

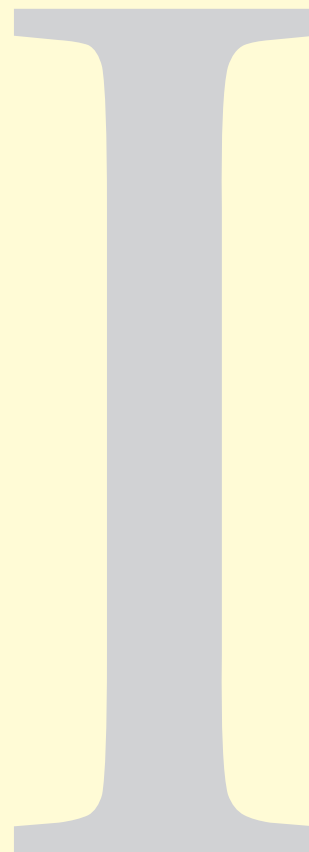


Prince Edward Island Curriculum

Education and Early
Childhood Development
English Curriculum

Independent Study Course

ISC 521/621



CURRICULUM



2014

**Prince Edward Island
Department of Education and
Early Childhood Development
Holman Centre
250 Water Street, Suite 101
Summerside, Prince Edward Island
Canada, C1N 1B6
Tel: (902) 438-4130
Fax: (902) 438-4062
www.gov.pe.ca/eecd/**

Independent Study Course (ISC521A/621A)

The Department of Education and Early Childhood Development (the Department) recognizes the importance of providing students with opportunities for self-directed learning. The Independent Study Course allows students to engage in personally meaningful, authentic, real-world learning within an inquiry and problem-solving framework. Students have the opportunity to investigate a self-selected topic or theme that extends the curriculum of an authorized provincial course(s) and contributes to their knowledge, skills, and attitudes necessary for lifelong learning. The Independent Study Course should be a student-directed investigative project that is planned in collaboration with a supervising teacher and community mentor, that is monitored frequently, and allows the student to assume the role of first-hand inquirer. This study should uncover new questions and ideas for further inquiry and may solve real-life community issues. It is designed as an opportunity to pursue further studies and should not be regarded as a student entitlement. This course will showcase a student's care, attention to detail, and overall pride in his or her work while requiring a considerable commitment of time, effort, and energy on the part of the student.

The Independent Study Course (ISC521A/621A) is designed to provide students with an opportunity to

- apply interests, knowledge, skills, creative ideas, and task commitment to a self-selected topic or theme;
- acquire advanced-level understanding of the knowledge (content) and methodology (process) that is used within particular disciplines, artistic areas of expression, and interdisciplinary studies;
- identify and achieve learning outcomes in a self-directed environment;
- increase flexibility and individualization of programming at the high school level.

Students interested in enrolling in ISC521A/621A should

- demonstrate the ability to work independently with minimal direction;
- be committed to a high quality level of work;
- be interested in pursuing a topic or theme that is authentic and personally meaningful;
- demonstrate an interest and ability to collaborate with and learn from others;
- demonstrate strong problem solving skills, critical thinking skills, and creativity;
- be willing to share their learning experiences with others.

Guidelines for an Independent Study Course (ISC521A/621A):

- Students may be granted one Independent Study Course credit in each of Grades 11 and 12.
- Students may earn a total of two Independent Study Course credits towards graduation requirements.

- The Independent Study Course credits may count towards graduation requirements as elective credits.
- Students will be supported by a supervising teacher at the school.
- Students should be supported by a community mentor.
- Independent Study Courses are to be developed cooperatively by the student and a supervising teacher, approved and supported by the parent/guardian(s), supervising teacher, school counsellor, and school principal. Final approval is required by the Department before a student can begin the Independent Study Course.
- Notification of students applying for ISC521A/621A will be communicated by the school to the English Language School Board and final copies of approved applications will be provided to the English Language School Board before the commencement of the course.
- Final completed applications must be submitted by the school to the Department a minimum of 30 days prior to the start of the semester in which the student will complete the Independent Study Course. First semester applications are to be submitted by July 31 and second semester applications are to be submitted by December 31.
- Numerous revisions of the application will occur at the school level before the final application is submitted for approval at the Department level.
- All Independent Study Courses must include the creation and evaluation of a formal final product, pre-determined by the student.
- All Independent Study Courses must include a final Presentation of Learning to be evaluated by a selected panel.
- Independent Study Course credits are not intended to replicate any existing provincially authorized course.
- A copy of the approved application form should be filed in the student's cumulative record.
- The student must maintain a portfolio of all components of the Independent Study Course (e.g., application, management plan, learning log, journal, assessments).

Roles and Responsibilities

It is the responsibility of the **student** to:

- make formal application to pursue an Independent Study Course;
- achieve the identified learning outcomes;
- organize and complete the learning experiences and activities involved in the course

It is the responsibility of the **principal** to:

- select an appropriate supervising teacher(s) who has the skills and ability to effectively support the students in the Independent Study Course;
- develop a process to approve student applications at the school level;
- engage the school counsellor to provide leadership in the selection of appropriate candidates.

It is the responsibility of the **supervising teacher** to:

- support students in completing the application for an Independent Study Course;
- support approved students in the execution of the learning experiences and activities involved in the course;
- assist the student in securing a community mentor;
- assist in the assessment and evaluation of the student's work;
- ensure the guidelines and procedures for community based learning are adhered to, if applicable. See the *Guidelines and Procedures for Community Based Learning* document for additional information.

Course Coding for Student Transcripts

The Department will assign ISC521A/ISC621A as the codes for this course.

Application for Approval of an Independent Study Course

Student Name: _____

Circle one: ISC521A ISC621A

Student E-mail: _____

Date: _____

School Name: _____

Supervising Teacher Name: _____

School Counsellor Name: _____

Principal Name: _____

NOTES:

Please refer to *Independent Study Course: Application Guidelines* for assistance in completing this application.

This application is to be completed by the student with the support and approval of the parent/guardian(s), supervising teacher, school counsellor, and school principal.

