

Inquiry-Based Learning in Health and Physical Education

A Resource Guide for Educators

Acknowledgements

Ophea is a not-for-profit organization dedicated to supporting school communities through advocacy, quality programs and services, and partnership building. Ophea is led by the vision that all children and youth will value, participate in, and make a lifelong commitment to active, healthy living. For more information on Ophea, visit www.ophea.net.

Inquiry-Based Learning in Health and Physical Education supports educators with the implementation of the 2015 Health and Physical Education Curriculum, Grades 1-8 and 9-12. It is intended to support educators in developing their understanding of inquiry-based learning, its application in the Health and Physical Education Curriculum, and the benefits it provides to students.

Inquiry-Based Learning in Health and Physical Education has been funded by the Government of Ontario.

Ophea wishes to acknowledge the following individuals for their contributions to this resource:

Program Development Team

Stephanie Cook, *Ophea*

Paul Andre Cyr, *Conseil scolaire de district catholique Centre-Sud*

Natasha Davey, *Aroland Education Authority*

Heather Gardner, *Ophea*

Stéphane Giroux, *Ophea*

Andrea Haefele, *Toronto District School Board*

Dave Inglis, *Thames Valley District School Board*

Deb Lawlor, *Ottawa Catholic School Board*

Muriel Rounthwaite, *Ophea*

Sharon Seslija, *Greater Essex County District School Board*

Joanne Walsh, *Ophea*

Writing Team

Deb Lawlor, *Ottawa Catholic School Board, Writer*

Sharon Seslija, *Greater Essex County District School Board, Reviewer*

Reference Disclaimer

Every effort has been made to trace the owners of the copyrighted materials and to make due acknowledgement. If situations are identified where this has not been achieved, please notify Ophea in order for appropriate corrective action to be taken.

Content Disclaimers

Other than Ophea programs and services, no endorsement by Ophea of any of the resources, programs, events, or services mentioned in this resource should be inferred. Inclusion or omission of any particular resource should not be considered as a recommendation or comment on the quality of the resource. No endorsement of any of the included resources by Ophea should be inferred.

Copyright© 2016 Ophea. All rights reserved. Limited duplication for personal use is acceptable, without permission, provided suitable credit is given.

Table of Contents

Acknowledgements	i
Introduction	5
Section One: Understanding Inquiry in Health and Physical Education	7
What is Inquiry-Based Learning?	7
Benefits of Inquiry-Based Learning	7
Inquiry Framework for Health and Physical Education	7
Adapting an Inquiry Stance with the Ontario Health and Physical Education Curriculum	9
Educator Entry Points into Inquiry-Based Learning	13
Start Where You Are	15
Considerations for Using Inquiry-Based Learning	15
• Shift in Educator Role	15
• Shift in Student Role	16
• Safe Learning Environment	16
• Collaboration	16
Section Two: Assessment in Inquiry-Based Learning	17
Key Considerations for Assessing Inquiry	19
Planning for Assessment	21
Differentiated Instruction and Assessment	21
Assessment Tools	21
• Generic Assessment Strategies and Tools	22
• Teacher Inquiry Planning Template 1	23
• Teacher Inquiry Planning Template 2	24
• Student Inquiry Organizer	25
• Information for an Inquiry Folder/Journal, or Research Notebook	26
• Anecdotal Recording Chart	27
• Inquiry Assessment Template	28
Section Three: Applying Inquiry in Health and Physical Education	29
Formulating Questions	30
• Types of Questions	31
• Effective Inquiry Questions	32
• Developing Effective Inquiry Questions	32
• Educator Tips to Facilitate Student Learning for Formulating Questions	33
• Sample Curriculum Connections for Formulating Questions	33
• Student Reflection Questions When Formulation Questions	35
• Assessing When Students Are Formulating Questions	35
• Success Criteria When Students Are Formulating Questions	35
• Tools to Formulate Questions	35
Question Matrix	36
See, Think, Wonder Template	37
Wonder Wall Template	38
RAN Chart for Inquiry	39
Question Builder Chart	40
Formulating Questions Provocation	41
Open-Ended Question Starters	42
Gather and Organize	43
• Skills Students Need to Learn and Develop	43
• Educator Tips to Facilitate Student Learning for Gathering and Organizing	44
• Sample Curriculum Connections for Formulating Questions	45
• Student Reflection Questions When Gathering and Organizing	46

Table of Contents (cont.)

• Assessing When Students are Gathering and Organizing	47
• Success Criteria When Students are Gathering and Organizing	47
• Tools to Support Learning to Gather and Organize	47
Information Source Tracking Sheet	48
Source Tracking Sheet	49
Graphic Organizer	50
Movement Competence (MC) Tracking Sheet	51
Activity/Running Log Tracking Sheet	52
Student Self-Assessment - Assessment as Learning	53
Interpret and Analyse	54
• Skills Students Need to Learn and Develop	54
• Educator Tips to Facilitate Student Learning for Interpreting and Analysing	54
• Sample Curriculum Connections for Interpreting and Analysing	55
• Student Reflection Questions When Interpreting and Analysing	56
• Assessing When Students are Interpreting and Analysing	57
• Success Criteria When Students are Interpreting and Analysing	57
• Tools to Support Learning to Interpret and Analyse	58
Matrix Organizer	59
Graphic or Video Text Organizer	60
Graphic Organizer for Analysing Sources	61
Questions to Practice Interpreting and Analysing	62
Analysing Checklist - Assessment As Learning	63
Exit Card	64
Evaluate and Draw Conclusions	65
• Skills Students Need to Learn and Develop	65
• Educator Tips to Facilitate Student Learning for Evaluating and Drawing Conclusions	65
• Sample Curriculum Connections for Evaluating and Drawing Conclusions	66
• Student Reflection Questions When Evaluating and Drawing Conclusions	67
• Assessing When Students are Evaluating and Drawing Conclusions	68
• Success Criteria When Students are Evaluating and Drawing Conclusions	68
• Tools to Support Learning to Evaluate and Draw Conclusions	69
Think Aloud Strategy	70
Conferencing	71
Graphic Organizer - Plus Minus Interesting (PMI) Chart	72
Template for Evaluate Evidence and Draw a Conclusion	73
Exit Card	74
Student Questions to Practice Evaluating and Drawing Conclusions	75
Inquiry Skills Rubric	76
Communicate	77
• Skills Students Need to Learn and Develop	78
• Educator Tips to Facilitate Student Learning for Communicating	78
• Sample Curriculum Connections for Communicating	79
• Student Reflection Questions When Communicating	80
• Assessing When Communicating	81
• Success Criteria When Students are Communicating	81
• Tools to Support Learning to Communicate	81
Word Wall Vocabulary	82
Inquiry Journal Entries	83
Inside-Outside Circle Sharing Strategy	84
Prompts to Encourage Student Thinking	85
Tracking Sheet - Assessment for Learning	86
Communication Self-Assessment Template	87
Presentation Rubric	88

Table of Contents (cont.)

Reflect	89
• Skills Students Need to Learn and Develop	89
• Educator Tips to Facilitate Student Learning for Reflecting	89
• Sample Curriculum Connections for Reflecting	90
• Student Reflection Questions When Reflecting	91
• Assessing When Students are Reflecting	92
• Success Criteria When Students are Reflecting	92
• Tools to Support Learning to Reflect	92
Reflection Exit Card	93
Questions to Help Students Practise Reflecting	94
Reflection Journal	95
Inquiry Process Reflection	96
Reflection Questions Summary for All Components of Inquiry Process	97
Section Four: Inquiry in Action	99
Elementary	99
• Inquiry Plan - Grade 3 Active Living: Physical Fitness	99
• Implementation Tools	102
Appendix A: Alphaboxes	103
Appendix B: KWHLQ Chart for Cardiorespiratory Fitness	104
Appendix C: Poster/Infographic	105
Appendix D: Observations Graphic Organizer	107
Appendix E: Anecdotal Recording Chart	108
Appendix F: Fitness Self-Assessment Checklist	109
• Inquiry Plan - Grade 5 Healthy Living, Healthy Eating: Making Healthy Choices and Making Connections for Healthy Living	110
• Implementation Tools	113
Appendix G: Anticipation Guide	114
Appendix H: Nutrition Label Match Vocabulary	115
Appendix I: Product Comparison Graphic Organizer	116
Appendix J: Self-Assessment Checklist	117
Secondary	118
• Inquiry Plan - Grade 9 Healthy Living, Healthy Eating: Making Healthy Choices and Making Connections for Healthy Living	118
• Implementation Tools	121
Appendix K: See, Think, Wonder Chart	122
Appendix L: Sample Interview Observations Tracking Sheet	123
• Inquiry Plan - Grade 10 Active Living: Physical Fitness	124
• Implementation Tools	128
Appendix M: Alphaboxes	129
Appendix N: KWHLQ Chart for Health-Related Physical Activity	130
Appendix O: Physical Activity Assessment Results Tracking Sheet	131
Appendix P: Anecdotal Recording Chart	132
Appendix Q: Goal Setting Checklist Peer Assessment	133
References	138

Introduction

This guide has been developed to support educators with the implementation of the 2015 Health and Physical Education Curriculum, Grades 1-8 and 9-12. It is intended to support educators in developing their understanding of inquiry-based learning, its application in the Health and Physical Education Curriculum, and the benefits it provides to students.

This guide is divided into four sections to support educators in exploring inquiry in health and physical education. Section One provides an overview of inquiry-based learning as it applies to Health and Physical Education. Section Two provides an overview of assessment in inquiry-based learning and related implementation tools. Section Three demonstrates how educators may apply an inquiry-based learning approach in Health and Physical Education, with guidelines for educators to use as they consider different components of the Inquiry Framework. Section Four provides sample inquiry plans for both elementary and secondary Health and Physical Education, including related implementation tools.

SECTION ONE

Understanding Inquiry in Health and Physical Education

What is Inquiry-Based Learning?

“Inquiry-based learning is a process where students are involved in their learning, formulating questions, investigate widely and then build new understandings, meanings and knowledge. That knowledge is new to the students and may be used to answer a question, to develop a solution or to support a position or point of view. The knowledge is usually presented to others and may result in some sort of action.”

(Alberta Learning, 2004, p. 1)

Central to the inquiry-based learning approach are the following key concepts:

- The process is grounded in the curriculum.
- The process provides the opportunity to extend learning.
- The process is recursive.
- The student is involved in the construction of knowledge.
- The process starts with questions/wonderings.
- Higher-order thinking is involved.

Benefits of Inquiry-Based Learning

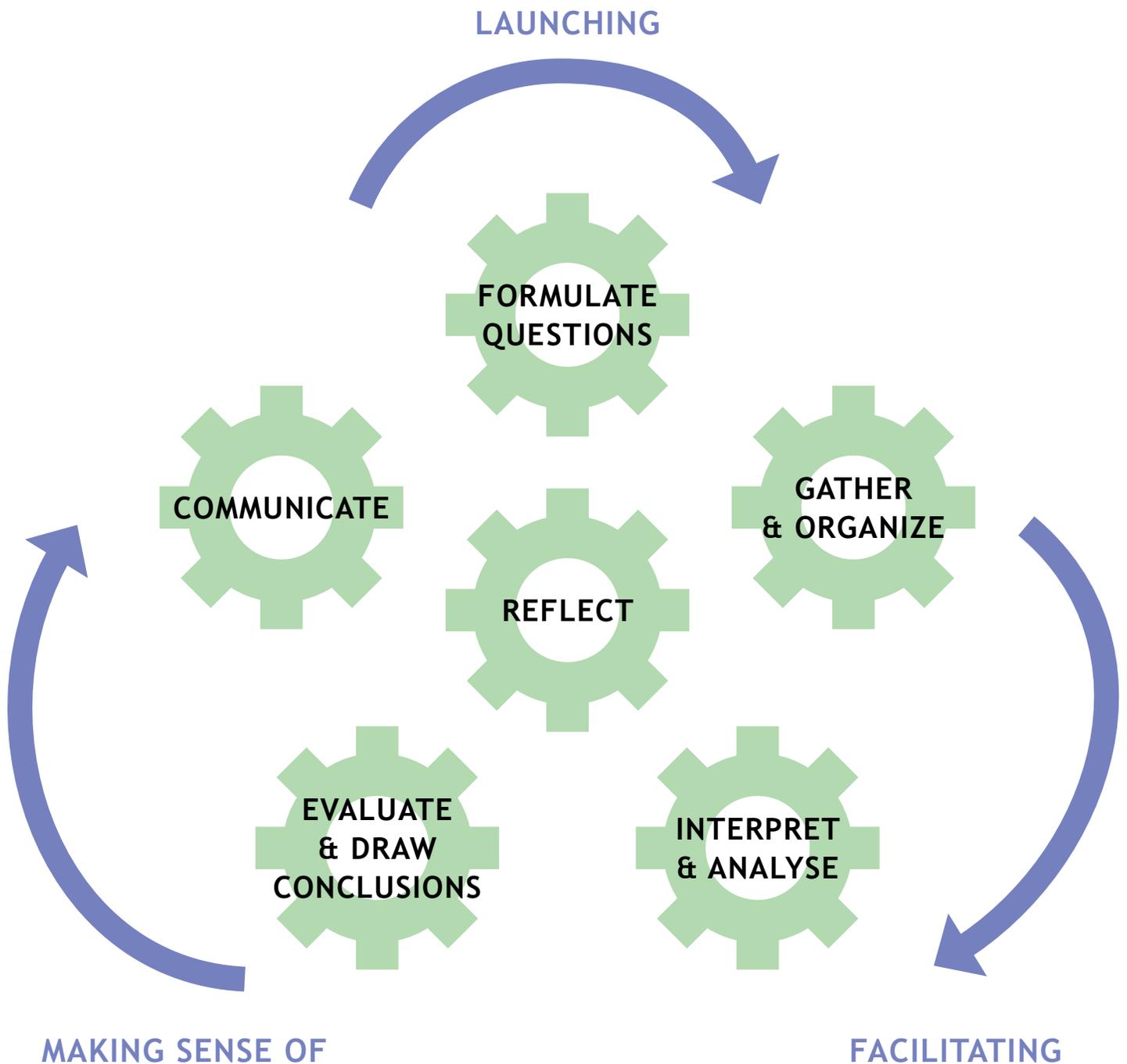
Students engaged in inquiry-based learning develop higher-order thinking skills such as analysing, synthesizing, evaluating, and reflecting, and they become more independent as they take responsibility for their own learning. As students pose their own questions their curiosity is piqued and as a result they are more engaged in the learning process. Throughout the inquiry process students also learn and practise collaboration and communication skills.

Inquiry Framework for Health and Physical Education

Adapted from the Ontario Social Studies, History, Geography, and Canadian and World Studies curriculum (Ontario Ministry of Education, 2013, p.23), the Inquiry Framework for Health and Physical Education (H&PE) illustrated in Figure 1 consists of six components that can be applied to student learning in the areas of both health and physical education.

Inquiry as a process for student learning can be considered in three stages: launching, facilitating, and making sense of inquiry, with the components of an inquiry process included throughout each stage. As part of **launching** their inquiry, students *formulate questions* to explore and investigate their topic. Educators **facilitate** the *gather and organize* component as students *interpret and analyse* what they’ve collected within the inquiry. Once students have collected appropriate information and evidence related to their question(s) they can move forward to **making sense of** their evidence—they *evaluate and draw conclusions*; *communicate* what they have learned; and *reflect* on what, why, and how they have learned. While the stages are progressive, educators can begin the process at any stage (see Figure 5, page 13).

Figure 1: Inquiry Framework for Health and Physical Education: Six Components of Inquiry-Based Learning



Stage 1: Launching

Formulate Questions: Students formulate questions or make predictions about concepts, strategies, and/or the relationships between topics or skills, and plan investigations to answer the questions as they take an active role in their learning.

Stage 2: Facilitating

Gather and Organize: Students collect, organize, and record relevant data, evidence, and/or information from appropriate primary or secondary sources. They focus and clarify ideas, concepts, strategies, or relationships between topics or skills.

Interpret and Analyse: Students interpret and assess data, evidence, and/or information, and analyse in order to identify patterns, relationships, currency, and bias; make connections; and potentially construct new knowledge.

Stage 3: Making Sense Of

Evaluate and Draw Conclusions: Students synthesize data, evidence, results, and/or information in order to make informed, critical judgments based on the reliability of the information and to explain the decision, choice, goal, or solution and its impact on themselves, others, and the world around them.

Communicate: Students consolidate and communicate observations, decisions, conclusions, goals, choices, strategies, and/or solutions clearly, logically, and effectively by using correct terminology and expressing information/results orally, in writing, or through demonstration or performance tailored to audience needs. They collaborate with others to deepen learning.

Reflect: Students reflect on initial questions, what they learned, what else they could investigate or try and what they could have done differently. They transfer learning to new situations and plan next steps.

It is important for educators to understand that the inquiry process is not a linear process. Learners may have to revise questions or develop additional questions based on what information they find during the *gather and organize* component or the *interpret and analyse* component. Students may need to gather more resources once they begin to *evaluate or draw conclusions*. Reflection can be performed during any stage, not only at the end of an inquiry. As educators guide students through the inquiry process, the curriculum expectations within Health and Physical Education must continue to drive student learning and assessment.

Adopting an Inquiry Stance with the Ontario Health and Physical Education (H&PE) Curriculum

In Health and Physical Education, students have the opportunity to develop inquiry skills in the **Active Living, Movement Competence, Healthy Living** strands and within the expectations of the **Living Skills**. The *2015 Health and Physical Education Curriculum* embeds “critical thinking skills such as questioning, predicting, analysing, synthesizing, examining opinions, identifying values and issues, detecting bias, and distinguishing between alternatives” (Ontario Ministry of Education, 2015a, p.72) in the curriculum expectations. These critical-thinking skills are the same skills needed and used in inquiry-based learning.

The **Living Skills** expectations from the 2015 Ontario Health and Physical Education Curriculum are taught in an integrated manner across all strands of the curriculum. Within these specific expectations, there is expected learning related to students’ knowledge of themselves, coping with challenges, interacting with others (collaboration and communication), and using a process for critical and creative thinking—all concepts reflective of the inquiry process.

The inquiry skills for *formulating questions, gathering and organizing, interpreting and analysing, evaluating and drawing conclusions, communicating new knowledge, and reflecting* are all found within the Living Skills expectations. Figure 2: Inquiry Components in the Living Skills: Critical and Creative Thinking Example illustrates how inquiry skills can be integrated within the Critical and Creative Thinking Living Skills. A similar approach can be taken to make connections between the other Living Skill areas and inquiry-based learning.

Figure 2: Inquiry Components in the Living Skills: Critical and Creative Thinking Example

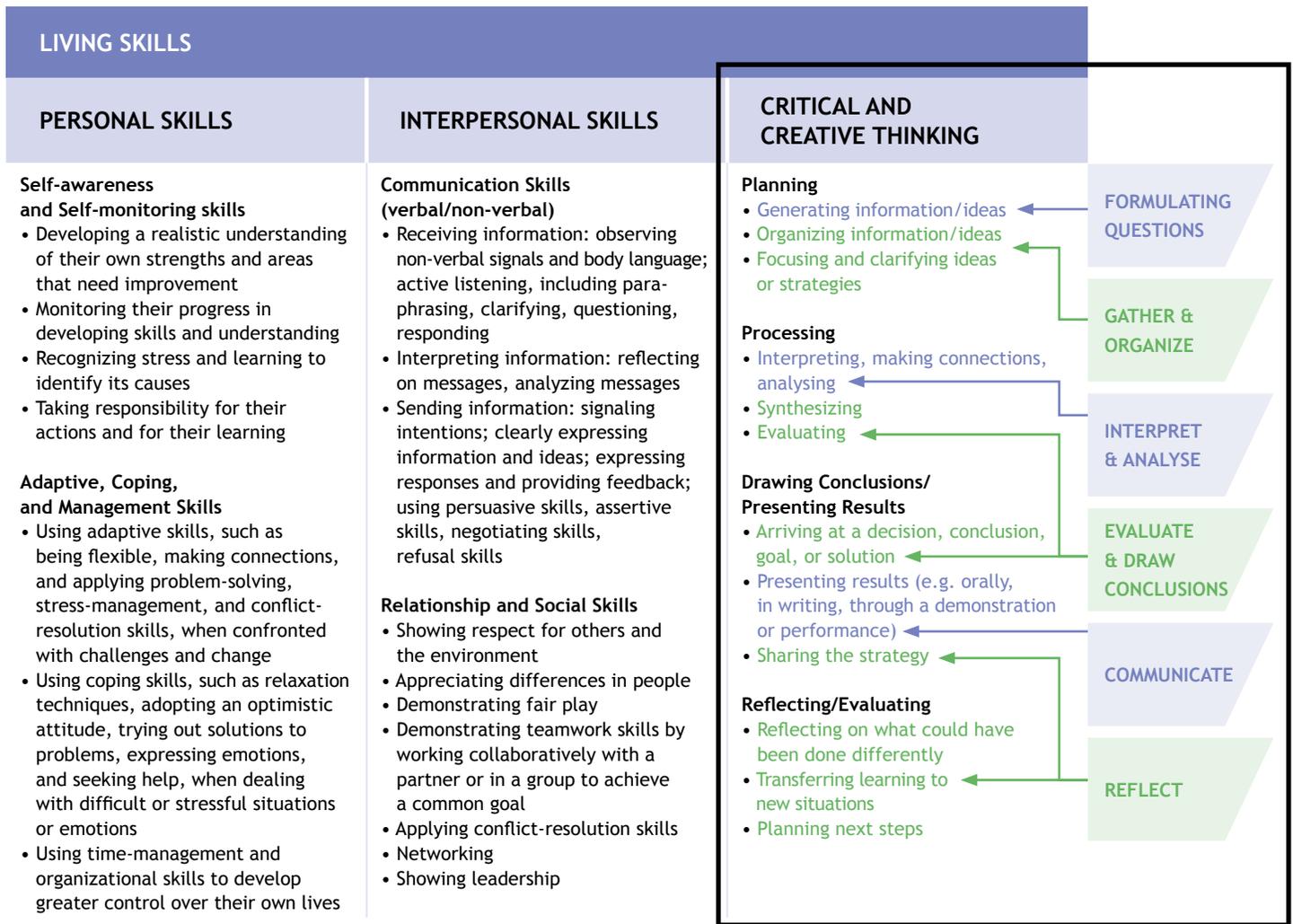
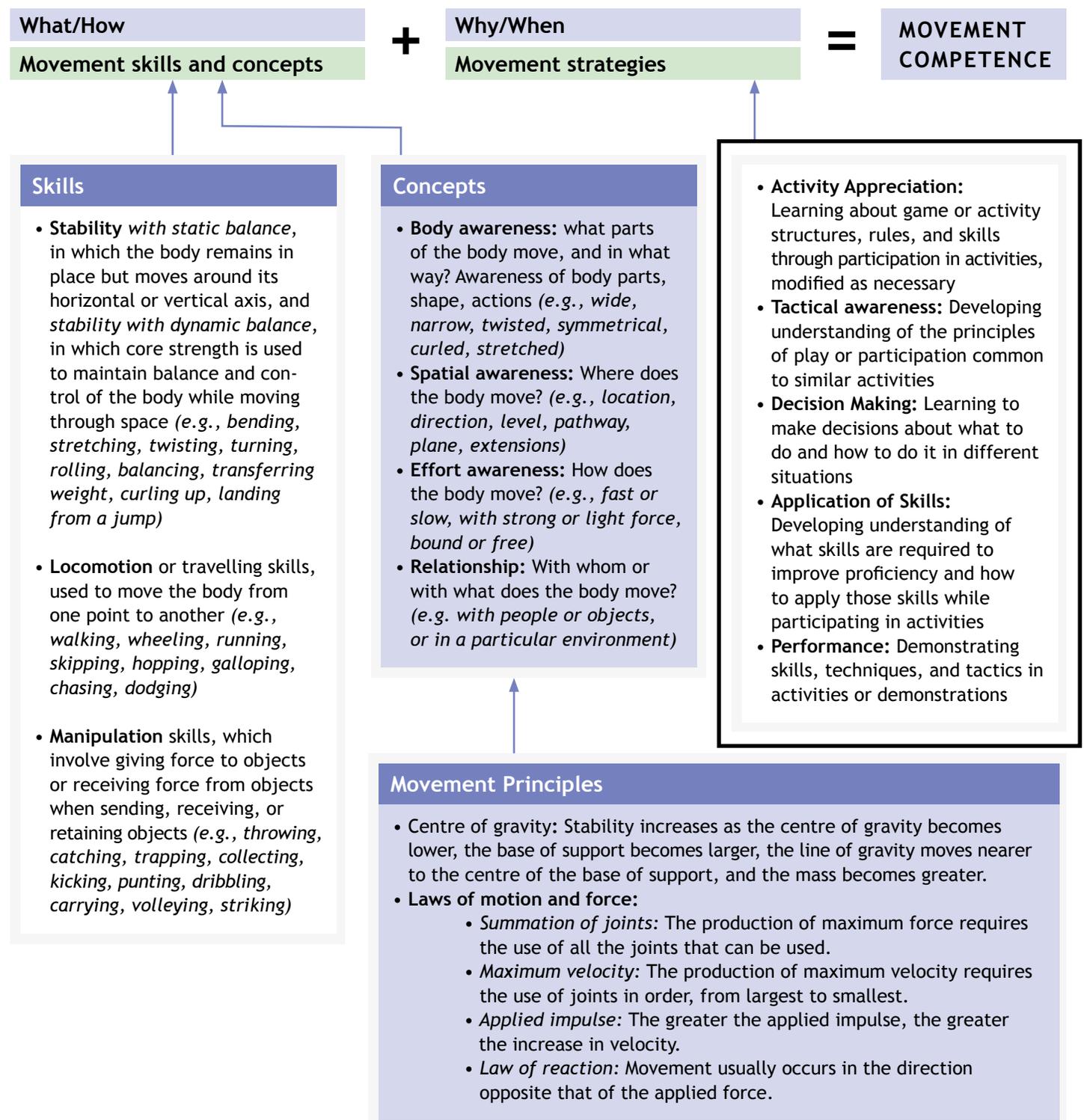


