL forms. Write a letter to WorkplaceNL suggesting several ways that the forms can be made user friendly and easier to complete.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 38-47

The Workplace Health, Safety and Compensation Act

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix C-4: Role of WorkplaceNL

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - Injured Workers Handbook and Employer's Guide
 - Submitting a claim - WorkplaceNL
 - The Historic Compromise
 - The Workplace Health, Safety and Compensation Act
 - Workers Compensation History
 - WorkSafe: How much will my insurance cost? (For employers)
 - OHS-Canada's Occupational Health and Safety Magazine- Money For Something
 - Youtube Return to work video
 - WorkplaceNL Return to work video

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

- 17.0 illustrate the importance of an early and safe return-to-work process (ESRTW) in returning injured workers to the workplace
- 17.1 list the obligations of employers and workers regarding early and safe return-to-work
- 17.2 identify and discuss the penalties for non-cooperation regarding early and safe return-to-work

Focus for Learning

In SCO 16.0, it was noted that having a claim accepted by WorkplaceNL does not mean you are permanently disabled. One of the services offered by WorkplaceNL to help injured workers is The Early and Safe Return-to-Work program. The main focus of ESRTW is to enable the worker to remain at the workplace following an injury or to return to the workplace in a safe and timely manner, if time has been lost from work. It is critical that an injured worker return to work as soon as possible to lessen the financial and emotional impact of the injury/occupational disease.

It is important for students to be aware that employers and workers are obligated to cooperate fully under conditions of the *WHSC Act*. There are penalties for employers and workers who are deemed to be non-cooperative, up to and including termination and financial penalties.

Discuss with students how the research indicates the likelihood of returning to work after six months away from the workplace continues to decrease as time progresses.

Sample Performance Indicator

Create a letter to an injured worker informing him or her that he or she has been slated to participate in an ERSTW. Outline in the letter why it is important, what his or her obligations are, what his or her employers obligations are, and what penalties may be incurred.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Show one of the return-to-work videos to introduce students to the importance of getting workers back to work as safely and quickly as possible. Bring them back to the beginning of this module and ask them to think about the direct, indirect and hidden costs of workplace incidents and occupational diseases for discussion.
- Provide the Early and Safe Return-to-Work Plan to students and briefly review the sections. Discuss how this plan is developed around the ESRTW legislation, policies and procedures, specifically employer/worker obligations. (Developing and following a plan is the best and most effective way of returning workers to the workplace.)
- Engage students in a discussion on the reasons for penalties. (Rules and procedures may be introduced as a way of highlighting that if someone fails to follow rules there are consequences.)

Connection

Students may

- Assemble into the same small groups as in SCO 16.0 and, using WorkplaceNL policies and procedures, complete the ESRTW plan according to their assigned scenarios.

Consolidation

Students may

- Refer back to the videos to examine how the ESRTW plans were effective in returning workers with significant injuries back to the workplace.

Extension

Students may

- Write a letter to one of the workers portrayed in the videos telling them how they have inspired them to work in a safe and healthy manner.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 38 - 47

The Workplace Health, Safety and Compensation Act

- sections 88-89.2

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - Watch Rod Stickman in “Returning to Work”
 - Early and Safe Return-to-Work Plan
 - Work Safe BC multimedia analysis of Return-to-Work policy

Module 1: Fundamentals of Occupational Health and Safety

Outcomes

Students will be expected to

18.0 investigate places where OH&S professionals may be employed and explore specific OH&S professions

Focus for Learning

This outcome has cross-curricular potential with Career Development 2201. Help students generate a list of the types of jobs within the safety profession. Several specific OH&S professions should be highlighted in an attempt to prompt students' thinking and searching, such as:

- ergonomist
- industrial hygienist
- occupational health nurse
- occupational physician
- OH&S advisor/coordinator

Make the connection to the type of workplace that would require such professionals. Use this generated list to support an independent study project or a class project further researching these careers. Any generated list should include, but not be limited to:

- agricultural operations
- construction firms
- consulting firms
- educational institutions
- engineering and design firms
- government agencies
- health care facilities
- insurance companies
- manufacturing plants
- transportation companies
- utility companies
- waste management facilities

Sample Performance Indicator

Create a job advertisement for one of the OH&S professions discussed in class. Outline required education, specific training (e.g., WHMIS, fall protection, basic survival training (BST), Traffic Control, First Aid, H2S Alive, etc.), daily duties, working environment, salaries, training programs, as well as the variety of work sites.

Module 1: Fundamentals of Occupational Health and Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Set this outcome up as an individual research project. Include in the project requirements the following:
 - what the career involves
 - where to get the education and training and length of time
 - possible places of employment
 - required certifications (CRSP, CIH, etc.)
 - other (e.g., annual salary, risks involved, length of career and popularity of career)

Students may

- Assemble in small groups to develop a list of places where OH&S specialists/professionals might find employment. Each group will present to the class and a larger class listing will be developed.

Connection

Students may

- Use the Internet, library resources, personal interviews or materials from a school of study to narrow their investigation of potential occupations in OH&S as they decide on an occupation for more in-depth research.

Consolidation

Students may

- Research one of the listed careers or another (with the teacher's approval) and, following careful research, present to the class the education necessary for that career, where to get the education, aspects of the career and specific workplaces associated with it. Variation in modes of presentation should be encouraged.

Extension

Students may

- Use this project as a cross curricular activity with Career Development 2201.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 52- 66

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-1.html>
 - Career search and profile
 - Working in Canada
 - Skills Canada NL
 - Getting the Message Out (GMO)
 - Engage Youth NL
 - Explore employment trends and training options for youth

Section Three:
Specific Curriculum Outcomes

Unit 2: Occupational Health and Safety
Systems and Processes

Unit 2: Occupational Health and Safety Systems and Processes

Focus

The beginning focus of this unit is hazard recognition, evaluation and control, particularly the processes and equipment necessary to maintain high levels of OH&S awareness in the workplace. Without a means to recognize workplace hazards, it becomes difficult for workers to avoid unnecessary risks. The ability to recognize hazards and evaluate risks comes with training. The natural progression from recognizing hazards is the ability to evaluate the risks associated with hazards. Next students explore Workplace Inspections which extends the practices of hazard recognition, evaluation and control. Students should understand that conducting regularly scheduled workplace inspections is one way of ensuring that hazards in the workplace are recognized, evaluated and, ultimately, controlled to reduce and/or eliminate risks posed to workers.

Students will be expected to investigate theories of workplace incident causation as well as factors contributing to such incidents. Knowing why incidents happen is an extremely important step in preventing them from happening in the future. The Emergency Preparedness and Response module emphasizes the importance of emergency planning. Students will be asked to investigate various types of emergencies that may arise at any time and cause personal injury and/or damage to property and the environment. They will also be asked to develop an understanding of the critical role a written emergency response plan can play in minimizing potential loss from natural or human-caused disasters and incidents. The final module helps students understand the importance of Personal Protective Equipment in the workplace. It will also help students understand that personal PPE is only effective as part of a complete OH&S program, particularly when users are being trained in proper use.

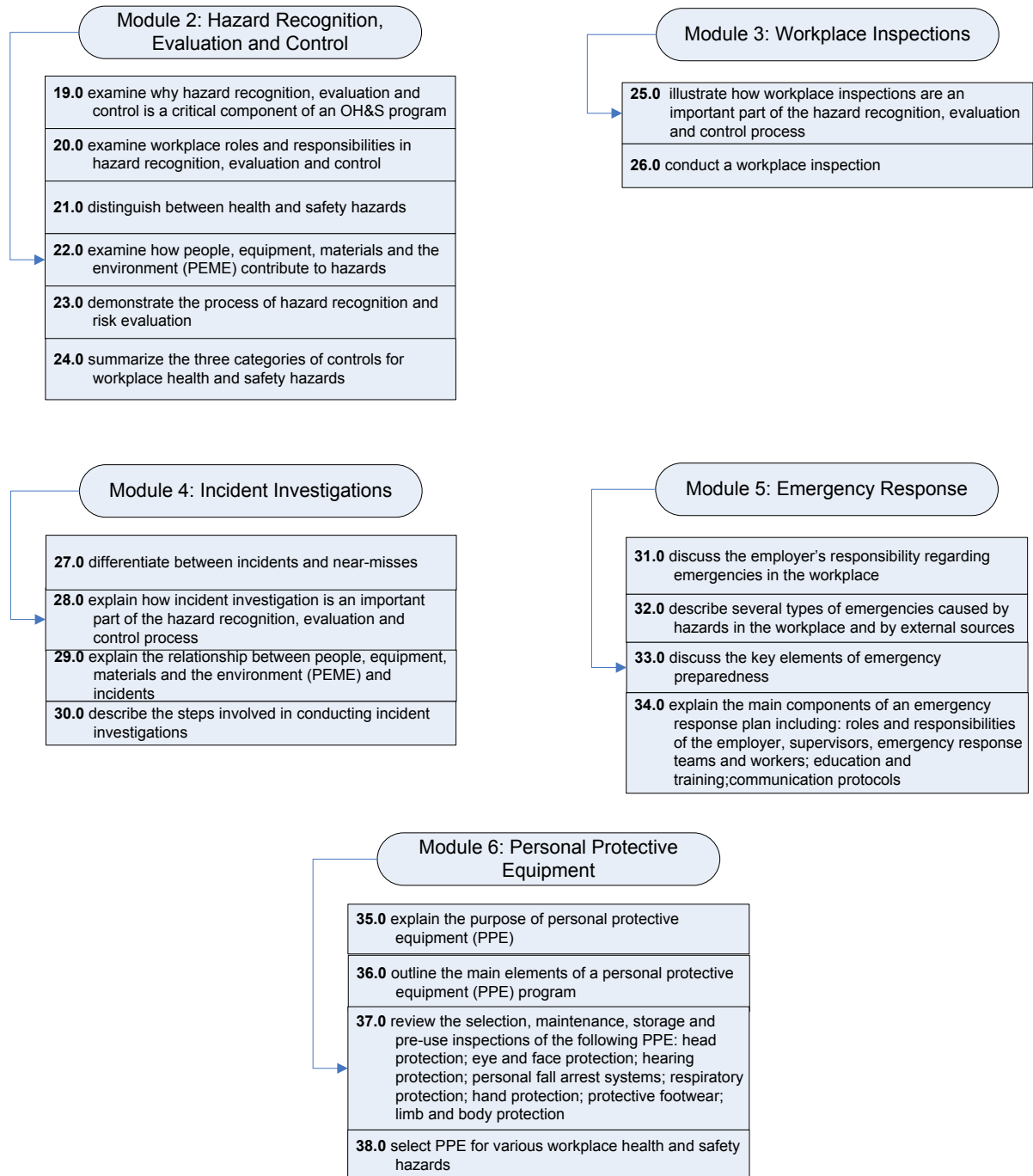
Unit 2 consists of 5 modules. A breakdown of the suggested hours of instruction are found below

Suggested Unit Plan

Module Name	# of classes
Hazard Recognition, Evaluation and Control	7
Workplace Inspections	6
Incident Investigations	3
Emergency Preparedness and Response	3
Personal Protective Equipment	6

The recommended instructional time for this Unit is 25 hours.

Outcomes Framework



Module 2: Hazard Recognition, Evaluation and Control

Outcomes

Students will be expected to

19.0 examine why hazard recognition, evaluation and control is a critical component of an OH&S program

Focus for Learning

Hazard recognition, evaluation and control (hazard REC) is the foundation of OH&S programs. As students proceed through the modules, they will discover that hazard REC is core to many OH&S activities conducted in workplaces. Section 12 of legislation requires an employer to have a system for the recognition, evaluation and control of hazards. This is an important module for students to understand as the principles of hazard REC apply to later chapters when they will be required to use different methods to identify, evaluate and control various workplace hazards.

Hazard and risk assessments, workplace inspections, job safety analysis and incident investigations are different parts of the overall hazard REC system. These components serve different functions with each playing specific roles in the hazard REC process. The connection is that either method, when used properly, will lead to hazard identification and the selection of the most appropriate control to minimize risk to workers. All of these activities, planned and implemented together as part of a hazard REC system, will go a long way in helping employers create a strong internal responsibility system.

Students may have some knowledge of how employers have identified health and safety hazards and selected controls to minimize risk to workers. Class discussions can make the link between prior knowledge and this new information.

Hazard and risk are terms that are often used interchangeably, but they mean different things. It is important for students to differentiate between the two. The use of an example as simple as water on a floor in a workplace may be effective. The hazard is the water, the risk is someone slipping and falling on the wet floor. Risk will go up or down depending on the probability of someone slipping and falling and the severity of an injury if one were to occur.

Sample Performance Indicator

Create a quick guide or brochure for new employees that outlines why hazard REC is important for OH&S programs.

Module 2: Hazard Recognition, Evaluation and Control

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Introduce students to the topic of hazard REC by playing “Hazards and Risks”. Lead a discussion about identifying hazards and evaluating risk for the purpose of eliminating or minimizing hazards is the basis of hazard REC. There are many different ways that hazards can be identified and controls put in place. The most important is that they are recognized, evaluated and controlled.

Connection

Students may

- Return to the videos that were viewed in Module 1 - The Curtis Zanussi Story, The Rick Krahn Story and The Curtis Weber Story discuss them in small groups from the point of view of hazard and risk. In these scenarios the risk was very high due to the accidents. What ways could the risks have been lowered? What could have been done to prevent these accidents from happening? What does hazard and risk mean to the overall implementation of an OH&S program? Why is it important to have a system for identifying, evaluating risk and controlling hazards?

Consolidation

Students may

- Continue with their mock OH&S committees or assemble as small groups, to write a memo for employers explaining why hazard recognition, evaluation and control is a critical component of the OH&S program.
- Write a journal entry where that argues for or against the following statement: “The hazard recognition, evaluation and control program is the foundation of an OH&S program.”

Resources and Notes

Authorized

Building a Safer Tomorrow

- p.. 72

OH&S regulations

- section 12

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix D-5: Hazard REC - Critical Component of an OH&S

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - Worksafe BC, Hazards and Risks Video
 - European Commission: Guidance of Risk Assessment at Work

Module 2: Hazard Recognition, Evaluation and Control

Outcomes

Students will be expected to

20.0 examine workplace roles and responsibilities in hazard recognition, evaluation and control

Focus for Learning

Unit 1 introduced the internal responsibility system as the foundation for legislative roles and responsibilities of workplace parties in creating a healthy and safe work environment. OH&S legislation also includes responsibilities for employers, supervisors and workers in dealing with and responding to workplace hazards. Employers develop and implement hazard REC policies and procedures that include the roles and responsibilities of workplace parties in their organization. This is a good way to show that employers are proactive and diligent in their efforts of improving workplace health and safety. Connecting school-based policies within science and fabrication labs may help students understand the importance of reporting and dealing with hazards.

OH&S legislation does not explicitly include sections called hazard REC. Sections are located throughout the *OH&S Act* and Regulations where one can search in specific sections for responsibilities in hazard REC. Part XII: Powered Mobile Equipment, Section 254 is an example of supervisors' responsibilities being located in various sections throughout the regulations. Supervisors are responsible to ensure that anyone operating mobile equipment does so in a safe manner and does not create hazards in the workplace. There are many other sections similar to this one where you have to dig deep into the OH&S legislation for hazard REC.

A common misconception is that employers who are not required to have an OH&S program under legislation do not require a system for reporting and responding to hazards. This is inaccurate as section 5 of the *OH&S Act* requires an employer to ensure supervisors and workers are made familiar with workplace hazards.

Sample Performance Indicator

Research your school-based and district-based process for reporting workplace hazards and report back to the class.

Module 2: Hazard Recognition, Evaluation and Control

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Introduce students to the concept of roles and responsibilities in hazard REC by relating the use of fall protection equipment. The following may be reviewed:
 - **Employers** must identify fall hazards, notify workers of hazards and control those hazards to eliminate or minimize with fall protection systems.
 - **Supervisors** are required to notify workers of fall hazards and controls that are used to eliminate or minimize hazards.
 - **Workers** must be aware of fall hazards, participate in training programs of any controls that they are using and notify employers of any hazards associated with equipment and systems.

Students may

- Review Section 12 of the OH&S Regulations independently or in small groups. Identify which subsections are specific to hazard REC. (Section 5, 5.2 and 7 of the *OH&S Act* and section 12 and 17 of the OH&S regulations may also be reviewed.)

Connection

Students may

- Work independently or in small groups, identify and present the roles and responsibilities of employers, supervisors and workers regarding one of the following workplace hazards: WHMIS or hazardous substances, musculoskeletal injuries (MSIs), noise hazards (section 68), machinery and equipment hazards, or one of particular interest.

Consolidation

Students may

- Choose one of the hazards identified in the connection activity and identify what could happen if employers have not written clear roles and responsibilities for hazard REC.

Extension

Students may

- Research the Canada Labour Code to identify workplace roles and responsibilities in hazard REC and present on one of the roles to the class.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 72-73

OH&S Act

- section 5, 5.2, 7

OH&S Regulations

- section 12, 17

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix D-6: Responsibilities in Hazard REC - Traffic Control

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - Health and Safety Authority of Ireland Hazards Overview
 - Hazards and Risks

Module 2: Hazard Recognition, Evaluation and Control

Outcomes

Students will be expected to

- 21.0 distinguish between health and safety hazards
 - 21.1 describe the four types of health hazards
 - 21.2 identify the various safety hazards present in the workplace

Focus for Learning

SCO 19.0 gave students the opportunity to differentiate between hazard and risk. Hazards are classified as health or safety. Helping students to understand workplace hazards is an important activity in helping them make decisions regarding their own health and safety. Hazards are usually linked to activities and processes in the workplace. Therefore job tasks and procedures are analyzed to identify potential and real hazards.

Health hazards include chemical, physical, biological and ergonomic. Health hazards, such as vapours, fumes or high noise areas, can be more difficult for students to identify. They tend to be harder to see, and may not be identified by the employer as a health hazard. The side effects of health hazards tend to be insidious and cumulative with signs and symptoms presenting as occupational disease over a period of time.

Some students may have work-oriented experiences they can share with the class. Brainstorming may help students to see the difference between health and safety hazards from their own experiences.

Safety hazards are workplace hazards that physically injure workers through the release of energy. Students may be more familiar with safety hazards than health hazards. Safety hazards are more easily seen; such as spills on the floor, safeguards missing from machines, etc. The effects of safety hazards tend to be immediate as they are the result of accidents.

Sample Performance Indicator

- Research common health and safety hazards associated with schools and create caution signs to post around the school. Distinguish between a health and safety hazard on these signs.

Module 2: Hazard Recognition, Evaluation and Control

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Review the two types of hazards with students as a large group discussion.
- Review a picture from Worksafe BC, “What’s wrong with this picture” with the students to illustrate what hazards look like in the workplace. Prompt students by asking them questions from Spot the Hazard discussion questions in Appendix B-13 or D-7.

Connection

Students may

- Participate in a game of health and safety hazard jeopardy as a large group activity.
- Assemble as small groups or as mock OH&S committees to identify health and safety hazards in a Spot the Hazard activity using pictures of hazardous work situations from Worksafe BC.
- Assemble in small groups or mock OH&S committees to create “Hazard Displays” to post around the classroom or throughout the school. Health and safety hazards should be identified accordingly.

Consolidation

Students may

- Review the health and safety hazards of their jobs or those of older siblings or family members. Share the hazard and compare with the class according to industry, job title, etc.

Extension

Students may

- Choose a specific health or safety hazard and research the following to present to the class/teacher:
 - type of hazard
 - jobs that are associated with these hazards
 - safe work practices

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 74-75

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix B-13: Safety Hazards and Answer Key
 - Appendix D-7: Health and Safety Hazard Jeopardy

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - “What Wrong With This Photo” database of photographs; answer keys provided
 - WorkplaceNL - Hazard REC Handbook
 - Skills Canada - Workplace Safety
 - WorkplaceNL - Young Workers

Module 2: Hazard Recognition, Evaluation and Control

Outcomes

Students will be expected to

22.0 examine how people, equipment, materials and the environment (PEME) contribute to hazards

Focus for Learning

PEME is an acronym that is frequently used in OH&S when discussing the causes of hazards. One, or in all likelihood, two or more of these factors contribute to workplace hazards.

When looking at hazards, it is critical to look at them from each perspective so that appropriate space controls are put in place. Students may be encouraged to look at their school, homes and extracurricular activities to identify the aspects of PEME that may contribute to potential hazards. There are many different ways that each of these factors contribute to hazards.

Students may also find through their research that work processes are sometimes included in the acronym as PEMEP - people, equipment, materials, environment and processes. These models have specified the interactions between people, equipment, materials and environment and called them processes. This is a valuable philosophy; however, for this course students should understand that job tasks are analyzed from start to finish and all factors of PEME are considered when looking for real and potential hazards.

Sample Performance Indicator

Create a flow chart or loop graphic to describe the role that each factor in PEME contributes to health and safety hazards.

Module 2: Hazard Recognition, Evaluation and Control

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Divide the class into four groups and assign each group one of applicable components of PEME.

Students may

- Review the assigned component of PEME and list possible ways their category contributes to the causes of hazards in the workplace. They may be prompted to think about and share some hazards that exist in their workplaces/school and use this as a guide in linking real-life situations with newly acquired knowledge.

Connection

Students may

- Using the list from the activation, choose one of the “What’s wrong with this picture scenarios”, previously-viewed videos, or provided case studies to determine which aspect(s) of PEME is the cause of the workplace hazard that led to the incident and report back to the class. Ensure that health and safety hazards are equally represented.
- Create a hazards poster or cartoon where hazardous conditions are created by PEME. Each condition is identified as either people, equipment, materials or environment.

Consolidation

Students may

- Rotate through various groups to share and exchange the knowledge and information that was exchanged in the original groups. Each group will be prepared to describe the viewpoint of another group.

Extension

Students may

- Record in their journals the importance of looking at all aspects of the workplace through the lens of PEME to identify hazards.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 75-76

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - Job hazards associated with typical young workers jobs
 - Recognizing, assessing and controlling hazards
 - Northwest Territories and Nanavut : Hazard Assessment
 - Risk Analysis Guide

Module 2: Hazard Recognition, Evaluation and Control

Outcomes

Students will be expected to

23.0 demonstrate the process of hazard recognition and risk evaluation

Focus for Learning

This outcome introduces students to the activities of recognizing hazards and evaluating risk using various methods of hazard REC. Students may unknowingly participate in informal hazard recognition activities on a daily basis. An example that may be used to explain this is crossing a busy street. The hazard is the traffic and the evaluation of risk includes what they do to lower the risk of getting hit by a car. Using cross walks, traffic light directions, looking both ways before crossing, etc., are ways the risk of getting hit by a car are reduced. This can be used to connect what they already know and do with new and upcoming concepts of formal hazard recognition and risk evaluation activities.

Hazard or risk assessments may be viewed as a tool that looks at 'what could go wrong' and things in the workplace that could harm workers. Students are not expected to become fluent in activities that are conducted by OH&S professionals or by trained individuals with expertise in the area of risk management. Hazard REC is an activity which may require specific skills and training by OH&S professionals and risk managers.

Throughout this outcome, students may discover the numerous risk or hazard assessment models available on the Internet. Some are very complicated, scientific and qualitative and are specific to a task or activity in a workplace. In addition, they may recognize that some models do not include frequency as a risk factor to be considered. The reason for this is that it does not matter how infrequently a worker does an activity, the hazard is still there.

Module 2: Hazard Recognition, Evaluation and Control

Sample Teaching and Assessment Strategies

Activation

Hazard and risk assessment models will be used for the duration of this module in two parts. Part 1 will cover hazard recognition methods and risk evaluation, while Part 2 will cover the various methods for controlling hazards.

Teachers may

- Remind students that they have already engaged in a hazard recognition activity in SCO 2.0. Ask them to think about how they identified the hazards as being hazards. What information did they use to help them decide whether a condition was a hazard? What questions did they ask themselves to help them make those decisions?
- Review the various methods for identifying workplace health and safety hazards.
- Review the questions that may be asked when determining severity, probability and frequency variables of risk.