Final completed applications MUST be submitted to the Department of Education and Early Childhood Development a minimum of 30 days prior to the start of the semester in which the student will participate in the Independent Study Course. Numerous revisions of this application should occur at the school level before the application is submitted to the Department for final approval. First semester applications are to be submitted by July 31 and second semester applications are to be submitted by December 31.

Notification of students applying for ISC521A/621A will be communicated by the school to the English Language School Board and final copies of Department approved applications must be provided to the English Language School Board before the commencement of the course.

Submission of completed applications:

Please submit all completed applications and supporting documents via email to the Coordinator, English Curriculum, Department of Education and Early Childhood Development.

Rationale for Independent Study

1. Why have you selected this topic or theme for independent study?

2. What do you hope to gain from this experience?

3. Describe yourself as a learner.

Overview of Independent Study

1. Driving Question:

2. Summary/overview of investigation (please be as specific as possible):

3. Type/format of final product:

4. Intended audience(s) for final product (in addition to your supervising teacher):

5. Potential Community Mentor(s):

Outline of Independent Study

1. Learning Plan
2. Assessment and Evaluation Plan
3. Action Plan

1. Learning Plan

A. Specific Learning Outcomes

What do you expect to know and be able to do as a result of your independent study course?
Please list specific learning outcomes.

I will know:

I will be able to:

B. Relationship of Course Elements to Essential Graduation Learnings

In what ways will your independent study help you to develop some or all of the Essential Graduation Learnings? Please check and explain. See Appendix B for elaboration of the Essential Graduation Learnings.

- Aesthetic expression**
- Citizenship**
- Communication**
- Personal development**
- Problem solving**
- Technological competence**

Explanation:

C. Relationship of Course Elements to 21st Century Skills

In what ways will your independent study help you to develop some or all of the 21st century skills? Please check (keep in mind that evidence of these skills will be required in your assessments). See Appendix B for elaboration of the 21st century skills.

- Creativity and Innovation**
- Critical Thinking and Problem Solving**
- Communication and Collaboration**
- Information Literacy**
- Media Literacy**
- Information, Communications & Technology Literacy**
- Flexibility and Adaptability**
- Initiative and Self-Direction**
- Social and Cross-Cultural Skills**
- Productivity and Accountability**
- Leadership and Responsibility**

2. Assessment and Evaluation Plan

A. Mandatory Summative Assessments (100% of overall course mark)

Each of the following summative assessments (assessments *of* learning) is mandatory and must be completed during the Independent Study Course.

I. Final Product

The assessment tool for this product **MUST** be included with the application form. See the *Independent Study Course: Application Guidelines* document for more details.

Value: _____

(30 – 40%)

II. Student Final Reflection

See the *Independent Study Course: Application Guidelines* document for the outline and assessment tool for this reflection.

Value: _____

(20 – 30%)

III. Formal Presentation of Learning

See the *Independent Study Course: Application Guidelines* document for the outline and assessment tool for this presentation.

Value: _____

(40 – 50%)

B. Suggested Formative Assessments

The following are **suggested** formative assessments (assessments *for* learning) that **may** be included in the Independent Study Course. If any of these are selected, be sure to include a detailed explanation and attach a sample of each assessment tool.

I. Learning Log

II. Scheduled Progress Meetings with Supervising Teacher

III. Reflections on Learning

IV. Other Appropriate Formative Assessment Tools

3. Action Plan

A. Resources

List the main resources (material, human, community, technological, etc.) that will be used to support learning throughout the Independent Study Course.

B. Learning Activities

List the activities that will be involved in this Independent Study Course and provide a brief description of each.

C. Timeline

Create a detailed timeline including dates for the specific activities listed below. Additional activities and timelines may be added.

- _____ Commencement of the course
- _____ Student/teacher progress meeting
- _____ Student/teacher progress meeting
- _____ Student/teacher progress meeting
- _____ Student/teacher progress meeting
- _____ Student/teacher progress meeting
- _____ Final product draft submitted to mentor and supervising teacher for feedback
- _____ Final product completed and presented to identified audience
- _____ Final student reflection submitted to supervising teacher
- _____ Rehearsal for Presentation of Learning
- _____ Formal Presentation of Learning
- _____ Final course mark returned to student

Signatures of Support and Approval

Student:

Student Name: _____ (please print)

Student Signature: _____ Date: _____

Parent/Guardian:

I am aware my son/daughter is intending to pursue an Independent Study Course and I support his/her proposal.

Parent/Guardian Name: _____ (please print)

Parent/Guardian Signature: _____ Date: _____

Supervising Teacher:

I am aware this student is intending to pursue an Independent Study Course and I support his/her proposal.

Supervising Teacher Name: _____ (please print)

Supervising Teacher Signature: _____ Date: _____

School Counsellor:

I am aware this student is intending to pursue an Independent Study Course and I support his/her proposal.

School Counsellor Name: _____ (please print)

School Counsellor Signature: _____ Date: _____

School Principal:

I am aware this student is intending to pursue an Independent Study Course and I support his/her proposal.

School Principal Name: _____ (please print)

School Principal Signature: _____ Date: _____

To be completed by the Department of Education and Early Childhood Development.

*This application adequately meets the requirements for an Independent Study Course. If all of the requirements for the course are successfully completed as outlined in this application, (circle one) **ISC521A** **ISC621A** shall be awarded to the student.*

Director of English Curriculum: _____

Signature: _____

Date: _____

Independent Study Course: Application Guidelines

This document is designed to guide you through the process of applying for an Independent Study Course credit at your school.

Is an Independent Study Course the right fit for me?

Approach your school counsellor to determine if an Independent Study Course would be an appropriate course for you to pursue. He/she will review your transcript, the course offerings at your school, and your learning interests. You may wish to consider the following questions:

- *Do I have a passion for learning about a particular subject or aspect of a subject?*
- *Was there a particular topic within a course I wished I could engage with more deeply?*
- *Have any courses I have taken left me with unanswered questions?*

Does this describe you?