Figure 2: Ontario Ministry of Education, 2015a, p.24; Ontario Ministry of Education, 2015b, p.27

Within the **Movement Competence** strand students learn about strategies connected to various games and activities by actively exploring and investigating the strategies and tactics of the game or activity through modified versions of the games or activities. Students interpret and analyse the game or activity structure and the results from different tactics tried in order to make connections to other games or activities determining which strategies and tactics can be transferred to other games or activities in the same games category.

The Teaching Games for Understanding methodology supports many components of inquiry-based learning in which students learn through “doing” and educators are facilitators of learning who ask open-ended questions and encourage students to ask questions in order to help them discover and experiment with tactical decisions and solutions. Students can communicate and demonstrate their new learning through a physical performance.

Figure 3: Inquiry Components in the Movement Competence Skills: Concepts and Strategies Strand



In the **Healthy Living** strand there is shift from a focus on content knowledge to focusing on health literacy, which means building students skills and understanding of how to use health information to make healthy choices and understand how to make connections outside of oneself for healthy living. The inquiry process can be used as a vehicle through which students develop knowledge and skills related to the various health concepts and communicate their learning to promote healthy living with others, across their school, and in the community.

Figure 4: Inquiry Components in Healthy Living

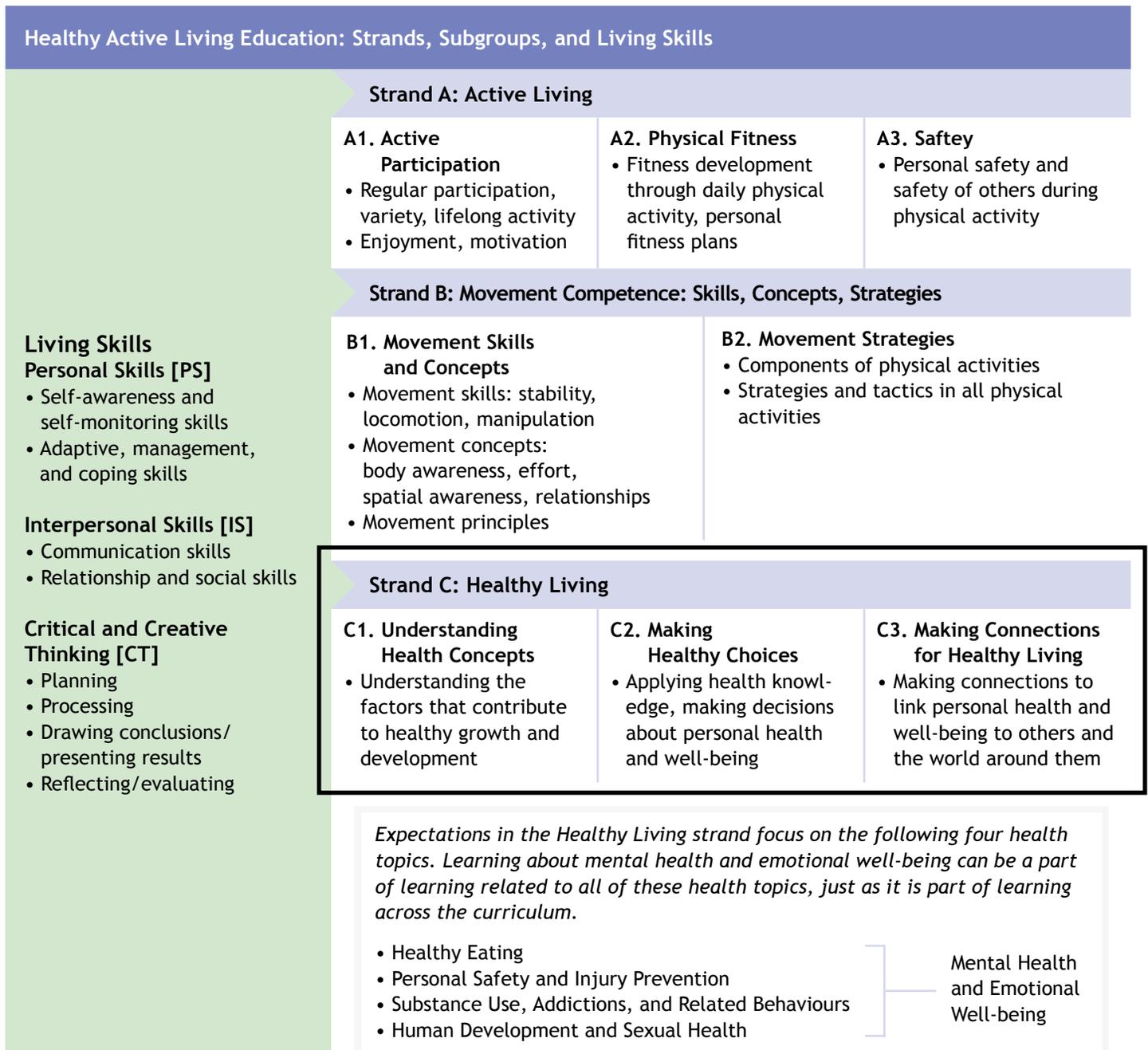


Figure 4: Ontario Ministry of Education, 2015, p.24; Ontario Ministry of Education, 2015b, p.26

Educator Entry Points into Inquiry-Based Learning

Inquiry is an approach to learning; educators may focus on the whole process or one or two of the components of inquiry. The educator decides at what stage of the inquiry process the inquiry is to begin and how much autonomy students are ready for, with respect to each component of the inquiry, as well as how much of the process to conduct with students.

Educators can approach inquiry from multiple entry points illustrated in figure 5. They may use a structured inquiry-based approach in which the educator guides students to practise just one component of the process (e.g., generating questions). Or they may use a guided inquiry approach in which the students practise more than one component of the inquiry process at a time. At the opposite end of the spectrum of student autonomy, educators may use an open inquiry approach in which students direct each component of the inquiry process with the educator providing feedback as students proceed through the components.

Educators may decide to use a structured approach for most parts of an inquiry combined with an open approach during specific stages, or may choose to differentiate parts of an inquiry for specific students in the class. For example, to engage a student who demonstrates strong reading abilities, the educator may have that student choose their own websites to research. For students who struggle with organizing their thoughts, the educator can provide graphic organizers for them to use when gathering their evidence. Considerations related to the entry point include:

- student readiness;
- educator comfort with inquiry-based learning;
- prior student knowledge;
- time, as some skills will need to be taught explicitly; and
- available resources and access to technology.

Figure 5: Spectrum of Student Autonomy in Inquiry-Based Learning

INQUIRY COMPONENT	GRADIENT OF STUDENT AUTONOMY MORE  LESS			
	OPEN INQUIRY	GUIDED INQUIRY		STRUCTURED INQUIRY
Formulate Questions: Learner engages in Health and Physical Education oriented questions	Learner poses a question	Learner selects among questions, poses new questions	Learner sharpens or clarifies question provided by educator, materials, or other source	Learner engages in question provided by educator, materials, or other source
Gather and Organize: Learner collects, organizes, and records relevant data, evidence, and/or information from appropriate primary or secondary sources, focusing on clarifying ideas or strategies	Learner determines what constitutes data, evidence, and/or information and collects it	Learner directed to collect certain data, evidence, and/or information	Learner given data, evidence, and/or information and asked to analyse	Learner given data, evidence, and/or information and told how to analyse
Interpret and Analyse: Learner interprets and assesses the data, evidence, and/or information and analyses in order to identify patterns, relationships, currency, and bias; making connections; and potentially constructing new knowledge	Learner formulates explanation after summarizing data, evidence, and/or information	Learner guided in process of formulating explanations from data, evidence, and/or information	Learner given possible ways to use data, evidence and/or information to formulate explanation	Learner provided with data, evidence, and/or information and told how to use evidence to formulate explanation
Evaluate and Draw Conclusions: Learner synthesizes data, evidence, results, and/or information in order to make informed critical judgments based on the reliability of information and explains the decision, choice, goal, or solution and its impact on themselves, others, and the world around them	Learner independently examines other resources and forms links to explanations	Learner directed toward areas and sources of data, results, and/or information	Learner given possible connections	
Communicate: Learner consolidates observations, decisions, goals, choices, and/or strategies; collaborates with others to deepen learning; communicates clearly and effectively by using correct terminology; and expresses information/results orally, in writing, or through demonstration or performance tailored to audience needs	Learner forms reasonable and logical argument to communicate information/results	Learner coached in development of communication	Learner provided broad guidelines to use, sharpen communication	Learner given steps and procedures for communication
Reflect: Learner reflects on initial questions, what was learned, what else could be investigated or tried, and what could have been done differently; transfers learning to new situations; and plans next steps	Learner independently applies self-awareness and self-monitoring skills	Learner directed towards key learnings and areas of strength and improvement	Learner given potential key learnings and possible areas of strength and improvement	Learner given key learnings and personal areas of strength and improvement

Figure 5: Adapted from Watt & Colyer, 2014, p. 12.

Start Where You Are

Using an inquiry stance to engage students in learning may be new to some educators and familiar to others. Most likely many educators already model or use some combination of inquiry when:

- asking students questions about game strategies within the TGFU (Teaching Games for Understanding) approach,
- having students track (gather) and analyse personal fitness results, and/or
- having students reflect on what they could do differently the next time they are in a conflict about their choices.

Educators who adapt an inquiry stance by asking effective questions are providing students with opportunities for deepening their knowledge and developing their critical-thinking skills of analysing, evaluating, and decision making.

To begin to use inquiry in Health and Physical Education educators consider:

- approaching inquiry with enthusiasm and excitement,
- understanding that inquiry involves the unexpected for themselves and for their students,
- modeling the inquiry process in their instruction,
- using the language of inquiry, and
- facilitating the process through discussion, clarification, support, and monitoring.

Educators who are experienced and comfortable with inquiry may consider taking it a step further by creating a cross-curricula inquiry question that addresses a number of expectations from multiple topics/courses.

Considerations for Using Inquiry-Based Learning

The following are some factors for educators to consider when adopting an inquiry-based learning approach.

Shift in Educator Role

To successfully facilitate inquiry-based learning, educators shift from the traditional role as provider of information and content to the role of a facilitator of learning. As experience and comfort with inquiry-based and student-centred learning increases, an educator becomes more of a guide and gradually releases responsibility to students to work more independently.

Modeling and guiding the inquiry process and the information literacy skills that are needed to effectively inquire is paramount. Students need to be taught information literacy and inquiry skills to be successful. As students develop the inquiry skills and their understanding of the inquiry process, an educator gradually releases responsibility and acts more as a guide and/or mentor.

Shift in Student Role

An inquiry-based approach to learning may be new to many students in Health and Physical Education. With this approach, students move from receiving information from the educator to taking a more active role in their learning and in constructing their own knowledge. Students will need practice as they adjust to developing their “learning to learn” skills.

To be successful in gathering evidence, students need to be able to find information that they can read and understand. Often, the information students gather is too complex for their age or grade. Though many students have done “research” projects, intentional instruction and/or guidance is sometimes required to help students because some may not have the information literacy or inquiry skills to research effectively. Educators need to incorporate time to instruct and/or review information literacy skills. The librarian in your school may be able to assist students in developing some of these literacy skills for conducting an inquiry in a variety of ways, by providing the following:

- an overview of the various resources available in the library/learning commons
- information on how to conduct searches for various types of print or digital resources
- a variety of sources (e.g., print, electronic/digital primary, secondary)
- strategies for using a table of contents and indexes, navigating web pages, and using headings and sub-headings
- tips on determining validity and reliability of sources
- conventions for citing sources of information
- tools to help keep track of information sources
- strategies for skimming and scanning
- strategies for using technology in the various stages

Safe Learning Environment

In order for students to take risks, ask questions, and share their thinking, an emotionally safe learning environment is needed. The physical set-up of the classroom or activity area and the established routines and rules are important for achieving a successful inquiry-based classroom.

When teaching health, educators may consider arranging a space in the room dedicated for learning and sharing, by placing desks in groups or in a circle. This can help create an environment conducive to student collaboration and shared learning.

Educators should also review the protocols that are established at the beginning of the year or semester. If students know what to expect and are familiar with the routines, they are more likely to feel comfortable taking risks in their learning. For example, if students understand that a regular part of the class is to stop during game play and answer a couple of questions posed by the educator, they become familiar with this routine and contribute more freely during such activities.

Educators may also consider providing opportunities for questions and reflection at various points in their lessons. Examples include having students pause and reflect about what they are learning and share their reflection with a partner; for example, they might stop and analyse game play, or strategize to achieve greater success.

Collaboration

It is important for educators to consider the group work and social skills needed by students and to take the time needed to develop group work norms and teach the skills required. “In an inquiry based classroom students make sense together” (Watt & Colyer, 2014, p. 68). Groups are more effective when members are being open-minded and listening attentively. Groups run more smoothly if students know what to do when conflict arises, how to disagree respectfully, and how to give and receive constructive feedback.

SECTION TWO

Assessment in Inquiry-Based Learning

Assessment happens in an ongoing way when using inquiry. In inquiry-based learning, the educator assesses the curriculum expectations from the Health and Physical Education curriculum, integrating the process and the product of the inquiry where applicable, always planning based on curriculum. In inquiry-based learning the process of inquiry is just as important as the final product. Students learn and demonstrate different skills in each of the stages of the inquiry process and it is these skills that can be assessed when they are specifically connected to curriculum expectations.

Learning is enhanced when students are offered multiple ways to demonstrate their learning, because the educator is given more opportunities to understand students' thinking and learning. Educators can use various ways to collect assessment information about student learning, including a variety of observations, conversations and products such as the following (Ontario Ministry of Education, 2010a, p.28):

- Formal and informal observations
- Discussions, learning conversations, questioning, conferences
- Tasks done in groups
- Demonstrations, performances
- Projects, portfolios
- Peer assessments and self-assessments
- Self-reflections

For additional assessment tools within the context of Health and Physical Education inquiry refer to the Assessment Tools located at the end of this section.

Educators need to plan for the various types of assessment when designing inquiry activities. Assessment can be summarized in three forms: assessment for learning, assessment as learning, and assessment of learning.

The purpose of both assessment *for* learning and assessment *as* learning is to improve student learning and inform educator instruction. By looking at evidence and seeing how students are doing—which skills that they have and where they need further support—educators are able to adjust or differentiate their instruction accordingly and provide specific feedback to help students achieve greater success in their learning.

Assessment *of* learning involves giving a value to student work related to the curriculum expectations at a given point in time (both at end of each stage and at the end of inquiry) and assigning a grade.

Inquiry-based learning is “clearly weighted in favour of assessment for and as learning since these types of assessments are effective aids for deepening students’ understanding and encouraging student involvement in the learning and assessment process” (The Laboratory School at the Dr. Erick Jackman Institute of Child Study, 2011, p. 31).

Figure 6: Forms of Assessment in Inquiry-Based Learning

FOR	AS	OF
<ul style="list-style-type: none"> • conducted before instruction is given or prior to proceeding to the next stage of the inquiry process in order to determine what skills students already know and can do • helps educators plan for anticipated challenges • formative—frequent and ongoing assessment as students are learning inquiry process skills • information is used by educators to monitor students' progress towards achieving critical, creative, self-awareness, and adaptive skills during inquiry • helps educators provide timely and specific descriptive feedback to students 	<ul style="list-style-type: none"> • ongoing during instruction and throughout the inquiry process • educator models and supports students in learning to assess themselves and peers • used by students to: <ul style="list-style-type: none"> • provide feedback to other students (peer assessment) • monitor their own progress towards achieving their learning goals for inquiry • to make adjustments in their learning approaches • to reflect on their learning, and • to set individual goals for learning 	<ul style="list-style-type: none"> • occurs at or near the end of a period of learning (any stage of inquiry process or end of entire inquiry; i.e., both process and product) • used by the educator to summarize student learning at a given point in time • used to make judgements about the quality of student learning on the basis of established success criteria

Key Considerations for Assessing Inquiry

When planning assessment opportunities using an inquiry-based learning approach, educators should consider the following concepts from Growing Success (Ontario Ministry of Education, 2010a):

- **Planning:** Assessment should be planned at the same time as instruction, and it should be integrated seamlessly into the learning cycle. Planned assessment should be used to inform instruction, guide next steps, and help both educators and students monitor progress towards achieving learning goals.
- **Criteria:** Established criteria for assessment and evaluation should be shared with students or co-constructed with students prior to learning. Students' work should be referenced for assessment and evaluation purposes to established criteria, rather than by comparison with work done by other students.
- **Ongoing Assessment:** Assessments should be ongoing throughout the learning cycle, varied in nature, and administered over a period of time. Students should be provided with multiple opportunities to demonstrate the full range of their learning throughout the class/course.
- **Assessment in inquiry can be used:**
 - to inform instruction, guide next steps, and help students monitor their progress towards achieving their learning goals
 - to give and receive specific and timely descriptive feedback about student learning, and
 - to help students to develop skills of peer assessment and self-assessment.

When educators use a variety of sources of evidence, the reliability and validity of the evaluation of student learning is increased. To ensure valid and reliable assessment and evaluation, educators are encouraged to collect evidence of student learning from a variety of sources (see Figures 7 and 8), on an ongoing basis, and in a variety of settings. Sources can include conversations, observations, and products, collectively referred to as “triangulation of evidence” (see Figure 7).

Figure 7: Triangulation of Evidence

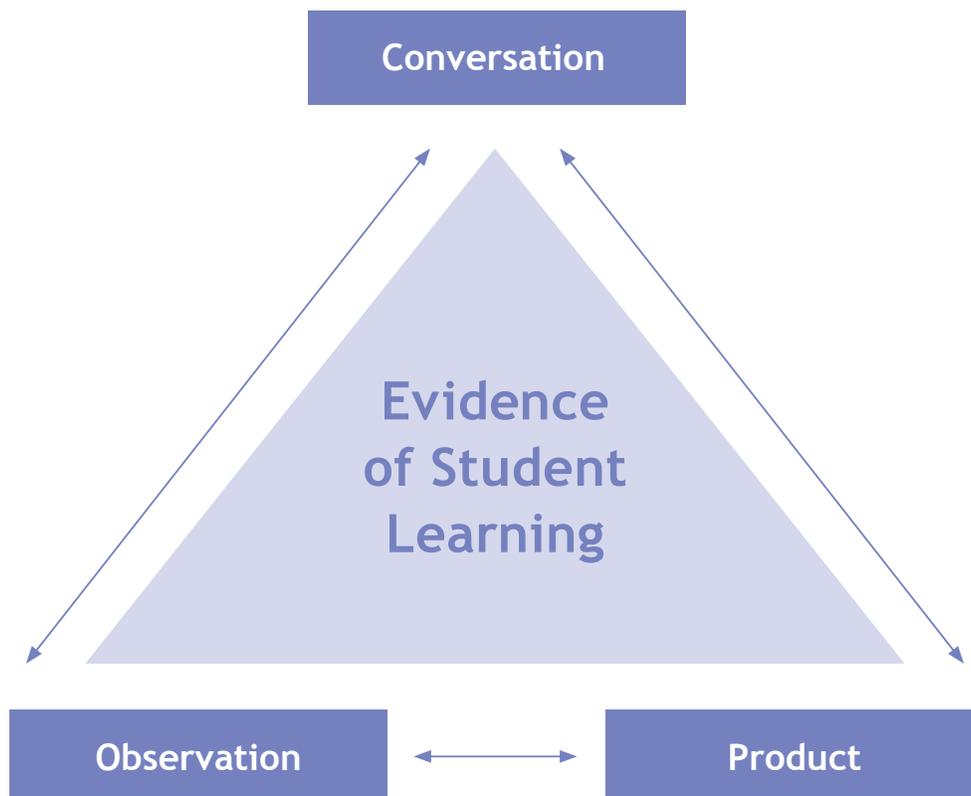


Figure 7: Adapted from Ontario Ministry of Education (2010a).