Students may

- Brainstorm occurrences of hazard recognition and risk evaluation in everyday life.

Connection

Students may

- Research the various methods for identifying workplace health and safety hazards and present to the class as a large group discussion in small groups or mock OH&S committees.
- Research OHS Risk Assessment Matrix or OHS Hazard Assessment Matrix as the original “What’s wrong with this picture” small groups or mock OH&S committees to complete Part 1 of the connection activity. Groups will use one of the provided templates to identify hazards and evaluate risk in the picture scenarios. Present Part 1 back to the class.

Consolidation

Students may

- Access the OH&S committee meeting minutes of the school to identify a hazard that was reported to the committee. Using the hazard or risk assessment model risk evaluation section, evaluate and prioritize the risk. Report this risk back to the OH&S committee with justification of how the risk was evaluated.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 76-79

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix A-4: What questions should I ask when planning and conducting a hazard or risk assessment?

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/>
 - CCOHS Risk Assessment
 - University of Waterloo – Hazard Recognition
 - Memorial University – Hazard Recognition
 - Health and Safety Executive (UK) Assessing Risks
 - Five Steps to Risk Assessment
 - Hazard Identification, Risk Assessment and control Procedure
 - Government of Saskatchewan OHS Guide

Module 2: Hazard Recognition, Evaluation and Control

Outcomes

Students will be expected to

24.0 summarize the three categories of controls for workplace health and safety hazards

24.1 select the most appropriate control for various workplace health and safety hazards

Focus for Learning

Students have learned ways to recognize hazards and evaluate risk using practical methods that are commonly used in workplaces by employers. The next step is to select the best way to eliminate or minimize the hazard to workers by choosing a control. The hierarchy of controls include:

- engineering
- administrative
- personal protective equipment (PPE)

There are various graphics and pictures available on the Internet that may be used by the teacher to help explain the hierarchy of controls. The best choice of control is always to eliminate the hazard. This means the hazard is gone and employers do not have to deal with monitoring the effectiveness. Other engineering controls address the sources of hazards, administrative controls address how a hazard gets to a worker and PPE addresses where and how workers come into contact with a hazard.

Students should be reminded that any control that is introduced to the workplace must be assessed to ensure it does not create any additional hazards to workers.

Selection of controls are based on:

- site-specific solutions that provide the most protection to workers.
- what is reasonable and practical for workers and the workplace.
- permanent solutions, however, temporary controls can be used until a permanent control is available.

Sample Performance Indicator:

Using the OH&S Risk Assessment or OH&S Hazard Assessment and the “What’s wrong with this picture” photo, choose one safety and one health hazard to begin the hazard recognition and risk evaluation process. As a secondary part of the project, select the best control for the identified hazards.

Module 2: Hazard Recognition, Evaluation and Control

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Introduce students to controlling hazards by showing Hazard Controls.
- Review the Hierarchy of Controls by showing the first 6 minutes of ENFORM Hierarchy of Controls. This is a 10 minute video, but the rest of the video is more appropriate to controlling chemical hazards.

Connection

Students may

- Return to their “What’s wrong with this picture” small groups or mock OH&S committees to select the most appropriate controls for hazards that were identified in displays. Displays may be an activity such as a poster, presentation, video, or song. Post their displays outside their classrooms and invite the school community to view their displays.

Consolidation

Students may

- Return to the caution signs that were created in SCO 3.0 and add the most effective controls to the signs.
- From a list of typical jobs that are held by youth, create a hazard REC display throughout the school during North American Occupational Safety and Health Week.

Extension

Students may

- Choose a specific workplace hazard and create an infographic outlining its recognition, evaluation, and control. (This activity may be used to summarize the entire hazard REC module.)

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 82-84

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix B-14: Hazard Recognition, Evaluation and Control - Wholesale and Retail, Health Care, Transportation, and Service Industries
 - Appendix B-15: Hazard Controls
 - Appendix B-16: Hazard Recognition, Evaluation and Control
 - Appendix D-8: Choosing the Most Appropriate Controls

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - Health and Safety Executive (UK) Controlling Risks
 - Hazard Controls CCOHS
 - Hazard Controls
 - Hierarchy of controls ENFORM

Module 3: Workplace Inspections

Outcomes

Students will be expected to

- 25.0 illustrate how workplace inspections are an important part of the hazard recognition, evaluation and control process
- 25.1 explain workplace roles and responsibilities in workplace inspections
- 25.2 describe the types of workplace inspections

Focus for Learning

This module builds on learning from the Hazard Recognition, Evaluation and Control module. Various sections of OH&S legislation give employers the responsibility to develop procedures for inspections of buildings, excavations, structures, machinery, equipment, work practices and places of employment. Encourage students to look through legislation and see where and when employers are required to conduct inspections. The volume of required inspections may help them understand the importance of conducting regular inspections. Employers are also required to schedule workplace inspections in consultation with the OH&S committee, Worker H&S representative or Workplace H&S designate.

Workplace inspections are an important component of an OH&S program and hazard REC. Employer's written policies and procedures for informal and formal workplace inspections should outline the roles and responsibilities within the company. Workplace inspections validate other hazard REC activities by checking established controls and identifying any other hazards that may have been overlooked.

Students may be familiar with equipment inspections conducted in skilled trades or laboratories. This is a type of workplace inspection where machinery and equipment must be inspected before each use. They may have also participated in a workplace inspection at their workplace or have seen inspection reports posted in the workplace. These experiences may be used to build their knowledge of workplace experiences as they learn the concepts and connect them to their own lives.

Students should know that:

- workplace inspection checklists are specific to workplace hazards; therefore, each workplace will have different workplace inspection requirement
- if the hazard and risk assessment is properly done, no other hazards should be identified during the workplace inspection

Sample Performance Indicator

Assume the role of employer and write a letter to a parent, caregiver or an underage worker (under 16). Explain what workplace inspections are, why they are important, who has responsibilities for workplace inspections and what these responsibilities entail.

Module 3: Workplace Inspections

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Introduce students to the topic of workplace inspections by bringing them outside the classroom to look for hazards in and around the school. This is an opportunity for them to do some form of an inspection without even knowing that what they are doing is an inspection. It also serves as a method of showing them that the best way to do a workplace inspection is to prepare, plan and document inspection activities.
- Share a copy of the school's OH&S committee workplace inspection checklist and report forms.

Students may

- Report the list of any identified hazards to the class and determine if their inspection was formal or informal.
- Review the definition of workplace inspections - informal and formal - and the workplace roles and responsibilities in conducting workplace inspections. Discuss how they are meant to complement each other and why workplace inspections are an important part of hazard REC.

Connection

Students may

- Review the copy of the school's OH&S committee workplace inspection checklist and report forms. Was the inspection that was conducted by the OH&S committee formal or informal?
- Research the legislative responsibilities of employers, supervisors, workers and OH&S committees, worker H&S representatives or workplace H&S designates in conducting inspections. Do these responsibilities apply to formal and informal inspections? Why or why not?

Consolidation

Students may

- Discuss workplace responsibilities as a connection to the Internal Responsibility System through the development of OH&S policy.
- Identify other types of inspections (e.g., pre-use inspections of tools and equipment, preventative maintenance programs, critical parts inspections, etc.) and determine which category they would fall under.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 86-89

OH&S Act

- sections 4, 5 (a), 5 (f), 5 (f.3), 5.1, 6, 39 (a.1), 41 and 42.1

OH&S regulations

- Sections 12 (g) (ii). 14, 18, 25

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - WorkplaceNL – OH&S Guideline Workplace Inspections
 - CCOHS – Effective Workplace Inspections
 - How to implement OHS (BC)
 - Government of Saskatchewan OHS Guide
 - Office checklist

Module 3: Workplace Inspections

Outcomes

Students will be expected to

- 26.0 conduct a workplace inspection
- 26.1 explain the four steps involved in workplace inspections

Focus for Learning

Valuable opportunities for problem-solving and decision-making students' health and safety may be provided to students in this outcome. Students will have the opportunity to learn and practice the four steps of workplace inspections - planning, conducting, completing the workplace inspection report, and monitoring corrective actions.

Student-selected scenarios, such as 'What's wrong with this picture?' photos or school workplace inspections may be used to add an interactive approach to learning. Students may work together to model a workplace and develop an inspection checklist specific to workplace hazards, OH&S legislation and hazard and risk assessments. Planning and developing inspection checklists that are based on individual worksite hazards is key to identifying and controlling workplace hazards.

Many students work in part-time jobs where they may have seen or participated in workplace inspections as workers, OH&S committee members, worker H&S representatives or workplace H&S designates. This outcome may give them the opportunity to practice their skills in a neutral environment centred around learning-by-doing.

During small group discussions and inspection activity emphasize the following:

- Although inspection checklists are used during the inspection, hazards may be present in the workplace that may not have been captured during other hazard REC activities. Students are reminded to keep eyes and ears open to any new hazards.
- During the inspection, if there is a situation identified where there is immediate danger, this must be reported to the supervisor or manager and corrective action taken immediately.

Sample Performance Indicator

Shadow a workplace inspection by the school's OH&S committee. Outline how they applied the four steps and the result of the inspection.

Module 3: Workplace Inspections

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Show the YouTube video: Office Safety. Review this video with the class to see how many hazards students can identify.
- Review the four steps in conducting workplace inspections through a large group discussion.
- Take pictures in the school and play “What’s wrong with this picture?”

Students may

- Return to their informal inspection of inside and outside the classroom and the school’s formal OH&S committee workplace inspection checklist to report on the following. Which one was easier to conduct? Why was it easier? What would you have to do to ensure that all aspects of the workplace are inspected?

Connection

Students may

- Return to the “What’s wrong with this picture?” scenarios. Create a workplace inspection checklist and report form based on these scenarios and display in the classroom.

Consolidation

Students may

- Review the school’s workplace inspection checklist for effectiveness. Have all areas of the workplace been inspected? Have all work activities and job tasks been covered? Have all types of hazards been addressed? Have the requirements of OH&S legislation been fulfilled? Make recommendations for improvements to the school OH&S committee to your teacher.
- Using this checklist and any other recommended changes to the checklist, conduct a workplace inspection following the four steps of workplace inspections.
- Develop a report and submit it to principal and OHS committee.

Extension

Students may

- Submit the completed workplace inspection to the school’s OH&S committee. If there are recommendations to be made, follow the process for making recommendations along with the OH&S committee and monitor the progress of the implementation of the control.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 90-94

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix B-17: Workplace Inspection and Answer Key
 - Appendix B-18: Workplace Inspections and Answer Key

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - Planned workplace inspections (video)

Module 4: Incident Investigation

Outcomes

Students will be expected to

27.0 differentiate between incidents and near-misses

Focus for Learning

Knowing the difference between incidents and near-misses may help students understand the concepts involved in incident investigations. An incident results in loss while a near-miss has the potential for loss. The experiences of students may help differentiate the two terms. Students may share an event that happened to them for a class discussion to determine if it was an incident or near-miss. Swimming in ponds or the ocean, for example, may lead to people venturing too far from shore when they realize they have to swim back. A near-miss would be swimming too far out and having to get back by swimming or having someone come out to get you. Not being able to get back or having someone get you may result in drowning which is an incident.

The incidence of occupational disease illness does not fit with traditional models of incident causation. However, they are still related to health hazards in the workplace that can lead to an occupational disease. Occupational disease and symptoms should be investigated by OH&S professionals with expertise in occupational disease.

Students will see the word ‘accident’ used in OH&S legislation. The Canadian Centre for Occupational Health and Safety (CCOHS) has made the following statement regarding both terms.

The term incident is used in some situations and jurisdictions to cover both an “accident” and “incident”. It is argued that the word “accident” implies that the event was related to fate or chance. When the root cause is determined, it is usually found that many events were predictable and could have been prevented if the right actions were taken -- making the event not one of fate or chance (thus, the word incident is used).

In classroom discussions emphasize:

- All incidents and near-misses should be reported to the employer.
- Serious accidents, injuries or those accidents that had the potential to cause serious injuries must be reported to the OH&S Division, the OH&S committee, worker H&S representative or workplace H&S designate.
- Symptoms of occupational disease must be reported to a doctor for further medical investigation. If diagnosed with an occupational disease, WorkplaceNL must be notified by completing the appropriate forms.

Sample Performance Indicator

Create a chart that explains the difference between an incident and near-miss, with examples or pictures of each.

Module 4: Incident Investigation

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Initiate a discussion about incidents and near-misses and simple causation by relating them to incidents and near-misses that happened to them. Ask if several students would like to share stories of incidents that happened and how it affected them. Why was this considered an incident? What caused the incident? Ask them if anyone has ever experienced a near-miss that could have led to a serious incident/injury or illness. Why was this considered an incident? What caused the incident? How could the near-miss have become an incident?
- Discuss the incidence and development of occupational disease. Ask students if they think occupational disease fits into traditional incident causation models. Why or why not? Ask them if they know anyone who has been diagnosed with an occupational disease. What were the cause(s) of the occupational disease?

Connection

Students may

- Independently, in small groups or in OH&S committees, research incidents and near-misses to find examples of each. Identify them as either incidents and near-misses, the reasons why and present their findings.
- Independently, in small groups or in mock OH&S committees, research occupational diseases diagnosed in the province ie, crab asthma and identify some aspects of what caused the occupational disease. Present their findings to the class.

Consolidation

Students may

- Identify how a near-miss could have become an incident if events happened in a different sequence.

Extension

Students may

- Create posters or blog entries educating others on how incidents are preventable.

Resources and Notes

Authorized

Building a Safer Tomorrow

- p. 98

OH&S Act

- sections 4, 5.1, 6, 26, 54

OH&S regulations

- sections 10, 12 (g) (iv), (k)

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - WorkplaceNL, Guideline to Accident/Incident Investigation
 - CCOHS - Accident/Incident Investigation
 - OHS Book – Models of Accident Causation

Note: Throughout the rest of this module, students should be given the opportunity to conduct incident investigations in small groups using one or more investigation scenarios provided by the teacher.

Module 4: Incident Investigation

Outcomes

Students will be expected to

- 28.0 explain how incident investigation is an important part of the hazard recognition, evaluation and control process
- 28.1 identify workplace roles and responsibilities in incident investigations

Focus for Learning

This module builds on learning from the Hazard Recognition, Evaluation and Control module. Incident investigations are another important component of an OH&S program and hazard REC. The purpose is to find gaps or 'what went wrong' in the overall hazard REC system to prevent re-occurrence. This is another area in OH&S legislation where employers and other workplace parties have been given roles and responsibilities in reporting and investigating accidents. Writing and implementing policies and procedures will help workplace parties understand what they are required to do in case of an incident or near-miss. This is another way that employers may show due diligence and strengthen the internal responsibility system.

There is a common belief that incident investigations look to assign blame in the workplace. In some cases, workers are afraid to report an incident or near-miss because they are afraid of repercussion or discipline. Incident investigations are a fact-finding, not fault-finding, processes that go beyond finding the direct cause to identifying the root (basic) cause of incidents. Clearly written policies and procedures, and education and training by employers, should help to dispel this belief.

Teachers should refer students to section 26, Powers of Investigation, of the *OH&S Act*. This section is important because it gives the Assistant Deputy Minister or an OH&S Officer the authority to enter a workplace at any time to inspect and/or investigate conditions that they feel are necessary to determine the cause of an incident. This section of OH&S legislation is not well known or understood.

Sample Performance Indicator

Using an example of an incident or near-miss, assume the role of the employer or the OH&S Committee and respond to committee in a letter in which you

- show how the near-miss or incident was connected to workplace hazards.
- identify the roles and responsibilities of workplace parties in incident investigation.
- explain why it is important to investigate near-misses and incidents to prevent re-occurrence.

Module 4: Incident Investigation

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Initiate a discussion about incident investigation by relating it to the investigation of motor vehicle/aircraft incidents. Refer to module 1 and the History of OH&S to highlight how investigations resulted in change. Ask students how many investigations they feel were completed?
- Invite an OH&S Officer or OH&S professional to discuss the importance of incident investigations, roles and responsibilities of workplace parties and the incident investigation process. In addition, they could also share the process they follow under section 26 of the OH&S Act.

Connection

Students may

- Using incident and near-miss scenarios from their own lives, research or develop a guide to help in identifying attributes of incidents and near-misses. Work together as small groups or mock OH&S committees and present back to the class.
- Create a mock incident investigation based on section 26 and share with the class as a role play, poster, video, song, etc.

Consolidation

Students may

- Write a journal entry or create a video, cartoon or audio file from the perspective of one of the workplace parties and his/her role in incident investigations including why his/her role is important in the hazard REC process.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 96-102

OH&S Act

- sections 4, 5.1, 6, 26, 54

OH&S regulations

- sections 10, 12 (g) (iv), (k)

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - CCOHS - helpful overview of the purposes, personnel involved and various processes connected with incident investigations

Module 4: Incident Investigation

Outcomes

Students will be expected to

29.0 explain the relationship between people, equipment, materials and the environment (PEME) and incidents

Focus for Learning

Students were introduced to PEME in Module 2 and the connection to workplace hazards. There is also a relationship between PEME and incident causation. If PEME contributes to workplace hazards, then they are also connected to incidents and near-misses.

This outcome does not expect students to undertake an in-depth investigation into theories of incident causation. These theories tend to be based on specific situations or workplace processes and can be complicated for individuals without additional education and training. Students should simply recognize that there are several theories that attempt to account for workplace incidents.

Teachers should emphasize that incident causation theories support the interaction of various factors that lead to incidents and near-misses. As well, there is very rarely one cause attributed to incidents. Many are the result of a series of events that lead to the incident or near-miss.

Sample Performance Indicator

Create an incident or near-miss scenario showing how all four aspects of PEME could have been the cause.

Module 4: Incident Investigation

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Refer to SCO 27.0 and the research that was conducted by students in finding examples of incidents, near-misses or occupational disease. Review the basic causation of each one and bring them back to SCO 22.0 and the discussion of PEME. Students identified the causes of workplace hazards as either people, equipment, materials or equipment related. Follow with a general discussion on how these hazards can contribute to incidents or near-misses.
- Use one of the scenarios as an example to identify the factors of PEME that created the hazard that contributed to the incident or near-miss.

Connection

Students may

- In small groups or mock OH&S committees identify the people, equipment, materials and environmental factors that caused each incident or near-miss and the reasons why these factors caused the incidents or near-misses. Rotate through each group or mock OH&S committee to educate others on the findings from their group. Once this is completed, each group will present the results of another group for discussion. Note any similarities and differences between the groups.

Consolidation

Students may

- Access Incident Alerts to review the various types of incidents that have been reported to WorkplaceNL. From the information, they can determine the direct cause of the incidents and near-misses and which factor(s) of PEME were involved.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 98-99

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - WorkplaceNL steps in and Accident/Incident Investigation
 - Sample forms to use in an Accident/Incident Investigation, including a form for the employee

Module 4: Incident Investigation

Outcomes

Students will be expected to

- 30.0 describe the steps involved in conducting incident investigations
- 30.1 describe one method that individuals can use to help them find the root cause of accidents

Focus for Learning

The incident investigation process is very detailed and may require expertise and training in incident investigation techniques. It is unlikely that students will identify the true root cause of the incidents. The purpose is to take them through the six steps so they can experience the process and the many different details that are involved in investigating incidents with the aim of preventing reoccurrence. The six steps include:

1. Immediately respond to the incident
2. Gather information
3. Analyze the information to determine the root cause
4. Make recommendations
5. Write the incident investigation report
6. Follow-up

Just as there are many theories of incident causation, there are many theories of root cause analysis. To further clarify step 3, you may use the '5 whys' for this activity. When looking for the root cause of an incident you may ask the question 'Why?' five times. Sometimes the root cause can be found with less than five questions, or maybe more than 5 questions. For example, a young worker is injured with a knife when chopping onions. The direct cause of this incident is the chopping with the knife. The root cause(s) may be identified by asking the following questions:

1. Why did the worker cut himself? The knife was dull.
2. Why was the knife dull? The worker did not sharpen the knife.
3. Why did he not sharpen the knife? The knife sharpener was missing.
4. Why was the knife sharpener missing? Another worker on the previous shift did not put it back in its usual place.
5. Why didn't the other worker put it back to its usual place? A policy and procedure on tools and equipment storage does not exist and they are left haphazardly around the kitchen.

Sample Performance Indicator

During a mock incident investigation, apply the steps to conducting incident investigations and use the '5 whys' technique to help identify root causes.

Module 4: Incident Investigation

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Continue to work with the incident and near-miss scenarios from outcome 27.0 to explore the six steps of conducting an incident investigation. After reviewing the six steps, spend some time on step 3, analyzing the information gathered to determine the root cause.
- Show one or more of the Worksafe BC incident investigation scenarios to help students understand that incident investigations, when conducted properly, are intense activities that aim to find the root cause(s) of incidents and near-misses. Review the root causes of the incidents and near-misses with students to help them understand the process. Use the '5 why' technique to get the students thinking beyond direct causes of near-misses and incidents.

Connection

Students may

- Assemble as small groups or OH&S committees to apply the six steps of incident investigations to one of the incidents or near-misses from SCO 27.0. Write a paper, create a poster or video on the direct and root causes of the incidents by applying the '5 why' technique. Identify the aspect(s) of PEME that caused the incident or near-misses.

Consolidation

Students may

- In small groups or mock OH&S committees, determine what could have been done by the employer and workers to prevent an incident from happening again. Focus specifically on the elimination or reduction of health and safety hazards in the workplace by using the PEME model.

Extension

Students may

- Work independently to find results of another incident investigation and identify how the six steps of incident investigations were applied.
- Write a statement in their journals explaining what happens if you fail to identify and correct the root causes of incidents.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 101-107

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix B-19: Incident Investigation and Answer Key
 - Appendix B-20: Incident Investigations and Answer Key

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - WorkplaceNL, Guideline to Accident/Incident Investigation
 - CCOHS - Accident/Incident Investigation
 - Safety Calculator
 - Safework Manitoba – conducting an Incident Investigation

Module 5: Emergency Preparedness and Response

Outcomes

Students will be expected to

31.0 discuss the employer's responsibility regarding emergencies in the workplace

Focus for Learning

Employers have a legal and moral responsibility to keep their worker's safe in the event of an emergency. The employer's legal responsibility is located throughout NL OH&S legislation. A review of this legislation illustrates the employer's responsibility to assess, prevent and respond to emergencies. Due diligence can be demonstrated with an emergency preparedness and response (EPR) program specific to workplace hazards and potential emergencies. This program outlines the procedures to follow in the event of an emergency, in addition to education and training requirements for rescue and evacuation.

An important section of the OH&S regulations is section 38, emergency plan risk assessment. This gives employers the responsibility to conduct an assessment in the workplace in which a need to rescue or evacuate workers may arise. If rescue or evacuation is deemed an issue, then written procedures are developed and a worker assigned to implement. This assessment can be compared to hazard and risk assessments covered in Module 2, Hazard Recognition, Evaluation and Control. However, the difference being the primary focus is on what happens if controls fail and an emergency happens.

Sample Performance Indicator

Research your school-based and district-based emergency preparedness and response plans and report back to the class.

Module 5: Emergency Preparedness and Response

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Ask students, in a large group discussion, to quickly define an emergency. Remind them that schools and school districts have developed programs that are in response to identified hazards and risks of schools.
- Ask students to find the legislative references to emergencies in the *OH&S Act* and Regulations. Remind them that administrators and school boards have similar responsibilities under fire protection legislation.
- The YouTube video “Expect the Unexpected” from Worksafe BC could be used to introduce students to emergency preparedness and response.

Connection

Students may

- Create a chart or summary of legislative references to emergencies with details and the employer’s responsibilities in assessing, preventing and responding to emergencies.
- Compare the roles and responsibilities of employers in emergency preparedness and response in relation to the responsibilities of school administrator and school boards in emergency preparedness and response.
- Explain why procedures and programs are better understood by all workplace parties when written by the employer.

Consolidation

Students may

- Describe the process for conducting an emergency plan risk assessment as required in section 38, NL OH&S Regulations. Compare this to how school administration and school districts conduct risk assessments to keep students and staff safe.