Students interested in enrolling in ISC521A/621A should

- demonstrate the ability to work independently with minimal direction;
- be committed to a high quality level of work;
- be interested in pursuing a topic or theme that is authentic and personally meaningful;
- demonstrate an interest and ability to collaborate with and learn from others;
- demonstrate strong problem solving skills, critical thinking skills, and creativity;
- be willing to share their learning experiences with others.

If you determine, with the help of your school counsellor and your parent(s)/guardian(s), that you are interested in developing an Independent Study Course, you should begin completing the application form. Remember, this is a formal process which will take considerable time to complete. Your supervising teacher and school counsellor will provide feedback and help you to make revisions before completing and submitting the final application to the Department of Education and Early Childhood Development for approval. Your school counsellor will notify your principal regarding your intention to apply. Your principal will identify your supervising teacher at your school.

Appendix A contains a sample completed application form to assist you in completing each section.

Completing the Application Form

Step One: Obtain an Application Form and Complete Page One

Obtain an application form from your school counsellor and complete page one of the form. Be sure to circle the appropriate course code: either ISC521A or ISC621A. Pay careful attention to the special notes at the bottom of the first page. This section contains important information regarding when and where to submit your application.

Step Two: Complete the Rationale for Independent Study

1. Why have you selected this topic or theme for independent study?

Use this question to explain why you want to learn more about this particular topic or theme.

2. What do you hope to gain from this experience?

When answering this question, comment on not only the knowledge you will gain but also the skills you will build. What new knowledge do you hope to learn? What topics will you be able to dive deeper into? What new skills will you learn and what skills will you be able to further develop?

3. Describe yourself as a learner.

Use this space on the application to describe yourself as a learner. Before you begin to write, consult your LifeWork Portfolio and reflect on your most memorable learning experiences. What key elements stand out for you? Do you like to learn from others? Do you like to tackle hands-on projects that require building and constructing? Do you like to perform? Are you able to shift through lots of information to find exactly what you want? Do you have strong visual-spatial skills? Only you truly know how you best learn.

Step Three: Complete the Overview of Independent Study

1. Driving Question

Your driving question will clearly state the purpose of your independent study in the form of a question and will give focus to everything you do in the course. The driving question should be challenging and complex, open-ended in nature, yet achievable and measurable in the timeframe allowed. Some possible driving questions include:

- How can I plan a campaign to raise awareness among various groups in our community about a healthy diet?
- Do the dominant character archetypes in Canadian History still embody our values today?
- How do rain events affect the chemical and physical properties of a section of the Dunk River?

- What does the work of George Orwell show us about humanity and who we are as humans?

Your final product should provide a clear answer to your driving question, and all of the learning activities you undertake in the course should help you to answer this authentic question.

2. Summary/Overview of Investigation

This is your chance to describe your independent study in detail.

- What answers are you looking for?
- How will you seek out those answers?
- Who can help you find the answers?

Let a friend read your response and see if he/she can describe the project to you after reading your response. This will help you to determine if your description is clear and thorough.

3. Type/Format of Final Product

The product must match the driving question you created and be authentic within the field of study. Remember, a written report is not always suitable for all questions. Consider creating a final product such as a book, performance, prototype, model, video, speech, podcast, or website.

4. Intended Audience(s) for Final Product

Who is the most appropriate audience to receive your final product in addition to your supervising teacher? Is it your mentor? A group of experts in the field? A panel of community members? A university professor? Your driving question and final product should be meaningful to the audience, who should also participate in the assessment of the final product.

5. Potential Community Mentor(s)

Throughout your independent study course you will have the opportunity to work closely with a community mentor in a field of study related to your topic area. Remember, it is your responsibility to secure your mentor. Your school counsellor and supervising teacher will be able to help you to make contact and also to brainstorm potential community mentors.

Considerations in identifying potential mentors:

- How can this mentor help to deepen your understanding of your topic and support you in finding answers to your driving question?
- When and where will you work with them?
- What method of transportation will you use to travel to your mentor's workplace?
- How will you communicate with them?
- Is he/she able to provide ongoing feedback during different stages of your investigation?

- Will he/she be involved in the assessment of your final product?

Although your mentor(s) does not need to be secured before submitting your application, you should have a good idea of whether or not he/she is willing to work with you and also have other options as well, if that person is not able to be your mentor. Before you begin working with your mentor, be sure you and your supervising teacher have consulted the *Guidelines and Procedures for Community Based Learning* document.

Step Four: Complete the Outline of Independent Study

1. Learning Plan

You will need to investigate the Department's provincially authorized curriculum documents for guidance as you plan your course outcomes and activities. Your supervising teacher or school counsellor may have copies you can borrow or you can download documents from the Department's website at <http://www.gov.pe.ca/eecd/index.php3?number=1026202&lang=E>

A. Specific Learning Outcomes

The expected learning outcomes define what you will learn (e.g., I will know...) and what skills you will build (e.g., I will be able to...). They are intended to help you design your learning experiences and assessment tasks. They should be specific, measureable, and achievable with the identified timelines.

B. Relationship of Course Elements to Essential Graduation Learnings (EGLs)

Essential Graduation Learnings (EGLs) are statements describing the knowledge, skills, and attitudes expected of all students who graduate from high school. Achievement of These Essential Graduation Learnings will help prepare you to continue to learn throughout your life. Read the descriptions of each EGL carefully in Appendix B and decide how your independent study will help you to achieve some or all of the EGLs. Be sure to explain your rationale in the space provided on the application form.

C. Relationship of Course Elements to 21st Century Skills

Take some time to refer to the more detailed descriptions of these skills in Appendix B before selecting specific skills on the application form. Considering the scope and nature of your investigation, it is likely that you may build and strengthen almost all of these skills throughout the course. However, you will be required to provide evidence of this skill building in your reflection and presentation of learning.

2. Assessment and Evaluation Plan

Assessment is a very important part of the Independent Study Course and it is how your identified learning outcomes will be measured. Each Independent Study Course, regardless of the grade

and/or subject area, contains three mandatory summative assessments. You have the flexibility to determine the value of these three assessments and ensure that together they total 100% of the overall grade. There are descriptions of both the Student Final Reflection and the Formal Presentation of Learning in Appendices C and D of this handbook. Read these descriptions carefully before determining the value you wish to place on them.