Figure 8: Sources of Evidence, Considerations and Health and Physical Education Examples**Source: Conversation**

EXAMPLES	BETWEEN PEERS, WITH EDUCATOR
Considerations	Conversations can also include written evidence such as journals in which educators can read what students have to say about their learning rather than listening.
H&PE Example	A student is using TGfU and is responding through reflective questions to consider how a game can be adjusted to be more challenging. The educator has a conversation with the student to assess the student's thinking.

Source: Observation

EXAMPLES	ANECDOTAL NOTES, ASSESSMENT CHECKLISTS
Considerations	Inquiry-based learning involves student collaboration. During times when students are working in pairs or small groups, the educator listens to and observes what students are saying and doing. The educator records observations to help assess what the student knows and is able to do.
H&PE Example	Students work in small groups to co-construct qualities (criteria) of a personal fitness goal. The educator moves throughout the room observing student conversations, recording students' demonstrated knowledge and making anecdotal notes.

Source: Product

EXAMPLES	STUDENT WORK, STUDENT THINKING RECORDED
Considerations	Inquiry journals, blogs, and portfolios are sources of evidence that reveal growth and progress of student learning over time.
H&PE Example	A student shares their inquiry findings related to making healthier food choices when eating out in their community, in a blog post.

“Documenting students’ questions can provide educators with information about a student’s understanding of the content area at hand, as well as his or her level of critical thinking” (The Laboratory School at the Dr. Erick Jackman Institute of Child Study, 2011, p. 23).

Planning for Assessment

Assessment should be planned prior to beginning an inquiry. Educators can start by assessing what students need to know and need to be able to do by the end of the inquiry. To further guide planning, the following should be considered (Alberta Learning, 2004, p.28; Ontario Ministry of Education, 2010a, p.33-35):

- Deciding how to monitor and assess student progress on an ongoing basis
 - Planning for monitoring and assessment of the expected learning from the curriculum throughout the inquiry process
 - Planning for assessment of the final product if applicable
 - Planning for co-constructing success criteria with students when developing assessment tools
 - Planning differentiated instruction as the need arises
 - Planning self-assessment and peer feedback
 - Planning for individual work as well as small group collaboration opportunities
-

Differentiated Instruction and Assessment

Educators who use a variety of oral, written or visual assessments throughout the inquiry process help address the various learning styles of students. This approach can allow them to demonstrate their learning and make their thinking visible according to their individual strengths.

For any students who find it difficult to express their understanding through writing, e.g. visual learners, English language learners, educators can consider using illustrations and other visuals such as graphic organizers to provide evidence of student learning. Sometimes what isn't included in a students' illustration can be an indicator of what the student may be overlooking or misunderstanding.

Inquiry-based learning can be approached independently, in pairs or small groups. Educators can consider flexible groupings based on interest, topic/question or readiness in terms of inquiry skills.

Educators should use practices and procedures that “relate to the interests, learning styles and preferences, needs, and experiences of all students” and that “support all students, including those with special education needs, those who are learning the language of instruction (English or French) and those who are First Nation, Metis, or Inuit”. (Ontario Ministry of Education, 2010a, p. 6)

Assessment Tools

The following assessment tools can be used to support student learning throughout an inquiry in Health and Physical Education.

- General Assessment Strategies and Tools
- Teacher Inquiry Planning Template 1
- Teacher Inquiry Planning Template 2
- Student Inquiry Organizer
- Information for an Inquiry Folder/Journal or Research Notebook
- Anecdotal Recording Chart
- Inquiry Assessment Template

Generic Assessment Strategies and Tools

Assessment Strategies

Conversations	Observations	Products
<ul style="list-style-type: none"> • Conference • Interview • Questioning • Small group discussions • Class discussions • Quick debriefs after a game or within a physical activity circuit 	<ul style="list-style-type: none"> • Classroom and activity area observation • Student journals or workbooks • Inquiry books • Student/peer assessments • Rehearsal 	<ul style="list-style-type: none"> • Physical demonstration or performance • Video or audio recording • Photograph or series of photographs • Report • Presentation • Pamphlet • Webpage • Portfolio

Assessment Tools

Rubrics	Green, Yellow, Red light self-assessment
Met/Not Met Yet	Checklist
Records of Conversations	Rating Scales
Checkbric	Observation Notes
Thumbs-Up Self-Assessment	Exit Card

Teacher Inquiry Planning Template 1

Curriculum Connections	Big Idea
Inquiry Question	
What students need to know:	What students need to be able to do:
<ul style="list-style-type: none"> • • • • 	<ul style="list-style-type: none"> • • • •
Culminating Assessment	
Prior Knowledge Activation	
Instructional Activities	Assessment For/As Learning

Student Inquiry Organizer

The Student Inquiry Organizer is a flowchart with the following steps and connections:

- My question is:** (light blue box) connects to **What I already know about this topic:** (light green box) via a horizontal arrow.
- What I already know about this topic:** connects to **How I plan to find out more about this:** (light grey box) via a vertical arrow.
- How I plan to find out more about this:** connects to **What I have learned:** (light blue box) via a vertical arrow.
- What I have learned:** connects to **Answer/solutions to my question, or decision made:** (light green box) via a horizontal arrow.
- Answer/solutions to my question, or decision made:** connects to **Connections to other subjects/areas of my life:** (light blue box) via a vertical arrow.
- Connections to other subjects/areas of my life:** connects to **What Actions/Next Steps:** (light blue box) via a vertical arrow.
- What Actions/Next Steps:** connects to **What questions do I have now? What else do I want to know?** (light grey box) via a vertical arrow.

My question is:

What I already know about this topic:

How I plan to find out more about this:

What I have learned:

Answer/solutions to my question, or decision made:

Connections to other subjects/areas of my life:

What Actions/Next Steps:

What questions do I have now? What else do I want to know?

Information for an Inquiry Folder/Journal or Research Notebook

Creating an inquiry folder, journal, or research notebook is a great way for students to collect evidence of their learning and record their progress throughout the inquiry process. Inquiry folders can contain a variety of samples of student learning of the various inquiry process skills.

Consider collecting the following items:

- initial questions, wonderings
- drawings, diagrams
- anecdotal notes, research
- sources
- plans, next steps
- revision of original inquiry question as needed
- outline for the communication of their findings
- reflections at end of each stage and at end of inquiry
- new questions that arise throughout and at the end of the inquiry

These portfolio items become a source of evidence of process learning and can also be used for assessment purposes.

Anecdotal Recording Chart

Observations		
Curriculum Expectations:		
Success Criteria:		
Name: _____ Date: _____	Name: _____ Date: _____	Name: _____ Date: _____
Name: _____ Date: _____	Name: _____ Date: _____	Name: _____ Date: _____
Name: _____ Date: _____	Name: _____ Date: _____	Name: _____ Date: _____
Name: _____ Date: _____	Name: _____ Date: _____	Name: _____ Date: _____

Inquiry Assessment Template

Name: _____

Inquiry Skills Criteria (insert H&PE related success criteria)	Met	Not Met Yet	Evidence
Formulate Questions • •			
Gather and Organize • •			
Interpret and Analyse • •			
Evaluate and Draw Conclusions • •			
Communicate • •			
Reflect • •			

Adapted from Gregory, Cameron, and Davies (2011).

Sample criteria for assessing the inquiry process

(Educator to insert in checklist above as linked to Health and Physical Education curriculum expectations)

- | | |
|---|---|
| <input type="checkbox"/> I ask questions that are open-ended and require deep thinking rather than simple recall. | <input type="checkbox"/> I understand and can clearly explain the main ideas and arguments in the evidence. |
| <input type="checkbox"/> I gather information from various sources and multiple perspectives. | <input type="checkbox"/> I communicate my findings clearly and address a specific audience appropriately. |
| <input type="checkbox"/> I analyse the validity and reliability of my sources. | <input type="checkbox"/> I reflect on how I learn best in each of the stages of the inquiry process. |

SECTION THREE

Applying Inquiry in Health and Physical Education

This section of the guide demonstrates how educators may apply an inquiry approach in Health and Physical Education with guidelines for educators to use as they consider the different components of an inquiry process. Each of the six components of the Inquiry Framework for Health and Physical Education will be examined in terms of:



The skills students need to learn and develop



Assessment strategies



Educator tips



Success criteria



Elementary and secondary connections to the curriculum



Tools to support student learning throughout each of the components of the inquiry process



Student reflection questions

Formulating Questions

Students formulate questions or make predictions about concepts, strategies, and/or the relationships between topics or skills, and plan investigations to answer the questions as they take an active role in their learning.

As educators guide students through the Formulating Questions component, they may refer to Figure 5 (page 13) to give consideration to the planned level of student autonomy, taking into account student needs and educator comfort.

Inquiry-based learning begins with a question, a problem, or a wondering that is related to the big ideas of the curriculum.

Questions are used throughout the inquiry process for a variety of reasons:

- Questions spark curiosity and engage students in their learning.
- Teaching students how to ask questions helps them to develop the critical- and creative-thinking skills as outlined in the Living Skills in the Health and Physical Education curriculum.
- For students to develop the skills for asking or formulating questions, educators need to model effective questioning techniques as part of their teaching practice on a regular basis.
- Students' confidence and competence are developed through their ability to respond to these questions.

Many terms such as “essential”, “framing”, “driving”, and “higher order” are used to describe the type of questions used in planning and delivering curriculum. This guide focuses on characteristics of an *effective* inquiry question and what it might look like in Health and Physical Education. For educators new to inquiry-based learning, techniques to begin integrating questioning in regular practice are also explored.

Did you know?

About 60% of the questions teachers ask are factual or recall questions, and about 20% are related to management of the classroom. Only about 20% of questions require students to engage in cognitive processes such as generating, integrating, synthesizing, and evaluating. (Ontario Ministry of Education, 2010b, p.4)

Types of Questions

Educators may begin by asking what questions they currently ask their students. Do their questions provoke student thinking? How are their questions connected to the expected learning in the Health and Physical Education?

There are many different types of questions that can be used in Health and Physical Education to use an inquiry stance into instructional practices. These include but aren't limited to the examples in Figure 9.

Figure 9: Types of Questions

Type of Question	Purpose	Examples
Overarching questions	This is a broad question based on the big ideas of the curriculum and may be relevant across multiple units or even multiple disciplines. These may be used to guide a unit.	<ul style="list-style-type: none"> • <i>How do our various body systems interact?</i> • <i>How does food turn into energy?</i> • <i>What kind of practice improves performance?</i> • <i>Why do games have rules?</i>
Topical question	This type of question is specific to the understandings of a particular unit or topic. Educators may use several topical questions in several lessons to help answer one overarching question.	<ul style="list-style-type: none"> • <i>How do we hit with the greatest power without losing control?</i> • <i>Why can't two runners occupy the same base at the same time in baseball?</i>
Simple skill-related questions	This type of question elicits purposeful feedback, or helps to develop a skill.	<ul style="list-style-type: none"> • <i>How was your racquet angled when you contacted the birdie?</i> • <i>What resources can you use to find information about mental health supports in your community?</i>
Analytical question	This type of question develops decision-making and problem-solving skills with respect to game or activity strategy or a personal health choice by asking <i>how</i> or <i>why</i> .	<ul style="list-style-type: none"> • <i>How can you position yourself in relation to your opponent to prevent a goal from being scored?</i> • <i>How would you go about solving a problem in a relationship?</i> • <i>What steps do you need to take?</i> • <i>What biomechanical principles would you focus on to increase the distance you throw the ball?</i>
Review question	This type of question develops thinking skills related to reflecting on an activity. It also develops thinking skills related to the development of a skill and ways to improve the activity or approach.	<ul style="list-style-type: none"> • <i>How can we change the game so everyone is included?</i> • <i>How does increasing the boundaries change the strategies you use to defend the goal?</i> • <i>How do your choices about substance use help you to live safely?</i>

Effective Inquiry Questions

Effective inquiry questions (McTighe & Wiggins, 2013):

- are open-ended (do not have a single, final, and correct answer);
- are thought-provoking and intellectually engaging (often sparking discussion and debate);
- call for higher order thinking (such as analysis, synthesis, inference, prediction; cannot be effectively answered by recall alone);
- point toward important, transferrable ideas;
- raise additional questions and spark further inquiry;
- require support and justification, not just the answer; and
- recur over time—that is, these are questions that can and should be revisited again and again.

Developing Effective Inquiry Questions

When creating effective questions to use for inquiry, educators must first determine the criteria for an effective question. Then they must keep those criteria in mind while developing questions and use them as a reference afterwards to review the quality of the question created.

The following are three steps for educators to consider for developing effective inquiry questions:

1. Use curriculum to identify and develop big ideas.

These ideas should be broad, timeless, and transferable. Educators should look at the verbs and nouns from the curriculum and identify what students will need to know and be able to do within both the Healthy Living strand and Living Skills expectations. For example, for “A2. requires students to demonstrate an understanding of the importance of being physically active, and apply physical fitness concepts and practices that contribute to healthy, active living”, the big idea is “Being physically fit has an impact on one’s health and well being”.

2. Brainstorm questions for the strand/unit.

Related to the curriculum expectations, educators can ask what is it that students would like to know? For example: How is your physical fitness level related to your overall health and well being? What do I need to do to be physically fit? What must I do to monitor and adjust my fitness level?

3. Question review.

Educators can compare questions with the criteria for an effective question and tweak as needed. For example, a question such as: “How is your physical fitness level related to your overall health and well being?” calls for higher order thinking and is open ended, but an educator might ask themselves whether the question is thought provoking and targeted enough.



Educator Tips to Facilitate Student Learning for Formulating Questions

To support the Formulating Questions component, educators may consider the use of the following implementation recommendations (Ministry of Education, 2011):

- Plan ahead and insert questions to ask students into lesson plans.
- Answer the question themselves to help them anticipate how students will answer and where they may struggle, and anticipate further questions they might consider asking to push student thinking and deepen student understanding.
- Become familiar with the curriculum, considering which educator prompts to use or adapt for questions in their lessons.
- Keep in mind the stage of development of their students; providing questions that are challenging but manageable.
- Use open-ended questions to encourage a range of possible responses and building student confidence in answering.
- Present curriculum expectations as questions.
- Look at their current questioning practices and choose one area to build upon.
- Take a lesson they currently have and tweak it to incorporate one or more components of the inquiry process.
- Try a mini-inquiry, thinking about how to change a unit from a content-focused to an inquiry-based approach.
- Look for opportunities to co-teach inquiry skills with the librarian in their school.
- Consider displaying the components of the inquiry process in a Word Wall poster for reference in the classroom or activity area.



Sample Curriculum Connections for Formulating Questions

With differentiated instruction and varying amounts of support, many of the strategies identified in Figure 10 (on the following page) can be used at all age/grade levels. For example, many of the examples for secondary students are also applicable for many elementary students.

Figure 10: Sample Curriculum Connections for Formulating Questions

Curriculum Expectations for Health and Physical Education - Grades 1-8 <small>(Ontario Ministry of Education, 2015a)</small>	Core Concepts	Big Idea	Overarching Questions
<p>Movement Competence B2. apply movement strategies appropriately, demonstrating an understanding of the components of a variety of physical activities, in order to enhance their ability to participate successfully in those activities</p>	<ul style="list-style-type: none"> • Movement strategies • Components of an activity (movement skills, rules, boundaries, fair play) • Successful Participation 	<p>You can improve your performance using game strategies</p> <p>How you conduct yourself is as important as playing well</p>	<ul style="list-style-type: none"> • What do you need to think about when you are playing? • How can you play fairly? • What makes a good teammate?

Possible Topical Questions (Ontario Ministry of Education, 2015a)

Movement Strategies

- What is the best way to get the ball to your partner? (primary)
- What did you do to improve your chances of success in the activity we just did? (junior)
- What similar strategies might you try in golf, bowling and curling? (junior)
- What did your opponent do that was successful? What strategy could you use in response? (intermediate)

Interpersonal skills

- What can you do to play fairly when playing the game of tag? (primary)
- How is the game set up so that it includes everyone? (junior)
- How does fair play, etiquette and ethics affect game play? (intermediate)

Curriculum expectations for Health and Physical Education -PPLO	Core Concepts	Big Idea	Overarching Questions
<p>A2. demonstrate an understanding of the importance of being physically active, and apply physical fitness concepts and practices that contribute to healthy, active living</p>	<ul style="list-style-type: none"> • Importance of regular, vigorous activity • Factors affecting fitness levels • Benefits of being physically fit • How to assess fitness levels • How to develop/ revise personal fitness plan 	<p>Being physically fit has an impact on one's health and well-being.</p>	<ul style="list-style-type: none"> • How do you maintain physical fitness throughout your life? • What makes a person physically fit? • Why is it important to be physically fit?

Possible Topical Questions

Personal Fitness

- Is 20 minutes of daily moderate to vigorous activity enough to be physically fit?
- How can you tell if you are physically fit?
- How can you develop your current fitness level?
- Why might your fitness plan change over time?
- Why can it be easy to lose your level of fitness?



Student Reflection Questions When Formulating Questions

Educators may pose the following questions to prompt students to reflect on their actions in the Formulating Questions component:

- Do your questions connect to the Big Ideas or topic area?
- Are your questions open-ended?
- Are your questions thought-provoking and intellectually engaging?
- Do your questions call for higher-order thinking skills?
- Do your questions raise additional questions and spark further inquiry?
- Do your questions require support and justification?
- Are your questions ones that can be revisited over time?
- What type of questions are you asking (e.g., topical, overarching, skill-related, analytical, review)?



Assessing When Students are Formulating Questions

Students reflect on the Formulating Questions component by using the following Success Criteria as related to the Health and Physical Education curriculum expectations.



Success Criteria When Students are Formulating Questions

Educators develop the success criteria with students so that a common understanding is developed. The co-constructed descriptions may be different in each class, but below is a list of possible success criteria for formulating questions. Each of the following success criteria should be expanded to be linked to what students are specifically learning within Health and Physical Education curriculum.

- I can use brainstorming strategies to construct questions about [specific learning in HPE curriculum].
- I can use a provocation (e.g., video, infographic, photograph, or artifact) to generate questions.
- I can explain the difference between a simple and a complex question.
- I can develop open-ended questions that require higher order thinking.
- I can create an effective inquiry question.
- I can refine my question as needed throughout an inquiry.
- I can ask questions related to the original question investigated.
- I can apply self-monitoring skills as I reflect throughout the inquiry process.



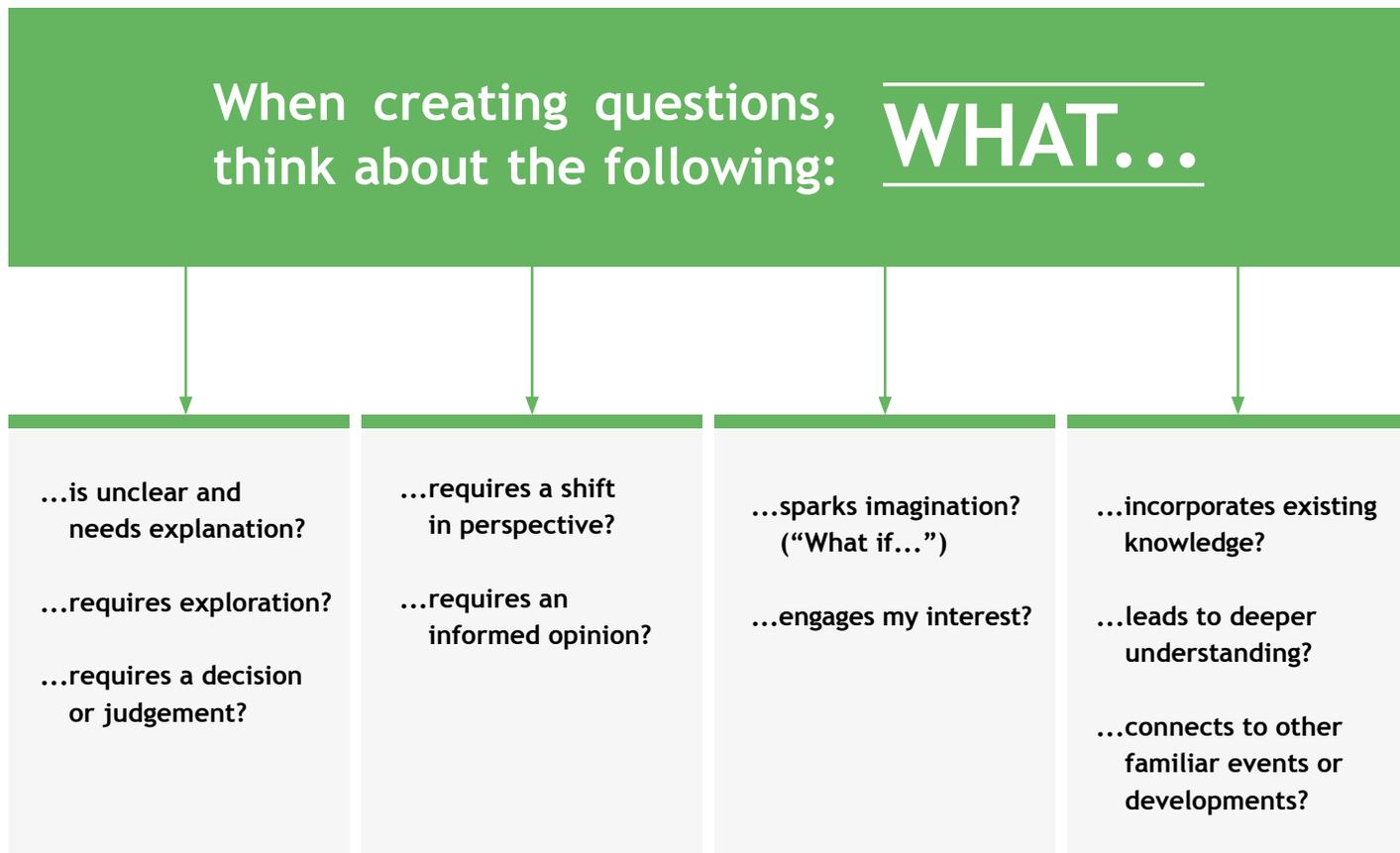
Tools to Support Learning to Formulate Questions

The following tools have been developed to support student learning as they are learning to Formulate Questions. As appropriate, consider differentiated tools based on the individual needs of the learners.