Extension

Students may

- Using section 38 of the NL OH&S regulations, independently or in small groups, research the emergency response options that are available to employers for workers who participate in the identified work activities.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 112; 127-128

OH&S Act

- section 36.1

OH&S regulations

- sections 12, 15, 18, 22-24, 38 - 42, 63, 82, 84, 86, 100, 135, 251, 308, 388, 415, 433-448, 458, 459, 468, 481, 484, 505, 506, 513, 515, 516

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - Emergency Preparedness and Response Handbook
 - You tube video - Expect the Unexpected: Emergency Preparedness 1
 - You tube video - Expect the Unexpected: Emergency Preparedness 2

Module 5: Emergency Preparedness and Response

Outcomes

Students will be expected to

32.0 describe several types of emergencies caused by hazards in the workplace and by external sources

Focus for Learning

The exploration of several types of internal and external workplace emergencies may help students look at their workplaces, homes and schools through a different lens. Some workplace emergencies, such as fire and medical emergencies, are generic and can be applied to all workplaces. However, some emergencies, such as bomb threats or hazardous material spills are specific to the workplace due to work activities and processes. Workplace emergencies will vary from workplace to workplace depending on the hazards identified in hazard REC activities and the emergency plan risk assessment.

Students may have been involved or know someone who has been involved in an emergency. This experience can be personalized and used as a valuable teaching tool to help them understand and connect the concepts. Class discussions may focus on students' stories of personal emergencies; what happened and what could be done to prevent it from happening again. Discussions may also centre around how those emergencies were specific to the hazards of that workplace, community or situation. If these hazards had been recognized and controlled, the emergency may not have happened.

Students may also have had some experience with community emergencies, such as DarkNL, Hurricane Igor, and the Badger Flood. Make the connection between these emergencies and how they could have affected workplaces and schools.

Sample Performance Indicator

Create an infographic that describes workplace emergencies common to specific industries (e.g., service, manufacturing, construction, landscaping)

Module 5: Emergency Preparedness and Response

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Ask the students to reflect on the emergencies they shared.
 - Did they feel the people involved knew their roles and were confident in their ability to overcome the emergency? Was there a panic response?
 - Connect their responses directly to the need for a written plan, as discussed in SCO 31.

Students may

- Share personal experiences in emergencies both inside and outside the workplace with the class as a large group discussion.

Connection

Students may

- Work together in small groups or mock OH&S committees to identify different types of emergencies that can occur both inside and outside workplaces and are applicable to NL.

Consolidation

Students may

- Research an actual local or regional emergency response (e.g., the 2003 Badger flood, Cougar Helicopter Crash, Hurricane Igor, Dark NL, Ocean Ranger disaster or the H1N1 pandemic) and provide a student product that focuses on:
 - what the emergency was about
 - who were the responding agencies
 - what injuries or fatalities occurred
 - how long the emergency lasted
 - was the response effective and satisfactory
 - how it affected workplaces in the area and/or province
 - what employers could have done to prevent the emergency from happening or reducing the impact to workers.

Extension

Students may

- Work in small groups or mock OH&S committees to prepare a brochure or poster either for their school, home, or community on how to prevent an emergency and how to appropriately respond. This could be based on the Safe and Caring Schools Policy, lock-down or fire drills.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 112-121

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - Ready.Kit.Go! brochure and materials available from Emergency Services NL
 - “Your Emergency Preparedness Guide” and associated information provided by the Government of Canada

Module 5: Emergency Preparedness and Response

Outcomes

Students will be expected to

33.0 discuss the key elements of emergency preparedness

Focus for Learning

Hazard REC activities identify and control hazards before they become emergencies. SCO 31 reviewed the process that is followed when conducting an emergency plan risk assessment. This assessment provides employers with the information they need to prepare for the safe evacuation or rescue of workers in the event of an emergency. The creation of the emergency preparedness planning teams should be the next step after the assessment has been conducted. This team develops the emergency response plan. Preparation activities allow employers to look at available internal and external resources and develop roles and responsibilities and around these resources for responding to emergencies. In addition, education and training in emergency response procedures are identified and delivered to workers.

Being prepared also means looking outside the internal activities and processes of the workplace to activities outside the building and environment. For example, workplaces that are located near airports, manufacturing/industrial facilities where hazardous and/or explosive products are housed, or near rivers or bodies of water where flooding has occurred must prepare for the negative impact of these events.

Associated policies and procedures in fire drills; lock-down and secure school procedures may be used to show how schools and districts have prepared for identified risks and emergencies. These evacuation procedures are prepared by a team of individuals who have a background in policy and procedure development, and emergency planning.

Teachers may also direct students to emergency preparedness resources such as the Get Prepared site of the Government of Canada. This website provides valuable information to Canadians on how to prepare for emergencies.

Sample Performance Indicator

Prepare a 72 hour emergency preparedness kit for home/school/work use. Document your preparation as a step by step instructional guide.

Module 5: Emergency Preparedness and Response

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Invite an emergency responder to discuss emergency preparedness and response planning.

Students may

- Brainstorm emergencies that could potentially occur in their local area, school or workplace. These may be hazardous spills, fires, floods, medical emergencies, violence in the workplace, suspicious packages, bomb threats, etc.

Connection

Students may

- Assemble as small groups or mock OH&S committees to list ways that organizations and workplace parties may be prepared to deal with one emergency listed in activation.
- As mock OH&S committees or small groups, provide an analysis of the school's preparation in dealing with emergencies by reviewing the emergency preparedness and response plan (e.g., fire, lock-down or secure school procedures).

Consolidation

Students may

- Provide feedback to the school OH&S committee on the emergency preparedness and response plan.
- Design an infographic with recommendations on how to prevent or prepare for one of the above emergencies and post to the school website.

Extension

Students may

- Conduct an interview with an emergency responder where he/she identifies ways that employers and workplace parties can prepare for emergencies. Report your findings to the class.
- Create a home evacuation plan.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 122-126

OH&S Regulations

- section 38

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - Government of Canada - Get Prepared site
 - Emergency Response: Worst Case scenario
 - Preparing for Traumatic Events
 - CCOHS.ca: Emergency Management Checklist
 - Eastern School District: Secure School/School Lockdown Policy
 - Nova Central School District: Emergency Response Plan – Checklist

Module 5: Emergency Preparedness and Response

Outcomes

Students will be expected to

- 34.0 explain the main components of an emergency response plan including:
- roles and responsibilities of the employer, supervisors, emergency response teams and workers
 - education and training
 - communication protocols

Focus for Learning

The response to an emergency is only as good as the preparation for an emergency - failing to plan is planning to fail. The emergency response plan (ERP) is the result of the activities of the emergency preparedness planning team. The key to an effective response is to clearly outline the actions and strategies of the organization. ERP plans can be very complicated depending on identified hazards and risks.

ERPs should be evaluated on a regular basis and continuous improvement efforts made when deficiencies have been found. Mock drills and table-top planning exercises with the emergency response team and workplace parties is critical to the overall success. Fire drills, mock lock-down in schools can be used to show students why it is important to practice on a regular basis. Drills will give you the opportunity to practice his/her roles and responsibilities; communication methods and determine if education and training is sufficient and if more needs to be conducted. In some cases, outside agencies may need to be included in drills depending on risk and response capability.

Students may also have been part of a community mock disaster drill. A number of municipalities in the province have participated in mock disasters. First-hand experiences may be shared with the class or research may be conducted to determine the effectiveness of the drills and any lessons learned.

Sample Performance Indicator

Plan a mock disaster response for the school as part of a full class project.

Module 5: Emergency Preparedness and Response

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Show the Emergency Response Video Training to review steps taken for emergency response by a college. This video summarizes the activation of an emergency response plan in clear and simple language.

Connection

Students may

- In small groups or mock OH&S committees, identify potential emergency response procedures for one emergency listed in activation of SCO 33.
- Play a game of “what would you do if.....”, using common emergencies within the school as the focus scenarios for the question.
- Evaluate the school’s fire, lock-down or secure school procedures.

Consolidation

Teachers may

- Show the YouTube video, “Emergency Preparedness and Response” to demonstrate the relationship between preparedness and response.

Students may

- Plan a mock drill for the school using the school’s emergency preparedness and response plan.
- Plan a mock drill for the school or community with emergency responders.

Extension

Students may

- Assemble in small groups to research one or two aspects of ER planning and present in an ‘EP&R Fair’. Students will rotate through the groups, ask questions and learn about each groups activities.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 122-128

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - Emergency Response Video Training
 - Be prepared - 72 hours
 - Preparation for fire drills
 - Emergency Response Plan for a Small Business
 - Table-top exercises - guides and samples

Module 5: Emergency Preparedness and Response

Outcomes

Students will be expected to

35.0 explain the purpose of personal protective equipment (PPE)

Focus for Learning

Students are expected to understand that, in any OH&S program, priority should be given to the elimination and control of hazards at their source, or along the path between the source and the worker. When this is not possible, workers are required to select and use PPE as per Part VII, sections 70-86 of the OH&S regulations. Workers must be provided with adequate PPE when engineering and administrative controls cannot reduce the risk to an acceptable level.

Knowing the purpose of PPE and how to properly use it is critical for students. Many employers in the province look at PPE as being the first line of defence when, in reality, it is the least preferred method of control. PPE does not remove the hazard from the workplace, it just provides a barrier between the workers and the hazard.

Students may return to the discussion of water on the floor in Module 2 to demonstrate the function of PPE. The hazard is the water on the floor and the risk is whether or not a person will slip and fall. The hazard will be completely removed if the water is cleaned up. Putting a WET FLOOR sign puts a barrier between the person and the water and reduces the risk. Wearing slip-resistant and proper fitting footwear further reduces the risk but still keeps the hazard in the workplace.

Students may also have knowledge of protective equipment that is used during sports and outdoor activities (helmets, elbow and shin guards, etc.). What they already know about protective equipment can be transferred to the application of PPE. Students may be invited to discuss the purpose of wearing protective equipment during sports and then to make the connection between PPE and work activities.

Sample Performance Indicator

Create a brochure for other students explaining the purpose of personal protective equipment (PPE) and the role of the employers, supervisors and workers in its selection and usage.

Module 5: Emergency Preparedness and Response

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Begin the study of PPE by brainstorming with students several examples of protective equipment that are used in sports and recreational activities. Ask them what the purpose of each piece of protective gear is, what it protects and how it protects.
- Bring students back to the hierarchy of controls and remind them of the control of hazards at the source, along the path or on the person. What would the protective gear fall under?

Students may

- List the various pieces of protective gear that is required for various recreation and sports activities as a way for teachers to move into a discussion on why PPE is specific workplace hazards.

Connection

Students may

- Use the “what’s wrong with the picture” scenarios to determine the most appropriate PPE for work activities based on identified hazards.
- Find the legislative requirements for PPE to connect this outcome with past learning of the *OH&S Act* and Regulations.

Consolidation

Students may

- Identify and present on a specific PPE that is associated with a career that interests them include the purpose of the PPE (e.g., PPE worn by firefighters, police officers, construction workers, lab technologists). NOTE: This can be carried over into an activity with SCO 36.0.

Extension

Students may

- Educate family members or friends on the purpose of the PPE they use for work.

Resources and Notes

Authorized

Building a Safer Tomorrow

- p. 132

OH&S Act

- sections Section 5 (a) (e), 5.2 (c), 7, 8 (b), 11, 26, 29, 30,31, 46, and 65

OH&S regulations

- Part IIV, sections 70-86; 14 (2), 35, 36 (6), 44 (3) (b) (5), 46 (6) (a) (7), 51 (1) (d) (2), 52 (6), 64, 68 (1) (b) (6), 69 (14), 106 (7) (e) (8) (c), 122, 126, 464, 466, 468 (1) (a), 484 (2) (b), 512 (13) (a) and 513
- Fall protection: Part X, section 138-146; 29, 30, 38; 155, 197, 207, 217, 242, 243, 246, 247, 266, 409, 410

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix D-9: Required PPE

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - WorkSafe BC list of PPE by Industry
 - Online searchable OH&S Act
 - Online searchable OH&S Regulations
 - OH&S Explanation Guide: PPE

Module 6: Personal Protective Equipment

Outcomes

Students will be expected to

36.0 outline the main elements of a personal protective equipment (PPE) program

Focus for Learning

The PPE program is just another part of the overall OH&S program that considers and addresses all hazards encountered in a particular workplace. It is not considered a separate component of the OH&S program, but is built into the program. Remind students that this is another example of how hazard REC activities identify specific hazards for each workplace and written policies and procedures are established for that workplace.

The success of a PPE program depends on the commitment and collaboration between the employer and workers. Roles and responsibilities must be developed and training must be conducted with all workers in how to properly use the PPE. Section 72 of the OH&S regulations clearly outlines the employer's responsibility in the adequate instruction of workers in using PPE.

During a class discussion emphasize the need and requirement for PPE education and training programs that include:

- the reasons why the PPE was chosen according to the hazard assessment
- the goals of the PPE program
- how to properly fit the equipment
- how to conduct a pre-use inspection
- how to properly wear the equipment
- how to adjust it for full protection
- limitations and capabilities of PPE
- proper care of PPE
- proper disposal of damaged PPE

Students should ask their supervisor and employer for this training if they have not received it as part of the right to know.

Sample Performance Indicator

Write a letter to your employer and/or OH&S committee, worker H&S representative or workplace H&S designate explaining what a PPE education and training program may look like and why it is critical that all workers be trained in PPE use.

Module 6: Personal Protective Equipment

Sample Teaching and Assessment Strategies

Activation

Students may

- In small groups, brainstorm what they believe are the main elements of a personal protective equipment (PPE) program. This discussion may also include what they believe is to be included in a PPE training program.

Connection

Students may

- Assemble as small groups or mock OH&S committees to begin the development of a PPE program for the identified PPE in SCO 35.0:
 - write a PPE policy
 - list any applicable CSA standards listed in NL OH&S legislation
 - determine the tools that are used to survey the workplace for health and hazards
 - determine any engineering and administrative controls that may be used by employers
 - analyze the selected PPE according to classes, types and categories.
- Share group findings with the class.

Consolidation

Students may

- Create a poster or collage of required PPE for Skilled Trades, Home Economic and Science labs and post outside these classrooms.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 133-134

OH&S Regulations

- section 72

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - CCOHS - designing an effective PPE program
 - Creative PPE Training
 - Sample PPE Program

Module 6: Personal Protective Equipment

Outcomes

Students will be expected to

37.0 review the selection, maintenance, storage and pre-use inspections of the following PPE:

- head protection
- eye and face protection
- hearing protection
- personal fall arrest systems
- respiratory protection
- hand protection
- protective footwear
- limb and body protection

Focus for Learning

This outcome expects students to focus specifically on PPE that protects various parts of the body. Students should acquire an understanding of what protection is provided, how the equipment is stored and worn and the requirements for pre-use and regular inspections.

As students examine several types of PPE, the importance of the Canadian Standards Association (CSA) standards needs to be highlighted as it is referenced throughout Part VII of the regulations. Legislation requires PPE to meet CSA standards.

PPE must be worn according to OH&S legislation and manufacturer specifications in order to provide maximum protection (e.g., hard hats should not be worn backwards or without headgear suspension). Fit-testing is critical in order to get required protection and it should be done before workers use any type of PPE. In addition, the PPE must not in itself create hazards to workers.

Pre-use inspections are critical to identify damaged or malfunctioning parts and components of PPE before it is used by workers. Students should be reminded that manufacturer specifications provide valuable information on proper use, care and storage and should be kept on-site. They must also know that if PPE is not performing as it should be, it must be removed from the workplace and properly discarded.

In a classroom discussion emphasize the following:

- The effectiveness of PPE cannot be certain without proper maintenance, inspection, care, cleaning, repair, and storage.
- Using poorly maintained or broken PPE could be more hazardous to workers than not using any form of protection at all. The workers gain a false sense of security and think they are protected when, in reality, they are not.
- Choosing to use PPE that is not CSA approved is a direct contravention of the *OH&S Act*.

Sample Performance Indicator

Create an infographic explaining the criteria for selecting, maintaining, storing and the pre-use inspection of a teacher-selected PPE.

Module 6: Personal Protective Equipment

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Bring examples of PPE into class for students to examine.

Connection

Students may

- Choose the PPE from one of the scenarios in SCO 35.0 and compile the following information:
 - proper fitting of PPE - right and wrong way of correct usage
 - education and training
 - storage and maintenance procedures
 - pre-inspection and regular inspection procedures
 - the importance of evaluation of the effectiveness of the program

Consolidation

Students may

- Design a brochure that outlines the proper care for a one type PPE
- Create a 'what not to wear' scenario where students identify the right and wrong ways to wear PPE.
- Bring in some PPE from home and engage in an inspection of the PPE to determine safe usage.
- Create a scenario involving PPE outlining what the end-user is to do to ensure safe usage, maintenance and inspection.

Extension

Students may

- Engage in role play in the form of charades or pictionary whereby they act out or draw the use or need of a specific PPE and those watching have to identify the PPE in question. (Teachers could make draw cards that identify the scenario for those acting much like a game of charades. This could also be done in teams and points awarded for the correct answers.)

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 134-150

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix D-10: PPE - Use, Care and Storage

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - Part VII of the Occupational Health and Safety Regulations (2012)
 - CSA standards referenced in the NL OH&S legislation
 - Safe Manitoba provides Standards Information Sheets,
 - CCOHS.ca has a helpful section on protective headwear
 - NL OH&S Explanation Guide

Module 6: Personal Protective Equipment

Outcomes

Students will be expected to

38.0 select PPE for various workplace health and safety hazards

Focus for Learning

The focus of this outcome is to provide the students with further opportunities to explore workplace health and safety hazards in relation to the selection of required PPE. Students will be given the opportunity to investigate PPE that is associated with a job or career that interests them. This outcome may be completed as a cross-curricular activity in Career Development as part of the in-depth career research assignment.

Students who are working and use PPE as part of their jobs may be a valuable resource for teachers to use in the delivery of this outcome. Their practical knowledge and experience may be used to help reinforce the need to select PPE based on workplace health and safety hazards. A student who works in a restaurant, for example, will have different PPE needs than another who works in landscaping. These experiences in why and how PPE was selected for the job can help other students understand considerations that are made when choosing what to use.

PPE comes with limitations and capabilities that must be considered when selecting the right PPE for a job. The selection of gloves is a good example to use when discussing PPE selection. A simple search of the Internet will show students the many different types of gloves available for hazard-specific work activities, very few with multi-purpose capabilities.

Sample Performance Indicator

One career in which a person will likely use almost every type of PPE mentioned in this chapter is the firefighter. Pick one type or category of PPE that makes up part of a firefighter's equipment set. Research its use, care, advantages, disadvantages, cost, and training requirements.

Module 6: Personal Protective Equipment

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Provide students with a list of hazard-specific work activities that require specialized PPE and/or programs. These may include, but not limited to:
 - asbestos abatement
 - body-work mechanic
 - diver
 - fish harvester
 - fish plant worker
 - forestry worker
 - high-angle rescue
 - infection control specialist
 - marine biologist
 - mine rescue specialist
 - powerline worker
 - wildlife officer

Connection

Student may

- In small groups or mock OH&S committees, answer the following questions in relation to one of the above work activities:
 - applicable legislation and CSA standards
 - health and safety hazards
 - potential engineering and administrative controls that are reasonable and practical
 - reasons for selection of type, class or category
 - education and training needs
 - maintenance and storage requirements
 - pre-use inspection checklist

Consolidation

Students may

- Display their completed products in the classroom, throughout the school, as part of a job fair or career day, in family members' workplaces where work activities are applicable, etc.
- Design and present a product on a PPE program for workers who are treating patients in a pandemic (e.g., Ebola). Each group may undertake an Internet search for examples and explanations about protection provided, proper use, and acceptable standards of quality.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 134-150

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-2.html>
 - CSA standards referenced in the NL OH&S legislation may be viewed by registering with CSA
 - Safe Manitoba Standards Information Sheets
 - CCOHS.ca has a helpful section on protective headwear
 - NL OH&S Explanation Guide

Section Three: Specific Curriculum Outcomes

Unit 3: Occupational Health

Unit 3: Occupational Health

Focus

The overall intent of this module is to promote a positive health and safety culture among students. The focus on the proper recognition and control of health hazards, mental health issues in the workplace, understanding the importance of ergonomics, health and safety where workers carry out their duties alone or in isolation, and the benefits of training in First Aid are all intended to build a positive mindset among students about health and safety.

In addition to potential safety hazards in workplaces, there is always potential for other health hazards. Without a means to recognize health hazards, it becomes difficult for workers to avoid unnecessary risks. The focus of this unit is health hazard recognition to provide students with knowledge and skills to recognize health risks and respond appropriately to health hazards. All of these factors have some relevance to students' own experiences and, as such, can help students deal with these issues and present an opportunity for quality discussion and reflection.

Suggested Unit Plan

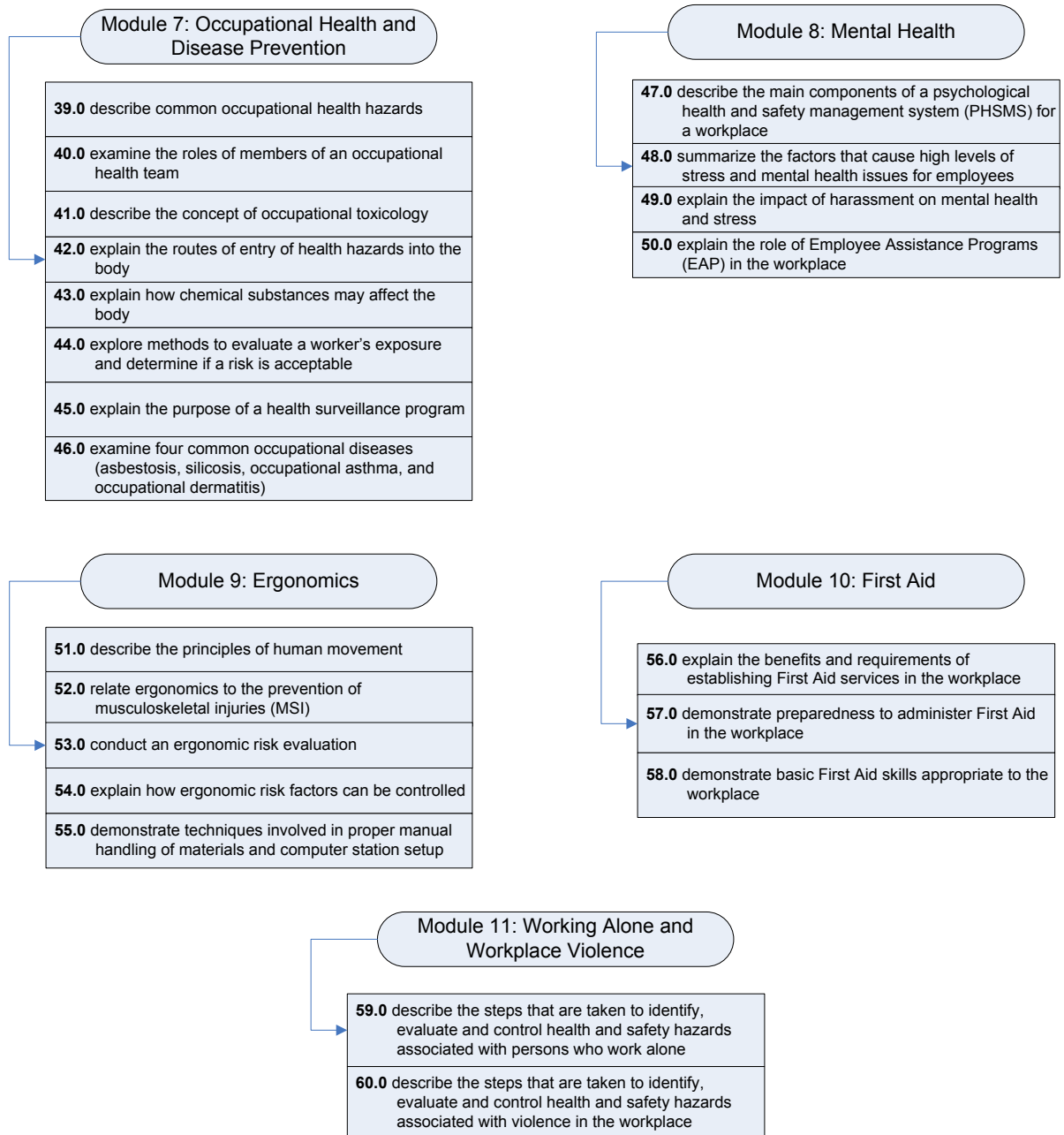
Unit 3 consists of 5 modules. A breakdown of the suggested hours of instruction are found below

Module Name	# of classes
Occupational Health and Disease Prevention	22
Mental Health	5
Ergonomics	4
First Aid	5*
Working Alone and Workplace Violence	5

First Aid is intended to be taught by a certified instructor over a continuous 1-day period.