The third mandatory summative assessment is of your final product. Based on the final product you have selected, you will need to secure an appropriate assessment tool for this product. You may wish to ask your supervising teacher to help you with this task. For example, if you propose your final product to be a formal lab report submitted to an environmental scientist, you will need to identify an assessment tool (e.g., rubric, scoring guide) that will be used by the expert to evaluate your product. This assessment tool must be attached to your final application.

The second section of the Assessment and Evaluation Plan relates to suggested formative assessments you may wish to include in your Independent Study Course. These assessments are very important and will provide you with the necessary feedback to ensure you are on track to achieve your learning outcomes. Quality formative assessment will lead to your success with the mandatory summative assessments.

3. Action Plan

The action plan section of the application will help you to identify the specific resources, activities, and timelines for the course.

A. Specific Learning Outcomes

Think of the numerous resources you plan to use throughout the course of your investigation. Often, we only think of material resources such as books and equipment, but remember that people such as your mentor and other experts in your field are also resources. List the resources you intend to use and include brief explanations as necessary.

B. Learning Activities

Throughout the course of your investigation you will complete many different activities. For instance, you may be conducting field research, interviewing community members, conducting internet research, or drafting written products. To help you create this list, begin with your final product and work backwards. What activities will you need to complete in order for you create this product?

C. Timeline

The timeline is one of the most important pieces of the application. Be sure to consult your school calendar as well as your own personal calendar when completing the timeline. Again, it may be most helpful to start with the concluding activities of the course, such as the

Presentation of Learning. Once you and your supervising teacher agree on this date, work backwards.

Consider the following:

- How much time should occur between your final presentation and the rehearsal in order for you to effectively incorporate feedback and make revisions?
- How often will you and your supervising teacher meet for progress updates?
- When will your investigation need to be completed in order for you to have adequate time to complete your final product?

You may have additional deadlines you would like to add to the timeline. Please record these on the timeline as well.

Step 5: Seek Feedback

Feedback is very important to the success of your application. Now that you have completed most of the application, seek feedback from your supervising teacher, your school counselor, and your parent/guardian(s). Ensure that your application is clear and thorough and is representative of the quality of work you are able to create. Listen carefully to the feedback provided and make all necessary revisions to your application. This process may occur numerous times before the final application is ready to be submitted to the Department for final approval.

Step 6: Gain Signatures of Support and Approval

After your application has been thoroughly reviewed and revisions are made, gain the signatures necessary for the final page of the application. These include your own, as well as your parent/guardian(s), supervising teacher, school counselor, and principal. The final signature of approval will come from a representative at the Department after they have reviewed your application. Remember, final approval must be obtained from the Department before you start your Independent Study Course.

Step 7: Submit Your Application

Your final application must be submitted electronically to the Department no later than 30 days prior to the start of the semester in which you wish to complete the Independent Study Course. Your school counselor will be able to assist you in submitting the final application. A representative from the Department may be in contact with you and/or your supervising teacher if there are questions concerning the application, or if further revisions are necessary. The Department will grant the final approval of your application. First semester applications are to be submitted by July 31 and second semester applications are to be submitted by December 31.

Appendix A:

Sample Completed Application Form

Application for Approval of an Independent Study Course

Student Name: *John Doe*

Circle one: ISC521A

ISC621A

Student E-mail: *john DOE@fakemail.com*

Date: May 12, 2011

School Name: *Three Oaks Senior High School*

Supervising Teacher Name: *Jane Smith*

School Counsellor Name: *John Smith*

Principal Name: *Nicole Haire*

NOTES:

Please refer to *Independent Study Course: Application Guidelines* for assistance in completing this application.

This application is to be completed by the student with the support and approval of the parent/guardian(s), supervising teacher, school counsellor, and school principal.

Final completed applications MUST be submitted to the Department of Education and Early Childhood Development a minimum of 30 days prior to the start of the semester in which the student will participate in the Independent Study Course. Numerous revisions of this application should occur at the school level before the application is submitted to the Department for final approval. First semester applications are to be submitted by July 31 and second semester applications are to be submitted by December 31.

Notification of students applying for ISC521A/621A will be communicated by the school to the English Language School Board and final copies of Department approved applications must be provided to the English Language School Board before the commencement of the course.

Submission of completed applications:

Please submit all completed applications and supporting documents via email to the Coordinator, English Curriculum, Department of Education and Early Childhood Development.

Rationale for Independent Study

1. Why have you selected this topic or theme for independent study?

The topic of cultural eutrophication was raised when I took Environmental Science 621A. Farmers are often blamed for fish kills and other negative impacts on river systems due to cultural eutrophication. I live along the Dunk River and my parents operate a potato farm. I want to determine scientifically whether or not rain events on my parents' farm cause an increase in turbidity, pH, dissolved oxygen, or nitrate measurements. If it is true, others could use my information to try to mitigate farming effects on river systems. If it is not true, this information could be used by watershed groups to try to investigate other possible sources of river pollutants.

2. What do you hope to gain from this experience?

I hope to be able to answer a question that has a direct impact on my life and my community. I want to be able to gather real-world data about something that I have studied in another course. I also want to be able to use real measuring devices to gather data, interpret the findings, and analyse the results. I hope that the information that I discover will help answer a real question (effects of cultural eutrophication) and provide evidence that others can use to try to help the environment. I feel that this experience will help me to understand what scientists actually do, and how the information that they gather can affect environmental policy and regulations. I also hope to be able to learn from people from the agricultural and watershed communities, to see their different perspectives, and to use their experiences and backgrounds to help me conduct my experiment.

3. Describe yourself as a learner.

I like to learn about things from books and then try them out in the real-world to see if they actually work. I like to talk about what I've learned with different people and debate my point of view with others who may think differently. I like to get my hands dirty and work outside. I like to learn about how my local environment is affected by the actions of my community. Most of all, I like to have real evidence that proves or disproves something that we learn in class. Through developing my LifeWork Portfolio, I have discovered my strongest essential skills are numeracy, oral communication, and critical thinking. I think that by creating and conducting my own experiment I will have a much better understanding of cultural eutrophication and its possible effects on our river.