- Question Matrix
- See, Think, Wonder Template
- Wonder Wall Template
- RAN Chart for Inquiry
- Question Builder Chart
- Formulating Questions Provocation
- Open-Ended Question Starters

Question Matrix

Students can use the following Question Matrix to prompt critical thinking when creating questions.



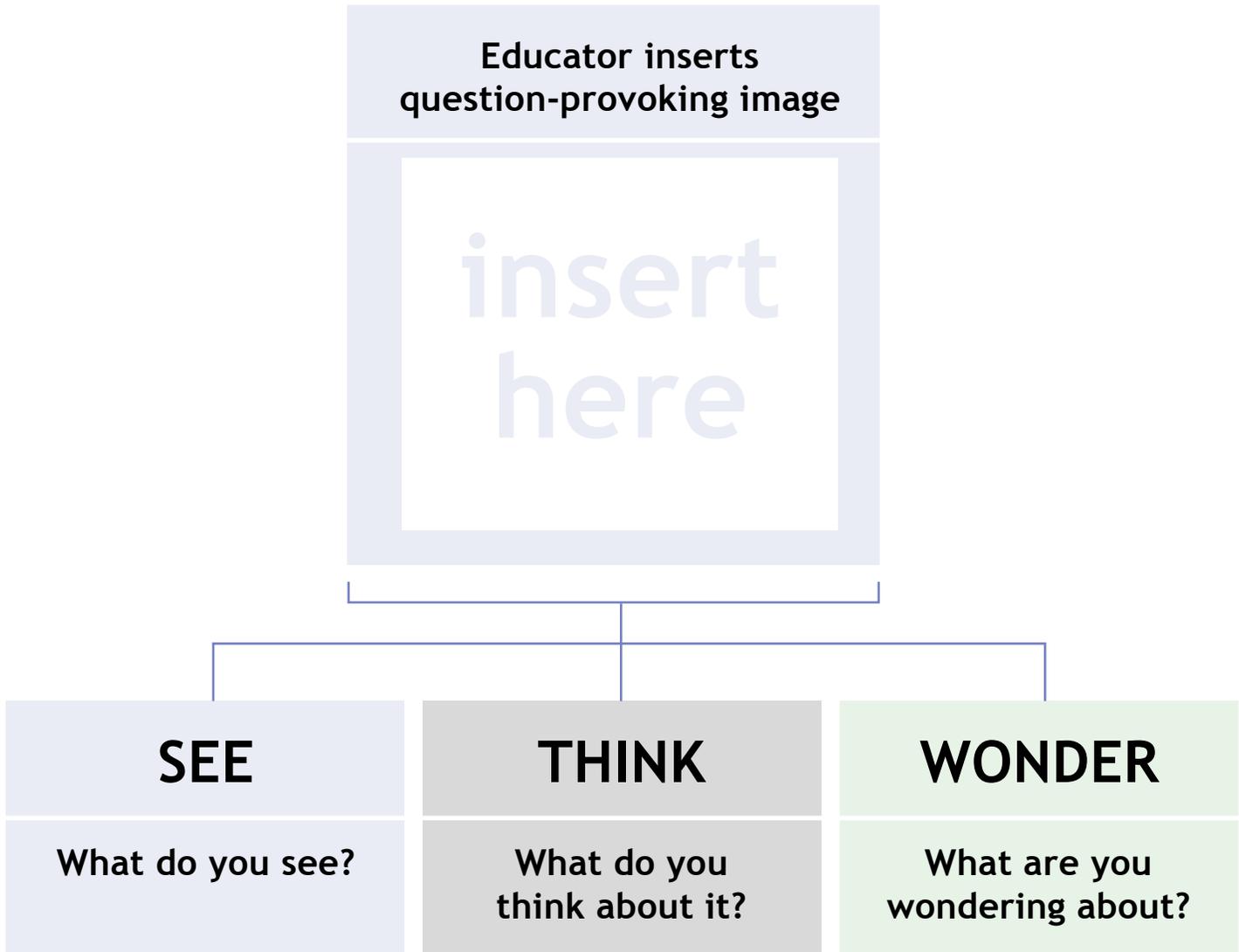
Adapted from Colyer, Cecillon, Draper, and Hoogeveen (2009).

Sample Question Matrix Responses:

- **What is unclear and needs explanation?**
e.g., the pros and cons of legalizing marijuana: “What impact would legalizing marijuana have on the laws for operating motor vehicles while impaired?”
- **What requires a shift in perspective?**
e.g., thinking like both an offensive and defensive player: “How do the defender’s actions influence what I’ll do next?”
- **What sparks imagination?**
e.g., looking at rules and regulations in a different way: “What if sports had no referees?”

See, Think, Wonder Template

The following template can be used to support students when formulating questions.



Wonder Wall Template

Create a **wonder wall** using poster paper or a bulletin board to record student thinking and questions.



RAN Chart for Inquiry

A RAN (Reading and Analysing Non-fiction) Chart is a graphic organizer that students can use to organize their thoughts and learning as they work through an inquiry. To start, students record their prior knowledge and wonderings they have about the topic or inquiry question. As they progress through the gathering and analysing information phase, students confirm what they knew, record any misconceptions that were part of their prior knowledge, and add new knowledge they gained.

What I think I know	Wonderings	Confirmed	Misconceptions	New information

Adapted from Steed (2001).

Other Instructional Strategies with a RAN chart

- **Group RAN Chart**

Depending on space in the classroom or activity area, educators may choose to have the whole class complete the activity together and make a wall-sized chart. This would be one method to model the process for students before having them complete it on their own.

- **Sticky Notes**

Consider having students use sticky notes to record their thoughts on the chart and move ideas from the first column to the confirmed or misconceptions column. Educators may also use technology (e.g., various apps) to store a question electronically and have students post electronically and access/share outside of class.

- **Inquiry Folders**

Consider keeping student RAN charts in a portfolio to provide a quick reference for each student's progress and to give feedback easily. The chart may be completed as a whole-group, small-group, or individual activity.

Question Builder Chart

To form a question, first select one word from the left-hand side of the Q chart (Who, What, Where, Why, When, How). Next select a word from the upper column (Is, Did, Can, Would, Will, Might). Use these two words as starters to form a question.

	Is	Did	Can	Would	Will	Might
Who						
What						
When						
Where						
How						
Why						
Which						

Adapted from Koechlin and Zwaan (2002).

Formulating Questions Provocation

The starting point for educators in creating inquiry questions is the curriculum and associated big ideas for a topic. To support students in creating effective questions, provide them with a “provocation” to get them thinking. Examples of provocations include photographs, infographics, texts, quotes, video clips, or artifacts. Provocations can spark ideas and wonderings.

Below is a sample of how students work collaboratively in pairs or small groups to create deep questions based on their thinking about a provocation.

1. Have a discussion about what they see and what they think about regarding the provocation.
2. Each student **individually** creates 3 questions based on his/her curiosities arising from the provocation and shares it with their partner or small group.
3. After each pair or group has developed a list of preliminary questions, have group members collaborate to choose three initial questions to “perfect” into effective inquiry questions using the criteria for an effective question.

What I observe in the picture (what I see):

What I infer in the picture (what I understand/deduce from what I see):

My three questions about the picture:

- 1.
- 2.
- 3.

Criteria for a good question:

- Is an invitation to think (not recall, summarize)
- Comes from genuine curiosity or confusion about the world
- Makes you think about something in a way you never considered before
- Invites both deep thinking and deep feelings, and leads to more questions
- Asks you to think critically, creatively, ethically, and reflectively about essential ideas in a topic

Our top 3 effective inquiry questions:

- 1.
- 2.
- 3.

Open-Ended Question Starters

Providing all students with sentence starters can help students begin to think of questions. Try and use more cognitively complex questions that require students to analyse, infer, predict, or generate further questions. Examples:

How can you improve...	→	...your accuracy in getting the beanbag in the hula hoop?
Why do you think...	→	...it's important to create space in striking/fielding games?
What evidence can you find to...	→	...encourage people to choose not to smoke?
What do you predict...	→	...will happen if the boundaries for the game were reduced?
What might be a better way to...	→	...toss the beanbag so it reaches the target?
What might happen if...	→	...one or two people in the group do all the talking?
How can you ensure that...	→	...you don't get an STI?

Gather and Organize

Gather and Organize: Students collect, organize, and record relevant data, evidence, and/or information from appropriate primary or secondary sources. They focus and clarify ideas, concepts, strategies, or relationships between topics or skills.

As educators guide students through the Gather and Organize component, they may refer to Figure 5 (page 13) to give consideration to the planned level of student autonomy, taking into account student needs and educator comfort.

Once students have an inquiry question, they begin to gather and record evidence to ultimately answer the question using a variety of credible sources.

Sources of information used to answer inquiry questions will vary depending upon the context of the inquiry. For example, finding information about healthy eating or sexual health may involve using sources such as books, databases, and health nurses. Finding information about fitness levels, movement skill, concepts, and game strategies may require using data collection tools such as fitness assessments and various game experiences.

To ensure students are using critical-thinking skills and are not simply giving personal opinions, students need to collect current, relevant information and evidence from different perspectives from which they later draw their conclusions. Students are required to use critical-thinking skills throughout an inquiry, although analysis of sources occurs during the Interpret and Analyse component of inquiry.



Skills Students Need to Learn and Develop

To support student learning to Gather and Organize a variety of skills are needed. These skills include:

- Determining valid, reliable and current sources of information for the information needed
- Demonstrating the use and applicability of a variety of graphic organizers (e.g., matrix charts, Venn diagrams, fishbone, tree organizer, cause/effect, and timeline) to record and organize information efficiently
- Understanding the difference between qualitative and quantitative information
- Reading information and graphical texts, viewing information from video texts, and listening for information from audio texts or feedback from peers/educators
- Creating and using effective search terms
- Gathering information from a variety of primary and secondary sources
- Gathering sources with a variety of perspectives
- Skimming and scanning information



Educator Tips to Facilitate Student Learning for Gathering and Organizing

Educators may consider the use of the following implementation recommendations:

- Use a variety of graphic organizers. Some may be more appropriate to use depending on the type of information that students are recording.
- Use stations, with different types of sources to help build background knowledge prior to beginning an inquiry.
- Make a list of reliable websites for students to start with.
- When gathering information, differentiate the number of sources required in response to learner's needs; the quality of the sources that students use is important.
- Whether it's recording the results from fitness assessments over time, feedback from a peer, video recording of their movement skill performed, or information researched on a website, students can choose a variety of ways to organize information to meet the needs of the specific learning (e.g., tracking sheets, calendars, graphic organizers/mind maps, jot notes, self/peer assessments, portfolio, inquiry folder, apps).



Sample Curriculum Connections for Gathering and Organizing

With differentiated instruction and varying amounts of support, many of the strategies identified in Figure 11 below can be used at all age/grade levels. For example, many of the examples at secondary are also applicable for many elementary students.

Figure 11: Sample Curriculum Connections for Gathering and Organizing

What Can It Look Like	Curriculum Connections (Ontario Ministry of Education, 2015a; Ontario Ministry of Education, 2015b)
<p>Students can gather information by monitoring and tracking heart rates, run times, fitness assessment results</p> <p>Elementary Students monitor their body's response to physical activity by taking their pulse before, during and after an activity and record how they felt using a happy, sad or neutral face emoji</p> <p>Secondary After setting a personal fitness goal, students track and record fitness assessment results related to their goal at the beginning, middle and end of semester</p>	<p>Active Living</p> <p>1.5 - use a range of critical and creative thinking skills and processes to assist them in making connections, planning and setting goals, analysing and solving problems, making decisions, and evaluating their choices in connection with learning in health and physical education</p> <p>Grade 4 - A2.3 - assess their level of exertion during physical activity, using simple self-assessment techniques and explain how intrinsic and extrinsic factors affect the exertion required to perform physical activities</p> <p>Grade 10 - A2.4 develop, implement, and revise a personal fitness plan [PS, CT]</p>
<p>Gather information through self or peer assessment</p> <p>Elementary Following a gymnastics sequence, students use a check mark to identify which skills they perform with the most confidence and circle which ones they need more practice in.</p> <p>Secondary Student give and receive videographed peer feedback for a movement skill performed in a dance sequence and store the feedback in a class portfolio for future analysis.</p>	<p>Movement Competence</p> <p>1.1 - use self-awareness and self-monitoring skills to help them understand their strengths and needs, take responsibility for their actions, recognize sources of stress, and monitor their own progress, as they participate in physical activities, develop movement competence, and acquire knowledge and skills related to healthy living</p> <p>1.5 - use a range of critical and creative thinking skills and processes to assist them in making connections, planning and setting goals, analysing and solving problems, making decisions, and evaluating their choices in connection with learning in health and physical education</p> <p>Grade 10 B1.2 - perform locomotor and manipulation skills in combination in a variety of physical activities while responding to external stimuli [PS,IS,CT]</p>

Figure 11: Sample Curriculum Connections for Gathering and Organizing (cont.)

Elementary

Students gather pictures of foods that enhance healthy growth and development for a person their age.

Secondary

Using multiple credible sources, students gather information about food planning when considering the impacts of various diseases.

Healthy Living

Grade 2 - C2.1 - use Canada's Food Guide to assess the nutritional value of meals and identify food and beverage choices that enhance healthy growth and development

Grade 11 - C1.1 - describe the impact of various diseases and health conditions on nutrient requirements, food choices, and meal planning



Student Reflection Questions When Gathering and Organizing

Educators may use the following questions to prompt students to reflect on their actions in the Gather and Organize component (Alberta Learning, 2004):

- Is there any information you still need to add?
- Where else could you look for information?
- Does the information you collected answer the question?
- Which type of resource is easiest to gather information from?
- What were the best sources you found?
- What is the best way for you to organize and sort your information?
- Did you collect enough evidence from more than one perspective?
- Do you need to adjust your inquiry/ topic question?
- Have you triangulated your information (i.e., more than one source provides similar information)?



Assessing When Students are Gathering and Organizing

The use of planning skills is linked to the Living Skills from the Ontario Health and Physical Education curriculum and found in the Thinking section of the Achievement Chart (Ontario Ministry of Education, 2015a; Ontario Ministry of Education, 2015b). Students can use various ways to demonstrate the learning of these skills including: using jot notes or graphic organizers, or having the students write or talk about the process. Students can also record a short video reflection on how they found and chose their resources to use.



Success Criteria When Students are Gathering and Organizing

Educators develop the success criteria with students so that a common understanding is developed. The co-constructed descriptions may be different in each class, but below is a list of possible success criteria for gathering and organizing. Each of the following success criteria should be expanded to be linked to what students are specifically learning within Health and Physical Education curriculum.

- I can collect and record data about my current level of fitness (exertion level, participation level, etc.).
- I can monitor and track my heart rate while participating in physical activity.
- I can gather information and data about my fitness assessment results to develop a fitness plan.
- I can collect and organize evidence about my progress in performing movement skills and applying game strategies, in my portfolio.
- I can gather relevant information from multiple types of sources.
- I can assess if information is relevant to my question.
- I can find evidence from multiple perspectives.
- I can choose an appropriate graphic organizer to sort and arrange information collected.
- I can determine if information is relevant and answers my questions.



Tools to Support Learning to Gather and Organize

The following tools have been developed to support student learning as they are learning to Gather and Organize information throughout the inquiry process. As appropriate, consider adapting and differentiating the tools based on the individual needs of the learners. Using the tools to support reflection and conversation can deepen student learning.

- Information Source Tracking Sheet
- Source Tracking Sheet
- Graphic Organizer
- Movement Competence Active Living (MCAL) Tracking Sheet
- Activity/Running Log Tracking Sheet
- Student Self-Assessment - Assessment as Learning

Information Source Tracking Sheet

Students can use the following template when tracking their sources when Gathering and Organizing information.

Inquiry Question:		
Source	Notes	New Questions

Source Tracking Sheet

Students can use the following template when tracking their sources when Gathering and Organizing information.

RESEARCH CHECKLIST	
Topic/Question:	
Types of Resources I have used	Sources
<ul style="list-style-type: none"> • Books • Textbook • Encyclopedia • Magazines • Journals • Newspapers • Government reports or documents • Flyers/pamphlets 	
<ul style="list-style-type: none"> • Websites • Databases (e.g., EBSCO) • School board provided software • Videos • Podcasts • Blogs • Photographs 	
<ul style="list-style-type: none"> • Interviews • Experts • Organizations 	

Graphic Organizer

Students can use the following organizer when consolidating their daily learning when Gathering and Organizing information. Students record responses on the arrow parts of the graphic.

Something I learned

Something I still need to find out

New questions I have

Movement Competence (MC) Tracking Sheet

Students can use the following tracking sheet when organizing their learning when Gathering and Organizing information.

How can I improve my performance in territory games?

Movement skills used:

Offensive strategies:

Strategies I need to improve:

Peer feedback I received:

Defensive strategies:

Strategies I do well:

Activity/Running Log Tracking Sheet

The following organizer can support students in organizing their learning when Gathering and Organizing information.

Date:	Time:	Hours slept last night:	Steps:	Distance:
Intensity of effort (circle one): max hard medium easy		I'm feeling ... (circle one): fantastic good tired other: _____	Heart Rate:	Resting: ____ bpm Active: _____ bpm Recovery: ____ bpm
Comments/Reflection (Physical feeling, emotion, thoughts about results, etc.)				

Date:	Time:	Hours slept last night:	Steps:	Distance:
Intensity of effort (circle one): max hard medium easy		I'm feeling ... (circle one): fantastic good tired other: _____	Heart Rate:	Resting: ____ bpm Active: _____ bpm Recovery: ____ bpm
Comments/Reflection (Physical feeling, emotion, thoughts about results, etc.)				

Date:	Time:	Hours slept last night:	Steps:	Distance:
Intensity of effort (circle one): max hard medium easy		I'm feeling ... (circle one): fantastic good tired other: _____	Heart Rate:	Resting: ____ bpm Active: _____ bpm Recovery: ____ bpm
Comments/Reflection (Physical feeling, emotion, thoughts about results, etc.)				

Date:	Time:	Hours slept last night:	Steps:	Distance:
Intensity of effort (circle one): max hard medium easy		I'm feeling ... (circle one): fantastic good tired other: _____	Heart Rate:	Resting: ____ bpm Active: _____ bpm Recovery: ____ bpm
Comments/Reflection (Physical feeling, emotion, thoughts about results, etc.)				

Adapted from Lawlor (2015a).

Student Self Assessment - Assessment as Learning

Students can use the following organizer to self-assess their learning when Gathering and Organizing information.

Gather and Organize Information	Rank 1-4 (4 is highest)			
I have recorded my information with an appropriate graphic organizer.	1	2	3	4
I combined and organized the information so it makes sense.	1	2	3	4
I have written anecdotal notes about my thoughts and questions as I recorded information.	1	2	3	4
I have gathered and recorded a variety of print and electronic sources.	1	2	3	4
I have used skim and scan skills to get an overview and help decide whether to spend more time looking at a source or not.	1	2	3	4
I have gathered enough relevant information about my topic/question to make a decision, set a goal, find a solution, or answer a question.	1	2	3	4
I have adjusted my topic/question as needed based on new information found.	1	2	3	4

Reflections:

Interpret and Analyse

Interpret and analyse: Students interpret and assess data, evidence, and/or information, and analyse in order to identify patterns, relationships, currency, and bias; make connections; and potentially construct new knowledge.

As educators guide students through the Interpret and Analyse component, they may refer to Figure 5 (page 13) to give consideration to the planned level of student autonomy, taking into account student needs and educator comfort.

Once students have collected information or evidence, they need to examine it for patterns and how the information connects to previous knowledge, relates to practice, and answers their inquiry question. Students also need to decide whether they have collected sufficient quality information to help them make a decision, create a solution, complete a task, or set a goal. To assess the quality of their information, students also need to review their sources of information with respect to bias, currency, point of view, and accuracy.



Skills Students Need to Learn and Develop

To support student learning to Interpret and Analyse, a variety of skills are needed. These skills include:

- Analysing data, evidence, information, skills, or strategies using list of criteria
- Interpreting data, evidence, and/or information in graphs, charts, photographs, and videos
- Finding patterns or relationships in data, evidence, and/or information collected
- Determining whether data, evidence, and/or information collected is relevant and/or useful to purpose
- Connecting data, evidence, and/or information collected with previous knowledge (e.g., use a KWL or RAN chart)
- Examining and assessing print and digital sources for currency, bias, accuracy, and reliability



Educator Tips to Facilitate Student Learning for Interpreting and Analysing

To support the Interpret and Analyse component, educators may consider using the following implementation recommendations:

- Model how to interpret information in graphs, videos, photographs, etc. by thinking aloud, asking and answering questions about the visual.
- Use questions to guide students in determining when enough evidence has been collected (e.g., Have you considered all perspectives? Do you have enough information to create a plan?).
- Use templates to help students evaluate their information/sources.
- Understand that this component can be difficult for students and requires developed critical-thinking skills. Additional support may be required through differentiated instructional strategies and tools to support student learning.



Sample Curriculum Connections for Interpreting and Analysing

With differentiated instruction and varying amounts of support, many of the strategies identified in Figure 12 below can be used at all age/grade levels. For example, many of the examples at secondary are also applicable for many elementary students.