The recommended instructional time for this unit is 41 hours.

Outcomes Framework



Module 7: Occupational Health and Disease Prevention

Outcomes

Students will be expected to

39.0 describe common occupational health hazards

Focus for Learning

This module explores common sources, causes and controls for occupational health hazards as well as some common occupational diseases associated with health hazards. Throughout the module it is important to emphasize the employer's responsibility in the recognition, evaluation and control of occupational health hazards through legislation. There are various sections in OH&S legislation that outline the employer's responsibility for risk assessment and plans for the control of biological, chemical, ergonomic and physical hazards.

Students were introduced to health hazards - physical, chemical, ergonomic and biological in Module 2, Hazard Recognition, Evaluation and Control. They should be able to identify some health hazards in the workplace. All industries have health hazards. They are usually associated with equipment, materials, chemicals, substances and/or living organisms that are present in the workplace. They can manifest themselves in a variety of ways such as

- fumes
- vapours
- radiation
- noise
- particulates

Overexposure to these hazards may lead to the development of occupational disease or conditions.

It is important to note that health hazards are the least obvious of workplace hazards and therefore can be more difficult for workers to identify. A missing safeguard is easily seen by workers, whereas vapours from chemicals are not. Workers are responsible to report to their supervisor for further investigation when they think a potential health hazard exists. In most cases, the control of health hazards requires expertise from various OH&S professionals. This is known as an occupational health team and will be discussed in the following outcome.

Sample Performance Indicator

Create a chart or collage outlining the types and sources of occupational health hazards associated with common industries in this province.

Module 7: Occupational Health and Disease Prevention

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Initiate the discussion by showing the “Clean, Cover and Contain” poster from local health authorities in the province. This is an example of a biological hazard in the workplace and the plan to control the spread of influenza and other illnesses. Review the remaining health hazards as a large group discussion using pictures and graphics.
- Divide the class into groups and assign one of the health hazards to each group.

Students may

- Assemble in small groups or mock OH&S committees to create “Health Hazard Displays” to post around the classroom or throughout the school. Health and safety hazards should be identified accordingly.

Connection

Students may

- In pairs, choose a common occupation in which youth are employed and record the following information as a display to post throughout the school or on the school web page:
 - source and description of hazards
 - associated occupational diseases
 - controls

Consolidation

Students may

- Identify the source and type of health hazard as portrayed in supplied pictures or case studies.
- In assigned groups, record the following information for the assigned health hazard:
 - source and description of hazards
 - associated occupational diseases
 - controls

Extension

Students may

- Using the “Clean, Cover and Contain” poster, create a similar campaign for one other occupational health hazard.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 158 - 159

OH&S Regulations

- sections 2 (l) (n), 9, 10, 12 (1) (g) (iv) (h), 41 (5), 42, 43 (7), 44, 45, 46 (18) (b), 47, 48, 49, 50-55, 57, 59, 62, 68 (3) (d), 69, 85, 283, 398, 413, 443, 511 and 512

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix C-10: Common Occupational Health Hazards
 - Appendix D-11: Guidelines for Learning Activities - SCO 39 - 45

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - Clean, cover, contain
 - Infrastructure Safety and Health Association, Occupational hazards by industry
 - Handbook for Health Care Workers

Module 7: Occupational Health and Disease Prevention

Outcomes

Students will be expected to

40.0 examine the roles of members of an occupational health team

Focus for Learning

In SCO 39.0, the concept of an occupational health team was introduced. As in all hazard REC activities, some responsibility for the identification, evaluation and control of the hazard rests with the worker. The complexity of occupational health hazards, however, may require more expertise. This is the role of the occupational health team - formal identification, evaluation and control. Every situation is different, and an occupational health team may be comprised of different professionals based on the specific.

Depending upon the situation such a team could consist of:

- industrial hygienists
- occupational physicians
- occupational health nurses
- ergonomists
- OH&S professionals

Industrial hygienists investigate the hazard, physicians examine the worker, nurses offer on-site medical support, ergonomists look at machinery and processes, while the OH&S professional helps develop and implement the controls. The goal is to work together to achieve the desired outcome of preventing illnesses and occupational diseases, using the knowledge and expertise of all parties. The concept of working as a team can be translated from sports - each team member has a role and position to play with the goal of winning the game.

Teachers may emphasize the fact that the principles that are followed by the occupational health team are essentially the same as the steps that are taken in hazard REC activities. In this instance, however the individuals following the process are specifically trained to deal with the hazards.

Sample Performance Indicator

Assume a role as a member of an occupational health team in a mock investigation of a health hazard where your group members assume roles of various team members.

Module 7: Occupational Health and Disease Prevention

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Refer to SCO 18.0 and review the different careers that are associated with occupational health and safety. Refer to the Hearing Conservation chapter of the textbook to explain how the team works together to resolve a noise issue in the workplace.
- Discuss the term “multidisciplinary” so that students gain an understanding that an effective occupational health team has expertise across many areas of health and wellness.

Connection

Teachers may

- Arrange students in small groups and assign each a specific member of an occupational health team (industrial hygienist, occupational physician, occupational nurse, occupational health and safety professional and other occupational health and safety professionals if applicable – ergonomists, toxicologists, epidemiologists, industrial/organizational psychologists) to identify the roles that each plays in one of the following health hazards:
 - chemical exposures such as carbon monoxide, silica or benzene
 - biological exposures such as hepatitis C or rabies
 - physical hazards such as radiation

Consolidation

Students may

- Work together in assigned health hazard groups to create a chart that shows how each individual team member works together to investigate and solve problems.

Extension

Students may

- Conduct research to determine professional occupational health services available in Newfoundland and Labrador and interview a member of an OH&S team to determine the job duties and responsibilities of their positions.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 178 - 179

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - Occupational Health and Safety Practitioner description
 - Masters of Science in Occupational & Environmental Hygiene
 - Investigation of the training and certification members of an occupational health team must have
 - The right thing to do
 - What is Industrial Hygiene? video

Module 7: Occupational Health and Disease Prevention

Outcomes

Students will be expected to
41.0 describe the concept of occupational toxicology

Focus for Learning

There are many agents in our environment and workplace that can negatively affect the health of a person. Toxicity is the measure of those negative effects.

Occupational toxicology deals with biological and chemical agents that are used by workers during the course of employment. The major emphasis is to identify the substances, the diseases they may cause, the conditions under which they may be used safely, and the ways to prevent harmful exposure.

Emphasize that a substance may become toxic depending on three factors - the route of exposure, duration of exposure and the dose of the substance. These three areas are further examined throughout the module.

We were introduced to occupational toxicologists in SCO 40.0 as members of the occupational health team. They are scientists trained to investigate, interpret, and communicate the nature of the unwanted health effects of chemical, physical or biological agents. Essentially, they provide the required information of safe exposure and what can be done in the workplace to reduce risk to workers.

Module 12, WHMIS, will provide students with an opportunity to further investigate this concept.

Module 7: Occupational Health and Disease Prevention

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Begin by asking students what is meant by the word toxic and what makes something toxic. Where would they find the properties of toxic chemicals and safe handling? (NOTE: students may or may not have completed the WHMIS module.) What does adverse effects mean? What does non-toxic mean? What makes a product non-toxic? Is there such thing as non-toxic?

Students may

- Identify which common workplace products are considered toxic or non-toxic when shown pictures by the teacher and provide reasons for the decision.

Connection

Teachers may

- Assemble students into small groups to list several toxic chemical or physical agents that can be found in and around the school. Some examples include drain cleaners, oven cleaners, detergents, paints, cleaning agents, pesticides, Art supplies, Lubricants, toner,(cafeteria food.)

Students may

- Identify the adverse effects associated with overexposure to each of the products and present as a student product.

Consolidation

Teachers may

- Organize students into small groups or mock OH&S committees. Starting with identification of toxic hazards, develop a project that will continue until SCO 45.0. Proceed from identification of toxins, to identification of routes of entry, to health effects and controls.

Students may

- As OH&S committees or small groups, select one of the following occupations to identify potential toxic hazards.
 - plumber
 - cabinet maker
 - nurse
 - hair stylist
 - fire fighter
 - tree planter

Resources and Notes

Authorized

Building a Safer Tomorrow

- p. 161

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix D-11: Guidelines for Learning Activities - SCO 39 - 45

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - Youtube - investigating and controlling levels of toxicity in workplaces
 - Toxic and Non-toxic
 - WHMIS Definitions
 - Biological hazards
 - Chemical hazards
 - Toxic Substances in schools
 - NIOSH Pocket Guide to Chemical Hazards

Module 7: Occupational Health and Disease Prevention

Outcomes

Students will be expected to

42.0 explain the routes of entry of health hazards into the body

Focus for Learning

Routes of entry are the ways in which possibly toxic substances enter the body. Inhalation, absorption, ingestion or injection are the four routes we will be focusing on. Many students would have prior knowledge of these concepts using different terminology. Familiarize them with the proper terms by making connections to their own understandings.

Knowing how a substance gets into the body is critical from a prevention and control perspective. Without an identification of the route for a specific toxin, proper controls cannot be put into place, wearing puncture resistant gloves or clothing can be used as a preventative measure for injection and may also help prevent absorption, but will not be effective against inhalation or ingestion.

In addition to primary routes, students should become aware of secondary routes of entry. Measures have to be taken to control other ways that toxic substances get into the body. Smoking cigarettes is an example. The main route of entry for tobacco smoke is through inhalation; however, tobacco can also be ingested while eating or drinking as well as absorbed through the skin.

Sample Performance Indicator

Create a brochure or collage of a toxic substance by outlining the characteristics of the substance and adverse health effects. Include in the brochure an explanation of primary and secondary (if applicable) routes of entry of the toxic substance.

Module 7: Occupational Health and Disease Prevention

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Refer students to the list of possible toxic products and substances from the school environment developed in SCO 41.0. Discuss the four ways that each product could enter the body. Which do they think is the most common? Which is the least? Can a toxic substance enter through the eyes?

Connection

Teachers may

- Assemble participants into small groups. Assign one of the routes of entry to each group to present in turn.

Students May

- Research the characteristic(s) and/or properties of toxic substances that increase/decrease absorption into the bloodstream and the process of entry into the body. During group rotation, each student will share their groups findings four times.

Consolidation

Teachers may

- Continue with the consolidation project started in SCO 41.0.

Students may

- As a mock OH&S committee or small group, choose a toxin from SCO 41.0 and begin the development of an OH&S campaign on the routes of entry of an identified toxic substance. This campaign may be a video or audio clip, poster, infographic, blog posting, etc.

Extension

Students may

- Develop safe work practices for the safe handling of an identified toxic substance.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 162 - 164

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix D-11: Guidelines for Learning Activities - SCO 39 - 45

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - CCOHS
 - Routes of entry
 - Health Canada
 - Chemical routes of entry

Module 7: Occupational Health and Disease Prevention

Outcomes

Students will be expected to

- 43.0 explain how chemical substances may affect the body
- 43.1 describe the dose/response curve
- 43.2 differentiate between acute and chronic exposure

Focus for Learning

Once the routes of entry have been identified, the next consideration is what affect these substances have on the body. The affects, and their severity, are directly related to the dose and duration of the exposure to the substance. Dose is the amount of the substance the body receives and duration is the length of time the person is exposed to a substance.

The reactions to the dose and duration of toxic substances vary between persons and are influenced by various factors. An example that may be used to explain this variation between individuals is caffeine. One person could drink 36 ounces of coffee during the morning and feel no effects of the caffeine, while another may feel jittery and unfocused after drinking only 12 ounces. This may be due to gender, age, medical conditions, weight, level of exposure to caffeine, etc. Energy drinks are currently popular with young adults and may be used as examples to help students understand dose/response and how it affects different people differently. Students could be prompted for their own examples.

Students may be familiar with the dose/response curve through science courses in biology and chemistry. The dose/response considers the amount of substance the body is exposed to and the effect of that exposure on the body. Toxicologists define two types of exposure that workers may experience-acute and chronic. An acute effect is a brief exposure to a substance, a one-time exposure that is high enough to cause negative health effects. These health effects are immediate; a cough, a rash, vomiting, bleeding, etc. Chronic exposure to toxic substances occurs over a longer period of time with symptoms not appearing immediately. These chronic exposures can lead to occupational disease, such as asbestoses, silicosis, occupational asthma and occupational dermatitis.

In most cases the greater the dose, the greater the response. Students should be able to recognize a dose/response curve and generally describe what it means.

Sample Performance Indicator

Design a cartoon, video or role-play to describe how energy drinks may affect the body by using a dose/response curve and showing the acute effects and chronic exposure.

Module 7: Occupational Health and Disease Prevention

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Use pictures of persons who use Crystal Methamphetamine on regular basis to show the effects of chemicals on the body over a long period of time. Do any of the individuals look worse than the others? Why would this be the case? What factors could influence the effects on the body?
- Use the example of crab asthma that have affected a number of small communities in the province. Crab asthma has affected workers in fish plants that process and cook crab for distribution.
- Engage students in a discussion of dose and response using the example of carbon monoxide and a dose response graph.
- Show the video “A second wind”.

Connection

Students may

- Create a chart of negative health affects with two columns. In column one list those health affects which may be classified as acute and in column two those that are chronic.

Consolidation

Teachers may

- Continue with the consolidation project started in SCO 41.0.

Students may

- Continue to work as OH&S committees or groups in previous consolidation activity to include the following in the OH&S campaign for one of the identified toxic substances
 - the health effects, both acute and chronic
 - factors that influence individuals susceptibility

Extension

Students may

- Research the type, cause and exposure of one of the following occupational diseases and present as a student product
 - popcorn lung
 - meatwrapper’s asthma
 - bisphenol A and thermal paper receipts

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 164 - 165

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix D-11: Guidelines for Learning Activities - SCO 39 - 45

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - www.mun.ca/secondwind/video
 - Crystal Meth User Pictures
 - Crab asthma
 - Dose response videos
 - Acute and chronic exposure

Module 7: Occupational Health and Disease Prevention

Outcomes

Students will be expected to

- 44.0 explore methods to evaluate a worker's exposure and determine if a risk is acceptable
- 44.1 discriminate between the four types of monitoring equipment
- 44.2 describe the three categories of controls for occupational health hazards

Focus for Learning

Industrial hygienists collect data to evaluate the risk of toxic substances according to route of entry into the body. They develop a sampling plan to collect this data and consider all the extraneous factors to select the proper monitoring equipment for the situation. The intent of this outcome is to introduce students to the methods and test equipment that are used by OH&S professionals to sample workplaces and activities for further testing. Industrial and occupational hygiene are grounded in scientific principles which go beyond the scope of this module.

The emphasis is on the methods used by an industrial hygienist. Their sampling plan will determine whether they need to do area, personal or instantaneous (spot) sampling. The plan also determines which type of monitoring equipment to use. This outcome focuses on four types of monitoring equipment, workplace and human factors that are considered when conducting tests, and the three categories of controls. This is another area of OH&S where significant training is required. Only qualified individuals use monitoring equipment for testing purposes.

The four types of monitoring equipment are

- Air Sampling Pumps
- Gas Monitors
- Sound Level Meter
- Noise Dosimeter

Introduce the American Conference of Governmental Industrial Hygienists (ACGIH). This is a technical guideline that establishes safe limits of exposure and helps employers find appropriate controls for various occupational health hazards. These values are used to establish threshold limit values (TLV) concentrations of substances found in a workplace using a mathematical formula.

As was discussed in Module 2, there are three categories of control.

- Engineering
- Administrative
- Personal Protective Equipment (PPE)

Students should be aware of the sections of OH&S regulations that outline occupational health testing, monitoring and control requirements.

Sample Performance Indicator

Develop a brochure for a new worker in a chemical industry. In the brochure, explain what a sampling plan is, what is taken in consideration in the plan; what types of monitoring equipment are used; what controls could be in place; and a description of threshold limit value.

Module 7: Occupational Health and Disease Prevention

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Refer to hazard REC for additional clarification. The purpose of using appropriate monitors and sampling devices is to evaluate risk and apply proper controls. The sampling plan outlines the how, what, who, when and where measurements will occur.
- Show students generic sample plans, pictures of monitoring equipment that are referenced in sampling plans, and review the process for determining risk to airborne contaminants (TLV)
- Show some common controls that are used to eliminate or minimize risk to workers that were discussed in previous SCO.

Connection

Students may

- As pairs or small groups, answer the following questions;
 - What is the purpose of a sampling plan?
 - What are the three types of monitoring that are used to sample the workplace?
 - What are the advantages and disadvantages of each?
 - What are the four types of monitoring equipment that are commonly used to measure levels of workplace contaminants?
 - What does threshold limit value (TLV) mean? What are the three categories and what do they mean?
 - Why is ventilation the best type of control?

Consolidation

Students may

- Continue to work as OH&S committees or groups in previous consolidation activity to include the following in the OH&S campaign for one of the identified toxic substances
 - select the most appropriate control method and identify other control methods that may be used from most preferred to least preferred and why.

Extension

Students may

- Using the practical example in the textbook, use different levels of carbon monoxide to determine if limits are acceptable. Why are the limits acceptable?

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 165 - 175

OH&S regulations

- Part IV, Sections 42-60

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix D-11: Guidelines for Learning Activities - SCO 39 - 45

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - Study on hazard prevention and control in the work environment
 - Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities
 - Sampling Guide for Air Contaminants in the Workplace
 - Occupational health
 - FAQ employee exposure monitoring
 - Air Sampling methods and equipment
 - Ventilation

Module 7: Occupational Health and Disease Prevention

Outcomes

Students will be expected to

- 45.0 explain the purpose of a health surveillance program
- 45.1 describe the procedures of a medical examination as part of the health surveillance program

Focus for Learning

Health surveillance programs are required in OH&S regulations when certain hazardous products are used by workers. These programs are administrative controls and are used in combination with other measures to prevent the development of diseases and illnesses. The surveillance program should be linked with measuring workplace exposures. If a worker is exposed to lead in a workplace, for example, blood lead levels may be monitored as part of the health surveillance program but airborne levels of lead must also be monitored.

Emphasis should be placed on health surveillance and identifying the early stages of an occupational disease. Individuals are able to work, but they are closely monitored by medical professionals to manage symptoms and slow down the progression of the disease. Students may be aware of some medical conditions that require regular monitoring by medical doctors, such as high blood pressure, diabetes, cholesterol, etc. This knowledge may be used to connect the management of chronic disease with the monitoring and treatment of occupational disease.

There are various components of a health surveillance program, specifically the purpose and processes of a medical examination. Examinations and assessments may vary depending on the specific hazards at the workplace. However, all workers should undergo a personal history examination and an occupational history with their doctor. Workers who are beginning jobs with associated health hazards should receive examinations before work, periodically during employment and after employment ceases.

Sample Performance Indicator

Generate a list of questions that a worker may ask a doctor during a medical examination.

Module 7: Occupational Health and Disease Prevention

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Using section 43 of the OH&S regulations, the textbook and the example of lead, review the employer's responsibilities in health surveillance.

Students may

- Identify the purpose(s) of a health surveillance program.

Connection

Students may

- Assemble as small groups or pairs to develop a checklist of questions that could be asked during a worker's medical examination that correlates with the case study from SCO 44.0.
- Identify the purposes of each medical examination test including why and when they are used.
- Identify the steps to take if the responses suggest the worker has been exposed to hazardous materials or substances.

Consolidation

Students may

- Using the case studies from SCO 44.0 and the questions from above, summarize the components of a medical examination, the screening procedures involved and timing of those procedures.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 175 - 178

OH&S regulations

- Part IV, Section 43

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix D-13: Guidelines for Learning Activities - SCO 39 - 45

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - UK Health Surveillance
 - Health Surveillance
 - Ontario Health Program
 - Silica in the workplace
 - Normative instruments for Health Surveillance
 - Understanding Health Surveillance at Work
 - Health Surveillance at Work

Module 7: Occupational Health and Disease Prevention

Outcomes

Students will be expected to

- 46.0 examine four common occupational diseases (asbestosis, silicosis, occupational asthma, and occupational dermatitis)
- 46.1 discuss how each occupational disease develops
- 46.2 list common treatments for each occupational disease

Focus for Learning

This outcome will focus on the four common occupational diseases— asbestosis, silicosis, occupational asthma, and occupational dermatitis. A good way to introduce this topic is to explore instances where the people of Newfoundland and Labrador have been affected by occupational disease. Mining in St. Lawrence led to many miners developing Silicosis and many dying from the disease. Mining asbestos at the Baie Verte Asbestos Mines led to the development of asbestosis in many workers who also later died from the exposure. Occupational asthma and occupational dermatitis affect many workers in the province, requiring regular and close monitoring by medical professionals. Emphasize that one of the most common occupational diseases in Newfoundland and Labrador, is noise-induced hearing loss. This disease will be explored in Module 17 – Hearing Conservation.

It is important for students to recognize the disease, the personal impacts, how it affects communities and, in some cases, the province. Some students may have a family member who lives with an occupational disease. These experiences may be used to help personalize and put a name and face to occupational diseases.

Students should explore how diseases develop and what the treatment options are. Asbestosis, silicosis and occupational asthma all develop through airborne particulates. Occupational dermatitis develops through skin exposure. There is no practical cure for a number of occupational diseases such as silicosis and asbestosis.

Emphasize the following:

- OH&S Regulations have included a list of occupational diseases as a ‘schedule’, found in the back of the book.
- Section 90-92 of the *WHSC Act* outlines requirements for industrial disease with section 91 being specific to St. Lawrence mines. Section 23 of the WHSC regulations lists accepted industrial diseases.
- The NL OH&S regulations do not permit persons under the age of 18 to work in a silica process or cleaning and maintenance procedures that involve exposure to silica.

Sample Performance Indicator

Deliver a presentation, play or display board focusing on one of the four occupational diseases. ‘Ensure that all four of the occupational diseases are covered in these presentations.

Module 7: Occupational Health and Disease Prevention

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Brainstorm with students to create a list of diseases that may be connected to hazards in workplaces. Students should recall reference to the health hazards associated with work in various mines throughout Newfoundland and Labrador over the past century. This list should identify the four common diseases that will be the focus of student work—asbestosis, silicosis, occupational asthma, and occupational dermatitis.
- Show “What is Asbestosis?” YouTube video on the progression of one occupational disease.

Connection

Students may

- Work in small groups to research the cause and source of either asbestosis, silicosis, occupational asthma or occupational dermatitis and present to the class as a whole.

Consolidation

Students may

- Work in small groups to research a specific occupation associated with either asbestosis, silicosis, occupational asthma or occupational dermatitis that identifies the following:
 - causes and sources of hazards
 - prevention strategies
 - prevalence (particularly in Newfoundland and Labrador)
 - development of the disease
 - available treatments
- Work as a mock OH&S committee to outline the process that would be followed by the committee to address occupational health hazard exposures.