Overview of Independent Study

1. Driving Question:

How do rain events affect the chemical and physical properties of a section of the Dunk River?

2. Summary/overview of investigation (please be as specific as possible):

For my project I plan to monitor the turbidity, pH, dissolved oxygen, and nitrate levels of the Dunk River before and after major rain events. I plan to pick a section of the river that is adjacent to agriculture land. My research will help determine if rain events lead to cultural eutrophication and what affects that may have on the river. I plan to work with a local watershed group to research the history/changes on the river. I will create a procedure to use school equipment to monitor the river levels and analyse and interpret the data that I collect. My final product will be a lab report analysing my findings and outlining proposed next steps based on my results.

3. Type/format of final product:

Formal lab report

4. Intended audience(s) for final product (in addition to your supervising teacher):

Watershed groups, environmentalists, agricultural experts

5. Potential Community Mentor(s):

John Hancock, Bedeque Bay Environmental Management Association (BBEMA)

Outline of Independent Study

1. Learning Plan
2. Assessment and Evaluation Plan
3. Action Plan

1. Learning Plan

A. Specific Learning Outcomes

What do you expect to know and be able to do as a result of your independent study course?
Please list specific learning outcomes.

I will know:

- *the main causes of cultural eutrophication*
- *the effects of elevated or diminished levels of turbidity, pH, dissolved oxygen, and nitrates on aquatic organisms (plant life and fish life)*
- *the practices and prevention strategies that farmers use to prevent chemicals and soil from entering water systems*
- *the monitoring systems that watershed groups use to gather information on the health of local rivers and the regulations that are in place to keep rivers safe*

I will be able to:

- *create and execute a plan to complete my investigation in the time allowed*
- *use scientific equipment properly and safely to collect data on specific variables*
- *analyse my data and interpret its results*
- *account for errors in my data and other possible explanations for the results*
- *interview local experts from the agricultural and environmental communities*
- *present and defend my findings to a group of local experts*

B. Relationship of Course Elements to Essential Graduation Learnings

In what ways will your independent study help you to develop some or all of the Essential Graduation Learnings? Please check and explain. See Appendix B for elaboration of the Essential Graduation Learnings.

- Aesthetic expression
- Citizenship
- Communication
- Personal development
- Problem solving
- Technological competence

Explanation:

Citizenship learnings will be met by understanding the social, economic, and environmental interdependence of farming activities surrounding the Dunk River. Communication learnings will be met by writing the formal lab report and presenting and defending my findings to a public group. Problem solving learnings will be met by creating the procedure to conduct my scientific experiment, interpreting the collected data, and analysing the results. Technological competence learnings will be met by selecting and using appropriate scientific equipment to measure variables in the river and to present my information.

C. Relationship of Course Elements to 21st Century Skills

In what ways will your independent study help you to develop some or all of the 21st century skills? Please check (keep in mind that evidence of these skills will be required in your assessments). See Appendix B for elaboration of the 21st century skills.

- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication and Collaboration
- Information Literacy
- Media Literacy
- Information, Communications & Technology Literacy
- Flexibility and Adaptability
- Initiative and Self-Direction
- Social and Cross-Cultural Skills
- Productivity and Accountability
- Leadership and Responsibility

2. Assessment and Evaluation Plan

A. Mandatory Summative Assessments (100% of overall course mark)

Each of the following summative assessments (assessments *of* learning) is mandatory and must be completed during the Independent Study Course.

I. Final Product

The assessment tool for this product **MUST** be included with the application form. See the *Independent Study Course: Application Guidelines* document for more details.

Value: 40%
(30 – 40%)

II. Student Final Reflection

See the *Independent Study Course: Application Guidelines* document for the outline and assessment tool for this reflection.

Value: 20%
(20 – 30%)

III. Formal Presentation of Learning

See the *Independent Study Course: Application Guidelines* document for the outline and assessment tool for this presentation.

Value: 40%
(40 – 50%)

B. Suggested Formative Assessments

The following are **suggested** formative assessments (assessments *for* learning) that **may** be included in the Independent Study Course. If any of these are selected, be sure to include a detailed explanation and attach a sample of each assessment tool.

I. Learning Log

I will maintain a chronological science log book of all my field notes, observations, sampling procedures, collected data, sample calculations, and correspondence with my mentor. This log will be signed off by my mentor. The log book will be assessed on its level of detail, reflection, and correlation to the learning outcomes and activities outlined in my Learning Plan.

II. Scheduled Progress Meetings with Supervising Teacher

During my scheduled progress meetings with my supervising teacher I will provide her with a Project Work Report outlining what I've accomplished, what my next steps are, and my most important concerns, problems or questions.

3. Action Plan

A. Resources

List the main resources (material, human, community, technological, etc.) that will be used to support learning throughout the Independent Study Course.

For my investigation I will require:

- *access to school facilities and equipment to measure the turbidity, pH, dissolved oxygen, and nitrate levels of the Dunk River;*
- *access to a school science teacher who can show me how to use the equipment listed above;*
- *a contact person with the BBEMA (John Hancock) who can provide me with historical trends of the river, demonstrate safe sampling procedures, and outline existing environmental policies and regulations related to cultural eutrophication;*
- *access to local agricultural experts (farmers) who can explain what steps they take to prevent chemicals and soil from entering the river;*
- *access to a school computer to conduct research and prepare my lab report;*
- *my own transportation to conduct site visits and sampling at the Dunk River (note: all sampling will be done from the river bank and not from a boat).*

B. Learning Activities

List the activities that will be involved in this Independent Study Course and provide a brief description of each.