Figure 12: Sample Curriculum Connections for Interpreting and Analysing

What Can It Look Like	Curriculum Connections <small>(Ontario Ministry of Education, 2015a; Ontario Ministry of Education, 2015b)</small>
<p>Students interpret and analyse information (e.g., heart rates, run times, steps walked, or fitness assessment results) to help develop a personal fitness plan and make connections between active living and personal fitness.</p> <p>Elementary Students analyse personal data (primary source) and data from resources (secondary sources) to determine where they are at, where they need to go and how to get there, with respect to personal fitness plans.</p> <p>Secondary Students examine their fitness assessment results to identify their strengths and limitations in order to set goals as they develop, implement and revise a personal fitness plan.</p>	<p>Active Living</p> <p>1.5 - use a range of critical and creative thinking skills and processes to assist them in making connections, planning and setting goals, analysing and solving problems, making decisions, and evaluating their choices in connection with learning in health and physical education</p> <p>Grade 6 A2.3 - assess their level of health-related fitness as they participate in various physical activities and monitor changes in their physical fitness over time [PS, CT]</p> <p>Grade 10 A2.4 - develop, implement and revise a personal fitness plan [PS,CT]</p>
<p>Students can analyse movement skills, use of tactics, or choice of offensive and defensive strategies</p> <p>Elementary Students determine what tactics work best when performing a variety of movement skills and concepts, which requires the interpretation of information/data that was collected (e.g., varying the speed of movement or the path of locomotion).</p> <p>Secondary Students explore and analyse which tactics work best in different situations and which strategies are similar in activities within a games category (e.g., When would you spike vs. tip the ball? What are some important movement concepts that transfer from when you play volleyball to when you play badminton?).</p>	<p>Movement Competence</p> <p>1.1 - use self-awareness and self-monitoring skills to help them understand their strengths and needs, take responsibility for their actions, recognize sources of stress, and monitor their own progress, as they participate in physical activities, develop movement competence, and acquire knowledge and skills related to healthy living</p> <p>Grade 5 B1.3 - explore different combinations of locomotor movements with and without equipment, alone and with others, moving at different speeds and levels, and using different pathways [PS, IS]</p> <p>Grade 12 B2.2 - apply analytical and problem-solving skills to identify and implement tactical solutions that will increase their chances of success as they participate in a variety of physical activities, including individual activities, sports and/or recreational activities [PS,IS,CT]</p>

Figure 12: Sample Curriculum Connections for Interpreting and Analysing (cont.)

What Can It Look Like	Curriculum Connections (Ontario Ministry of Education, 2015a; Ontario Ministry of Education, 2015b)
<p>Elementary Students examine and respond to various scenarios. Students assess the level of potential danger and rank the scenarios from the most dangerous to the least dangerous based on student-generated success criteria.</p> <p>Secondary Students are given an article, a YouTube video and an infographic about various factors to examine and compare with respect to the influence of social factors on food and beverage choices.</p>	<p>Healthy Living</p> <p>1.5 - use a range of critical and creative thinking skills and processes to assist them in making connections, planning and setting goals, analysing and solving problems, making decisions, and evaluating their choices in connection with learning in health and physical education</p> <p>Grade 8 C2.2 - demonstrate the ability to assess situations for potential dangers, and apply strategies for avoiding dangerous situations [CT]</p> <p>Grade 9 C3.1 - analyse the influence of social and environmental factors on food and beverage choices [IS, CT]</p>



Student Reflection Questions When Interpreting and Analysing

Educators may pose the following questions to prompt students to reflect on their actions when they are learning to Interpret and Analyse.

- Did you find enough information to answer your question?
- Is any information missing? (e.g., a point of view or voice not represented)
- How does your information connect to your prior knowledge or personal experiences?
- Does the information gathered confirm what you know or challenge your ideas about your topic?
- What new information have you learned that could be added to your KWL or RAN chart?
- After analysing your information/evidence, do you have other questions?
- How do you know your sources are credible?
- Do you trust the information you found to be reliable and valid?
- Did you detect bias in any of your sources?



Assessing When Students are Interpreting and Analysing

Educators can gather evidence of students' ability to interpret and analyse information, data, and sources as related to the Health and Physical Education curriculum expectations in a variety of ways, such as the following:

- Teachers make anecdotal observations and document conversations with students.
- Students complete an evaluation of Internet sites/sources for currency, relevancy, accuracy, and various perspectives using a set of established criteria.
- Students write an entry in their inquiry journal about the patterns they identified in their information.
- Students revisit the KWL or RAN chart used at the beginning of a unit or inquiry and move information from “What I Know” to “Misconception”.
- Educators assess and provide feedback on the information recorded on graphic organizer.
- Students use reflection questions (e.g., writing about what they learned from the peer feedback received about how they receive a pass while on the move).



Success Criteria for When Students are Interpreting and Analysing

Educators develop the success criteria with students so that a common understanding is developed. The co-constructed descriptions may be different in each class, but below is a list of possible success criteria for interpreting and analysing. Each of the following success criteria should be expanded to be linked to what students are specifically learning within Health and Physical Education curriculum.

- I can compare and contrast my dietary intake with those suggested in Canada's Food Guide.
- I can compare my personal fitness assessment results at the beginning and the end of the course/year.
- I can assess whether my performance of kicking a ball meets the criteria for the phases of movement (e.g., preparation, execution, and follow-through).
- I can assess which tactics work best in different game situations.
- I can analyse different ways to maximize my own safety and that of others.
- I can make connections between my heart rate, level of effort, and changes in fitness levels over time.
- I can analyse how my sexual health may be affected by physical and emotional changes during puberty.
- I can combine and organize information I gather.
- I can recognize when more evidence is needed to support an answer to my question.
- I can assess whether data/evidence support or dispute my question, stance, plan, or decision.
- I can detect bias and identify missing voices in evidence gathered.
- I can determine whether sources are current, objective, and reliable.
- I can make connections between information/evidence and my personal experiences.



Tools to Support Learning to Interpret and Analyse

The following tools have been developed to support student learning as they are learning to interpret and analyse information throughout the inquiry process. As appropriate, consider adapting and differentiating the tools based on the individual needs of the learners. Using the tools to support reflection and conversation can deepen student learning.

- Matrix Organizer
- Graphic or Video Text Organizer
- Graphic Organizer for Analysing Sources
- Questions to Practice Interpreting and Analysing
- Analysing Checklist- Assessment as Learning
- Exit Card

Matrix Organizer

Students can use the following organizer when tracking their sources as they are learning to Interpret and Analyze noting appropriate information in the relevant columns.

Source	Something Interesting I read	A connection I can make to my life	A question I still have

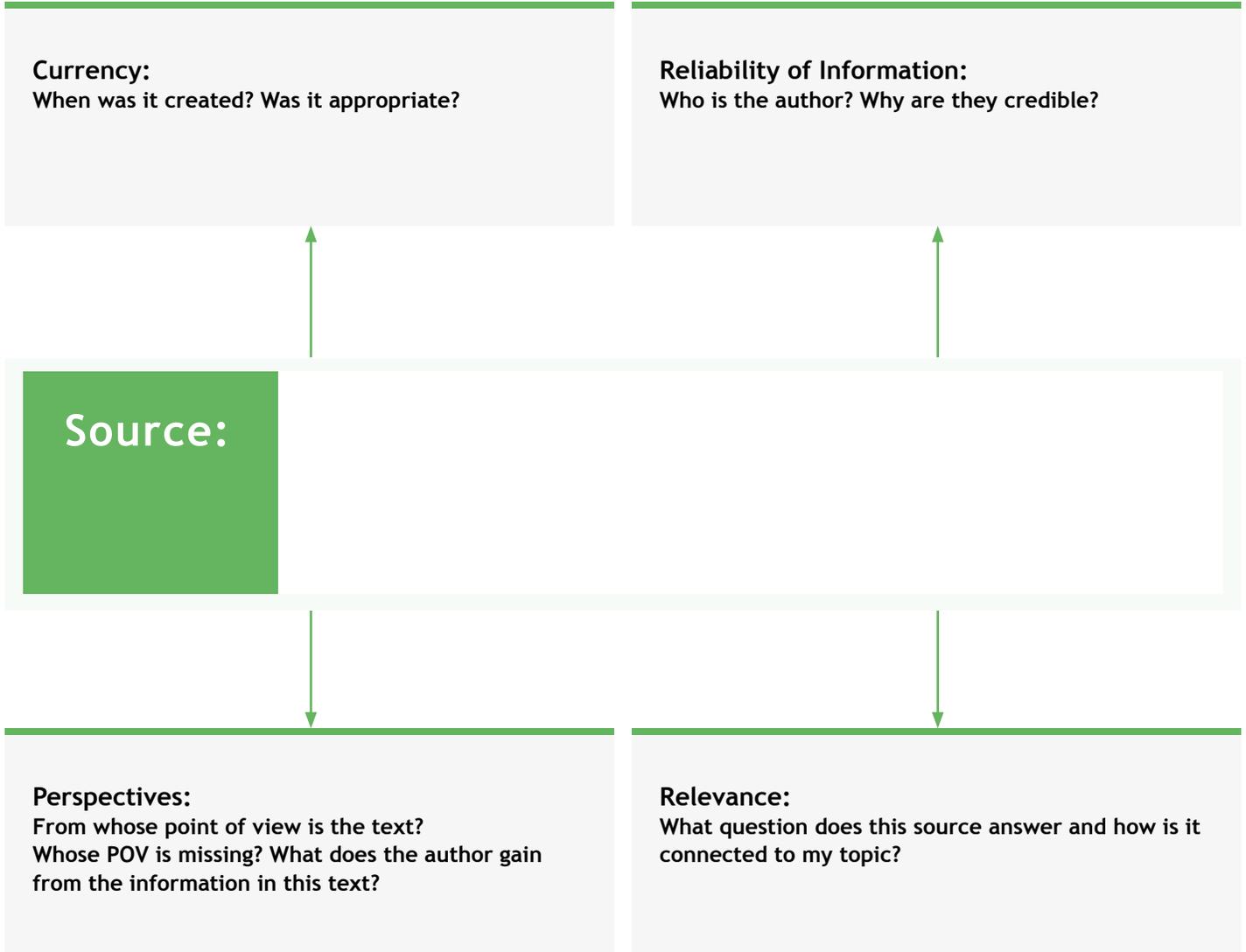
Graphic or Video Text Organizer

Students can use the following organizer to record their learning as they are learning to Interpret and Analyse.

Photo, graph, infographic, chart, video, or illustration?	What do I see? Are there any patterns or relationships between the images or the information presented?	What do I think it means? What do I think is being inferred through the image? What can I deduce from the information in it? Is it valid information?	What connections can I make between the information in it and my personal experiences?	What do I want to know more about the information?

Graphic Organizer for Analysing Sources

Students can use the following organizer in analysing their sources as they are learning to Interpret and Analyse.



Questions to Practice Interpreting and Analysing

Students can use the following questions when demonstrating their learning as they are learning to Interpret and Analyse.

What do your fitness assessment results tell you about your strengths and areas to keep working on?

What are some of the common elements of field hockey, rugby and lacrosse?

Are there any patterns in your heart rate during participation and during recovery?

How many different ways can you throw the ball to your partner? Which way worked best?

What information from your fitness portfolio can you use to set your goal?

Analysing Checklist - Assessment As Learning

Students can use the following organizer in analysing their sources as they are learning to Interpret and Analyse.

Analysing Sources	Analysing Information and Evidence
<p>I have examined the sources for:</p> <ul style="list-style-type: none"><input type="checkbox"/> Currency<input type="checkbox"/> Bias<input type="checkbox"/> Multiple perspectives<input type="checkbox"/> Relevance<input type="checkbox"/> Credibility	<p>Have I:</p> <ul style="list-style-type: none"><input type="checkbox"/> looked for patterns in the results?<input type="checkbox"/> found relationships in the evidence?<input type="checkbox"/> made connections to personal experiences?<input type="checkbox"/> identified information that is still needed?<input type="checkbox"/> considered whether my topic/question needs to be revised?

Next Steps:

Exit Card

Students can use the following Exit Card when consolidating their daily learning as they are learning to Interpret and Analyse.

Exit Card

Compare and contrast the first and second time you ran a distance of 2.2 km. For example, consider heart rate, time, weather, how you felt, sleep, hydration, and so on.

What does the information from your tracking sheets tell you about your progress so far?

How does your analysis compare to the goal you set?

Evaluate and Draw Conclusions

Evaluate and Draw Conclusions: Students synthesize data, evidence, results, and/or information in order to make informed, critical judgments based on the reliability of the information and to explain the decision, choice, goal, or solution and its impact on themselves, others, and the world around them.

As educators guide students through the Evaluate and Draw Conclusions component, they may refer to Figure 5 (page 13) to give consideration to the planned level of student autonomy, taking into account student needs and educator comfort.

After students have analysed their sources of information, they next amalgamate their information and draw conclusions based on sound judgment about the evidence.

To synthesize all their collected information, students combine and arrange data, eliminate information that isn't important, highlight new understandings. Students look at what the evidence tells them, determine the implications of the information, and make a logical, well-supported conclusion. This may include what impact it has on them, others, or the world around them.

Students can use the information in their conclusions in a variety of ways such as:

- To develop or revise plans that impact their health such as plans for healthy eating, fitness or sexual health
- To make decisions about resolving conflicts
- To make adjustments in performing a movement skill
- To choose an effective offensive or defensive strategy in a game situation
- To judge how the use of movement skills/game strategies affects successful participation in game play



Skills Students Need to Learn and Develop

To support students as they learn to Evaluate and Draw Conclusions, a variety of skills are needed. These skills include:

- Evaluating information based on the evidence
- Synthesizing and combining information
- Drawing conclusions based on analysis of information or evidence
- Making a decision or choice
- Developing a plan
- Setting a goal
- Finding a solution
- Critiquing and giving appropriate feedback



Educator Tips to Facilitate Student Learning for Evaluating and Drawing Conclusions

To support the Evaluate and Draw Conclusions component, educators may consider using the following implementation recommendations:

- Instruct and clarify for students the difference between summarizing and synthesizing.
- Encourage students to continually make connections between their ideas and the evidence.
- Have students use graphic organizers to help them see patterns and connections between pieces of evidence and help them draw conclusions.



Sample Curriculum Connections for Evaluating and Drawing Conclusions

With differentiated instruction and varying amounts of support, many of the strategies identified in Figure 13 below can be used at all age/grade levels

Figure 13: Sample Curriculum Connections for Evaluating and Drawing Conclusions

What Can It Look Like	Curriculum Connections <small>(Ontario Ministry of Education, 2015a; Ontario Ministry of Education, 2015b)</small>
<p>Elementary Students describe how they can use health-related fitness-assessment information when making action plans for personal fitness, setting a goal to improve cardio-respiratory fitness, and making a plan to do activities that increase the heart rate in order to be able to walk or run faster over the long term.</p> <p>Secondary Students evaluate different fitness programs and equipment that would help them to reach the fitness goals they set for themselves.</p>	<p>Active Living</p> <p>1.5 - use a range of critical and creative thinking skills and processes to assist them in making connections, planning and setting goals, analysing and solving problems, making decisions, and evaluating their choices in connection with learning in health and physical education</p> <p>Grade 6 A2.4 - develop and implement plans of action based on both their assessments of their health-related components of fitness and their interests, in order to achieve personal fitness goals [PS, CT]</p> <p>Grade 12 A2.2 - evaluate the effectiveness of various physical activity and fitness programs, approaches, and types of fitness equipment for achieving specific personal physical activity and fitness goals [PS, CT]</p>
<p>Elementary Students evaluate the different types of movement learned and choose appropriate movements to create a movement sequence.</p> <p>Secondary Students evaluate the offensive or defensive strategies that they used during various activities and determine what they could do differently to improve their performance in those activities. (e.g., “What strategies might you use to improve your performance in net/wall games?” “In your next shift, how can you make it difficult for opponents to hit the ball in striking/ fielding activities?”)</p>	<p>Movement Competence</p> <p>1.5 - use a range of critical and creative thinking skills and processes to assist them in making connections, planning and setting goals, analysing and solving problems, making decisions, and evaluating their choices in connection with learning in Health and Physical Education</p> <p>Grade 4 B1.3 - perform different combinations of locomotor movements with and without equipment, alone and with others, moving at different speeds and levels, using different pathways, and going in different directions [PS, IS]</p> <p>Grade 10 B1.1 - perform stability and locomotor skills in combination in a variety of physical activities while responding to external stimuli [PS, IS, CT]</p>

Figure 13: Sample Curriculum Connections for Evaluating and Drawing Conclusions (cont.)

What Can It Look Like	Curriculum Connections
<p>Elementary Students look at potentially dangerous situations and create solutions for making them safer.</p> <p>Secondary Students evaluate information and statistics to make a decision about substance use.</p>	<p>Healthy Living</p> <p>1.5 - use a range of critical and creative thinking skills and processes to assist them in making connections, planning and setting goals, analysing and solving problems, making decisions, and evaluating their choices in connection with learning in health and physical education</p> <p>Grade 1 C3.1 - demonstrate an understanding of how to stay safe and avoid injuries to themselves and others in a variety of situations, using knowledge about potential risks at home, in the community, and outdoors [PS, CT]</p> <p>Grade 11 C2.2 - apply their understanding of the connections between substance use, addictive behaviours, and physical and mental health to make safer choices about the use of medications, drugs, and other substances and involvement in potentially addictive activities [PS, CT]</p>



Student Reflection Questions When Evaluating and Drawing Conclusions

Educators may use the following questions to prompt students to reflect on their actions in the Evaluate and Draw Conclusions component (Watt & Colyer, 2014):

- What big ideas have you learned or better understood?
- What does the evidence tell you about the question being investigated?
- What conclusions can be drawn at this point in the inquiry process?
- Does the evidence support your initial position or not?
- How are your ideas changing?
- Is there anything new you've learned that you would change or add to your stance/position?
- Is there anything else you might need to investigate to support your stance?



Assessing When Students Are Evaluating and Drawing Conclusions

Evaluating information and drawing conclusions are processing skills linked to the Living Skills from the Ontario Health and Physical Education curriculum and found in the Thinking section of the Achievement Chart (Ontario Ministry of Education, 2015a; Ontario Ministry of Education, 2015b). Students can use several ways to demonstrate the learning of these skills as related to the Health and Physical Education curriculum expectations, including:

- Using graphic organizers
- Educator or peer conferencing
- Exit cards
- Reflection questions



Success Criteria When Students are Evaluating and Drawing Conclusions

Educators develop the success criteria with students so that a common understanding is developed. The co-constructed descriptions may be different in each class, but below is a list of possible success criteria for evaluating and drawing conclusions. Each of the following success criteria should be expanded to be linked to what students are specifically learning within Health and Physical Education curriculum.

- I can develop a fitness plan using data collected about my current level of fitness (e.g., exertion level, participation level, etc.).
- I can combine multiple pieces of information about my heart rate, participation, and exertion levels to help set a goal.
- I can revise my goals as needed based on new information and data obtained.
- I can modify my strategies to adjust to a game situation (e.g., windy, playing defence).
- I can compare and contrast two or more tactics.
- I can critique the performance of a movement skill (peer-assessment, video of myself, visual diagrams of the skill) according to set criteria.
- I can evaluate my performance of a movement skill and make adjustments to improve my performance.
- I can choose which strategy is the best to use in different game situations.
- I can incorporate different pieces of gathered information into my action plan.
- I can use self-assessment information to identify adjustments that may be necessary in my fitness plan.
- I can make connections between my ideas and the ideas in the evidence.
- I can evaluate information to make a decision, make a choice, or find a solution.
- I can create possible explanations based on a set of data.
- I can form my own conclusions from reading various viewpoints about a topic.
- I can look at a problem/issue from various perspectives and suggest a solution.
- I can weigh pros and cons and consider consequences to make decisions in a variety of situations.



Tools to Support Learning to Evaluate and Draw Conclusions

The following tools have been developed to support student learning as they are learning to Evaluate and Draw Conclusions throughout the inquiry process. As appropriate, consider adapting and differentiating the tools based on the individual needs of the learners. Using the tools to support reflection and conversation can deepen student learning.

- Think Aloud Strategy
- Conferencing
- Graphic Organizer - Plus Minus Interesting (PMI) Chart
- Template to Evaluate Evidence and Draw a Conclusion
- Exit Card
- Student Questions to Practice Evaluating and Drawing Conclusions
- Inquiry Skills Rubric

Think Aloud Strategy

In the Think-Aloud Strategy (Ophea, 2015a, p. 8), the educator models out loud a thinking or learning process while using it. This strategy is particularly useful when students are learning a difficult concept, skill, or strategy, or to reinforce learning. Think-Alouds can also be done by students on their own as they learn a skill, working with a peer, or working with the educator for assessment purposes.

Educator prompt: “With a partner, complete a think-aloud as you underhand serve against a wall. Share with your partner details of what different parts of your body are doing and what you are thinking about, with respect to the skill and applicable tactical solutions.”

Conferencing

During a student-educator conference (Ophea, 2015, p. 4), students can report on their progress, consider problems and solutions, and note strengths as well as areas for improvement. Conferences therefore require an inviting and supportive atmosphere to encourage open discussion, as well as a high level of trust between participants. Educators can discuss students' work with pairs or small groups of students in order to facilitate learning. Conferences provide educators with an opportunity to guide and support learners, and they provide a forum for students to demonstrate their learning through discussion, sketchbooks, or portfolios.

The following is an example prompt for a conference for a fitness plan:

Educator prompt: “While you’re completing fitness stations, we are going to individually have a conference about your application of goal setting and creating a fitness plan that has been used throughout the unit. Please bring your portfolio with you when it’s your turn.”

Questions the educator could ask the student include but are not limited to the following (Ontario School Library Association, n.d.):

- Tell me about your results and the goal you set.
- What conclusions have you drawn from your fitness assessment results?
- What changes do you plan to make?
- On what evidence did you base your decisions?
- What are the possible positive impacts of achieving your fitness goal?

Graphic Organizer - Plus Minus Interesting (PMI) Chart

Students can use the following template when organizing as they are learning to Evaluate and Draw Conclusions.

Inquiry Question/Decision:	
Plus/Pros:	Minus/Cons:
Interesting Facts:	

Template to Evaluate Evidence and Draw a Conclusion

Students can use the following template when evaluating evidence as they are learning to Evaluate and Draw Conclusions.

Question:			
Cause:		Effect:	
Evidence	Evidence	Evidence	Evidence
Evidence	Evidence	Evidence	Evidence
Evidence	Evidence	Evidence	Evidence
Conclusion:			
Reasons:			

Exit Card

Students can use the following Exit Card when consolidating their daily learning as they are learning to Evaluate and Draw Conclusions.

Exit Card

I used to think...

But now I think...

I had a feeling that...

and it looks like I was on the right track because...

So far I'm thinking...

This conclusion is very different from what I thought it was going to be because...