Extension

Students may

- Write a letter to their employer from the viewpoint of a worker who has developed one of the above diseases. This letter will focus on how the disease has impacted their work and family life, and the importance of identifying and controlling occupational health hazards.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 180 - 184

OH&S Regulations

- sections 48, 398 (Asbestos), 46, 47, 121, 413 (Silica), Schedule, List of Occupational Diseases

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - Hidden Killer
 - Definition of Asbestosis
 - Worksafe BC
 - WorkplaceNL- prevention of Occupational Diseases
 - Worksafe BC - Silicosis
 - Description of silicosis
 - Occupational Asthma definition
 - Work-related Asthma
 - Occupational dermatitis definition
 - Dermatitis treatment options

Module 8: Mental Health

Outcomes

Students will be expected to

- 47.0 describe the main components of a psychological health and safety management system (PHSMS) for a workplace
- 47.1 differentiate between psychological health and psychological safety

Focus for Learning

Students will be introduced to psychological health and safety in this module. Note that the terms “psychological” and “mental” health are used interchangeably throughout the industry and school system. Teachers should explain to students that mental health is not an explicit requirement under OH&S legislation for employers, however this does not mean they are exempt from creating a psychologically safe work environment. Employers are expected under their general duties within the *OH&S Act* to protect the mental or psychological health of workers. This means protection from harassment, workplace violence and bullying.

Psychological health refers to the state of mind of the worker, while psychological safety refers to the environment that an employer creates to promote workers’ psychological health. When employers identify psychological risks in the workplace through hazard REC activities, they are obligated to put controls in place to eliminate the hazard or minimize risk.

The CSA standard, Z1003-13, Psychological Health and Safety in the Workplace – Prevention, Promotion, and Guidance to Staged Implementation is one element employers can use. It is a voluntary standard that

- assesses stress levels in workplaces
- introduces policies and practices to control risks associated with workplace changes and job demands
- supports employees’ psychological well-being
- reviews policies and practices

Make the connection between these elements and elements of an OH&S program and any associated programs (e.g., PPE program, WHMIS program, etc.).

Sample Performance Indicator

Write a letter to an employer with recommendations on what they can do to create a psychologically safe workplace that encourages wellness and mental health.

Module 8: Mental Health

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Introduce students to the requirements of the CSA standard by showing the video “National Standard - Psychological Health and Safety for Canadian Workplaces”.
- Discuss the difference between psychological health and psychological safety.

Students may

- Assemble in four small groups to summarize the general requirements of a teacher assigned element of CSA standard Z1003-13. Share this material with the class.

Connection

Students may

- In small groups, take all the findings from the Activation exercise and incorporate into a complete representation of the psychological health and safety management system (PHSMS).
- Compare the PHSMS to an OH&S program and outline the benefits of both.
- Examine/research the instances of mental health issues missing in workplaces across Canada and around the world.

Consolidation

Students may:

- In small groups, find ways that employers can create a psychologically-healthy workplace. Create a poster, brochure or pamphlet that promotes how this can be accomplished.
- Participate in a discussion where ideas for employers and workers are shared in creating a workplace that is psychologically healthy and safe.

Extension

Students may

- Write a policy statement that shows commitment, leadership and participation of workplace parties in creating psychologically healthy and safe workplaces.
- Develop psychological wellness initiatives based on Monthly Themes.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 191 - 192, 198

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - Mary Walsh and the Standard
 - National standard psychological health and safety for canadian workplaces
 - Mental Health Commission of Canada free download of the CSA standard
 - Guarding Minds at Work
 - Workplace Mental Health Promotion: a How to Guide
 - Psychosocial hazards

Module 8: Mental Health

Outcomes

Students will be expected to

48.0 summarize the factors that cause high levels of stress and mental health issues for employees

Focus for Learning

Students are familiar with certain aspects of stress related to school, home and extracurricular activities. Some students may have part-time or after-school jobs where they experience job-related stress. These experiences can be used to establish a foundation for further learning. The focus of this outcome is on factors that lead to high levels of stress and mental health issues among employees in the workplace. Students may be surprised to learn that nearly 50% of Canadians will experience some form of mental illness before they turn 40.

Teachers may review the factors of jobs and workplaces that may cause high levels of stress. Jobs that have a high demand and little control, and those that are physically demanding and have little reward in compensation, status and career advancement tend to cause high levels of stress. A lack of support and relationships at the workplace, unclear understanding of roles and responsibilities, and organizational change are also factors that are attributed to high stress levels. Make the connection between the career development 2201 concept of work/life balance as stress outside of work presents high demands on workers as well.

There is also a connection between high levels of chronic stress and diseases. There are links between high levels of chronic stress and cardiovascular disease, back pain, some types of cancer, depression, anxiety, substance/drug abuse and other mental health issues. It is important that students understand that work/life balance strategies that support physical, emotional, family and community health are key to keeping stress in check. Teachers may invite students to share strategies they use to minimize stress.

Sample Performance Indicator

Design a work/life balance poster that summarizes high-stress factors and practical strategies to decrease stress.

Module 8: Mental Health

Sample Teaching and Assessment Strategies

Activation

Students may

- Reflect on and jot-note five aspects of their school environments that can cause high levels of stress. Compare these stressors with those of a work environment that could cause them high levels of stress.
- Share with a classmate and arrive at one list of situations or conditions that would cause them significant stress on the job. The list items will be written on separate pieces of paper and will be shared with the class in the connection activity to follow.

Connection

Teachers may

- Write the titles of demands, control, roles, change, support and relationships on large and separate pieces of paper and affix to a wall in the classroom. Explain what each means in relation to job stress.

Students may

- Continue from the activation activity. Using the list created on separate sheets of paper:
 - Rotate through the titles and post where each situation on the list belongs.
 - As a large group discussion, summarize each group into one statement and affix to the wall.
- Establish how work/life balance can make a positive impact on workplaces and workers.

Consolidation

Students may

- Determine practical ways employers can reduce the stress associated with each group and improve work/life balance.

Extension

Students may

- Determine ways that employers and workers can plan, review and implement a psychological health and safety management system (PHSMS) to reduce high levels of stress.
- Working in small groups or mock OH&S committees, determine how employers should evaluate, measure and monitor the PHSMS for continual improvement and present to the class.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 188 - 191

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - Workplace Stress Overview
 - Causes of Stress
 - Stress and mental health
 - Resources to support programs to combat bullying

Module 8: Mental Health

Outcomes

Students will be expected to

49.0 explain the impact of harassment on mental health and stress

Focus for Learning

The focus of this outcome is on the personal, social and economic costs of harassment in the workplace. The intent is to have students consider not only the economic costs but also the personal (individual) and social (overall workplace and community) costs associated with mental illness.

Due to the similarities between harassment and bullying, and the familiarity students have with the concept of bullying, we will be considering both terms interchangeably within this outcome.

Harassment is

improper conduct by an individual, that is directed at and offensive to another individual in the workplace, including at any event or any location related to work, and that the individual knew or ought reasonably to have known would cause offence or harm. (Treasury Board of Canada Secretariat)

Bullying is

typically repeated behaviour that is intended to cause harm to another person(s). (Safe and Caring Schools Policy, Government of Newfoundland and Labrador)

Just as harassment and bullying have affected schools and students, workers and workplaces have seen an increase in harassment. These unwanted behaviours can take their toll on workers-leading to discontent, and mental health issues that emanate in work and home life. Anxiety and mental health issues untreated can affect workplaces in various ways, from increased absenteeism to decreased productivity. The financial costs associated with mental health issues should not be ignored as mental illness is the fastest-growing reason for short-term and long-term disability claims in Canada.

The surge in social media use has created another avenue for bullying and harassment in society. Bullying and harassment have moved outside schools to homes and families where those who are bullied can not fully escape the torment.

Sample Performance Indicator

Record an account of a personal experience with unwanted behaviour from another individual and how that made you feel, impacted your school and home life and how you chose to deal with the stress at the time.

Module 8: Mental Health

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Introduce students to the costs of harassment and mental health by asking what is meant by costs when it is applied to harassment and mental illness.
- Show videos on the personal impacts of harassment and bullying in workplaces.
- Use the following headings and ask students to brainstorm some of the costs in general terms.

Costs	Examples/Description
Personal	
Social	
Economic	

Connection

Students may

- Research, individually or in small groups, to find evidence of personal, social and economic costs of harassment and mental illness using the table provided above or another choice for presentation (e.g., videos, vignettes, stories, etc.)

Consolidation

Students may

- Defend a viewpoint of employers or workers that support or do not support the development and implementation of a psychological health and safety management system (PHSMS) to deal with harassment issues.
- Engage in a debate that argues the following statement: Employers cannot afford the financial cost associated with implementing a PHSMS that deals with harassment and bullying.

Extension

Students may

- Create a video on the impacts of harassment and share on the school website.
- Write a letter to a fictitious employer that emphasizes the importance of introducing a plan to address mental health issues in the workplace. The letter should include statistics and other evidence to strengthen the arguments for a program.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 192 - 195

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - Information and statistics about mental health and mental illness in Canada.
 - Bullying and Mental Health
 - Information about emotional and financial costs associated with mental health issues in the workplace

Module 8: Mental Health

Outcomes

Students will be expected to

50.0 explain the role of Employee Assistance Programs (EAP) in the workplace

Focus for Learning

Students should investigate the purpose, processes and components of Employee Assistance Programs (EAPs). Students may not be familiar with EAPs or their roles within an organization. EAPs are available to federal and provincial government employees and many private businesses and organizations throughout the province.

Teachers should emphasize that EAPs are voluntary, confidential, short term counselling services for employees and their families with personal problems that affect their work performance and family life. Employee problems may be marital, family, financial, emotional or those associated with substance abuse or gambling. EAPs are designed to be part of a larger plan to promote wellness that involves written policies and supervisor and worker training.

Students may be familiar with Kid's Help Phone or other confidential and voluntary counselling services that provide direction and short-term help for children and youth. These services may be used to help explain the purpose and processes of EAPs.

Sample Performance Indicator

As small groups or mock OH&S committees, write a recommendation to the employer for the development and implementation of an EAP.

Module 8: Mental Health

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Initiate a discussion of EAP, by asking students if they know what they are and the role they play in workplaces.
- Invite an EAP provider to discuss their services.

Students may

- Work in pairs to decide on two reasons why governments and private businesses offer Employee Assistance Programs (EAP).
- Work in pairs to identify the factors or conditions that make an EAP successful.

Connection

Students may

- Examine the EAPs for public service workers found on the federal or provincial government official websites and summarize their findings under the following headings: Purpose, How the Program Works, Features of the Program, How the Employee Makes Contact
- Review the “Respectful Workplace Program” offered to public service employees in Newfoundland and Labrador and respond to the following questions:
 - Why would a Respectful Workplace Program be connected to an EAP?
 - Why would a government invest human and financial resources in such a program?

Consolidation

Students may

- Explain the purpose and features of EAPs to a fellow student.

Extension

Students may

- Interview an EAP provider to determine the types of services available, where and when they are offered, processes that are followed when workers are not located in the same community, the most common mental health issues they see and next steps when they have done all they can do for a worker.

Resources and Notes

Authorized

- Building a Safer Tomorrow*
- p. 192

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - CCOHS information about Employee Assistance Programs
 - Federal EAP
 - EAP for Newfoundland and Labrador Public Service
 - Respectful workplace program

Module 9: Ergonomics

Outcomes

Students will be expected to

51.0 describe the principles of human movement

Focus for Learning

Students may have a basic understanding of human movement through health, science and physical education courses. The purpose of this outcome is to describe how each part of the musculoskeletal system works together to move the body. These movements are very important as the proper functioning and movement of the musculoskeletal system will decrease the incidence of musculoskeletal injuries (MSI). This outcome and module should give them a basic understanding of how the body moves and why the principles of human movement are important when designing work activities for workers.

Students should understand that human movement involves the actions of bones, joints, tendons, muscles and ligaments when the body moves. Every part of the body has a specific function and position. Weaknesses or overuse in one area may lead to unhealthy patterns in the body. This is important for them to understand in relation to neutral postures. Neutral posture refers to the resting position of each joint when the joint is under minimal physical strain. As a body part moves away from the resting position, muscles are required to generate more energy. This can lead to strain on muscles, tendons and other tissues, which puts a person at risk for MSI.

Students may be familiar with 'blackberry thumb' or 'i-injuries'. These are injuries associated with finger and joint pain due to prolonged use, holding and typing with cellular phones and tablets. Ask students whether they have experienced discomfort and pain when using these devices. Emphasize that one of the reasons for this type of pain and injury is due to holding the device for long periods of time in awkward positions outside of the hand and fingers neutral posture.

Sample Performance Indicator

Demonstrate various neutral postures of sitting/standing positions and explain why working in neutral postures is critical in the prevention of MSIs.

Module 9: Ergonomics

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Introduce the Kids Health website to students. This website provides a detailed summary of the musculoskeletal system with video, audio, pictures and text. Provide a brief overview of each section.
- Introduce students to the basics of human movement.

Students may

- Assemble as small groups to research the musculoskeletal system, specifically bones, joints, muscles, tendons and ligaments.

Connection

Students may

- Create a diagram or flow chart that includes:
 - how the bones, joints, muscles, tendons and ligaments work together
 - what happens when one of the above is not functioning and how it affects the other parts.
 - how all of the above function in neutral postures and why it is important to remain in neutral posture as much as possible when working.

Consolidation

Students may

- Work in pairs to compare sitting and standing in normal and neutral postures by
 - taking pictures of themselves sitting and standing as they normally would sit and stand
 - taking pictures of themselves sitting and standing in neutral postures

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 202 - 204

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - The Musculoskeletal System
 - Health Information on Muscles, Joints and Bones
 - Worksafe BC Back Information

Module 9: Ergonomics

Outcomes

Students will be expected to

- 52.0 relate ergonomics to the prevention of musculoskeletal injuries (MSI)
- 52.1 describe the primary risk factors
- 52.2 explain the types, signs, symptoms and causes of musculoskeletal injuries

Focus for Learning

This outcome will allow students to explore the application of ergonomic principles to reduce MSI. Ergonomics and MSI are often confused and used interchangeably. They are different, however, and should be used in the appropriate context. Ergonomic principles are the practices and processes used in the workplace to reduce the incidence of MSIs. Ergonomics research and studies have led to design of tools, workstations and work processes that allow workers' joints and body parts to remain in neutral position as much as possible. Students may find it helpful to look at ergonomics as fitting the task to the human as opposed to fitting the human to the task. Workers are responsible to protect health and safety and that of others which includes using safe body mechanics when working.

Students should be directed to section 50-56 of the OH&S Regulations. Employers are required under the NL OH&S Regulations to conduct MSI risk assessments when risk factors have been identified and to establish controls for workers to follow. Emphasize that this process is no different from the hazard or risk assessment that is examined in Module 2, Hazard Recognition, Evaluation and Control. These processes and procedures may be called an ergonomics or MSI prevention program within the OH&S program. Identifying risk factors is the first step in conducting an MSI risk assessment, just as hazard recognition is the first step in a hazard or risk assessment.

There are many different types of MSIs that are associated with the above risk factors. Changes in technology, machinery and equipment have increased the number of MSIs seen in the workplace and at home. Signs and symptoms vary between individuals and may include numbness, tingling, pain, tenderness, swelling, redness, restricted movement and loss of strength.

Sample Performance Indicator

Through observation of classmates, teachers or staff, you may identify some potential risk factors and explain to them how ergonomics may be used to eliminate or minimize the risk of MSIs before or after signs and symptoms are reported.

Module 9: Ergonomics

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Begin by asking students if they know what the terms ergonomics and MSI mean and how they are related to each other. Students may return to the pictures in the activation activity of SCO 51.0. Ask them in which pictures are the principles of ergonomics being applied. Why? How are they being applied? In which pictures could a potential MSI develop? What are the risk factors?

Students may

- Find sections 50-56 of the NL OH&S Regulations and review with the teacher as a large group discussion for the purposes of becoming familiar with the employer's responsibilities in MSI prevention.

Connection

Students may

- Work in small groups to find or draw pictures of work postures that contain one or more of the risk factors and explain:
 - why the postures may put workers at risk for developing MSI and how they relate to neutral postures
 - jobs and work activities associated with risk factors
 - types of MSIs associated with the risk
 - signs and symptoms of the MSI
 - how ergonomics can reduce the incidence of MSIs

Consolidation

Teachers may

- Organize students into small groups or mock OH&S committees. Get them started with an outline of employer's responsibility for MSI prevention and continue the project through SCO 54.0.

Students may

- Using case studies and acting as OH&S committee members, reps or designates, write a recommendation to an employer that outlines their responsibility for MSI prevention, potential risk factors, and signs and symptoms .

Extension

Students may

- Research and present the financial costs associated with MSIs.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 204 - 211

OH&S regulations

- sections 50-56

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix C-11: Linking Ergonomics with MSI Prevention - SCO 52-54

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - Signs and Symptoms of Soft Tissue Injuries
 - MSI and Workers
 - Ergonomics Worksheet
 - Worksafe BC Fillable PDF
 - Explanation guide on Ergonomics
 - OHS Resource Binder for Teachers
 - Ergonomics and the Office
 - Preventing MSI through Work Design
 - Ergonomics and Risk

Module 9: Ergonomics

Outcomes

Students will be expected to

53.0 conduct an ergonomic risk evaluation

Focus for Learning

Students were introduced to the concept of risk evaluation back in Module 2 in Hazard Recognition, Evaluation and Control. Emphasize that the same concepts that were learned in module 2 can be applied when assessing and controlling ergonomic risks. For the most part, the steps that are followed are the same for all types of hazard and risk assessments.

Teachers should explain that after MSI risk factors have been identified by the employer, they must be evaluated to determine how great the risks are to workers. It is important to tell students that not all risk factors are severe enough or occur over a long enough time to cause or contribute to an injury. Risk is evaluated on the location of the pain and discomfort, the intensity of the pain, how often the pain is evident and how long the pain lasts.

They will discover that as with any specialized field, there are various tools that are used by consultants or experts in ergonomic analysis that are listed in the textbook. Remind them that these tools are technical and require education and training in proper application. Students are not expected to use these in this course, but can be used as a reference or expose them to the science behind ergonomics.

Sample Performance Indicator

Explain to a classmate, teacher or staff, as selected in SCO 52.0, the process for evaluating risk for job tasks with identified ergonomic risk factors.

Module 9: Ergonomics

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Begin by referring students to Unit 2 and the risk evaluation tools used to determine the amount of risk. Ask students how they might define risk evaluation and what factors they may consider when assessing the level of risk associated with a job task. Review the risk factors and contributing factors to MSIs that were discussed in the SCO 52.0

Connection

Students may

- Assemble as small groups or mock OH&S committees to identify and explain
 - the process that is followed and why it is followed in this way
 - the factors that are used to determine the level of risk associated with the risk factors, including the contributing factors
 - questions that may be asked for each factor to determine if the risk is high/medium/low

Consolidation

Teachers may

- Organize students into small groups or mock OH&S committees and ask them to continue with a risk evaluation for MSI prevention: (They may continue the project through SCO 54.0.)

Students may

- As an OH&S committee, assist the employer in conducting a risk evaluation using the pictures of job tasks from the previous outcome. Determine the actions of each factor that would make it High/Medium/Low risk. The results of the risk evaluation will be included in the recommendation to the employer.

Extension

Students may

- Respond to the following scenario: You are working as a Data Entry Clerk and have started to notice some numbness and tingling in the wrist of your dominant hand. What process would you follow to report symptoms and what would your employer do to identify risk factors and assess risk?

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 211 - 212

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix C-11: Linking ergonomics with MSI prevention - SCO - 52-54

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - WorkSafeBC monthly hazard recognition photo challenge
 - Worksafe BC: Push/Pull/ Carry Calculator

Module 9: Ergonomics

Outcomes

Students will be expected to

54.0 explain how ergonomic risk factors can be controlled

Focus for Learning

Continuing with the concept of hazard REC, students will have the opportunity to select the most appropriate ergonomic controls for various job tasks. Students should be encouraged to look at a job task before it begins to design the job around the worker and not the worker around the job. This approach seeks to identify the sources or root causes of the risks and then address those causes as the first step. In addition, risk factors for tasks which are performed most often should be considered first.

Encourage students to look at hazard elimination, which was introduced as a hazard control in the hierarchy of controls. They must keep in mind that elimination must be practical to the workplace and workers. In determining if elimination of a risk is practical, they are encouraged to look at the

- degree of risk to the worker.
- extent of available information on the risk and the means of controlling it.
- availability and suitability of control measures.
- frequency of performing the task containing the risk factors.
- resources needed to control the risk.

If elimination is not practical, there are various engineering and administrative controls that can be used by workers. Ergonomics is the one area of OH&S where very little PPE is available to workers. As a caution, students should be told that back belts are not PPE that is suitable for heavy lifting. Some workplaces still have back belts for workers to wear when lifting and moving heavy objects. This is not a practice recommended by OH&S professionals as studies have shown these to be ineffective.

Sample Performance Indicator

Discuss with classmates, teachers or staff from several ergonomic control measures they can use to eliminate or minimize risk.

Module 9: Ergonomics

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Review three main types of controls from Unit 2 and relate these to the ergonomic control mechanisms.

Connection

Students may

- Assemble as small groups or mock OH&S committees to use the hierarchy of controls to identify ways, techniques, processes, tools or equipment that can be used to eliminate or minimize ergonomic hazards and risk.

Consolidation

Teachers may

- Organize students into small groups or mock OH&S committees and ask them to finalize the control measures for MSI prevention.

Students may

- Refer to the pictures of job tasks provided. Determine the control measures using the hierarchy of controls that may be used to eliminate the hazard or reduce the risk to workers.

Extension

Students may

- Identify ways they can improve upon laptop, smart-phone or tablet use at home. Include controls that could be used to aid in this improvement.
- Research myths that are associated with ergonomic controls (e.g., back belts) and present the truth.
- Describe the workstation at home where they most frequently study or do homework, whether it be a desk, table or bed, etc. List the risk factors involved.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 212 - 213

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix C-11: Linking Ergonomics with MSI Prevention - SCO 52-54

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - WorkplaceNL: Back Protection Agents Social Marketing Campaign
 - SafeWorkNL YouTube Channel
 - “Test Your Knowledge of Ergonomics”

Module 9: Ergonomics

Outcomes

Students will be expected to

55.0 demonstrate techniques involved in proper manual handling of materials and computer station setup

Focus for Learning

This outcome asks students to apply what they have previously learned to common work and home environments. This is a practical and hands-on activity for students that allows them to apply knowledge gained through the study of previous modules. When participating in computer station set-up, teachers should remind students that workstations are more than the chairs people sit in—they are the desk, equipment set-up, environment, lighting, etc. They should also consider that workstations are designed around individuals, meaning there is no one-size fits all

Sample Performance Indicator

Demonstrate for your teacher the right and wrong way to set-up a workstation and to manually lift/move materials such as boxes, heavy and awkward items.

Module 9: Ergonomics

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Initiate a discussion by showing different pictures of computer workstations that are not properly set up and improper manual handling procedures. Focus the discussion on aspects that put workers at risk for each risk factor, why they are at risk and what the employer and workers can do to eliminate or minimize risk.

Connection

Students may

- Assemble in small groups or mock OH&S committees to create scenarios, drawings, videos, or photographs of improperly designed workstations and improper manual handling. They may share their scenarios with the class.
- Individually or as small groups, identify the risk factors associated with teacher, principal, or other office staff workstation or a specific job task of the custodian.
- Work in pairs to take pictures of each other sitting properly and improperly at a workstation .

Consolidation

Students may

- Use another group's creation, to participate in risk evaluation and control.
- Provide feedback and/or directions on the workstation to the custodian or chosen staff member in risk evaluation and control measures.
- Using the pictures taken in the connection activity, create infographics or brochures on proper workstation set-up and manual handling.
- Post on the school web page.