The learning activities that I will conduct for my investigation include:

- *Contact John Hancock to get historical information from BBEMA on the Dunk River*
- *Contact a local farmer(s) to find out what procedures they follow to prevent cultural eutrophication*
- *Conduct research on the effects of elevated and diminished turbidity, pH, dissolved oxygen, and nitrate levels on aquatic organisms*
- *Determine how to safely operate the science equipment needed to make my measurements*
- *Write a procedure for taking water measurements*
- *Determine a suitable sampling site on the Dunk River to take my water measurements*
- *Conduct water measurements on 2 dry days to establish a comparative baseline*
- *Conduct water measurements immediately after a minimum of 5 non-consecutive rain events*
- *Analyse my data and discuss possible sources of error (repeat measurements as needed)*
- *Form conclusions and recommendations based on my results*
- *Submit a draft copy of my final lab report for review and revision*
- *Submit the final copy of my formal lab report and logbook*
- *Rehearse presentation of learning*
- *Conduct formal presentation of learning*

C. Timeline

Create a detailed timeline including dates for the specific activities listed below. Additional activities and timelines may be added.

<i>September 12, 2011</i>	<i>Commencement of the course</i>
<i>September 30, 2011</i>	<i>Student/teacher progress meeting</i>
<i>October 3, 2011</i>	<i>Complete initial research on eutrophication effects and preventive measures</i>
<i>October 10, 2011</i>	<i>Master the safe use of the scientific equipment to required to complete my investigation</i>
<i>October 14, 2011</i>	<i>Complete experimental procedure</i>
<i>October</i>	<i>Collect sample data on two dry days for control/baseline</i>
<i>October 31, 2011</i>	<i>Student/teacher progress meeting</i>
<i>October/November</i>	<i>Collect sample data of five non-consecutive rain events</i>
<i>November 30, 2011</i>	<i>Student/teacher progress meeting</i>
<i>December 5, 2011</i>	<i>Analyse data and interpret results</i>
<i>December 12, 2011</i>	<i>Form conclusions and recommendations based on my results</i>
<i>December 20, 2011</i>	<i>Student/teacher progress meeting</i>
<i>December 20, 2011</i>	<i>Final product draft submitted to mentor and supervising teacher for feedback</i>
<i>January 19, 2012</i>	<i>Final product and logbook completed</i>
<i>January 20, 2012</i>	<i>Student/teacher progress meeting</i>
<i>January 20, 2012</i>	<i>Final student reflection submitted to supervising teacher</i>
<i>January 21, 2012</i>	<i>Rehearsal for Presentation of Learning</i>
<i>January 27, 2012</i>	<i>Formal Presentation of Learning</i>
<i>January 31, 2012</i>	<i>Final course mark returned to student</i>

Signatures of Support and Approval

Student:

Student Name: _____ (please print)

Student Signature: _____ Date: _____

Parent/Guardian:

I am aware my son/daughter is intending to pursue an Independent Study Course and I support his/her proposal.

Parent/Guardian Name: _____ (please print)

Parent/Guardian Signature: _____ Date: _____

Supervising Teacher:

I am aware this student is intending to pursue an Independent Study Course and I support his/her proposal.

Supervising Teacher Name: _____ (please print)

Supervising Teacher Signature: _____ Date: _____

School Counsellor:

I am aware this student is intending to pursue an Independent Study Course and I support his/her proposal.

School Counsellor Name: _____ (please print)

School Counsellor Signature: _____ Date: _____

School Principal:

I am aware this student is intending to pursue an Independent Study Course and I support his/her proposal.

School Principal Name: _____ (please print)

School Principal Signature: _____ Date: _____

To be completed by the Department of Education and Early Childhood Development.

*This application adequately meets the requirements for an Independent Study Course. If all of the requirements for the course are successfully completed as outlined in this application, (circle one) **ISC521A** **ISC621A** shall be awarded to the student.*

Director of English Curriculum: _____

Signature: _____

Date: _____

Lab Log Book

Lab Log Book Information

For a scientist, the lab log book is a record of everything connected with his or her research. It is a record of the procedures, observations and results of ongoing research and it is a place to record those ideas that occur to a scientist as he or she thinks about the work. It is a record of when ideas were born in case there is a dispute over patents or intellectual property. There are some expectations as to the kinds of content expected.

Keeping a Lab Log Book

1. Record all experimental data, conceptions, drawings, calculations, and other observations on a daily basis.
2. Number every page of your lab book consecutively in the upper right hand corner of each page; do not leave out any pages.
3. Date every page of the book as you use it and every entry if doesn't start on a new page.
4. Writing must be done in ink. Pencil should not be used for anything!
5. If you make a mistake, cross it out with a single stroke and initial it. Do not use white out or liquid paper.
6. Never tear or cut pages from a laboratory notebook.
7. Do not leave empty pages between experiments.
8. Start a new page for each different experiment or project.
9. Glue a copy of the experimental procedure or protocol in the notebook the first time you use that procedure so you can refer to it later.
10. Glue diagrams and photos in at the appropriate place and sign or initial the corner of the photo or diagram.
11. List all materials and apparatus required.
12. Say exactly what was done, why, when and by whom.
13. Notes should be clear enough to enable someone else to do the same thing at some future date.
14. Indicate results clearly, adding comments when necessary.
15. Define all abbreviations and acronyms when first used.
16. Number figures and tables separately and refer to them in the text by their number, i.e., "Figure 1 shows that the activity ..." or "The activity decreases after five minutes (Fig. 1)".
17. Have your mentor sign you lab book for completion.

Lab Log Book Rubric

The teacher will use a rubric like the one below to assess your lab books.