Student Questions to Practice Evaluating and Drawing Conclusions

Students can use the following questions to demonstrate their learning as they are learning to Evaluate and Draw Conclusions. (Adapted from Ontario Ministry of Education, 2015a; Ontario Ministry of Education, 2015b)

- What evidence do you need to consider when setting your personal fitness and physical activity goal(s)?
- How did you ensure everyone was involved in the game?
- When catching an object outdoors, how can you adjust for the wind?
- How do you make it difficult for opponents to hit the ball in striking/fielding activities?
- Based on your experiences participating in cross-country running, power walking, and cross country skiing, what strategies could you use to be successful in each of these activities?
- How do you make it difficult for opponents to score on your goal in territory games?
- Food labels contain a lot of information. How can you use this information to evaluate food choices?
- How would thinking about your personal limits and making a personal plan influence decisions you may choose to make about sexual activity?
- What strategies could you use to ensure your school is a safe place free of bullying and harassment?

Inquiry Skills Rubric

The following Rubric can be adapted for use as students are learning to Evaluate and Draw Conclusions.

Thinking Skills	Level 4	Level 3	Level 2	Level 1
Use of processing skills (<i>synthesizing and evaluating data, evidence, and information; formulating conclusions</i>)	Uses processing skills with a high degree of effectiveness	Uses processing skills with considerable effectiveness	Uses processing skills some effectiveness	Uses processing skills limited effectiveness
Use of critical- & creative-thinking processes (<i>using inquiry, problem-solving, and decision-making processes</i>)	Uses critical- & creative-thinking processes with a high degree of effectiveness	Uses critical- & creative-thinking processes with considerable effectiveness	Uses critical- & creative-thinking processes with some effectiveness	Uses critical- & creative-thinking processes with limited effectiveness

Communicate

Communicate: Students consolidate and communicate observations, decisions, conclusions, goals, choices, strategies, and/or solutions clearly, logically, and effectively by using correct terminology and expressing information/results orally, in writing, or through demonstration or performance tailored to audience needs. They collaborate with others to deepen learning.

As educators guide students through the Communicate component, they may refer to Figure 5 (page 13) to give consideration to the planned level of student autonomy, taking into account student needs and educator comfort.

In the Communicate component of the inquiry process students “go public” with their learning and share their new understandings with others. Students can communicate their conclusions in various ways including oral, written, graphic, and/or multimedia forms. When presenting their conclusions in a meaningful way, students need to consider the following:

- The genre for presenting their information (e.g., oral, visual, written, multimedia, performance);
- Audience (e.g., peer, teammate, younger student, educator, family, community member);
- Purpose (e.g., to inform, persuade, instruct, refute or promote)

Students need to be able to use proper vocabulary in order to communicate effectively. This includes the specialized terminology in the Health and Physical Education curriculum (e.g., preparation, execution, follow-through) as well in the context of inquiry-based learning (e.g., assess, analyse, evaluate, synthesize). A student’s use or misuse of inquiry vocabulary provides information about further learning needs..

Teaching students the vocabulary associated with inquiry-based learning occurs throughout all of the stages of the inquiry process. Each stage of the inquiry process contains specific terminology, and a student’s understanding of such vocabulary will enhance their ability to use the inquiry for learning.

Opportunities for students to practise and develop their communication skills can occur in various ways throughout the various components of the inquiry process, not only during the communicate stage. “Through purposeful talk, students not only learn to communicate information but also to explore and to understand ideas and concepts, identify and solve problems, organize their experience and knowledge, and express and clarify their thoughts, feelings, and opinions” (Ontario Ministry of Education, 2015a, p.71). For example, students can:

- Work in a group to brainstorm questions about a topic
- Turn and talk to a partner about the credibility of a source
- Participate in a knowledge-building circle telling the class what they discovered about using strategies during games play.

In Health and Physical Education, students communicate with their bodies as well as with words. Students learn to use non-verbal communication to share information and to interpret body language for a variety of purposes.

Offering multiple opportunities for students to talk about a range of topics (e.g., fitness, movement skills, game strategies, substance use, conflict resolution skills, decision making, goal setting, etc.) helps students to develop the oral communication skills needed to present their findings.



Skills Students Need to Learn and Develop

To support student learning to Communicate, a variety of skills are needed. These skills include:

- Consolidating new knowledge in a variety of oral, written, and visual formats
- Using proper vocabulary and terminology in both the subject content and inquiry-based learning
- Appropriately addressing a particular audience
- Communicating for different purposes
- Using presentation skills (e.g., speaking clearly, audible voice, making eye contact)
- Providing positive feedback and asking questions as a member of an audience
- Using self-awareness and self-assessment strategies to share and make suggestions for improvement in future presentations



Educator Tips to Facilitate Student Learning for Communicating

To support the Communicate component, educators may consider using the following implementation recommendations:

- Teach students inquiry vocabulary and model its use frequently throughout all the stages of the inquiry process
- If multimedia products are one of the choices for sharing the learning, plan class time for students to learn how to use the app, software, etc.
- Identify audience when starting an inquiry so students can shape how they'll share early on. Using the phrase "sharing out loud" rather than "presenting" may alleviate stress for younger students.
- Small group sharing may be more appropriate and efficient for younger students or to scaffold practicing communication skills.
- Build in class time for practice/peer assessment of presentations and revisions.
- Post and refer regularly to anchor charts or word walls with the vocabulary used in inquiry-based learning.
- Arrange students so everyone can see each other in the class or activity area (e.g., U shape or circle).
- Allow a student to "pass" but let them know they need to later give an answer or in some way follow up with you one-on-one.
- Consider the use of words/tone when providing feedback during a game or in debriefs, coaching situations, or strategy discussions.
- Allow 3-5 seconds wait time between asking a question and calling on a student.
- Post 1-2 key questions the day before the discussion to allow students who require more thinking time to be able to contribute to the conversation the next day.



Sample Curriculum Connections for Communicating

With differentiated instruction and varying amounts of support, many of the strategies identified in Figure 14 below can be used at all age/grade levels. For example, many of the examples at secondary are also applicable for many elementary students.

Figure 14: Sample Curriculum Connections for Communicating

What Can It Look Like	Curriculum Connections <small>(Ontario Ministry of Education, 2015a; Ontario Ministry of Education, 2015b)</small>
<p>Elementary Students create a visual of their effective communication choice after inquiring about using effective verbal and non-verbal communication in the activity area setting.</p> <p>Secondary Students report on the effectiveness of CPR at various time intervals after beginning CPR.</p>	<p>Active Living</p> <p>1.3 - communicate effectively, using verbal and non-verbal means, as appropriate, and interpret information accurately as they participate in physical activities, develop movement competence, and acquire knowledge and skills related to healthy living</p> <p>Grade 5 A3.1 - demonstrate behaviours and apply procedures that maximize their safety and that of others during physical activity</p> <p>Grade 9 A3.3 - demonstrate an understanding of cardiopulmonary resuscitation (CPR) techniques and when and how to use them [CT]</p>
<p>Elementary Students create a non-verbal mirroring sequence to demonstrate the results of an inquiry in a dance unit.</p> <p>Secondary Students take turns adopting the role of coach to give feedback to their peers to help them execute a serve more efficiently in a volleyball game after an inquiry on the phases of movement.</p>	<p>Movement Competence</p> <p>1.3 - communicate effectively, using verbal and non-verbal means, as appropriate, and interpret information accurately as they participate in physical activities, develop movement competence and acquire knowledge and skills related to healthy living</p> <p>Grade 6 B1.2 - perform a wide variety of locomotor movements, in combination, at different speeds, in different directions, and using different pathways, while moving around others and/or equipment [PS, IS]</p> <p>Grade 12 B1.3 - demonstrate an understanding of the phases of movement and apply this understanding to refine skills as they participate in a variety of physical activities, with an emphasis on individual and lifelong activities [PS, CT]</p>

Figure 14: Sample Curriculum Connections for Communicating (cont.)

What Can It Look Like	Curriculum Connections
<p>Elementary Students can identify what a bystander could do or say when someone calls another person names. (For example, students can practise effective oral responses to someone who directs a homophobic slur to them or another student.)</p> <p>Secondary Students perform role-plays using refusal skills to deal with potentially challenging situations involving illicit use of drugs.</p>	<p>Healthy Living</p> <p>Grade 4 C1.3 - describe various types of bullying and abuse, including bullying using technology, and identify appropriate ways of responding [IS]</p> <p>Grade 7 C2.2 - assess the impact of different types of bullying or harassment, including the harassment and coercion that can occur with behaviours such as sexting, on themselves and others, and identify ways of preventing or resolving such incidents [IS, CT]</p> <p>Grade 10 C2.3 - demonstrate the ability to analyse situations involving conflict within oneself or conflict with others and apply appropriate conflict resolution strategies [PS, IS, CT]</p>



Student Reflection Questions When Communicating

Educators may use the following questions to prompt students to reflect on their actions in the Communicate component (Watt & Colyer, 2014; Alberta Learning, 2004):

- What worked well? What didn't?
- What would you change the next time you share your conclusions?
- How can this new learning make a difference to other people?
- How well does your creation address your audience and purpose?
- What parts can you consider keeping or deleting from your sharing out?
- How can you improve how you share your information and evidence?
- What strategies did you use to get and maintain your audience's attention that you can use again?
- What did you learn from the other presentations?
- Which of the following presentation forms works best for you?
 - Inquiry Journal Entries
 - Inside-Outside Circle Sharing Strategy
 - Prompts and Questions to Encourage and Extend Student Thinking and Dialogue
 - Tracking Sheet/Assessment for Learning
 - Scoring Rubric for Presentation



Assessing When Students are Communicating

By using inquiry journals or student-educator conferencing, educators can assess a variety of topics including, but not limited to:

- whether students understand the inquiry vocabulary,
- their reasons for sharing their learning in a particular way,
- how they plan to engage and address a particular audience,
- what went well with their sharing, and
- areas to improve on the next time, all within the context of the Health and Physical Education curriculum expectations.

Educators can also document conversations during small-group collaborative work or whole-class discussions to assess communication skills and Health and Physical Education curriculum knowledge. The opportunity also exists within Health and Physical Education to assess the actual sharing of conclusions and new understandings by the student, and the means chosen to do so.



Success Criteria for When Students are Communicating

Educators develop the success criteria with students so that a common understanding is developed. The co-constructed descriptions may be different in each class, but below is a list of possible success criteria for communicating. Each of the following success criteria should be expanded to be linked to what students are specifically learning within Health and Physical Education curriculum.

- I can consolidate my conclusion, decision, and goals into an oral, visual, multimedia, or written presentation or performance.
- I can choose an appropriate method to communicate my observations, decisions, goals, choices, or strategies.
- I can explain why I chose to present my understandings in a particular format.
- I can address different types of audiences effectively.
- I can engage my audience using different strategies.
- I can communicate clearly and concisely.
- I can self-assess what I do well and what I need to improve when sharing my observations, decisions, goals, choices or strategies.



Tools to Support Learning to Communicate

The following tools have been developed to support student learning as they are learning to Communicate throughout the inquiry process. As appropriate, consider adapting and differentiating the tools based on the individual needs of the learners. Using the tools to support reflection and conversation can deepen student learning.

- Word Wall Vocabulary
- Inquiry Journal Entries
- Inside-Outside Circle Sharing Strategy
- Prompts to Encourage Student Thinking
- Tracking Sheet-Assessment for Learning
- Communication Self-Assessment Template
- Presentation Rubric

Word Wall Vocabulary

Consider displaying the following words and definitions as required, on your classroom word wall.

Inquiry-Based Learning Vocabulary

Accurate	Correct and true
Assess	To evaluate the quality of
Analyse	To examine in detail in order to expand
Bias	To show prejudice
Clarify	To make something easier to understand
Collaborate	To work and co-operate with another person(s)
Conclude	To make an inference based on evidence
Defend	To speak or write in favour of a person, idea, or action
Evaluate	To make a judgment based on criteria
Extend	To expand meaning
Infer	To form a conclusion based on evidence and reasoning
Inquiry	Asking questions and collecting evidence to answer a question
Metacognition	Thinking about your thinking
Perspective	A mental view or outlook
Persuade	To convince someone of your way of thinking
Point of View	A particular attitude or way of thinking
Question	To request information
Reflection	To think about
Refute	To prove that something is incorrect
Relevant	Closely connected to a subject under consideration
Significant	Important enough to have an effect or be noticed
Synthesize	To combine ideas to form a theory (overall explanation)
Wonder	To think or guess with curiosity

Adapted from Watt and Colyer (2014).

Inquiry Journal Entries

Students share their learning in a journal reflection. Sample prompts include:

1

Jot down 3 ways I could share my information, demonstrate my understanding, and create a project that teaches something and/or shows my new knowledge gained.

2

Here are 3 strategies I am going to use to reach and engage my audience:

3

One way my teacher could help me with sharing my new knowledge is:

Inside-Outside Circle Sharing Strategy

There are many versions and adaptations to this activity which allows students to practice communication skills in a low risk environment with multiple classmates.

1

Split the class in two. One group forms a circle and faces outward. The other half of the class forms an outside circle and faces inward. Students line themselves up so they are standing directly across from another person.

2

The educator poses a question or makes a statement for the students to discuss with the person across from them for a short period of time (e.g., 30 seconds per person). The person on the inside shares their thoughts first, and when they are finished, the person on the outside shares their response.

3

On a signal from the educator, the inside circle moves to the left 2-3 spots while the people in the outside circle remain still, so each student faces a new discussion partner.

4

Students can answer/discuss the same question/statement with their new partner, or they can present a new question or statement.

Prompts to Encourage Student Thinking

The following prompts might be useful to support student learning (Ontario Ministry of Education, 2013).

Can you explain further how that works?

Can you expand on your answer?

What else might we do with that idea?

What evidence do you have to support your comment?

Does anyone else have something to add to _____'s answer?

Can you give a reason why you agree (or disagree) with what _____ said?

Would anyone like to ask _____ a question about that?

That's an interesting connection. What other ways might these two _____ be related?

How are _____ and _____ connected?

How can we combine these two ideas?

Why do you think that _____ impacts _____?

Can you suggest another way of doing this?

Can you remember something else we did like this?

Do you think that holds true for all _____?

How could we test this theory?

Presentation Rubric

The following Rubric can be adapted for use to assess the Communication component.

Criteria	Level 4	Level 3	Level 2	Level 1
Effectiveness of language and speaking style:	Speaks precisely and skillfully, and uses language, tone, pacing, eye contact, and gestures persuasively and emphatically	Speaks clearly and fluently, and uses language, tone, pacing, eye contact, and gestures purposefully	Speaks clearly, though perhaps with hesitations, and uses language, tone, eye contact, and gestures to communicate meaningfully	Speaks hesitantly, and may use some language or pace that is less effective for the purpose
Degree of interest created for appropriate audience:	Successfully involves the audience through an imaginative method of presenting ideas, details, and/or visuals	Generally involves the audience through a frequently inventive method of presenting ideas, details, and/or visuals	Sometimes involves the audience through an occasionally original method of presenting ideas, details, and/or visuals	Rarely involves the audience and uses few strategies to present ideas, details, and/or visuals with interest
Quality of student's preparation for presentation:	Is fully prepared, so the presentation is effective	Is competently prepared, so the presentation is made with confidence	Is adequately prepared, so the presentation establishes a basic view	Demonstrates limited preparation and evidence of practice

Reflect

Reflect: Students reflect on initial questions, what they learned, what else they could investigate or try and what they could have done differently. They transfer learning to new situations and plan next steps.

As educators guide students through the Reflect component, they may refer to Figure 5 (page 13) to give consideration to the planned level of student autonomy, taking into account student needs and educator comfort.

Reflection is a core component of inquiry-based learning and occurs in all parts of the inquiry process. Students develop the ability to think critically about their own thought processes through reflection. Reflection involves students developing the ability to articulate their thinking while they progress through the different stages of the inquiry process, as well as what they have learned about themselves as inquirers.

Students can reflect about:

- How they learn and what best helps them learn
- Successes and challenges during each of the stages of the inquiry process
- What they could do to improve
- How what they learned in the inquiry process can be transferred to other areas of their life
- What they learned (new knowledge)
- What changes may have occurred in their beliefs or behaviour
- What they might do differently next time
- What their next steps would be now that they have acquired new learning



Skills Students Need to Learn and Develop

To support student learning to Reflect, a variety of skills are needed. These skills include:

- Self-assessing strengths and areas of need
- Self-assessing their progress in developing new skills
- Writing/talking about successes and challenges during the inquiry process
- Developing strategies to deal with frustrations during the process
- Taking responsibility for their own learning

As students reflect on the new knowledge they acquired and presented, they may have new questions. These questions might form the basis for deeper learning in the same area or further research or the next inquiry, and the process begins again.



Educator Tips to Facilitate Student Learning for Reflecting

To support the Reflect component, educators may consider the use of the following implementation recommendations:

- Provide opportunities for students to write/talk about what they have learned for each stage of the inquiry process.
- Use learning styles and/or multiple intelligences inventories to help students understand how they learn best.
- Have students use an inquiry journal, reflection notebook, or personal blog throughout the semester/year to record thinking.
- Conference with students, reviewing their reflections prior to proceeding to the next stage of the inquiry process.



Sample Curriculum Connections for Reflecting

With differentiated instruction and varying amounts of support, many of the strategies identified in Figure 15 below can be used at all age/grade levels. For example, many of the examples at secondary are also applicable for many elementary students.

Figure 15: Sample Curriculum Connections for Reflecting

What Can It Look Like	Curriculum Connections (Ontario Ministry of Education, 2015a; Ontario Ministry of Education, 2015b)
<p>Elementary Students can use self-assessment information to identify adjustments that may be necessary in their fitness plans and write a reflection on a next step.</p> <p>Secondary Students reflect on ways they could be physically active in their family home and in their local community.</p>	<p>Active Living</p> <p>1.5 - use a range of critical and creative thinking skills and processes to assist them in making connections, planning and setting goals, analysing and solving problems, making decisions, and evaluating their choices in connection with learning in health and physical education</p> <p>Grade 5 A2.4 - develop and implement personal plans relating to a specific component of health-related fitness, chosen on the basis of their personal fitness assessments and interests [PS, CT]</p> <p>Grade 10 A2.2 - describe factors that affect personal physical fitness, and explain the benefits of developing fitness as part of an overall healthy active way of life [PS, CT]</p>
<p>Elementary When students explore the use of different pieces of equipment, they can reflect on why they prefer one over another (e.g., “When you choose an object to throw and catch, what do you think about to make a choice that is good for you?”).</p> <p>Secondary Students reflect to transfer learning to new situations (e.g., “The target games of curling, bocce, lawn bowling, and archery all emphasize accuracy and control as you try to get an object as close as possible to a target. What similar strategies might you use in golf or bowling?”).</p>	<p>Movement Competence</p> <p>1.1 - use self-awareness and self-monitoring skills to help them understand their strengths and needs, take responsibility for their actions, recognize sources of stress, and monitor their own progress, as they participate in physical activities, develop movement competence, and acquire knowledge and skills related to healthy living</p> <p>Grade 5 B1.3 - explore different combinations of locomotor movements with and without equipment, alone and with others, moving at different speeds and levels, and using different pathways [PS, IS]</p> <p>Grade 10 B2.2 - apply analytical and problem-solving skills to identify and implement tactical solutions that will increase their chances of success as they participate in a variety of physical activities [PS, IS, CT]</p>

Figure 15: Sample Curriculum Connections for Reflecting (cont.)

What Can It Look Like	Curriculum Connections
<p>Elementary Students look at a picture of a school lunch and assess whether it has something from all four food groups. Students set a goal to make healthier choices for their lunch or after school snack. Students write a reflection sentence on what they need to do to ensure they accomplish their goal.</p> <p>Secondary Students reflect on next steps for their plan and what could be done differently (e.g., “What can you do to eat better when you are busy?”).</p>	<p>Healthy Living</p> <p>1.5 - use a range of critical and creative thinking skills and processes to assist them in making connections, planning and setting goals, analysing and solving problems, making decisions, and evaluating their choices in connection with learning in health and physical education</p> <p>Grade 2 C2.1 - use Canada’s Food Guide to assess the nutritional value of meals, and identify food and beverage choices that enhance healthy growth and development</p> <p>Grade 9 C2.1 - apply their knowledge of basic nutrition principles and healthy eating practices to develop a healthy eating plan [PS, CT]</p>



Student Reflection Questions When Reflecting

Educators may use the following questions to prompt students to reflect on their actions in the Reflect component (Alberta Learning, 2004):

- What have you learned about your topic?
- What skills have you learned?
- What have you learned about effectively communicating your ideas and learning?
- What have you learned about the inquiry process?
- What have you learned from collaborating with others?
- Which components of the inquiry process were the most challenging?
- What have you learned that you can use in other subjects or other areas of your life?
- How well did you achieve your goal?
- What changes did you have to make to achieve your goal?
- How did you feel at the beginning of the inquiry process and at the end?
- Did your thinking about the topic change at any point in the inquiry process?
- What advice would you give to someone using the inquiry process for the first time?



Assessing When Students are Reflecting

Reflection is addressed in the use of critical/creative-thinking processes and under the Thinking section of the Achievement Chart (Ontario Ministry of Education, 2015a; Ontario Ministry of Education, 2015b). This component of the inquiry process requires students to frequently reflect on their learning and determine steps for improvement.

To assess how students are learning and to provide feedback, educators can have students submit a reflection at the end of each stage of the inquiry process, making connections back to the learning in Health and Physical Education. For example, students could write a blog post or have a mini-conference with the educator to share their learning related to the Health and Physical Education curriculum expectations. Students could also identify challenges they might be experiencing and the strategies they can use related to their challenges.

Ongoing student reflections give educators a rich source of information about how students are progressing with respect to the knowledge acquisition of the Health and Physical Education expectations throughout the inquiry.

Educators can then provide feedback about how the student can do the following (Alberta Learning, 2004):

- Move forward
- Understand things from new perspectives
- Make connections between previous and new knowledge
- Write/talk about their reasons for sharing their new knowledge in a particular way
- Explain the way they focused on the needs of their particular audience
- Identify what went well with their sharing and what things they need to improve
- Identify the patterns of their learning



Success Criteria When Students are Reflecting

Educators develop the success criteria with students so that a common understanding is developed. The co-constructed descriptions may be different in each class, but below is a list of possible success criteria for reflecting. Each of the following success criteria should be expanded to be linked to what students are specifically learning within Health and Physical Education curriculum.

- I can articulate my thinking processes.
- I can identify how I best learn information.
- I can use a variety of oral, visual and written methods to reflect on my learning.
- I can plan next steps based on reflections about the inquiry process.
- I can use coping skills and time management skills to deal with confusion and frustration during the inquiry process.
- I can collaborate with others to be successful at a given task.