Extension

Students may

- Conduct a workstation review of the family's computer workstation at home by taking before and after pictures. Explain how changes will improve comfort and health while using the computer.
- Research several 'Sitting Disease' and present to the class.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 213 - 221

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - Proper computer workstation setup

Module 10: First Aid

Outcomes

Students will be expected to

56.0 explain the benefits and requirements of establishing First Aid services in the workplace

57.0 demonstrate preparedness to administer First Aid in the workplace

58.0 demonstrate basic First Aid skills appropriate to the workplace

Focus for Learning

First aid services in a workplace are required by law. First aid services are a necessary component of an Emergency Response Plan and the overall Occupational Health and Safety program. The benefits from establishing first aid services include

- greater awareness of hazards
- reduced severity of workplace injury
- better employee morale
- improved productivity
- minimize the length and extent of medical treatment
- reduced lost time from work

Students will be engaged in a variety of activities and simulations that, following testing, will leave them prepared to administer First Aid. These skills will need to be maintained, but at this stage, will ensure a good understanding of what to do in the event of an injury in their work environment. It should also lead to a better appreciation for the benefits of first aid services.

Basic First Aid skills appropriate to the workplace, which must be taught by certified trainers, include

- CPR
- severe bleeding
- breaks and fractures
- burns (including chemical burns)
- choking
- head injuries/concussion
- cuts and abrasions
- electric shock
- heart attack
- stroke recognition
- moving an injured person
- drug overdose
- unconscious victim
- eye injuries
- rescue

Sample Performance Indicator

Demonstrate proper First Aid skills for a series of possible school-based injuries.

Module 10: First Aid

Sample Teaching and Assessment Strategies**Activation**

Teachers will

- Arrange for the teaching and assessment strategies that address this curriculum to be provided by qualified first aid instructors

Students will

- Participate in an approved first aid training course.

Resources and Notes**Authorized**

Building a Safer Tomorrow

- Appendix, pp. 350 - 353

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - Benefits of first aid
 - Why learn first aid
 - St. John Ambulance course overview
 - Canadian Red Cross course overview

Module 11: Working Alone and Workplace Violence

Outcomes

Students will be expected to

- 59.0 describe the steps that are taken to identify, evaluate and control health and safety hazards associated with persons who work alone
- 59.1 discuss regulations that apply to individuals who work alone
- 59.2 summarize the essential components of a working alone policy and procedures
- 59.3 describe the health and safety hazards associated with working alone

Focus for Learning

The Working alone legislation was enacted in September 2009 as section 15 of the OH&S Regulations. There are numerous jobs in the province that require workers to work alone, some occupied by young workers. Working alone means they cannot be seen or heard by another worker, cannot expect a visit from another worker or member of the public for some time, and/or assistance is not readily available when needed. In a class discussion, teachers should emphasize that only one of these conditions of legislation has to be met to be considered working alone.

Another section in OH&S legislation requires employers to conduct a risk assessment when working alone has been identified as an issue. Legislation requires, part of these controls to be written procedures for regular checks and emergency response that are developed and implemented by the employer. There are various resources available for employers and workers to use when developing procedures to follow when working alone.

Teachers may use the requirements of the OH&S policy statement from Module 1 as a comparison tool for working alone policy. Policies serve as a way for employers to show their commitment to a program or procedures. Procedures may be compared to safe work practices and procedures where the employer develops a step-by-step process of how the organization will carry out a commitment to keep workers safe from hazards when working alone. Some health and safety hazards associated with working alone include motor vehicle accident, falls, burns, sprains and strains, violence, chemical exposures or exposure to other potentially hazardous materials.

Sample Performance Indicator

As part of a mock OH&S Committee, select one job where workers may work alone, explain why they are working alone and list measures that employers may implement to reduce the risks associated with working alone in this job.

Module 11: Working Alone and Workplace Violence

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Introduce students to working alone by reviewing section 15 of the OH&S Regulations.
- Show the Worksafe BC video Lone Worker Protection

Students may

- Brainstorm a list of jobs or job tasks that may require workers to work alone according to the legislative definition and why they work alone.

Connection

Students may

- Choose a specific case from the Activation list and complete the following:
 - identify the health and safety hazards associated with each job or job task and explain why each is a hazard
 - identify considerations that are taken into account when assessing risk
 - generate a list of controls that could be initiated to eliminate, where possible, or reduce health and safety hazards
 - write a working alone policy and procedure

Consolidation

Students may

- Conduct a job orientation for a new worker who is required to work alone in one of the above jobs or job tasks.

Extension

Teachers may

- Ask students, as they go about their days in and out of school, to take note of how many people they see who appear to be working alone and report back to the class.

Students may

- Write a letter to an employer explaining legislative requirements and some potential controls they can implement in a “working alone” situation.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 228 - 229, 232-235

OH&S regulations

- section 15

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - Working Alone: A Handbook for Small Businesses
 - Working Alone
 - Working Safe in Retail
 - Lone Worker Protection
 - Safety Information on Working Alone

Module 11: Working Alone and Workplace Violence

Outcomes

Students will be expected to

- 60.0 describe the steps that are taken to identify, evaluate and control health and safety hazards associated with violence in the workplace
- 60.1 discuss regulations that address violence in the workplace
- 60.2 summarize the essential components of a workplace violence policy and procedure
- 60.3 describe examples of where workplace violence may occur
- 60.4 examine instances where violence may occur in the workplace

Focus for Learning

Workplace violence legislation was enacted in September 2009 as section 22 of the OH&S Regulations. There are numerous jobs in the province where workplace violence is a risk, some occupied by young workers. Workplace violence is often deemed as a physical assault or a violent act against a worker by someone other than a worker. During a class discussion, teachers may emphasize that violence by a worker to another worker does not fall under the parameters of OH&S legislation. In addition, two components of workplace violence that often get overlooked are “threatening statements” and “behaviour”.

Another section in OH&S legislation where employers are required to conduct a risk assessment when there is a risk of injury to a worker from potential violence arising out of their employment. When conducting the risk assessment, previous experience in the workplace and overall occupational experience and the location and circumstances of work activities are taken into consideration. The work environment is also assessed and arrangements are developed and implemented by the employer to eliminate or minimize risk to workers. Legislation requires part of the control measures to be written policies and procedures. Teachers may use the requirements of the OH&S policy statement from Module 1 and working alone policy as a comparison tool for a workplace violence policy.

Teachers should emphasize that workers must receive instruction in potential health and safety hazards and control measures. Some health and safety hazards associated with workplace violence include physical acts, threatening statements and aggressive/erratic behaviours. Liquor stores, gas stations, jewellery stores, convenience stores, restaurants with bars and taxis are at a higher risk than other workplaces.

Sample Performance Indicator

As part of a mock OH&S Committee, select one job where workers may be at risk of workplace violence. Explain why violence in the workplace is a risk to workers and procedures that employers may implement to reduce the risks of violence in this job.

Module 11: Working Alone and Workplace Violence

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Introduce students to violence prevention by reviewing section 22-24 of the OH&S Regulations.

Students may

- Brainstorm a list of jobs or job tasks where workers may be exposed to violence according to the legislative definition and explain why they may be exposed to violence.

Connection

Students may

- Choose a particular situation from the Activation list and complete the following:
 - identify the health and safety hazards associated with each job or job task and why they are hazards
 - identify considerations that are taken into account when assessing risk
 - generate a list of controls that could be initiated to eliminate, where possible, or reduce health and safety hazards
 - write a working alone policy and procedure

Consolidation

Student may

- Develop a role play, poster, cartoon or video of a procedure for a liquor store, convenience store, pharmacy, etc. for employees to follow when a customer comes into the store.
- Develop a procedure for health care facilities, special care homes, etc. for working with challenging clients or patients. Present the set of procedures to the class.

Extension

Students may

- Research the number of armed robberies that have occurred in the province and ways that employers have protected workers from getting injured during these robberies.
- Educate a fellow student who works in a high-risk workplace on the measures that may be taken by their employers and themselves to prevent or minimize violence in the workplace.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 230 - 238

OH&S regulations

- section 22

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-3.html>
 - Safety Information on Working Alone
 - Violence Guides for Retail Stores
 - Steps to take care
 - Working alone and Money

Section Three:

Specific Curriculum Outcomes

Unit 4: Occupational Health and Safety Hazards

Unit 4: Occupational Health and Safety Hazards

Focus

This unit encompasses the breadth of occupational health and safety hazards, from chemical safety, fire protection, electrical safety, machine safeguarding, confined spaces, and hearing conservation to being safe in the outdoors. Students will be introduced to the Workplace Hazardous Materials Information System (WHMIS)- what WHMIS represents, how and why it was developed, its major components, and responsibility for its implementation. They will also garner an appreciation for the broad scope of protection against fire hazards, electrical safety, machine safeguarding and hearing protection. This material should be covered in an experiential and practical fashion.

Students will also be introduced to the health and safety risks and hazards associated with working in confined spaces. As work in this area requires workers to be trained in confined space entry (CSE) by a WorkplaceNL approved CSE training provider, most of this learning will be theoretical.

Finally, the focus will shift to factors that contribute to outdoor safety, various protective measures and equipment, and awareness of hazards in an outdoor environment. Most of this material also has applicability in the life of a student, so making specific ties to those experiences will be paramount.

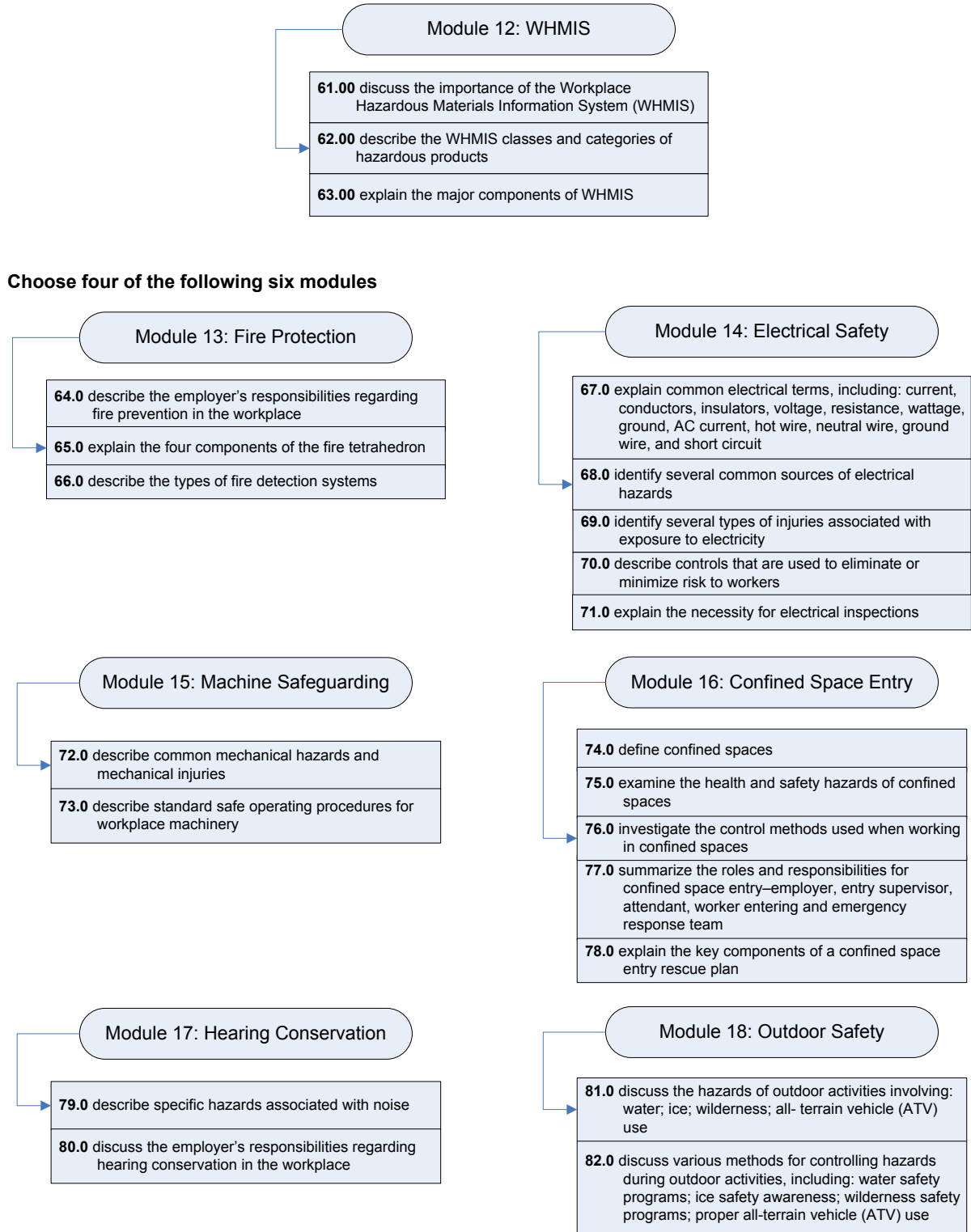
Suggested Unit Plan

Unit 4 consists of 7 modules. Module 12, WHMIS, is required. Of the remaining modules, 4 of 6 are required to be completed. A breakdown of the suggested hours of instruction are found below:

Module Name	# of classes
WHMIS	7
Fire Protection	5
Electrical Safety	5
Machine Safeguarding	5
Confined Space Entry	5
Hearing Conservation	5
Outdoor Safety	5

The recommended instructional time for this unit is 27 hours.

Outcomes Framework



Module 12 – Workplace Hazardous Materials Information System

Outcomes

Students will be expected to

61.0 discuss the importance of the Workplace Hazardous Materials Information System (WHMIS)

Focus for Learning

The Workplace Hazardous Materials Information System (WHMIS) is the backbone of the worker's right to know that was implemented in 1988 federal and provincial legislation. It is a communication system specific to hazardous products that workers may use and handle in the workplace and has a mandatory education and training component. WHMIS provides employers and workers with health and safety information on the safe use of hazardous products.

The federal legislation was recently amended to align WHMIS with a globally accepted hazardous materials communication system called the Global Harmonization System (GHS). These changes are known as WHMIS 2015. Students must be aware of these changes as hazard identification and product classification; labels and safety data sheets have changed.

Until full implementation of WHMIS 2015 students will need to be trained on both systems as there may be hazardous products that fall under the requirements of 1988 still in the workplace. Suppliers have until December 1, 2018 to implement WHMIS 2015. This means that employers may have WHMIS 1988 and 2015 products in the workplace. Employers must review and comply with the WHMIS regulations regarding worker education and training.

Sample Performance Indicator

In a paragraph, explain the purpose and importance of WHMIS and the relationship to the worker's right to know.

Module 12 – Workplace Hazardous Materials Information System

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Initiate the discussion by showing and relating various road signs such as STOP, YIELD, moose, sharp turns, etc. with labels on hazardous products. Like road signs, WHMIS information allows for recognition of hazards associated with substances that may be encountered at work, and associated safe handling, storage and disposal measures.
- Introduce the topic of responsibility by asking students who the major players are in ensuring workers keep safe when working with hazardous products.

Connection

Students may

- Access the WHMIS regulations to identify the responsibilities of governments, manufacturers and suppliers, employers and workers. Create a flow chart of responsibilities and accountabilities when working with hazardous products.

Consolidation

Students may

- Using section 12 and 13 of the OH&S regulations, WHMIS regulations and a graffiti wall, work together to identify where workplace responsibilities regarding WHMIS fall under the OH&S program.
- Write a policy statement regarding a workplace WHMIS program.

Extension

- Access the school's WHMIS program to determine if it outlines workplace roles and responsibilities in carrying out all aspects of the WHMIS program.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 240 - 244

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - Transition period for GHS and WHMIS 2015
 - Health Canada and WHMIS
 - The Canadian Centre for Occupational Health and Safety and WHMIS
 - WorkSafe BC and WHMIS

Module 12 – Workplace Hazardous Materials Information System

Outcomes

Students will be expected to

62.0 describe the WHMIS classes and categories of hazardous products

Focus for Learning

Students who have taken science and Career Development 2201, or work with hazardous products in a workplace may have participated in WHMIS training. This knowledge may be used to encourage class discussions. They may be familiar with the various safe handling procedures, product labels, material safety data sheets, etc.. However, WHMIS 2015 introduces some changes in the way that hazardous products are identified and classified.

There are two major groups of hazards: physical and health with various classes and categories. Physical hazards contain nineteen classes, and health hazards have twelve classes. Each hazard class contains at least one category, assigned as a number, while others may have two or three categories. Even for those who have been trained in the workplace, these new requirements may be confusing and overwhelming for them.

Students are not expected to memorize each class, category or type. They should understand, however, that every hazardous product falls under specific classes and categories and it is the employer's responsibility to provide instruction in the safe handling of the hazardous products they are using.

If they are unsure about a hazardous product, they are encouraged to ask their employer for additional training and education. The next outcome will give them the opportunity to examine SDSs where required information is summarized for workplaces.

Sample Performance Indicator

Create a cheat sheet for Science 1206 or Science 2200 students that reviews the WHMIS classes and categories and how they are used to keep workers safe while handling hazardous products.

Module 12 – Workplace Hazardous Materials Information System

Sample Teaching and Assessment Strategies

Activation

Students may

- Review the definition of a controlled product as outlined in the WHMIS regulations.

NOTE: WHMIS 2015 has replaced The Term “controlled products” with hazardous products and once WHMIS 2015 is completely implemented controlled products will no longer be used.

- Brainstorm, as small groups, examples of potential hazardous products in the workplace and write on sticky notes that can be displayed on the walls. Think about what is around workplaces, homes, garages and school to identify any products that may contain WHMIS labels. Some examples may include latex paint, spray paint, household cleaners, lubricants and acids. Share these examples with the class and discuss why they are hazardous products.

Teachers may

- Write the classes and categories of hazardous products and their symbols on separate pieces of paper and review with the large group. Their products may be affixed to the wall throughout the classroom.

Connection

Teachers may

- Provide students with paper headbands or queue cards with one WHMIS class written on each band or card. Students will ask their partners yes/no questions to help them determine the name of the class.

Students may

- As small groups, determine where each of their examples fall under the classes/categories and affix to the wall under each category.

Consolidation

Students may

- Individually or in small groups, create a poster display of the WHMIS classes and categories. The displays could include all the classes or be combined to create a larger class display with groups or individuals working on a single classification.

Extension

Students may

- Interview each other regarding the use of hazardous products and training they have received from employers.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 245 - 249

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - Hazard Classes
 - WHMIS Home Page

Module 12 – Workplace Hazardous Materials Information System

Outcomes

Students will be expected to

- 63.0 explain the major components of WHMIS
- 63.1 discuss the purpose of the workplace and supplier labels
- 63.2 summarize the sixteen sections of information on safety data sheets (SDSs)
- 63.3 explain workers education and training requirements

Focus for Learning

In addition to hazard identification and product classification, there are three major legislated components of WHMIS-labelling, safety data sheets (SDSs) and worker education and training. These three areas provide workers with the information they need to work safely with hazardous products. Identifying and controlling hazardous products is another example of hazard REC in action.

There are two types of WHMIS labels that include suppliers or workplace labels. These labels are a source of information on hazardous products and are designed to alert employers and workers to the hazards of the product and the precautions that must be taken to prevent negative health effects.

The second element is an SDS. If workers need to find out specific information about a hazardous product, this is where they will get that information. They provide some very technical information and a comprehensive summary of the product in sixteen different sections. The employer is required to make SDSs available to workers.

The third element is worker education and training, which is key to working safely with hazardous products. Workers must participate in WHMIS training and site-specific training. Generic WHMIS training will not give workers the specifics in how to use and work with the hazardous products in their workplace. Employers are required to keep an inventory of hazardous products and provide additional instruction to workers on products used in their workplace.

In class discussions, it is important to emphasize the following

- There is currently no certification process on who can provide education and training.
- WHMIS education and training currently does not expire. However, the employer should review the education and training needs on a regular basis. Education and training may need to be updated if there is a change in work conditions or as new hazard information becomes available.

Sample Performance Indicator

Design a worker education and training package that focuses on labelling and the sixteen categories of the SDS.

Module 12 – Workplace Hazardous Materials Information System

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Review the major components of WHMIS.
- Provide examples of supplier and workplace labels and SDSs for common hazardous products.

Students may

- Find the definition for label, supplier label and workplace label in legislation and discuss as a large group.

Connection

Students may

- Choose a hazardous product from SCO 62 to find the following:
 - supplier label (When and why are they necessary?)
 - workplace label (When and why are they necessary?)
 - SDS (When and why are they necessary?)

Consolidation

Students may

- Choose a hazardous product as identified in the school's SDS inventory and develop an education and training program according to section 6 of WHMIS regulations. The program may be presented to the school's OH&S committee, skilled trades, science or home economic classes.
- Choose a hazardous product as identified in the student/family member's workplace/SDS inventory and develop an education and training program according to section 6 of WHMIS regulations. It may be presented in a student product.

Extension

Students may

- Create a fictitious hazardous product and create an SDS using the sixteen sections. Identify the product and relevant safety information pertaining to that product.
- Compare and contrast the WHMIS 1988 and WHMIS 2015 requirements.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 250 - 252

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - Checklist for WHMIS labels visit
 - Work Safe BC blank sheets and accompanying checklists
 - Canadian Centre for Occupational Health and Safety
 - Video that provides a clear overview of the types and uses

Module 13: Fire Protection

Outcomes

Students will be expected to

- 64.0 describe the employer's responsibilities regarding fire prevention in the workplace
- 64.1 describe several methods of fire prevention

Focus for Learning

Employers have specific responsibilities regarding fire prevention and protection in the workplace, which includes instruction and training. From their own experiences, most students should be aware that workplaces and public buildings are designed with fire alarms, emergency lighting, fire detection, emergency exit routes and fire protection equipment. These are in place to meet the requirements of life safety and fire prevention/protection standards. Students may be reminded of section 38 of the OH&S Regulations and the employer's responsibility to conduct a risk assessment when there is a need for evacuation or rescue.

There are many ways students can prevent fires in their home, schools and workplaces. Practicing good housekeeping, using electrical equipment according to manufacturer guidelines and handling flammables and combustibles with care are some of the ways fires can be prevented. Students should be reminded to read labels of any chemicals, cleaning agents, etc. that are used in the workplace and home to determine if they are a flammable or combustible substances.

WHMIS also has a role to play in fire prevention. An employer that has WHMIS products, explosives, pesticides, radioactive materials, consumer products or hazardous waste in quantities that may endanger the life of fire-fighters must notify local fire departments of the nature and quantities of the controlled products. Employers must also notify them of methods for safe handling. This is a section of legislation that is not well known to the public.

Ask students to contemplate the volume and amount of hazardous products that fire-fighters may be exposed to when they respond to a fire. This may help students understand why it is so important for employers to notify fire departments of building contents.

Sample Performance Indicator

Using a floor plan of your current classroom, create a room assessment that outlines all of the fire protection elements in the room.

Module 13: Fire Protection

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Initiate a discussion on the employer's responsibility for fire prevention by asking students what they think the employer is responsible for when preventing and controlling fires in the workplace. What types of equipment should they have in the workplace? Who should be trained?
- Show YouTube video: Workplace Fire Safety

Students may

- In small groups and using the OH&S regulations, determine the responsibilities of supervisors and workers for fire prevention training.

Connection

Students may

- As small groups or mock OH&S committees, review the school's fire prevention plan to identify roles and responsibilities of workplace parties and fire prevention methods. Critique and provide recommendations to the school OH&S committee and administration.

Consolidation

Students may

- As small groups or mock OH&S committees, work on a case study or pictures to identify
 - fire hazards
 - fire prevention methods

Extension

Students may

- Using the connection activity based on the schools fire prevention plan, create an FAQ, infographic or poster to display at the school in highly visible areas.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 256, 268

OH&S regulations

- sections 38, 40, 41, 81, 251, 308, 443

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix C-8: Fire Hazards and Prevention Methods

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - National Fire Protection Agency (US)
 - Fire Prevention tips for Workers
 - Workplace Fire Safety Video
 - Fire Safety Risk Assessment – Warehouses and Factories
 - Fire prevention on construction sites
 - Fire Safety risk Assessment in Health Care Settings

Module 13: Fire Protection

Outcomes

Students will be expected to

- 65.0 explain the four components of the fire tetrahedron
- 65.1 identify four ways fires are controlled

Focus for Learning

Knowing how and why a fire burns helps to control and extinguish it. The four components of the fire tetrahedron are fuel, heat, oxygen and a chemical chain reaction.