	Complete (Yes/No)
Content:	
Entries dated with legible data organized in tables	
Well-detailed procedure clearly outlined including detailed diagrams	
Observations detailed in note form with diagrams where applicable	
All relevant predictions included with detail	
Conclusions clearly detailed and supported with relevant facts	
Detailed and insightful personal reflections included	
Procedure:	
Pages numbered and dated	
Experimental procedure and protocol attached appropriately	
Errors appropriately acknowledged	
Diagrams and photos attached appropriately	

PROGRESS MEETING REPORT

Project Name:			
Student Name:		Date:	
For the Time Period:	Day(s): _____	Week: _____	

During this time period, I had the following goals for the project work:	1	
	2	
	3	
	4	
	5	
During this time period, I accomplished:	1	
	2	
	3	
	4	
	5	
My most important concerns, problems or questions are:	1	
	2	
	3	
	4	
	5	

Formal Lab Report Guide

The formal report documents the experiment that was performed and provides a detailed discussion of the results obtained and how those are important. It organizes and clarifies the information that can be found in a science log book, adding background material and a more detailed discussion of the results. From such a report, a peer group of students who are familiar with the same general subject matter should be able to reproduce the experiment and perform their own analysis, such that they could either verify or dispute your conclusions. Reports generally have three goals: 1) to justify the reasons for performing the experiment; 2) to record the results of the experiment; and 3) to allow others to evaluate the results.

You should consider your audience to be familiar with the general science background associated with your experiment, but none of the specifics. Reports will be graded largely on their ability to clearly communicate results and important conclusions to the reader. You must, of course, use proper English and spelling, along with comprehensible logic and appropriate style. In addition, it should contain publication-ready, professional graphics and illustrations. You should proofread your report as well as spell-check it. Type reports, and attach lab notes as appendices.

Formal Reports should contain the following components:

- **Title Page:** The title page should clearly display the name of the experiment, your name, the date the experiment was performed, and the course number, section, and teacher's name.
- **Abstract:** The abstract should contain one or two paragraphs which clearly and concisely present an overview of the report. Complete sentences must be used, not phrases. It is imperative that clear, concise, to-the-point information be used. Include information on what was done, the key results, and the key conclusions.
- **Introduction:** This section is written to provide the reader with all the background needed to appreciate why you did the experiment and to understand your results and conclusions. Write the introduction in paragraph form; include the purpose, background information and hypothesis. Do not segregate these subtopics into separate sections. Use the following guidelines when writing the introduction:

Purpose: A brief statement of the problem or theory that is being investigated. For example, "This experiment was performed to measure the effect of light intensity on the rate of photosynthesis."

Background Information: A compilation of information gathered from multiple sources which provides the reader with general knowledge about the problem and justifies the hypothesis. Sources used should be referenced.

Hypothesis: A testable prediction regarding the outcome of the investigation. The hypothesis should be written in the form, “If (independent variable), then (dependent variable).” It should also include controls. For example, “If crickets are placed in a choice chamber containing a piece of filter paper saturated with 0.1 M acetic acid and a second piece saturated with distilled water, then, after 10 minutes, more crickets will be found in the distilled water section than the acetic acid section.” The hypothesis must be supported by the background information that is supplied.

- **Methods and Materials:** The intent of this section is to summarize the experimental strategy and identify what aspects of the equipment and procedure are significant to the outcome of the experiment. The methods and materials section is written in paragraph form, not using a bulleted list. Do not separate methods and materials, rather, include the materials used within the description of the procedure. Be sure to include all materials and amounts required to complete the lab. A schematic of the experiment is almost always necessary.

Methods: Describe the methods (procedure) concisely – this means saying as much as possible using the fewest words, but still keeping full sentences. Use the passive voice with no personal pronouns. The procedure needs to contain the required amount of information necessary so that the lab could be repeated. For example, “10 mL of hydrochloric acid was added to a 50 mL beaker.” NOT “We added acid to the beaker”. Do not include steps that should be understood (connecting a probe to the computer). Explain why certain procedures were used as controls.

Materials: Include all materials (equipment) used during the lab. Identify the manufacturer and model name of all equipment employed in the investigation. For example, “The force was measured using a Vernier Dual Force Sensor set at the +50 setting.” NOT “A force sensor was used.”

- **Results and Analysis:** This section contains all the information collected during the experiment. The results and analysis section are to be written together.

Results: Results include the information collected during the experiment. This includes observations and raw data. Be descriptive yet concise with observations. Raw data needs to be organized, and presented with the appropriate level of precision. Data can be organized in tables with labeled column headings and an overall title. An example of a column heading might be: Velocity (+0.01 m/s). An example of a table title might be **Table 1: Velocity & Acceleration Data for a Sphere Rolling Down a Ramp.**

Analysis: This includes data that has been manipulated mathematically or presented graphically. Statistical analysis is required for large volumes of mathematical data. This may

include mean, mode, median, standard deviation, chi square, etc. depending on your particular data.

- **Discussion:** The discussion is a narrative that describes what the results mean. Explain your results and make the appropriate inferences (conclusions). Indicate trends, analyse why they occur, and explain any significant features or differences from expected results. Do your measurements and calculated values make sense? Include any errors that may have been made, the source of that error, and how it affected your results. Be as specific and quantitative as possible. Avoid the use of catch-all phrases such as "human error." Always comment on "wild" data points. Graphs and tables must be numbered and referenced in the text. Evaluate the hypothesis and describe how the experiment supports or rejects it. Relate your results to previous research (identified in your introduction). Include any questions that may have come up and modifications that could be made to the lab if it were repeated. Also include any new hypotheses that may arise.
- **Conclusions and Recommendations:** All conclusions should be clearly stated and supported with evidence from your results. Cite specific results and observations from the experiment and tie them to your conclusions. Summarize reasons for any disagreement between your results and the expected results. Recommend any practical ways of improving the experiment. Suggest any possible future investigations that may expand/extend the work from your experiment.
- **References:** Provide references in APA format. Please include in text referral to references when appropriate.