Tools to Support Learning to Reflect

The following tools have been developed to support student learning as they are learning to Reflect throughout the inquiry process. As appropriate, consider adapting and differentiating the tools based on the individual needs of the learners. Using the tools to support reflection and conversation can deepen student learning.

- Reflection Exit Card
- Questions to Help Students Practice Reflecting
- Reflection Journal
- Inquiry Process Reflection
- Reflection Questions Summary for All Components of Inquiry Process

Reflection Exit Card

Consider the following exit card to have students demonstrate as they are learning to Reflect.

Reflection Exit Card

I think I am becoming a better inquiry learner because...

At this point in the inquiry my goal to improve my collaboration/researching is...

Collaborating with others has helped me learn...

I have a clear idea where I am going in this inquiry because...

I am feeling _____ about this part of the inquiry because...

Questions to Help Students Practice Reflecting

The following are examples of questions that can be used to support student learning in the Reflect component (Adapted from Ontario Ministry of Education, 2015a; Ontario Ministry of Education, 2015b).

What Was Learned and What Could be Done Differently

- What could have been done differently when you threw the ball?
- How do you maintain control of the ball when you are moving in a zigzag pattern down the field? Does this change when your speed changes?
- How do you need to adjust your position when receiving a pass on the move?
- Working in your small group, consider what rule you could change in this activity to make it more or less challenging.
- What should you consider when making any decision?

Planning Next Steps

- If someone does something that makes you feel very angry, what can you do to manage your anger?
- Once you strike a ball in cricket what is your strategy to get to the base quickly?
- With \$20 a week, what choices do you make to budget your lunch?

Transfer Learning to New Situation

- What can you do to eat healthy during a busy day?
- How do you know if you need help with dealing with your feelings?
- What might you think about when you see a professional athlete drinking an energy drink in a commercial?
- How can you promote the benefits of healthy eating and active living at school?
- What are some ways of protecting your safety when using a computer at home or in a public place?

Thinking About Thinking

- When working in groups, what have you found helpful in making your group function well?
- How does knowing yourself help you to make healthy decisions when you are in a relationship?
- In the next ten minutes, you will have the opportunity to go to three different fitness stations. Think about what stations you will choose to use.
- What is a physical activity that you like to do or a skill that you like to practise? What is it in these games or skills that you particularly like?

Reflection Journal

The following sample journal prompts can be used to support students as they are learning to Reflect.

Stage of Inquiry Process	Reflections
Formulate Questions	
Gather and Organize	
Interpret and Analyze	
Evaluate and Draw Conclusions	
Communicate	
Reflect	

Inquiry Process Reflection

The following reflection prompts can be used to support students as they are learning to Reflect. How did you feel during the inquiry process?

Components of Inquiry Process	Unsure or Frustrated	At Ease	Confident	Evidence
Formulate Questions				
Gather and Organize				
Interpret and Analyse				
Evaluate and Draw Conclusions				
Communicate				
Reflect				

Reflection Questions Summary for All Components of Inquiry Process

The following reflection questions can be used to support students as they are learning to Reflect.

Components of Inquiry Process	Reflection Questions
Formulate Questions	<p>Some questions are questions an educator might ask while some are questions a student might ask of him/herself.</p> <p>What are some possible topics that interest me? What is the focus of my inquiry? What are some steps that you would use to solve a problem? What forms of brainstorming work best for me? What do I know about the topic before I start? What do I still need to find out?</p>
Gather and Organize	<p>Where can I look for information? What sources of information have been useful? What search methods have been most useful? How might I best organize my information and ideas? How do you know when you have enough evidence? How useful are visual organizers for you? What key terms gave the best results?</p>
Interpret and Analyse	<p>Where else can you use these strategies? How did you make sure your sources were credible? What type of information is easy for you to interpret? Which types of information are more challenging to interpret? What additional sources of information do I need to answer my question?</p>
Evaluate and Draw Conclusions	<p>What helped you synthesize your evidence? How did you link your ideas together? Did you have enough evidence to draw a clear conclusion? Are you able to defend your stance with sufficient evidence? Do I need more information?</p>
Communicate	<p>How can I make my presentation most appropriate for my audience? What format did you use to present your findings? Would you use that format again? Why or why not? How can you best communicate or share your conclusions, decision, or solution? What would I do differently in my next presentation?</p>

SECTION FOUR

Inquiry in Action

This section of the guide provides both elementary and secondary examples of inquiry in both physical education and health education. The samples provide an overall outline and structure and some ideas as a starting point to allow for flexibility in educator planning. Full expectations, educator prompts, and student responses for questions can be found in The Ontario Curriculum Grades 1-8 and Grades 9-12 Health and Physical Education (Ontario Ministry of Education, 2015a, b). Each example includes the inquiry plan as well as implementation tools.

Elementary

Inquiry Plan—Grade 3 Active Living: Physical Fitness

Throughout the Grade 3 Active Living: Physical Fitness Inquiry Plan (see Table 1 below), students develop and act on personal fitness goals exploring why it is important to be physically active and how via self-monitoring they will know they are trying their best.

Table 1: Inquiry Plan—Grade 3 Active Living: Physical Fitness

Inquiry Plan—Grade 3 Active Living: Physical Fitness	
Curriculum Expectations (Grade 3) 1.1 - use self-awareness and self-monitoring skills to help them understand their strengths and needs, take responsibility for their actions, recognize sources of stress, and monitor their own progress, as they participate in physical activities, develop movement competence, and acquire knowledge and skills related to healthy living A1.2 - demonstrate an understanding of factors that contribute to their personal enjoyment of being active as they participate in a wide variety of individual and small-group activities [PS] A2.2 - identify new capabilities and other benefits that may result from improved cardiorespiratory fitness [CT] A2.3 - assess their degree of physical exertion during cardiorespiratory fitness activities, using simple self-assessment methods [PS] A2.4 - develop and act on personal goals related to physical activity [PS, CT]	Big Ideas 1. Being physically active helps me to feel good and stay healthy and strong. 2. Knowing what I like about being active can help me set personal goals related to being active. 3. Being able to monitor how hard I am working during physical activities will help me achieve my physical activity goals.
Possible Inquiry Question: Why is it important to be physically active? How will I know I'm trying my best when participating in physical activities?	

Inquiry Plan—Grade 3 Active Living: Physical Fitness (cont.)

What Students Need to Know

- The benefits of physical activity
- The factors that contribute to personal enjoyment of being active
- Various methods of assessing cardiovascular exertion
- How to develop and act on personal goals related to physical activity

What students need to be able to do

- Use simple methods to assess their degree of cardiovascular exertion
- Monitor their progress during physical activity
- Develop a goal related to cardiorespiratory fitness
- Act on a personal goal
- Show understanding of how their actions relate to personal enjoyment

Culminating Assessment (of Learning)

Students explore and investigate the benefits of cardiorespiratory fitness, degree of exertion, and goal setting. Students communicate their findings through creating and acting on a personal goal related to physical activity and share it through visual means that might include:

- a class book/blog of personal fitness goals or on a running shoe cut out and displayed on a bulletin board
- creating a class infographic on what they learned about cardiorespiratory fitness, exertion, and goal setting and how it has helped them be more capable in participating in physical activities (e.g., activities they enjoy, 100% of the class have been able to elevate their heart rate when playing triangle tag, benefits of being active, etc.)

Reflection: After completing the culminating task, students revisit their KWHLQ Chart (Appendix B) and complete sections on what they have learned and what new questions they have that surfaced from their findings. Students reflect on the process of inquiry, examining successes, challenges, and how they might overcome challenges.

Activating Prior Knowledge**Alphaboxes (Appendix A)**

As a class, students give a word related to physical activity or cardiorespiratory fitness starting with each letter of the alphabet as identified in Appendix A. Responses can be an activity, fitness related vocabulary, or anything that comes to mind when thinking about fitness (e.g., H—heart beat, J—jump). Write the initials of the student who suggests the word in the box beside it.

Option: Students complete chart with parents/guardians at home over the course of the unit.

KWHLQ Chart for Cardiorespiratory Fitness (Appendix B)

Individually, using Appendix B, students record on a sticky note what they know about cardiorespiratory fitness, what they want to know, and how they think they can find the information. At the start of the unit/inquiry, students put their notes on a class KWHLQ Wall Chart, or they can share their responses verbally and the teacher or student leader records these on chart paper. Keep the chart paper displayed and revisit it often throughout and following the completion of the inquiry. Allow students the opportunity to reflect on what they have learned and what new questions have surfaced throughout the inquiry.

Poster/Infographic (Appendix C)

Share a quote or grade-appropriate fitness poster or infographic (e.g., see Appendix C) and record questions students have in response to what they see and think. Consider modelling questioning for students if appropriate. Possible questions might include:

- I wonder how hard I'm working?
- I wonder how I will know how I'm doing now?
- I wonder what the difference is between being THE best versus doing my best?
- I wonder how we get all of the class to do better than we did?

Students can record questions on their KWHLQ Chart, a “Wonder Wall” in the activity space, or an online message board used for ongoing class reflections.

Inquiry Plan—Grade 3 Active Living: Physical Fitness (cont.)

Instructional Activities**Effect of different levels of physical activity on the body—Exertion**

Students work in small groups and complete stations that identify a variety of different physical activities, for 1 minute per station. Activities might include vigorous walking, jumping jacks, or skipping. Students monitor their physical reactions (checking their heart rate, rate of breath, ability to talk, sound of their breath, and perceived exertion) during the physical activity. Following the activity, students record their observations about their heart rate, rate of breath, ability to talk, sound of their breath, and perceptions of how hard they were working.

Exploring enjoyment of participating

Students participate in a variety of physical activities (e.g. Noodle tag, Everybody's It, Animal circuit, co-operative games) and reflect on factors that contribute to their enjoyment of being active.

Personal goal setting

Using the Think, Pair, Share strategy, students brainstorm what they know about setting a goal. Have pairs share their responses with the class. Consider recording student responses on the board or chart paper. Students practise setting a simple goal and recording it on an index card. Students exchange goals with a peer to assess progress toward their goals based on a checklist of criteria. Educator can model a class goal.

Assessment For/As Learning

Observations Graphic Organizer (Appendix D)

Large-group discussion
Teacher observations, verbal feedback
Anecdotal Recording Chart (Appendix E)

Teacher observation with verbal feedback using Fitness Self-Assessment Checklist (Appendix F)

Possible Reflection Questions for Unit

- How did you feel during the activity we just completed?
- Did you enjoy that activity? What did you enjoy about the activity?
- What were some of the changes that happened in your body as you participated in the activity?
- What could be changed so that the activity would be more enjoyable for you and for everyone?
- What goal would you have next time?
- What are the benefits of participating in physical activity and getting your heart beating faster?
- What do you need to do to get your heart beating faster and lungs working harder?
- Did you work hard enough to have an increased heart rate throughout the task?

Reflection questions for setting a goal

- Did you participate in class activities that you planned in order to help you reach your goal?
- Did you do the home activities that you planned in order to help you reach your goal?
- What was the hardest part of trying to reach your goal?
- What would you change for your next fitness goal?

Note: A fitness inquiry folder/notebook could be used for students to record questions they have, information about their degree of exertion, factors affecting fitness, achievement of their goal, appendix material, how they feel/enjoyment, and reflections about any part of the process.

Implementation Tools

Appendix A: Alphaboxes

In each box, try to write any words that begin with that letter and are related to Physical Activity or Cardiorespiratory Fitness.

A	B	C	D	E
F	G	H	I	J
K	L	M	N	O
P	Q	R	S	T
U	V	W	X	Y Z

Appendix B: KWLHQ Chart for Cardiorespiratory Fitness

What do I <u>k</u> now?	What do I <u>w</u> ant to know?	<u>H</u> ow will I find out?	What did I <u>l</u> earn?

What questions do I have now?

It's not about
being the
BEST
it's about being
BETTER
than you
were yesterday.

Appendix C: Poster/Infographic (cont.)

**Work hard and
be proud of what
you can achieve**

**Do something that
your future self
will thank you for.**

Appendix D: Observations Graphic Organizer

Perform each activity, taking 1 minute of rest between each activity.

Physical Activity	Heart Rate <ul style="list-style-type: none"> • Regular beating • Faster beating • How hard are you working on a scale of 1-10? 	Breathing <ul style="list-style-type: none"> • No change • I can hear my breath • I'm breathing hard 	Talk Test <ul style="list-style-type: none"> • Can't talk • Can talk with some gasping • Can talk easily 	How hard are you working? <ul style="list-style-type: none"> • Going easy • Medium hard • Working my hardest 	How do you feel when you're being active?
Crab walk across the activity area					
20 jumping jacks					
Skip around the activity area 4 times					
Boxer jogs 20 second					
Hop on each leg 5 times					
Skip rope 20 times					
Run 1 lap around activity area as fast as you can					

What activity made you breathe the hardest?

How do you know you're working hard?

What activity did you enjoy the most?

Appendix E: Anecdotal Recording Chart

Success Criteria:

- Student identifies why they enjoy being active.
- Student identifies physical, social, emotional, and mental benefits.

Student Name					
Evidence					
Student Name					
Evidence					
Student Name					
Evidence					
Student Name					
Evidence					
Student Name					
Evidence					
Student Name					
Evidence					

Adapted from Ophea (2011).

Inquiry Plan—Grade 5 Healthy Living, Healthy Eating: Making Healthy Choices and Making Connections for Healthy Living

Throughout the Grade 5 Healthy Eating Inquiry (see Table 2 below), students use a range of critical-thinking skills to explain how to use nutrition fact tables, and they describe the influences of media and advertising on food choices. A summary of the lesson activities, including graphic organizers and assessment tools, are included.

Table 2: Inquiry Plan—Grade 5 Healthy Living, Healthy Eating: Making Healthy Choices and Making Connections for Healthy Living

Inquiry Plan - Grade 5 Healthy Living, Healthy Eating: Making Healthy Choices and Making Connections for Healthy Living

Curriculum Expectations (Grade 5)

- 1.5 - use a range of critical and creative thinking skills and processes to assist them in making connections, planning and setting goals, analysing and solving problems, making decisions, and evaluating their choices in connection with learning in health and physical education
- C2.1 - explain how to use nutrition facts tables and ingredient lists on food labels to make healthier personal food choices [CT]
- C3.1 - describe how advertising and media influences affect food choices, and explain how these influences can be evaluated to make healthier choices [CT]

Big Ideas

- Nutritional information on food labels can guide people in making decisions about healthy food choices.
- Advertising and media use a variety of tactics that target children or youth and can influence food choices.
- Thinking critically about how food choices can have an impact on whether the choices are as healthy as possible.

Possible Inquiry Questions

How do advertisers and the media try to influence what I choose to eat and drink?
How can I think about these influences as I try to make the healthiest food choices possible?
How can I use food labels to make healthier food choices?

Rich Assessment Task

Students investigate and research how advertising and media influences affect the food choices of children and youth. Students examine 2-3 nutrition labels for similar products and decide which one is a healthier choice.

Inquiry Plan - Grade 5 Healthy Living, Healthy Eating: Making Healthy Choices and Making Connections for Healthy Living (cont.)**Inquiry at a Glance****1. Formulate Questions:**

Students look at a variety of advertising images and media examples that can impact a person's food choices (e.g., TV commercials, celebrity endorsements, product placement in movies, magazine ad promoting a fad diet, etc.). Students select one item that is of interest to them. Students record wonderings or questions they have about how advertising and media influences a person's food choices. (E.g., Do celebrities really use the products they promote? What information in the TV commercial is true? Would I buy the product? What ingredients are in the product advertised?)

2. Gather Information:

Students research how advertising or media might influence food choices of someone their age. Students review nutritional facts from a variety of products represented in a photograph or other image (sample may be provided). Students record and organize their information in a graphic organizer.

3. Evaluate Evidence and Make a Decision:

Students use the information gathered to compare their product food label to a similar product, and they decide which one is the healthier choice.

4. Communicate and Share New Knowledge:

In small groups, students share their findings about how advertising and media influence food choices, and they explain their healthier choice between the two products.

5. Reflection:

Students answer reflection questions and write new questions they may have. (E.g., Where did you find your information? How do you know the information you found is true? What do you need to consider when seeing advertisements about food? Why might someone use the product in the advertisement? Which product is the healthier choice? What new questions do you have based on what you have found out?)

Grade 5 Healthy Eating Activities:**Minds On:****• Activity 1: Anticipation Guide—Exploring Food Labels**

Prior to the lesson, gather a variety of products with food labels, or photographs of food labels, for students to examine. Review the food labels and create five statements regarding food labels that students respond to using an Anticipation Guide (Appendix G).

Students complete the “Before” column of Anticipation Guide based on the educator-generated statements regarding food labels. In pairs, have students look at 1-2 products/images and fill in the “After” and “Evidence” columns in the Anticipation Guide. Afterwards, have a class discussion about their observations from reviewing the food labels and share wonderings they have.

• Activity 2: Nutrition Label Match

Using Nutrition Label Vocabulary Match (Appendix H) cut the vocabulary into strips and separate the descriptions from the words. Provide each student either a description or a word. Students move throughout the activity space and on the educator's signal attempt to find their match. Once the match has been found, students perform an on-the-spot stretch. Next, have students trade cards with 3-5 other students and on the teacher's signal try to find their new match. Once their match has been found, students perform a new on-the-spot stretch. Review a few match cards every round.

Inquiry Plan - Grade 5 Healthy Living, Healthy Eating: Making Healthy Choices and Making Connections for Healthy Living (cont.)**• Activity 3: Media Influences on Food Choices: 4 Corners**

Place four pieces of chart paper, each with one of the following headings, in four corners of the activity area: “Product Packaging”, “Celebrity Endorsements”, “TV Commercials”, and “Magazine Ads Promoting Fad Diets”.

Offer students the choice of which corner they feel comfortable going to. In their chosen corner students discuss examples they’ve seen of that media influence as well as how it could influence food choices people their age make. Model for students what this conversation could look like. (E.g., celebrity endorsement: “I’ve seen ads with Sidney Crosby drinking Gatorade, and I know a lot of children and youth play hockey and look up to Sidney Crosby, so might choose to buy Gatorade.”)

Action:**• Activity 4: Evaluating Media**

In a large-group discussion, share with students techniques that can be used to evaluate media:

- Critically examine reasons for celebrity endorsements
- Explore the logic of product claims
- Check whether information that verifies the claims (for example website, medical reference) is credible
- Asking information about the product ingredients and nutrients
- Critically examine how realistic the body images are that are presented in an advertisement

Set up 4-5 stations with various video clips, magazine ads, and advertising promoting specific eating habits, product packaging to entice children and youth, celebrity endorsements, and product placements in movies and programs. Students examine and record their observations on how the advertisement influences food choices for people their age.

Students select one item and then begin researching the nutritional information of a product in one of the stations’ advertising pictures and media examples. Students record their information on Product Comparison Graphic Organizer (Appendix I). Students then select a second object that is similar to their first. Students research the nutritional information for the second product to determine which of the two products is a healthier choice.

Consolidation:**• Activity 5: Exit Card**

Working individually, students respond to the following questions:

- What or when might someone choose to eat/drink the product?
- Is the product a healthy choice for you?

Students complete Self-Assessment Checklist (Appendix J).

Implementation Tools

Appendix H: Nutrition Label Vocabulary Match

Vitamins	do not provide energy but do help the body grow and stay healthy. Fruits, vegetables, and enriched grain products are good sources.
Protein	is made up of amino acids. The body uses amino acids to develop bone, muscle, skin, and blood. Some common sources are fish, poultry, meat, legumes (beans, lentils), eggs, tofu, nuts, and milk products (milk, cheese, yogurt).
Minerals	help build bones and teeth, help muscles work, and are involved in various metabolic pathways. Calcium is an example that helps build bones and teeth. Other examples our bodies need that we get from food are potassium, sodium, iron, zinc, phosphorus, magnesium, and copper.
Transfats	are found in processed foods, baked goods, and hard (stick) margarines containing shortening or partially hydrogenated oil. They raise blood cholesterol and increase the risk of cardiovascular disease. Saturated fats are mainly found in animal products such as meats, butter, milk, cheese, and eggs. Large amounts of these types of fat are known to raise blood cholesterol and increase the risk of cardiovascular disease.
Unsaturated fats	such as monounsaturated and polyunsaturated are found in vegetable oils such as canola, olive, and soybean oils. These types of fats are healthy.
Fats	supply calories and help our bodies absorb the fat-soluble vitamins A, D, E, and K. There are three main types in foods that people eat.
Fibre	is found in vegetables, fruit, whole grains, beans, and lentils. It is the portion of plant foods that the body cannot digest.
Carbohydrates	are the body's major source of energy. There are three main types: simple, complex, and fibre.
Calories	are a measure of how much energy food can supply the body. The body uses the food eaten as fuel, burning it to produce energy.
% Daily Value (DV)	is how much of a specific nutrient a serving of food contains relative to the recommended daily amount.
Sodium	is an essential mineral for the human body. The most common form is table salt.

Appendix I: Product Comparison Graphic Organizer

Before you get started, check the amounts! Serving sizes on nutritional labels may not be identical. What can you do to ensure you are making correct comparisons?

	Sugar	Fat	Sodium	Fibre	Vitamins
Product 1					
Product 2					

Observations/Conclusions:

Appendix J: Self-Assessment Checklist

CRITERIA	Still working on it!	Almost there!	Got it!	Comments/Evidence
I can ask questions about how advertising and media influences a person's food choices				
I gathered and organized relevant nutritional information to investigate how advertising influences food choices.				
I used nutritional information to compare two products and make a reasonable judgment about which product is healthier.				
I communicated my finding clearly about how advertising influences food choices and my explanation of which of two products is healthier.				
I can identify my strengths and challenges in this inquiry about media influence on food choices. I have additional questions I can ask about this topic.				

Secondary

Inquiry Plan—Grade 9 Healthy Living, Healthy Eating: Making Healthy Choices and Making Connections for Healthy Living

Throughout the Grade 9 Healthy Living: Healthy Eating inquiry plan (see Table 3 below), students use self-awareness and self-monitoring skills as well as critical-thinking skills to explain how healthy eating contributes to a person's overall well-being. Students apply their knowledge of nutrition principles and analyse the influence of social and environmental factors on food choices. A summary of the lesson activities, including graphic organizers and assessment tools, are included.