This is an excellent opportunity to connect to community groups. Local fire departments and municipalities often have outreach programs that promote fire prevention. Demonstrating to students how fires are controlled or extinguished provides an excellent experiential motivation for this section. Fires are extinguished when any one of the four components is removed. This can be done by cooling burning materials, removing oxygen from the fire, removing fuel and/or interrupting the chemical chain reaction.

Most students will understand that taking away fuel will diminish a fire. If a piece of paper is on fire, it will go out once the whole sheet has burned or will continue to burn if more paper is added. Removing heat or cooling can be explained by using the example of pouring a glass of water over a flame. The removal of oxygen may not be understood and may need further explanation. This may be explained by showing students videos or pictures of fire blankets and how they are used to smother or remove oxygen from fires.

Sample Performance Indicator

Create a poster of the fire tetrahedron showing the relationship between the four components of fire and controlling them.

Module 13: Fire Protection

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Engage students in a discussion of the fire tetrahedron and direct correlation with starting and controlling fires.
- Perform simple demonstrations of starting/stopping the chemical chain reactions of fires in a fume hood by removing:
 - oxygen with a large jar and a burning wood splint
 - fuel by letting a piece of paper burn out
 - heat by pouring a glass of water over the flame

Connection

Students may

- As small groups, create a scenario where fires have started and the ways that the fire may be extinguished. Explain the source of the fuel, oxygen and heat and describe what happens when one or more of the elements have been removed and the chemical chain reaction is halted.
- As small groups, identify in supplied case studies or pictures the source of the fuel, oxygen and heat and describe what happens when one or more of the elements have been removed and the chemical chain reaction is halted.

Consolidation

Students may

- As small groups or individually, identify the fire hazards or sources of fuel, heat and oxygen in their workplaces or the school and explain the best way to remove one of the elements of the fire.

Extension

Students may

- Create a journal entry as a picture, cartoon or infographic to a younger family member or friend showing how a fire starts and how it is extinguished.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 257 - 261

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix C-9: Fire Tetrahedron and Classifications

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - All about Fire
 - Theory of fire
 - Information about fire tetrahedron and fire triangle

Module 13: Fire Protection

Outcomes

Students will be expected to

- 66.0 describe the types of fire protection systems
 - 66.1 differentiate between fire classifications
 - 66.2 describe the proper use of a portable fire extinguisher

Focus for Learning

This outcome focuses on automatic and manual systems that are in workplaces to prevent or mitigate the adverse effects of fire and provide protection for occupants. Outcome 64.0 outlined the employer's responsibility for fire protection and life safety in buildings. Fire protection in buildings is very important to decreasing property human and financial losses. A connection to the hazard REC process can be made here as fire alarms and suppression systems are one control for fire hazards.

Different fuels create different fires that require different types of fire extinguishing agents. The fire categories are identified as classes and include A, B, C, D and K. These classes refer to the types of objects or substances being burned. Fire extinguishing agents and extinguishers are developed based on the class of fire. They are also available as different types that contain water, dry chemical or carbon dioxide. It is critical that the right type of fire extinguisher or agent is used on the right fire. Using extinguishing agents incorrectly can be deadly and spread the fire or cause an explosion. An example of this is the use of water on electrical or Class C fires. Water is a conductor of electricity and using water to extinguish a fire puts the person at risk of electrocution.

Students knowledge of fire and smoke detectors in homes may be used to help explain one type of fire protection system. Changes to the Fire Protection Services Act and regulations in 2012 requires that smoke alarms be installed on every level and in each sleeping area. Encourage students to look at various pull stations and fire extinguishers throughout the school. In addition, show students where automatic fire sprinklers are located. A quick tour of the cafeteria, library, skilled trades, science and computer labs may show the differences in these systems.

During class discussions, teachers should emphasize that workers who use fire extinguishers must be trained by a qualified instructor with retraining as needed and at least once per year. It is important students understand that fire extinguishers are short-term measures and are not meant to extinguish large fires. Their purpose is to contain the fire in the very early stages and they must used correctly.

Students should also be reminded that SDSs contain fire-fighting measures for WHMIS hazardous products. They outline suitable and unsuitable fire-fighting measures as well as any special protective equipment and precautions for firefighters.

Sample Performance Indicator

Design a chart of fire classes and associated fire extinguishing agents and discuss why the PASS method is effective in extinguishing fires.

Module 13: Fire Protection

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Begin a large group discussion by showing the five classes of fires and their associated fire extinguishing systems and agents. Ask students to list the fire protection systems that exist in their homes, in their school, and in their workplace (or workplaces they have visited.) From individual responses, the range of devices commonly found in homes and workplaces should emerge.
- Invite a qualified instructor in fire protection in to demonstrate the safe use of a portable fire extinguisher and to explain the different types of fire extinguishing systems.

Connection

Students may

- Ask students to compare and contrast the various types of fire protection systems.
- Outline the advantages and disadvantages of the various types of fire protection systems.
- Describe the benefits of automatic sprinkler systems.

Consolidation

Students may

- Create an infographic, poster, video, cartoon, song, etc. of the different classes of fires, fire extinguishing agents and the safe usage of fire extinguishers.
- Demonstrate on a 'dummy' fire extinguisher the correct procedure to follow when putting out fires.
- Using the floor plan of the school, identify the following:
 - fire detection systems on a floor plan
 - fire extinguisher locations
 - evacuation routes-primary and secondary
 - muster locations
 - draw a floor plan of their own home and develop

Extension

Students may

- Develop a floor plan of their home that contains:
 - fire detection systems on a floor plan
 - fire extinguisher locations
 - evacuation routes-primary and secondary
 - muster locations

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 262 - 265

OH&S regulations

- section 41

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - Introduction to Fire Detection
 - Fire protection systems
 - How to of Fire Detection
 - Types of Fire Extinguishers
 - Fire Extinguishers 101
 - Fire Extinguishers Fact Sheet

Module 14 – Electrical Safety

Outcomes

Students will be expected to

67.0 explain common electrical terms, including: current, conductors, insulators, voltage, resistance, wattage, ground, AC current, hot wire, neutral wire, ground wire, and short circuit

Focus for Learning

Becoming familiar with electrical terms is the first step in understanding electricity and how to work with electrical equipment in a healthy and safe manner.

Students may be familiar with electrical terms through science and technology courses. This knowledge can be used in class discussions to connect prior knowledge with the work world. Note that common understandings of these terms may not be technically accurate but may form the basis for student learning.

Familiarization with the terms, not rote learning, is the goal. Ease of use of the terms is important for learning that follows this outcome.

Sample Performance Indicator

Produce a matching game for using two columns. One column will contain the term and second the definition.

Module 14 – Electrical Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Begin by asking students “What is electricity?” What gives electricity its energy? Are sources of energy controlled or uncontrolled? Have you ever received an electric shock? Have you experienced static electricity in your clothes?
- Show the YouTube video: “Explaining an Electrical Circuit”.
- Invite an electrician or an electrical inspector to class early in the study of this module, to explain...

Connection

Students may

- Work in pairs to create a graphic, flow chart or poster of how electricity works and the relation of each term to the flow of electricity.

Consolidation

Students may

- Select a piece of equipment that is used in skilled trades, home economics, or science labs and describe how electricity provides power to the equipment.
- Write a safe work practice for the selected equipment and post in the applicable classroom/work area.

Extension

Students may

- Write a journal entry answering the following questions:
 - The greater the current the greater the shock. Why?
 - The longer the shock the greater the injury? Why?

Resources and Notes

Authorized

Building a Safer Tomorrow

- p. 272

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix D-12: Safe Work Practice – Power Cords and Power Bars

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - Explaining an Electrical Circuit
 - Electrical Safety Field Guide
 - Student Manual on Electrical Safety in the Trades
 - Sample safe work practice, skill saw

Module 14 – Electrical Safety

Outcomes

Students will be expected to

68.0 identify several common sources of electrical hazards

Focus for Learning

This outcome will give students another opportunity to apply the principles of hazard REC. Electricity and electrical hazards are around us and part of everyday life. It is easy for students to become complacent in failing to identify electricity as a hazard as it has widespread usage. Students should understand that when things go wrong with electricity, at work and home, the results can be serious injuries or fatalities. In the province, there have been numerous serious injuries and fatalities due to uncontrolled electrical hazards.

The following are some sources of electrical hazards that students should be aware of before entering the work force:

- improper grounding of electrical equipment
- exposure of wires or electrical parts on equipment
- circuit overload
- damaged electrical tools and equipment
- wet environment and conditions
- overhead and underground power lines
- improper or inadequate wiring
- insulation failure or defective insulation
- combustible and explosive materials
- using ladders that are made of conductive materials (i.e., metal or aluminum)

It is important that students understand they immediately report electrical hazards to supervisors.

Sample Performance Indicator

Write a letter to your employer about the damaged electrical cord on the slicer next to the sink. Outline the hazards and what the employer can do to fix it.

Module 14 – Electrical Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Review the sources of electrical hazards and the hazard REC process on Page 274 - 276 of the textbook.

Connection

Students may

- In small groups or individually, create a poster display highlighting
 - how each electrical hazard is identified
 - potential electrical hazards and their sources
 - why they are hazards
 - common work activities associated with each electrical hazard

Consolidation

Students may

- Select one specific electric hazard and explain to a younger family member the dangers of the electrical hazard and how to avoid the hazard.

Extension

Students may

- Discuss how static electricity is an electrical hazard in the workplace.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 274 - 276

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - Electrical Safety on Canadian Centre for Occupational Health & Safety
 - Controlling Electrical Hazards
 - Student Manual on Electrical Safety in the Trades
 - Working Safely around Electricity

Module 14 – Electrical Safety

Outcomes

Students will be expected to
69.0 identify several types of injuries associated with exposure to electricity

Focus for Learning

Using electricity in the wrong way is high risk and puts individuals at risk for fatalities or serious injuries. Incidents associated with electricity tend to be fatal. Those who are lucky to survive may be left with life-altering and painful injuries. It is important to note that research may contain pictures and visuals that could be disturbing to some students.

Knowing why the human body is considered a conductor of electricity will help students understand why fatalities and serious injuries are often the result of making contact. The human body is made up mostly of water, and electricity travels fast through water trying to find the easiest way to the ground. Workers are injured when they become a part of the electrical circuit.

Discuss how the severity of an injury is based on

- the amount of current flow through the body
- the length of time the current is in the body
- the path of the current through the body
- the body's resistance to the current.

Such injuries can be internal or external and exist as electrocution, electric shock, burns and falls. Some situations may even contain more than one type or category of injury. A worker standing on an unguarded scaffold, for example, may come in contact with a powerline. The shock of the electrical contact causes them to fall to the ground which compounds the original injury of electrocution or shock.

It is also important to note that any serious injuries that meet the requirements of OH&S legislation must be reported by the employer, OH&S committee, Worker H&S representative or Workplace H&S designate and the OH&S division of government.

Sample Performance Indicator

Using an image of a worker as a model, label the image with a description and area that internal and external injuries caused by electricity could occur.

Module 14 – Electrical Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Ask students if they have ever received an electric shock. Relate the discussion of the flow of electricity to how an electric shock is received by a person and why the person is a conductor.
- Discuss the factors that contribute to injuries, specifically the characteristics of current-amount, length of time in body, the path through the body and the body's resistance to the current.

Connection

Students may

- Using the information in the textbook and from other sources, create a graphic that explains
 - the flow of electricity through a person
 - potential internal and external injuries

Consolidation

Students may

- Research incidents that occurred in the province or in Canada to identify the following:
 - the work activity the worker was engaged
 - the source of the electrical hazard
 - the cause of the accident
 - the injuries suffered or the consequences of the accident
 - the human and direct costs of the accident

Extension

Students may

- Summarize emergency response and first aid procedures for electrical shocks.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 273 - 274

Suggested

Electrical Shock web site

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>

Module 14 – Electrical Safety

Outcomes

Students will be expected to

- 70.0 describe controls that are used to eliminate or minimize risk to workers
- 70.1 demonstrate the procedure for de-energization and lock out
- 70.2 list the requirements for working around power lines

Focus for Learning

Students should investigate and reflect upon overall safety with respect to electrical equipment and controls. This includes the proper use of equipment, where and how to install it and safety precautions used in conjunction with the devices. Many operating practices and procedures are found in manufacturer specifications and operator's manuals and can be used to help employers develop safe work practices and procedures with workers. Oftentimes, these manuals are discarded or put aside. Students should be reminded that before they begin work they must be instructed on how to use control measures.

Part XXVI, electrical operations is found in the OH&S Regulations. In addition, there is a number of sections throughout regarding the control of electrical hazards. One of the most common controls is de-energization through lock-out/tag-out (LOTO). Lock-out procedures are required in OH&S Regulations, Part IX, De-energization and Lock-out, sections 127-137. LOTO is applicable to all industries and is not just simply turning off the power button. LOTO means that all sources of energy are isolated or at zero before work begins and personal locks are placed on all sources of energy.

Power Line Hazards (PLH) Certification Training is a legal requirement for operators of boom trucks, mobile cranes and other similar equipment. This training is conducted by approved training providers/trainers of WorkplaceNL and must be completed every three years. It is highly recommended that workers who work outdoors and around power lines who do not operate mobile equipment or boom trucks participate in PLH training. This is not legislated, however, the electrical hazards associated with power lines are still there.

Sample Performance Indicator

Develop a safety procedure for the school's fabrication lab. Outline the electrical hazard controls that are in place, how they should be used and the LOTO process. Identify within this procedure under what circumstances someone would need PLH training and where it could be obtained.

Module 14 – Electrical Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Begin by asking students what controls are in their houses. Remind them that every piece of electrical equipment is designed and built for a specific purpose and it should be used only for the purpose it was intended.
- Review the controls that are available to workers in the workplace, specifically de-energization and lock-out.
- Review section 483 of the Regulations and/or invite a representative from NL Power and NL Hydro to discuss power line hazards.

Connection

Students may

- In small groups, return to the poster display of SCO 69 and select the most appropriate control for each hazard, the type of control and why the control was selected.
- As a mock OH&S committee, use legislation to write a group lock out procedure.

Consolidation

Students may

- Summarize the functions of the following:
 - circuit breakers and fuses
 - ground-fault circuit interrupters (GFCI)
 - grounding and bonding
 - lock-out/tag-out (LO/TO)
 - power line hazards (PLH) training
- Select a piece of equipment at the school and develop a LOTO procedure according to legislation.
- Select a piece of equipment and write a safe work procedure based on the safe work practice written in SCO 68.

Extension

Students may

- Create a student product on ‘Do’s and Don’ts’ of working with electrical equipment which reference all control measures.
- Develop an education and training program for working with a specific tool, equipment or machinery.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 276 - 281

OH&S regulations

- sections 127-137 (LOTO), 483 (PLH training), Part XXVI (Electrical Operations)

Online Appendices

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/apps.html>
 - Appendix C-12: LOTO
 - De-energization of Conveyor Belt for Maintenance

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - Images of tagout signs and equipment
 - Lock out/tag out
 - De-energization and Lockout
 - Lock out procedures
 - Lock out and Tag out
 - Additional information on Power Line Safety
 - Power Distribution
 - Occupational Health & Safety Regulations, Part XXVI, Electrical Operation
 - Power Line Hazards Booklet

Module 14 – Electrical Safety

Outcomes

Students will be expected to

71.0 explain the necessity for electrical inspections

Focus for Learning

This outcome may be combined with SCO 70.0 as electrical inspections are another aspect of hazard control. It is important for students to recognize the importance of such procedures when working in areas with high levels of electricity. Teachers should emphasize that electrical inspections must be carried out by properly trained and experienced electricians. In addition, only trained and experienced electricians undertake electrical work or repairs.

Qualified inspectors are available across the province and are responsible for ensuring all electrical work undertaken by qualified electricians meet Canadian and provincial codes and regulations.

Sample Performance Indicator

Create a list of common electrical hazards that many people would not rectify voluntarily or perceive as serious. Identify those which would be identified in an electrical inspection and what kind of serious issue would be avoided through their discovery.

Module 14 – Electrical Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Ask students who they believe is responsible for checking the electrical components of a workplace. Students may then be referred to the information provided from provincial government websites to build the following understandings:
 - permits must be obtained to undertake electrical work
 - work must be undertaken by certified electricians
 - work must be inspected by qualified inspectors

Connection

Students may

- Undertake research to determine where and who are the electrical inspector(s) for their area of the province. An electrical inspector may be invited to class to talk about his/her role.

Consolidation

Students may

- Write a journal entry in response to the following questions:
 - Why are periodic electrical inspections important?
 - Who should carry them out?

Resources and Notes

Authorized

Building a Safer Tomorrow

- p. 280

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - The Canadian Safety Association (CSA) website contains an overview of the new electrical code
 - Codes and regulations that guide the work of electricians
 - Electrical Regulations
 - Permits and inspections of all electrical work undertaken in the province

Module 15: Machine Safeguarding

Outcomes

Students will be expected to

72.0 describe common mechanical hazards and mechanical injuries

Focus for Learning

Section 89 of the OH&S Regulations requires employers to choose machinery and equipment according to OH&S legislation, CSA standards and manufacturer specifications. This legislation is in place to protect workers from contact with power transmission parts, point of operation, and any falling or spraying materials ejected during a manufacturing process. These are all hazards associated with machinery and failing to follow the requirements can result in severe injuries and fatalities.

Through work or classroom experiences, students may have some understanding of mechanical equipment and the parts of the machinery that move, rotate or eject materials. Within the school environment, students may have seen physical guards on tools in skilled trade labs or machinery in home economics classrooms. Students may be employed in many industries where tools and machinery are being used that have safeguards. These experiences are a valuable tools to use to connect prior knowledge. Students should be encouraged to ask their supervisors if they are unsure of hazards and hazardous conditions.

As a piece of equipment or machinery is examined, all the moving parts and their processes need to be reviewed to determine if there is any way a worker may get hurt. Every tool and machine is different and requires individual assessment and work activity analysis. Students should recognize the hazard REC theme during this module.

Note that health hazards might also be associated with some machinery and equipment. These may include

- chemicals
- atmospheric contaminants
- heat
- noise
- vibration
- radiation
- biohazards
- musculoskeletal injury (MSI)

Sample Performance Indicator

Create a caution sign to display over pieces of equipment and machinery in the skilled trades fabrication lab. The sign should outline the associated mechanical hazards and injuries.

Module 15: Machine Safeguarding

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Share the Candace Carnahan story. Discuss the events leading up to the incident in which she lost her leg, the cause of the incident, the machine that was involved, the machine movement and characteristics, etc.

Students may

- Review the health and safety hazards of several machinery and equipment.

Connection

Students may

- As small groups, pairs or individually research the piece of equipment that was involved in Candace's incident and identify the motion of the machine that led to her leg becoming caught. In addition, identify the responsibilities of workplace parties in preventing this accident. (NOTE: this accident occurred in New Brunswick, where legislation may be different from NL.)
- Conduct an inspection of the school's, skilled trades lab, home economics lab or their workplace.
 - identify equipment, tools and machinery that may create safety and health hazards for users.
 - identify the action and motion of the machines
 - identify the injuries that may result
- Create a chart of the machine and equipment found in the workplace inspection and identify the action/motion that poses the hazards.

Consolidation

Students may

- As small groups, pairs or individually, create caution signs that include action/motions and hazards and post in the vicinity of the machinery and equipment at the school.

Extension

Students may

- Compare and contrast NB and NL operation of machinery and equipment legislation.
- As a class, participate in a "If you see something, say something" campaign created by Candace Carnahan.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 286 - 288

OH&S Regulations

- Section 89

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - Candace Carnahan Story
 - Candace Carnhan website
 - Lost limb, Saved Life
 - Learning from her Accident

Module 15: Machine Safeguarding

Outcomes

Students will be expected to

73.0 describe standard safe operating procedures for workplace machinery

73.1 explain safeguarding requirements

73.2 identify several types of safeguards and devices

Focus for Learning

Safeguarding is often confused with machine guarding. Machine guarding is only one of the many types of safeguarding.

Safeguarding is defined as methods that are used to protect workers from health and safety hazards while operating machinery and equipment. Any part, function or process of machinery that could cause injury to workers must be secured to prevent accidental contact.

Safeguards include physical barrier guards, safety devices, shields, awareness barriers, warning signs, etc., that may be used separately or in combination. It has been found that no matter how experienced an operator is it is very difficult to predict what a person will do when working with machinery. Safeguarding protects against human error or lapses in judgment.

Teachers should emphasize that when safeguards are properly selected they will

- be secure and durable.
- protect against falling objects.
- not create another hazard.
- not create any interference.
- allow for safe maintenance.

The selection of machine safeguards and considerations in selection can be compared to the hierarchy of control in Module 2, Hazard Recognition, Evaluation and Control.

There is also some confusion regarding safeguarding and LOTO. LOTO is not a substitution for LOTO. LOTO procedures protect workers when machinery and equipment is shut-down at zero energy. Safeguarding protects workers while operating the machinery and equipment.

Sample Performance Indicator

Choose two tools in the skilled trades fabrication lab and design a poster of the different types of safeguards they use along with elements of their safe operating procedures.

Module 15: Machine Safeguarding

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Review the basic requirements for safeguarding as outlined in legislation.

Students may

- Find or draw pictures of various machines, tools or equipment safeguards that include guards, safety devices and/or shields.

Connection

Students may

- Using the pictures in the activation activity, show the point of operation and power transmission parts of the machinery and equipment.
- Using the chart that was created in SCO 72.0, identify the safeguards for each piece of equipment using the hierarchy of safeguarding controls.

Consolidation

Teachers may

- Develop safe operating procedures for three machines from the chart.
- Create safety tips for each piece of machinery or equipment by adding on to the caution signs created in SCO 72.0
- Develop safe operating procedures for various machines throughout the school.

Extension

Students may

- Write a journal entry, create a poster, video or other graphic explaining why it is important to say something if you see something, such as a safeguard missing in the workplace.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 288 - 296

OH&S regulations

- sections 87-104

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - Newfoundland & Labrador OH&S section 87-104
 - Machine safe guarding Handbook, BC
 - Basics of Machine Safeguarding
 - Safeguarding Equipment and Protecting Workers from Amputations
 - Machine Guarding and Equipment Safety
 - Common woodworking machines
 - Sample Safeguarding videos
 - Skilled Trades Safety Videos

Module 16: Confined Space Entry

Outcomes

Students will be expected to
74.0 define confined spaces

Focus for Learning

Students may think of a confined space as a small space, but confined spaces are not identified based on size. A confined space is defined by the OH&S Regulations as an enclosed or partially enclosed space that

- is not designed or intended for human occupancy except for the purpose of performing work
- has restricted means of access and egress
- may become hazardous to a person entering it as a result of
 - design, construction, location or atmosphere
 - materials or substances in it, OR
 - any other conditions relating to it

For a space to be considered a confined space it must meet **all** the requirements of legislation. A common misconception is that a space only has to meet one of the criteria outlined in legislation to be considered a confined space. During discussions, students should be reminded that some restricted spaces are sometimes confused with confined spaces. These types of spaces do not need a permit but may still require safe work practices and procedures to safely execute work.

Employers are responsible to ensure workers who work in confined spaces receive training in confined space entry (CSE) by an approved CSE training provider of WorkplaceNL. This includes anyone who is involved in a confined space entry as an entrant, attendant or CSE rescue team. Teachers should emphasize that confined spaces are very dangerous and proper training is critical before work begins in confined spaces.

Sample Performance Indicator

From a series of workplace images, create a matching game for confined spaces. Players will have to identify whether the workspace in the image is a confined space.

Module 16: Confined Space Entry

Sample Teaching and Assessment Strategies

Activation

Students may

- Discuss the definition of a confined space in legislation and provide examples of spaces they believe are confined spaces.

Connection

Students may

- As small groups, determine if spaces discussed in the activation exercise meet all the requirements of legislation. Images may be researched and used to show how all requirements have been or have not been met.

Consolidation

Students may

- Compile a list of specific occupations and work activities that may require work in confined spaces.

Extension

Teachers may

- Simulate confined spaces in the classroom by lining up chairs that lead to a medium size table. Cover the seats and table with black garbage bags that drape to the floor. Invite students to crawl through the legs of the chair to the table to give them an idea of what some confined spaces feel like and how difficult it would be to conduct a rescue.

Students may

- Determine a list of work activities that would take place in small and tight spaces such as the above simulation.

Resources and Notes

Authorized

Building a Safer Tomorrow

- p. 300

OH&S Regulations

- sections 511 – 516

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - Employer Training for Confined Spaces
 - Confined Spaces Defined
 - Introduction to Confined Spaces
 - Confined Space Entry

Note: Images of confined spaces may be used to assist with learning activities through the module.

Module 16: Confined Space Entry

Outcomes

Students will be expected to

75.0 examine the health and safety hazards of confined spaces

Focus for Learning

There are many hazards and risks related to confined space entry. Workers are injured or killed each year while working in confined spaces where hazards were not identified and controlled. In some cases, workers are not even aware they are entering a confined space. Confined spaces located in workplaces throughout the province must not be entered by workers until an assessment has been conducted by the employer and controls put in place. Employers are also required to put a sign at each entrance of a confined space to alert people of the hazards.

Health and safety hazards in confined spaces are determined by conducting a CSE assessment. A CSE assessment is a hazard and risk assessment conducted by the employer following the same process as covered in Module 2, Hazard Recognition, Evaluation and Control. All areas and work activities of the space, inside and outside, are examined for potential health and safety hazards. Teachers could use a ship hold as an example to help students understand the various health and safety hazards found in confined spaces. Hazards may include

- access and egress
- slips, trips and falls
- falling objects
- poor visibility
- cold temperatures
- noise
- atmospheric hazards
- fire hazards
- electrical hazards, etc.

Module 16: Confined Space Entry

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Show a video of confined spaces to reinforce the hazards of confined spaces.

Students may

- Review the health and safety hazards on Pages 305 - 310 of *Building a Safer Tomorrow*.

Connection

Students may

- Working in small groups and using the images from SCO 74.0, identify the health and safety hazards of each confined space picture, including
 - The type of atmospheric hazards and chemical hazards that are present and the conditions that lead to the hazard.
 - The sources of electrical hazards, entrapment/engulfment or falls in confined spaces.

Consolidation

Students may

- Create a poster indicating the health and safety hazards in the selected confined space image.

Extension

Students may

- Write a journal entry on the following: Health and safety hazards are amplified in confined spaces.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 304 - 310

OH&S Regulations

- sections 511 – 516

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - Video: No Escape – Dangers of Working in Confined Spaces
 - Video – Confined Spaces

Module 16: Confined Space Entry

Outcomes

Students will be expected to

76.0 investigate the control methods used when working in confined spaces

Focus for Learning

This outcomes continues with the application of the hazard REC model to confined spaces, specifically the control measures selected when health and safety hazards have been identified. There are various controls available to workers to keep them safe while working in confined spaces. A search of CSE materials available via the web will outline many common controls. Remind students that publications and control methods are based on legislative requirements of the province, state or country. Control methods include, but are not limited to

- atmospheric testing
- isolation and de-energization
- ventilation
- shoring
- education and training
- cleaning, purging and or inerting
- CSE work permit system
- signage
- safe work practices and procedures
- PPE
- non-sparking and explosion-proof tools; ground fault circuit interrupters (GFCI), ground and double insulated tools

Students are expected to familiarize themselves with the various control methods available when working in confined spaces. This module does not prepare them to work safely in a confined space. Training is required by a WorkplaceNL approved CSE training providers and trainers before they begin working in a confined space. In addition to this training, other specialized training may be needed regarding the use of equipment such as gas monitors, ventilation, fall protection systems, PPE, traffic control and LOTO. Teachers should remind students that they are never to enter a confined space without training in all tools, machinery and equipment.

It is also important to note that in most cases PPE is the last line of defence. It is still a requirement for most confined space entries due to the high risk associated with work in these spaces. Teachers may use some pictures or videos to show students some of the types of controls that are used in confined spaces.

Sample Performance Indicator

Using an image of a workspace that is clearly a confined space, draw thought bubbles to label the health and safety hazards. Next to each of the bubbles outline a control that can be used to deal with the hazard.

Module 16: Confined Space Entry

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Review hazard controls with students on Page 310 - 311 of the textbook and show pictures of each control in action.

Connection

Students may

- As small groups or individually, select one example of the hazard controls from the list supplied by the teacher and provide a description that should include
 - legislative requirements
 - purpose and functions
 - potential safe work practices and procedures

Consolidation

Students may

- Working as small groups or individually, review the confined space image or poster of another group from SCO 75.0 to recommend possible control measures that may be used by employers.

Extension

Students may

- Write a scenario in their journal or portfolio where they exercise their right to refuse unsafe work because confined space hazard controls are inappropriate.
- Research and provide a description of confined space accidents that occurred in the province or in Canada.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 310 - 311

OH&S Regulations

- sections 511 – 516, 45, 70-86, 127-137

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - Video: No Escape – Dangers of Working in Confined Spaces
 - Video – Confined Spaces

Module 16: Confined Space Entry

Outcomes

Students will be expected to

77.0 summarize the roles and responsibilities for confined space entry—employer, entry supervisor, attendant, worker entering and emergency response team

Focus for Learning

Students should continue to examine OH&S roles and responsibilities specific to confined space entry in relation to the principles of the IRS. Students are expected to know that safe entry begins with the writing of clear roles and responsibilities and the education and training of all workers in these roles. Everyone who is involved in a confined space entry must know what to do, how to do it and particularly, what to do in the event of an emergency. The collaboration of these roles are generally known as the confined space entry team.

The CSE assessment conducted by the employer will ultimately determine who will be involved in the confined space entry. It is important to note that, at a minimum, a CSE entry team is made up of a CSE supervisor, attendant, entrant and CSE rescue team. Teachers could return to the example of the ship hold from the previous outcome to outline the following basic responsibilities of workplace parties:

- **employers** are responsible for the CSE assessment and developing a plan for safe entry of work going on in the ship hold
- **CSE supervisors** are responsible for ensuring that all workers involved in the entry are instructed and understand the procedures for safe work and entry
- **attendants** are responsible for ensuring that an unauthorized person does not enter the space while work is ongoing and for maintaining communication with entrants
- **entrants** or workers entering spaces are responsible to carry out work in a safe manner and notify attendants of any emergencies
- **CSE rescue teams** or emergency response teams are responsible for ensuring the safe rescue of entrants when required.

Remind students that when they participate in CSE training by an approved training provider they will find out more details about these roles and how work can be carried out safely.

Module 16: Confined Space Entry

Sample Teaching and Assessment Strategies

Activation

Students may

- Research CSE roles and responsibilities and compare them to workplace roles and responsibilities covered in Module 1, Introduction to Occupational Health and Safety.

Connection

Students may

- Create a chart of CSE roles and responsibilities based on selected images and legislative roles and responsibilities.

Consolidation

Students may

- Using OH&S legislation, select one of the following and show the connection between each workplace party or the flow of responsibility and accountability:
 - CSE assessments
 - CSE permits
 - hazard controls
 - CSE rescue procedures

Extension

Students may

- Working in small groups and using the images from the previous SCO, research and develop a CSE work permit and signage to be posted on the outside of all entrances to confined spaces.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 301 - 304

OH&S Regulations

- sections 511 – 516

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - Sample Confined Space Entry Permit
 - Confined Space Entry Permit

Module 16: Confined Space Entry

Outcomes

Students will be expected to

78.0 explain the key components of a confined space entry rescue plan

Focus for Learning

Module 5 introduced the concept of emergency plan risk assessments. Working in confined spaces is another area where the employer is required to conduct an emergency plan risk assessment and write rescue and evacuation procedures. Workers must not enter or remain in a confined space unless an effective rescue can be carried out.

Teachers could use the information from Module 5, Emergency Preparedness and Response to help students understand what a CSE rescue plan is and how it is developed by the employer. The CSE rescue plan will address the following:

- roles and responsibilities of the CSE rescue team
- methods of communication
- first aid and medical equipment
- emergency rescue options and rescue procedures
- schedules for mock-drills and practice

It is also important to do mock-drills and practice, in a safe manner, the different types of rescue appropriate to the workplace and work activities.

Emphasize that anyone who enters a confined space to retrieve a victim must be properly fitted with the necessary equipment and a trained member of the confined space entry rescue team. Statistics show that up to 60% of confined space fatalities are not the initial victim but the rescuers who tried to save them. This statistic should highlight the importance of a confined space rescue plan for the safety of workers.

Sample Performance Indicator

Create an outline of a training plan for confined spaces. In the training plan, identify the roles of the employer, entry supervisor, attendant, worker entering and emergency response team. A brief description should accompany each role and a template for development of a rescue plan, which would be the role of the emergency response team.

Module 16: Confined Space Entry

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Revisit the extension activity of SCO 74.0. Ask students the challenges of a rescue from a confined space.
- Show YouTube video: Rescue Drill (CSE rescue). This will show the importance of having a CSE rescue plan and the regular practice of this plan. NOTE: oxygen levels are 20-22% in NL OH&S regulations.

Students may

- Review the four types of rescue from *Building a Safer Tomorrow* and research each type for advantages and disadvantages.

Connection

Students may

- Working in small groups and using the images from SCO 74.0, identify
 - the types of rescue that could be used
 - the best rescue method to use and why
 - the equipment and control methods for a safe rescue

Consolidation

Teachers may

- Invite a local fire fighter, search and rescue or emergency responder to critique the role-play.
- Invite a local fire fighter, search and rescue or emergency responder to talk about confined space rescues in which they have been involved.

Students may

- Conduct a mock drill or role-play of a confined space rescue.

Extension

Students may

- Write a journal entry that addresses the following questions: “How does an internal rescue differ from an external one with regard to confined spaces?” “Which has more risk attached to it and why?”

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 311 - 314

OH&S Regulations

- section 516

Suggested

Confined Space Rescue plan web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>

Module 17: Hearing Conservation

Outcomes

Students will be expected to

79.0 describe specific hazards associated with noise

79.1 outline the signs and symptoms of hearing loss

79.2 list the factors that affect the degree of hearing loss

Focus for Learning

Noise is defined as any unwanted sound and can cause noise induced hearing loss (NIHL). Hearing conservation programs and hearing protection are used as controls in many different occupations and industries, particularly in construction, fish harvesting, manufacturing and forestry. There is no cure for NIHL. Although it is 100% preventable, it is one of the most common occupational diseases in the province.

There are various signs and symptoms of hearing loss that can be determined. As with most occupational hazards, signs and symptoms occur so slowly that people do not realize they are losing their hearing. In fact, once a person realizes there is a problem, significant hearing loss has occurred and it may be too late.

A little known fact is that exposure to high noise levels may affect the cardiovascular system, increase blood pressure and cause a disruption to sleep schedules. In addition, the social and emotional implications are numerous.

Teachers should emphasize that NIHL in the workplace is exacerbated with off-the-job noise exposure. Many hobbies and social activities such as hunting, woodworking, listening to loud music involve exposure to noise. When participating in such activities, it is important that individuals use appropriate hearing protection.

In addition, every worker is different and is affected by outside factors in different ways. The American Conference of Governmental Industrial Hygienists (ACGIH®) sets the threshold limit value at 85 decibels. This means that the average worker can be exposed to levels of sound less than 85 dB over eight hours a day, 40 hours per week. This is just a guideline. Some individuals may experience hearing loss at less than 85 dBs. As with any occupational health hazard, there are many factors that come into play and require evaluation by experts in noise and hearing loss.

Module 17: Hearing Conservation

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Initiate a large group discussion by showing an image or video of the ear and explaining how sound reaches the eardrum and what happens when hearing loss occurs. This will help show that hearing loss is not reversible and has no cure.

Students may

- As a small group or in pairs, brainstorm a list of occupations where NIHL may be a hazard and identify the possible sources of noise.

Connection

Students may

- Research the decibels related to the operation of the machinery and equipment required for occupations in the activation activity. Compare these with ACGIHs level of 85 dBs and determine the factors that affect the degree of hearing loss.

Consolidation

Students may

- As mock OH&S committees or small groups, assist the employer in the development of an education and training program for one of the occupations showing how overexposure to noise can cause NIHL. Include signs and symptoms of hearing loss, other health effects of noise and factors that affect the degree of hearing loss.

Extension

Students may

- Download a 'noise meter' from iTunes App Store, Android Apps or Google Play and survey some noise levels of common tools, machinery and equipment at home and in the school. While these applications are not precise, they can show students the potential noise that can be generated by common tools and equipment.
- Answer the following questions as a journal entry:
 - Why does the age of the worker influence how sound is received?
 - Why are sound absorbent walls, floor and ceiling better than reflective? Why?
 - What factors make individuals more susceptible to noise? Why?

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 318 - 321

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - Introduction to Noise Hazards
 - Causes of Sound induced Hearing Loss
 - YouTube videos on how the ear works

Module 17: Hearing Conservation

Outcomes

Students will be expected to

- 80.0 discuss the employer's responsibilities regarding hearing conservation in the workplace
- 80.1 list the components of a hearing conservation program
- 80.2 describe how noise assessments are carried out
- 80.3 explain several noise control strategies

Focus for Learning

Students should connect the principles of hazard REC with identifying and controlling noises hazards. Employers must take appropriate actions to implement control measures to reduce noise to acceptable levels determined by the ACGIH Threshold Limit Values (TLVs) for noise. If eliminating noise is not possible, the next step is to isolate workers from the noise. Hearing protection is required when none of these strategies reduce noise to acceptable levels. Preliminary noise surveys and assessments are used with ACGIH guidelines to determine if noise levels require one or more of the above controls.

If surveys and testing identify that noise exceeds the permissible level, section 68 of the OH&S Regulations outlines the requirements for a hearing conservation program. Hearing conservation programs contain detailed strategies on how the employer will control noise hazards to protect workers from the negative health effects of noise exposure. In addition to noise surveys and control strategies, the program must contain

- selection, use, care and maintenance of PPE
- education and training for all workers who are overexposed to noise
- annual hearing testing for overexposed workers
- program evaluation conducted on a regular basis

Control strategies include, but are not limited to, isolation, sound barriers, regular maintenance of tools and equipment, education and training, job rotation, signage and PPE.

Many employers do not have a full understanding of noise attributes and hearing conservation responsibilities. They may not realize that to get an accurate reading of noise level requires the measurement of noise. Oftentimes, employers will purchase ear plugs or ear muffs which may not be the right solution for the problem. Wearing the wrong hearing protection may create a bigger hazard to workers.

Sample Performance Indicator

Choose a piece of equipment that may be in your school or workplace and create a poster that

- outlines hazards associated with the equipment,
- shows the signs and symptoms of hearing loss.
- identifies some control strategies that can be used to lessen the risk.

Module 17: Hearing Conservation

Sample Teaching and Assessment Strategies

Activation

Students may

- Review section 68 of the OH&S regulations as small groups or pairs and answer the following questions: What is the first step an employer takes? When? Why? How would an employer determine if noise is an issue?
- Using the hierarchy of controls from Module 2, brainstorm some potential noise control strategies that employers may use. What type of control is a hearing conservation program?

Connection

Students may

- Continue to work in pairs, small groups or mock OH&S committees to identify the legislative components of a hearing conservation program. Describe how preliminary noise surveys and assessments are used to help employers determine noise issues.
- Compile a chart that could be used as a guide for employers to follow when providing hearing protection for their employees. The chart should include specific jobs matched with the correct form of hearing protection for that job site. The chart should also justify each type of hearing protection for that specific application, as well as outline the process to be followed when using that type of protection.

Consolidation

Students may

- Create a webpage, poster, or video presentation illustrating to prospective workers how the employer is working to reduce noise hazards. The product should also indicate what workers are required to do to keep noise levels to a minimum and protect themselves when noise can not be controlled at the source.

Extension

Teachers may

- Invite an audiologist, industrial hygienist or occupational health nurse to class to discuss hearing conservation and the hazards contributing to hearing loss.

Students may

- Prepare questions in advance for the guest speaker. Following the presentation, students could write a summary of the speakers talk along with the answers to the questions asked.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 321 - 325

OH&S Regulations

- section 68

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - NL OH&S regulations – section 68
 - Levels of Hearing Loss
 - Video Demonstration – Levels of Hearing Loss
 - Types of Workplace Hearing Protection
 - Hearing Protection for Specific Work Places
 - Video – Protecting your Ears
 - Health and Safety Ontario – Hearing Conservation

Module 18: Outdoor Safety

Outcomes

Students will be expected to

81.0 discuss the hazards of outdoor activities involving:

- water
- ice
- wilderness
- all-terrain vehicle (ATV) use

Focus for Learning

The focus for this module is keeping safe while working outdoors and participating in outdoor activities. There are several industries in the province where workers are required to work on the water, in the outdoors and/or wilderness while operating equipment such as all-terrain vehicles. These include fishing and fish harvesters, vessel manufacturing, utilities, mining, construction, wildlife and hunting organizations, etc.

Students should recognize the hazard REC model theme throughout this module. Working outdoors should be treated no differently by employers than working at an indoor workplace. Before outdoor work activities, employers must conduct hazard and/or risk assessments to identify these hazards and to make a plan for minimizing risk to the worker. Written safe work practices and procedures for workers and emergency response plans are two very important control measures for workers.

Planning outdoor activities for pleasure should be no different from planning for work outdoors. The first step to any outdoor activity is to be prepared by recognizing potential hazards and putting controls in place to minimize risk. Making a trip plan, getting proper training and taking the essentials are three key elements to staying safe in the outdoors.

Emphasize that students should follow the health and safety hazard model when looking at the types of outdoor hazards. Using this model will help them look at all possible hazards that need planning and controls. When using an ATV, for example, they should look at all the possible hazards. This includes chemical, biological, physical and ergonomic hazards. In addition, safety hazards include those associated with tools, machinery and equipment, uneven terrain, drops and holes in ground and rocks. The environment can also pose hazards as wind, rain and snow can create slip and fall accidents while animals and wildlife offer their own special risks. Health and safety hazards can change very quickly in the outdoors of NL.

Module 18: Outdoor Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Introduce the topic of outdoor safety by explaining that there are many hazards associated with working and playing outdoors.
- Invite a local search and rescue worker or volunteer to talk about the hazards of working and playing outdoors in the province.

Students may

- Research outdoor health and safety theme weeks and/or months and invite students to create a display in the main lobby of the school to bring awareness to the topic.

Connection

Students may

- Using the hazard REC model of health and safety hazards, break down the hazards as either health or safety and identify in a chart the outdoor activities that are associated with each hazard.
- Create their own health and safety theme weeks that include water safety, ice safety, keeping safe in the wilderness and/or safe ATV riding.

Consolidation

Students may

- Assemble as small groups, pairs or individuals. Select a topic to begin the creation of an outdoor safety book, infographic, video or collage. This step will identify the health and safety hazards of outdoor activities.

Extension

Students may

- Make an outdoor emergency kit, as a class or small groups, and display at various locations through the school.
- Make a class geocache(s) and hide in an area around the school or community. In addition to the pencil and notebook that will be placed in the geocache, include safety tips that treasure hunters can use to make geocaching safe. Register the cache on geocaching.com so it can be found by anyone.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 330, 334, 338, 340, 343, 345

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - AdventureSmart “Get informed and go outdoors”
 - Parachute is a safety organization for students and young workers
 - Outdoor Winter Safety
 - Lifesaving Society – Who’s Drowning
 - Health Canada: Calendar of Health Promotion Days
 - National Water Safety month
 - Water Safety
 - Information about Lifejackets and PFDs from the Safe Boating Guide
 - Lifejackets and PFD’s – Transport Canada
 - Lifesaving Society
 - Drowning and Water-related Deaths in Canada

Module 18: Outdoor Safety

Outcomes

Students will be expected to

82.0 discuss various methods for controlling hazards during outdoor activities, including:

- water safety programs
- ice safety awareness
- wilderness safety programs
- proper all-terrain vehicle (ATV) use

Focus for Learning

The focus for this outcome is on the steps and activities that may be taken to reduce risk to individuals. SCO 81 outlined that the first step to preparing for any outdoor activity is to conduct a hazard and risk assessment and identify all safety and health hazards. The results of this assessment will lead to the development of safe practices and procedures and trip planning.

Trip planning is key to enjoying the wilderness or any outdoor activity such as ATV riding or boating. To stay safe, students should plan the route, become knowledgeable with the terrain, check the weather forecast, have emergency and first aid supplies on hand and leave the trip plan with a responsible adult. Unfortunately, families throughout the province have experienced serious injuries and losses, due in part to the lack of planning and preparedness.

Emphasize that training in the skills and knowledge to stay safe and know what to do in the event of an emergency is an important part of being prepared. Training may also include instruction in any tools, machinery and equipment (protective gear included) that are used during outdoor activities.

Sample Performance Indicator

Select one outdoor hazard and create a safety manual for elementary students that addresses the various types of health and safety hazards. Also outline the various control methods for the identified hazards.

Module 18: Outdoor Safety

Sample Teaching and Assessment Strategies

Activation

Teachers may

- Refer to the health and safety hazards identified in SCO 81.0 and review some possible controls that may be used.
- Invite a search and rescue worker or volunteer to talk about ways of keeping safe while working and playing outdoors.

Connection

Students may

- Using the hierarchy of control model of health and safety hazards, identify the controls that can be used to eliminate hazards or minimize risk and add to the chart in SCO 81.0.
- Continuing with the outdoor health and safety themed weeks and/or months, add to their displays about ways to keep safe.

Consolidation

Students may

- Conduct a full school assembly on one or more of the outdoor safety themes during one of the weeks (e.g., water safety)
- Display protective gear that must be worn during ATV, snowmobile riding, boating and swimming as a video, poster or collage.
- Develop safe work or operating practices/procedures for boats, snowmobiles or ATVs.
- Create an education and training program for flotation devices – PFD and life jacket

Extension

Students may

- Research the cause of hypothermia, signs and symptoms of hypothermia and how to prevent in water and on land.
- Create a display of safe ice thickness and/or role-play what to do to safely rescue someone who goes through the ice.

Resources and Notes

Authorized

Building a Safer Tomorrow

- pp. 331 - 347

Suggested

Various web resources

- <https://www.k12pl.nl.ca/curr/10-12/ohs/ohs-3203/links/unit-4.html>
 - AdventureSmart “Get informed and go outdoors”
 - Transport Canada's on the safe use of small watercraft in Newfoundland and Labrador
 - Safe Boating Guide – Transport Canada
 - The Newfoundland and Labrador Recreational Boating Advisory Council (N&L-RBAC)
 - Safe Boater Guide
 - Symptoms of Hypothermia
 - Treating Hypothermia
 - Hypothermia Video – Cold Water Boot Camp or Hypothermia Realities

References

- Coady C., Feltham-Scott D., Fewer C., Osborne C., Taylor K., Whiffen C., & Yetman M. (2015) *Building a Safer Tomorrow, Occupational Health and Safety*, Port Rexton: Mintbrook Hill Solutions.
- Leyton, E. (1975). *Dying hard: The ravages of industrial carnage*. Toronto: McClelland and Stewart.
- Occupational Health and Safety Act*. Revised statutes of Newfoundland and Labrador Chapter O-3, 1990. Queen's Printer
- Tomlinson, C. A. (2008). *The differentiated school: Making revolutionary changes in teaching and learning*. Association for Supervision and Curriculum Development (ASCD).
- UNESCO. (2004). *The plurality of literacy and its implications for policies and programmes*. Education Sector Position Paper. Paris, UNESCO.
- University of Western Ontario. (2009). *Understanding inclusive education*. Retrieved April 15, 2015 from <http://www.inclusiveeducationresearch.ca/about/inclusion.html>
- Workplace Health, Safety and Compensation Act*, Revised statutes of Newfoundland and Labrador Chapter W-11, 1990, Retrieved July 15, 2015 from <http://www.assembly.nl.ca/legislation/sr/statutes/w11.htm>
- World Commission on Environment and Development. (1987). *Our common future, from one earth to one world*. Retrieved April 15, 2015 from <http://www.un-documents.net/our-common-future.pdf>

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