Table 3: Inquiry Plan—Grade 9 Healthy Living, Healthy Eating: Making Healthy Choices and Making Connections for Healthy Living

Inquiry Plan-Grade 9 Healthy Living, Healthy Eating: Making Healthy Choices and Making Connections for Healthy Living

Curriculum Expectations (Grade 9)

- **1.1** - use self-awareness and self-monitoring skills to help them understand their strengths and needs, recognize sources of stress, take responsibility for their actions, and monitor their own progress as they participate in physical activities, develop movement competence, and acquire knowledge and skills related to healthy living
- **1.5** - use a range of critical and creative thinking skills and processes to assist them in making connections, planning and setting goals, analysing and solving problems, making decisions, and evaluating their choices in connection with learning in health and physical education
- **C1.1** - explain how active living and healthy eating contribute to a person's physical health and mental, emotional, and spiritual well-being, and describe the benefits of a holistic approach to health [PS, CT]
- **C2.1** - apply their knowledge of basic nutrition principles and healthy eating practices to develop a healthy eating plan [PS, CT]
- **C3.1** - analyse the influence of social and environmental factors on food and beverage choices [IS, CT]

Big Ideas

- Healthy eating and active living can make a difference in a person's physical health and their emotional, spiritual, and mental well-being.
- Many different factors (environmental, social, emotional, and nutritional) can affect a person's food choices and eating habits.
- It's important to think about these factors when developing a plan for healthy eating.

Possible Inquiry Questions

- What is affecting what I choose to eat and drink at different times of day and in different social situations in my life right now?
- What do I need to consider when creating a healthy eating plan?
- How do I create a healthy eating plan that takes into account my culture and religious influences as well as social, environmental, emotional, and financial factors?

Inquiry Plan-Grade 9 Healthy Living, Healthy Eating: Making Healthy Choices and Making Connections for Healthy Living (cont.)**Rich Assessment Task:**

Students investigate and research social and environmental factors that influence children and youth food and beverage choices. Students create a personal healthy eating plan that meets the Canada Food Guide requirements and reflects personal needs and circumstances.

Inquiry at a Glance**1. Formulate Questions:**

Students research different social and environmental factors that can impact a person's food choices and select one factor that is of interest to them. Students record wonderings or questions they have about the impact of social and environmental factors on a person's food choices. Student questions might include:

- Are one culture's traditional foods healthier than another?
- Can I still follow Canada's Food Guide with my particular heredity, culture, religion, financial situation, etc.?
- What factor in my life might have the greatest impact on making healthier food choices and on my well-being? (Well-being includes physical, social, mental, emotional, physical, and spiritual aspects.)
- How do different choices I make with respect to active living and healthy eating affect how I feel mentally, emotionally, and physically?

2. Gather Information, Interpret and Analyse Sources:

Using credible sources, students research information regarding the social/environmental factors that impact food choices. Students share their findings in a group discussion, giving and receiving peer feedback. Students record and organize their information and sources in a graphic organizer. Some sources might include: Canada's Food Guide (translated into multiple languages) as well as the First Nations, Métis, and Inuit version; registered dietitians; local public health unit; credible nutritional websites; and Teen Health and Wellness database).

3. Evaluate Evidence and Create a Plan:

Students synthesize their information gathered in order to answer an inquiry question and create a personal healthy eating plan that both meets Canada Food Guide nutritional requirements and reflects their personal needs and circumstances.

4. Communicate and Share New Knowledge:

In small groups of 4-5, students use their evidence collected share their conclusions (using an advertisement, video, letter, app, brochure, etc.) about the influence of different factors on food and beverage choices of children and youth, and explain their choices in their healthy food plan.

5. Reflection:

Students complete a reflection about what they have learned throughout the inquiry and what new questions they have.

Inquiry Plan-Grade 9 Healthy Living, Healthy Eating: Making Healthy Choices and Making Connections for Healthy Living (cont.)**Grade 9 Healthy Eating Lesson Activities****Minds On Ideas:****• Activity 1: Exploring Canada’s Food Guide**

Gather a variety of pictures of a holistic view of health (e.g., graphics and text making connections between physical activity, healthy eating and mental, emotional and spiritual well-being) from the internet/texts. In pairs, students look at 1-2 pictures and complete a See, Think, Wonder Chart (Appendix K). Afterwards, guide a class discussion about the things students notice in the pictures, including what’s different, what’s the same, what’s missing. Have students share wonderings they have related to a holistic approach to health.

As appropriate, consider adding the See, Think, Wonder Chart to the students’ inquiry portfolios (hard copy or electronic version).

• Activity 2: Factors Influencing Food Choices—4 Corners

Place four pieces of chart paper and a marker—one each for “Environment”, “Family”, “Finances”, and “Culture”—in four spots in the activity area. Offer students the choice of which corner they feel comfortable going to and talking about how that factor influences food choices that children and youth make related to healthy eating practices.

Consider modeling for students what the conversations could look like at each corner. Examples: Finances—“It can be hard to make healthier choices when you have less time and money. Eating at a fast food restaurant regularly.” Family—“My mom is a vegetarian so we eat a lot of beans and lentils. Sometimes she eats tofu when we have meat, and sometimes we all have tofu as a family.” Environment—“Buying fresh food from the market reduces the packaging that fills up our garbage dumps.” “In certain parts of Ontario, fresh produce is more expensive and harder to find.” Culture—“Eating certain types of meats is against my religion.”

Action:**• Activity 3: Class Interview**

Students search Canada’s Food Guide in print or online and gather information about the four food groups and daily requirements for youth their age.

Arrange with another educator to allow your students to interview their students using Sample Interview Observations Tracking Sheet (Appendix L). Students collect information to determine what they eat for a typical lunch and why, with the goal of determining factors that may influence the food choices of youth.

Next, in groups of 3, students analyse their findings, focusing on the aspects of the lunches that are healthy and what eating practices or foods consumed might be improved upon.

Some questions for discussion could include:

- Do students have a balanced lunch with items in all four food groups?
- What aspects of the lunch are healthier? Explain.
- What changes could you suggest to make healthier choices for lunch?
- What factors affect student food choices?
- Consider what eating practices contribute to physical/emotional health and what practices might inhibit health. For example, where do they eat? Who do they eat with? How long do they take to eat? What they do while eating

Consolidation:**• Activity 4: Exit Card**

Working individually, students respond to the following questions:

How do social and environmental factors influence the food choices of students at my school?

How can I use what I learned in developing my own healthy eating plan?

Implementation Tools

Appendix K: See, Think, Wonder Chart

What do you <u>see</u> ?	What do you <u>think</u> about what you see?	What does it make you <u>wonder</u> ?

Adapted from Ritchhart, Church, and Morrison (2011).

Appendix L: Sample Interview Observations Tracking Sheet

	Student 1	Student 2	Student 3
Lunch items			
Vegetables & Fruit			
Milk & Alternatives			
Grain Products			
Meat & Alternatives			
Other			
Healthy Eating Behaviours (e.g., where food is consumed, social circumstances, feelings, etc.)			
Is there a balance of foods from all four food groups?			
Overall, what aspects are healthier or less healthy?			

Social/environmental factors influencing students' food choices:

Inquiry Plan—Grade 10 Active Living: Physical Fitness

Throughout the Grade 10 Active Living: Physical Fitness Inquiry Plan (see Table 4 below), students assess their level of health-related fitness and develop a personal fitness plan. Students implement and revise their personal fitness plan, focusing on their personal fitness goals, and answering questions such as: What does being fit mean for me? How will being physically fit benefit me now and in the future? How will I continue to develop different aspects of my fitness in order to benefit my overall health?

Table 4: Inquiry Plan—Grade 10 Active Living: Physical Fitness

Inquiry Plan—Grade 10 Active Living: Physical Fitness	
<p>Curriculum Expectations (Grade 10)</p> <p>1.1 - use self-awareness and self-monitoring skills to help them understand their strengths and needs, recognize sources of stress, take responsibility for their actions, and monitor their own progress as they participate in physical activities, develop movement competence, and acquire knowledge and skills related to healthy living</p> <p>1.5 - use a range of critical and creative thinking skills and processes to assist them in making connections, planning and setting goals, analysing and solving problems, making decisions, and evaluating their choices in connection with learning in health and physical education</p> <p>A2.2 - describe factors that affect personal fitness, and explain the benefits of developing fitness as part of an overall healthy active way of life [PS, CT]</p> <p>A2.3 - assess their level of health-related fitness during various physical activities, and monitor changes in their health-related fitness over time [PS, CT]</p> <p>A2.4 - develop, implement, and revise a personal fitness plan [PS, CT]</p>	<p>Big Ideas</p> <ol style="list-style-type: none"> 1. Being fit helps to improve one’s quality and enjoyment of life and there are many factors that can affect personal fitness. 2. Your decisions and actions affect your level of fitness. 3. Understanding yourself and being aware of your personal fitness including changes over time can help when setting goals to improve various aspects of fitness.
<p>Possible Inquiry Question:</p> <p>What does being fit mean for me? How will being physically fit benefit me now and in the future? How will I continue to develop different aspects of my fitness to benefit my overall health?</p>	

Inquiry Plan—Grade 10 Active Living: Physical Fitness (cont.)

What Students Need to Know

- Factors that affect personal physical fitness
- Benefits of developing fitness as a part of healthy active living
- How to design, implement, and revise personal fitness plans
- Identify components of health-related fitness
- Methods to personally assess health-related fitness and monitor it over time

What students need to be able to do

- Assess levels of personal health-related fitness during physical activity
- Describe the factors that affect their personal fitness
- Demonstrate activities to help improve at least one of the health-related components of fitness
- Set goals to improve personal health-related fitness
- Create a personal fitness plan to reach those goals as a part of an overall personal fitness plan
- Monitor goals over time and revise goals as needed

Culminating Assessment (Assessment of Learning)

Students explore and investigate the benefits of health-related components of fitness, factors affecting personal physical fitness, and ways to assess and monitor health-related components of fitness by developing, implementing, and revising a personal fitness plan.

Students communicate their findings through:

- Creating a personal fitness plan based on personal assessment results and current needs
- Revising this plan based on information gathered through monitoring over time
- Creating a written, visual, or audio public service announcement for the school community showing awareness of the factors that affect physical fitness, to promote the benefits of being physically active to youth

Reflection: After completing a culminating task students revisit and complete their KWLHQ Chart, reflecting about what they have learned, what new questions they have as a result of their findings, and what next steps they can take.

Activating Prior Knowledge**Alphaboxes (Appendix M)**

Working in a large group, students fill in a word related to the health-related components of fitness starting with each letter of the alphabet as identified on Appendix M. A word can be an activity, fitness-related vocabulary term, whatever comes to mind when thinking about fitness (e.g., A—aerobic, B—breath rate, C—crunches). Consider having students complete the chart while they are entering the activity space, getting equipment ready, and preparing to warm-up.

KWLHQ Chart for Health-Related Physical Activity (Appendix N)

Working individually at the beginning of the unit/inquiry, students fill in what they already know about health-related fitness, what they want to know, and how they'll find the answers using Appendix N. Students revisit and complete their KWLHQ chart to reflect on what they have learned and what new questions have occurred to them throughout the different parts of the inquiry process.

Infographics

Working in pairs, students examine a variety of age-appropriate infographics related to the health-related components of fitness. As appropriate, model questioning for students to support various learner needs. For example:

- Why is it bad for your health to exceed your maximum heart rate?
- Why are 50% of youth not physically active on a regular basis? What's stopping them?
- What components of fitness do I work the most when I play hockey on my league team?

Questions could be recorded in their KWLHQ Chart, on a "Wonder Wall" in the activity area, or on an online message board used for ongoing class reflections.

Inquiry Plan—Grade 10 Active Living: Physical Fitness (cont.)

Exploring Health-Related Components of Fitness

Create a circuit with various fitness assessments to be completed and recorded by the students. Intersperse four discovery stations each with information about one of the health-related components of fitness and a piece of chart paper. Place different pieces of equipment (pylons, weights, skipping ropes, hula hoops, balls, etc.) at these stations. Students examine the equipment and brainstorm physical activities that can be used to work on and improve that component of fitness and record them on the chart paper on the wall.

Instructional Activities**Effect of physical activity on the body**

Students perform three different physical activities for 1 minute each, such as walking, jogging, and jumping jacks, and record their observations about their heart rate, rate of breath, and other feelings and evidence of exertion.

Exploring and assessing health-related components of fitness

Students investigate the different components of health-related fitness at stations exploring the different types of equipment and physical activities that can be used to work on and improve each health-related component.

Students try out a variety of fitness assessments for the different components and record their results. Students then analyse the results to determine their areas of strength and areas for improvement.

Factors affecting physical fitness

In small groups, students brainstorm different factors that affect a person's level of fitness (heredity, cultural background, finances, time, physical challenges, etc.). Have students create two lines facing each other, and then pair up with the person across from them. Have pairs perform on-the-spot warm-up activities for 30 seconds per activity. Call out one factor that affects a person's level of fitness and have pairs discuss. Repeat the sequence for as long as desired to achieve an effective warm-up and for students to discuss some of the factors.

Personal Fitness Plan

Students learn about developing a personal fitness plan, the F.I.T.T. (Frequency, Intensity, Time, Type) principle, SMART (Specific, Measurable, Achievable, Results-Oriented, Time-Bound) goals, and how these applies to developing, implementing, and revising a fitness plan as needed.

Students practise setting a goal as one component of their overall personal fitness plan, and they exchange goals with a peer to assess based on criteria established at the start of the task.

Students create Action Plan statements to help them meet their SMART goals and support their overall personal fitness plan. (E.g., "If I engage in additional cardiovascular activity, then my body will adapt and I will improve my results on the 12-minute run test, thus improving my cardiovascular fitness.")

Assessment For/As Learning

Physical Activity Assessment Results Tracking sheet (Appendix O)

Teacher observations using Anecdotal Recording Chart (Appendix P)

Physical Activity Assessment Results Tracking sheet (Appendix O)

Teacher observations using Anecdotal Recording Chart (Appendix P)

Goal Setting Checklist Peer Assessment (Appendix Q)

Inquiry Plan—Grade 10 Active Living: Physical Fitness (cont.)

Possible Reflection Questions for Unit

- How do I develop an appropriate fitness program and find the motivation to commit to it?
- How does participating in physical activity make me feel?
- What are the physical and social benefits of participating in physical activity?
- What affects my personal fitness?
- Why is lack of physical activity unhealthy?
- What do I need to do to be physically fit?
- How did I challenge myself today?
- What adjustments do I need to make tomorrow?
- How do you measure physical fitness?
- How do you maintain physical fitness?
- How can goal setting improve personal fitness levels?

Note: A fitness inquiry folder/notebook could be used for students to record:

- questions they have
- information gathered about factors affecting health and physical activity
- health-related components
- assessment results
- reflections about how they feel and impact on their physical, mental, social, and emotional health
- questions about what they might consider changing or adjusting
- conclusions about their fitness level and improvements
- decisions made in creating their personal fitness plan, and
- reflections about any part of the process.

Implementation Tools

Appendix M: Alphaboxes

In each box, try to write any words that begin with that letter and are related to Health-Related Fitness.

A	B	C	D	E
F	G	H	I	J
K	L	M	N	O
P	Q	R	S	T
U	V	W	X	Y Z

Appendix N: KWLHQ Chart for Health-Related Physical Activity

What do I <u>k</u> now?	What do I <u>w</u> ant to know?	<u>H</u> ow will I find out?	What did I <u>l</u> earn?

What questions do I have now?

Appendix O: Physical Activity Assessment Results Tracking Sheet

Do each activity for 1 minute. Record your observations. Rest 1 minute between each activity.

Activity	Heart Rate • Beats per minute	Breathing • No change • I can hear my breath • I'm breathing hard	Talk Test • Can't talk • Can talk with some gasping • Can talk easily	How hard are you working? • Going easy • Medium hard • Working my hardest	Other effects you feel
Walking around pylons					
Jogging around pylons					
Jumping Jacks					
Running full speed around pylons					
Plank (partial or full)					
Squats					
Push Ups (partial or full)					
Downward dog					

What activity challenged you the most?

What helps you determine whether the intensity of an activity is moderate or vigorous?

Appendix P: Anecdotal Recording Chart

Success Criteria:

- Identifies how being fit helps to improve the quality and enjoyment of life
- Identifies that there are many factors that can affect personal fitness
- Identifies how decisions and actions affect someone’s level of fitness
- Demonstrates an understanding of personal fitness including how changes over time can help when setting goals to improve various aspects of fitness

Student Name					
Evidence					
Student Name					
Evidence					
Student Name					
Evidence					
Student Name					
Evidence					

Appendix Q: Goal Setting Checklist Peer Assessment

<p>Glow</p> <p>Identify glowing ways your partner met the success criteria for the task.</p>	<p>Grow</p> <p>Identify areas of growth your partner needs to work on to meet the success criteria for the task.</p>

References

- Alberta Education. (1997). *English 20: Teacher manual. Classroom Assessment Materials Project*. Edmonton, AB: Alberta Education.
- Alberta Learning. (2004). *Focus on inquiry: A teacher's guide to implementing inquiry-based learning*. Edmonton, AB: Alberta Learning.
- Brown's Basics. (2015). *Inquiry cycle recording template*. Retrieved from <https://www.teacherspayteachers.com/Store/Browns-Basics>
- Colyer, J., Cecillon, J., Draper, G., & Hoogeveen, M. (2010). *Creating Canada: A history – 1914 to the present*. Toronto, ON: McGraw-Hill Ryerson.
- Corwin. (n.d.). *21st century rubrics*. Retrieved from http://www.corwin.com/upm-data/61523_Thinking_Rubric.pdf
- Gregory, K., Cameron, C., & Davies, A. (2011). *Knowing what counts: Setting and using criteria* (2nd ed.). Courtenay, BC: Connections Publishing and Bloomington, IN: Solution Tree Press.
- Hoyt, L. (1999). *Revisit, reflect, retell: Strategies for improving reading comprehension*. Portsmouth, NH: Heinemann.
- Koehler, C., & Zwaan, S. (2014). *Q tasks: How to empower students to ask questions and care about answers* (2nd ed.). Markham, ON: Pembroke Publishers.
- The Laboratory School at the Dr. Erick Jackman Institute of Child Study. (2011). *Natural curiosity: Building children's understanding of the world through environmental inquiry / A resource for teachers*. Oshawa, ON: Maracle Press Ltd.
- Lawlor, D. (2015a). *Activity/running log tracking sheet*. Unpublished work, Ottawa Catholic School Board, Ottawa, ON.
- Lawlor, D. (2015b). *Interview observations tracking sheet*. Unpublished work, Ottawa Catholic School Board, Ottawa, ON.
- Lawlor, D. (2015c). *MCAL tracking sheet*. Unpublished work, Ottawa Catholic School Board, Ottawa, ON.
- McTighe, J., & Wiggins, G. (2013). *Essential questions: Opening doors to student understanding*. Alexandria, VA: ASCD.
- National Research Council. (2000). *Inquiry and the National Science Education Standards: A guide for teaching and learning*. Washington, DC: National Academy Press.
- Ontario Ministry of Education. (2004). *Think literacy: Health and Physical Education, Grades 7-10*. Retrieved from <http://www.edu.gov.on.ca/eng/studentssuccess/thinkliteracy/files/ThinkLitHealthPhysEd.pdf>
- Ontario Ministry of Education. (2010a). *Growing success: Assessment, Evaluation, and Reporting in Ontario Schools; covering grades 1 to 12* (1st ed.). Retrieved from <https://www.edu.gov.on.ca/eng/policyfunding/growSuccess.pdf>
- Ontario Ministry of Education. (2010b). *Questioning: Viewing guide*. Assessment for Learning video series. Retrieved from <http://www.edugains.ca/resourcesAER/VideoLibrary/Questioning/ViewingGuideQuestioningAFLVideoSeries.pdf>
- Ontario Ministry of Education. (2011). *Capacity Building Series: Asking Effective Questions* (Special Ed. #21). Retrieved from https://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_AskingEffectiveQuestions.pdf
- Ontario Ministry of Education. (2013). *Capacity Building Series: Inquiry-Based Learning* (Secretariat special ed. #32). Retrieved from http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_InquiryBased.pdf

References

- Ontario Ministry of Education. (2015a). *The Ontario Curriculum, Grades 1-8: Health and Physical Education*. Retrieved from <http://www.edu.gov.on.ca/eng/curriculum/elementary/health1to8.pdf>
- Ontario Ministry of Education. (2015b). *The Ontario Curriculum, Grades 9 to 12: Health and Physical Education*. Retrieved from <http://www.edu.gov.on.ca/eng/curriculum/secondary/health9to12.pdf>
- Ontario Ministry of Education. (2013). *The Ontario Curriculum, Grades 1 to 6: Social Studies; Grades 7 and 8: History and geography*. Retrieved from <https://www.edu.gov.on.ca/eng/curriculum/elementary/sshg18curr2013.pdf>
- Ontario School Library Association. (n.d.). *Small group discussion: Testing ideas with peer-to-peer consultation*. Retrieved from <http://www.accessola.com/ola/toolkit/Resources/Small%20Group%20Discussion.pdf>
- Ophea. (2011). *Teacher resource: Recordable assessment tool*. Retrieved from http://teachingtools.ophea.net/sites/default/files/pdf/VS_Anec_Rec_Int_05DE11.pdf
- Ophea. (2015a). *Appendix F: Teaching and learning strategies*. Retrieved from http://teachingtools.ophea.net/sites/default/files/appendices/primary_appendixf.pdf
- Ophea. (2015b). *Teacher resource 4 : Fitness self-assessment checklist*. Retrieved from http://teachingtools.ophea.net/sites/default/files/ophea-files/lesson_plan/gr3_mcal_fitness_intro_tr4.pdf
- Ophea. (2015c). *Teacher resource 5: Nutrition label match*. Retrieved from http://teachingtools.ophea.net/sites/default/files/ophea-files/lesson_plan/gr5_hl_choices_tr5.pdf
- Ritchhart, R., Church, M., & Morrison, K. (2011). *Making thinking visible: How to promote engagement, understanding, and independence for all learners*. San Francisco, CA: Jossey-Bass.
- Stead, T. (2002). *Is that a fact? Teaching nonfiction writing, K-3*. Portland, ME: Stenhouse Publishers.
- Watt, J., & Colyer, J. (2014). *IQ: A Practical Guide to Inquiry-Based Learning*. Don Mills, ON: Oxford University Press.
- Wilhelm, J.D., Wilhelm, P.J., & Boas, E. (2009). *Inquiring Minds Learn to Read and Write: 50 Problem-Based Literacy and Learning Strategies*. Markham, ON: Scholastic Canada.