Formal Lab Report Rubric

Section	Level 1	Level 2	Level 3	Level 4	Score
Title Page	No title page 0	Incomplete title page 0.5	Lab title or identification information incomplete or out of place 1	Lab title and identification information complete and properly placed 2	/2
Abstract	No abstract 0	Abstract does not match purpose of lab 0.5	Abstract is vague 1	Abstract Includes what was done, the key results, and the key conclusions 2	/2
Introduction	No introduction 0	Introduction missing explanation of principles, terms, techniques <i>and</i> a clearly stated hypothesis, or is poorly written 1-4	Introduction missing some explanation of principles, terms, techniques <i>or</i> a clearly stated hypothesis 5-7	Introduction includes detailed background information on principles, terms, techniques <i>and</i> a clearly stated hypothesis 8-10	/10
Methods	No procedure 0	Many steps missing from procedure; past, impersonal tense not used; no set-up diagram; incomplete sentences or point form used 1-6	Some steps missing from procedure; past, impersonal tense not always used; set-up diagram is inaccurate, not referenced; incomplete sentences used 7-11	Procedure describes all steps of experiment in clear order; table of results and set-up diagram referenced; past, impersonal tense is used; paragraph form is used 12-16	/16
Materials	No materials list 0	Missing several pieces of equipment <i>and/or</i> equipment sensitivity 1	Missing one or two pieces of equipment used, <i>or</i> equipment sensitivity 2	Materials list includes all equipment used, including sensitivity 3	/3

(over ...)

Results - Qualitative	No results 0	Vague or incorrect descriptions; tables and/or sketches missing; paragraph form not used 1-4	Description of observations incomplete; tables and/or sketches not included, and/or incomplete paragraphs 5-8	Complete description of observations; table or sketch included where appropriate; paragraph form used 9-12	/12
Results - Quantitative	No results 0	Graphs and/or tables missing; sample calculations missing; percent error not included 1-10	Graphs and/or tables incomplete or inaccurate or some calculations missing or percent error not included 11-19	Complete graphs and tables of measured results and sample calculations with headings are shown; percent error included where applicable 20-25	/25
Discussion	No discussion of results 0	Poorly demonstrates understanding of principles affecting results and possible sources of error 1-14	Somewhat demonstrates understanding of principles affecting results and possible sources of error 15-19	Clearly demonstrates understanding of principles affecting results and possible sources of error 20-25	/25
Conclusion and Recommendations	No conclusion 0	Conclusion does not match or answer hypothesis 1	Conclusion inaccurately or incompletely answers hypothesis 2	Concise statement summarizing the results; accurately answers the hypothesis and recommends future investigations 3	/3
References	No literature cited 0		Literature cited incomplete or incorrectly formatted 1	Literature cited complete and correctly formatted 2	/2
Neatness, spelling, formatting	Subtract 0.5 points for each error 0-4				Sub. /4
Total					/100

Appendix B:

Essential Graduation Learnings and

21st Century Skills Descriptors

Essential Graduation Learnings

Graduates from the public schools of Atlantic Canada will be able to demonstrate knowledge, skills, and attitudes in the following Essential Graduation Learnings.

AESTHETIC EXPRESSION

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

For example, graduates will be able to:

- use various art forms as a means of formulating and expressing ideas, perceptions and feelings;
- demonstrate understanding of the contribution of the arts to daily life, cultural identity and diversity, and the economy;
- demonstrate understanding of the ideas, perceptions and feelings of others as expressed in various art forms;
- demonstrate understanding of the significance of cultural resources such as theatres, museums and galleries.

CITIZENSHIP

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

For example, graduates will be able to:

- demonstrate understanding of sustainable development and its implications for the environment;
- demonstrate understanding of Canada's political, social and economic systems in a global context;
- explain the significance of the global economy on economic renewal and the development of society;
- demonstrate understanding of the social, political and economic forces that have shaped the past and present, and apply those understandings in planning for the future;
- examine human rights issues and recognize forms of discrimination;
- determine the principles and actions of just, pluralistic and democratic societies;
- demonstrate understanding of their own and others' cultural heritage, cultural identity and the contribution of multiculturalism to society.

COMMUNICATION

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

For example, graduates will be able to:

- explore, reflect on, and express their own ideas, learnings, perceptions and feelings;
- demonstrate understanding of facts and relationships presented through words, numbers, symbols, graphs and charts;
- present information and instructions clearly, logically, concisely and accurately for a variety of audiences;
- demonstrate a knowledge of the second official language;
- access, process, evaluate and share information;
- interpret, evaluate and express data in everyday language;
- critically reflect on and interpret ideas presented through a variety of media.

PERSONAL DEVELOPMENT

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

For example, graduates will be able to:

- demonstrate preparedness for the transition to work and further learning;
- make appropriate decisions and take responsibility for those decisions;
- work and study purposefully both independently and in groups;
- demonstrate understanding of the relationship between health and lifestyle;
- discriminate among a wide variety of career opportunities;
- demonstrate coping, management and interpersonal skills;
- demonstrate intellectual curiosity, an entrepreneurial spirit and initiative;
- reflect critically on ethical issues.

PROBLEM SOLVING

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

For example, graduates will be able to:

- acquire, process and interpret information critically to make informed decisions;
- use a variety of strategies and perspectives with flexibility and creativity for solving problems;
- formulate tentative ideas, and question their own assumptions and those of others;
- solve problems individually and collaboratively;
- identify, describe, formulate and reformulate problems;
- frame and test hypotheses;
- ask questions, observe relationships, make inferences and draw conclusions;
- identify, describe and interpret different points of view and distinguish fact from opinion.

TECHNOLOGICAL COMPETENCE

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

For example, graduates will be able to:

- locate, evaluate, adapt, create and share information using a variety of sources and technologies;
- demonstrate understanding of and use existing and developing technologies;
- demonstrate understanding of the impact of technology on society;
- demonstrate understanding of ethical issues related to the use of technology in a local and global context.

21st Century Skills Descriptors

Adapted from Partnership for 21st Century Skills: P21 Framework Definitions

CREATIVITY AND INNOVATION

- Create new and worthwhile ideas (both incremental and radical concepts)
- Elaborate, refine, analyse and evaluate their own ideas in order to improve and maximize creative efforts
- Develop, implement and communicate new ideas to others effectively
- Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work
- View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes
- Act on creative ideas to make a tangible and useful contribution to the field in which the innovation will occur

CRITICAL THINKING AND PROBLEM SOLVING

- Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation
- Analyse how parts of a whole interact with each other to produce overall outcomes in complex systems
- Effectively analyse and evaluate evidence, arguments, claims and beliefs
- Analyse and evaluate major alternative points of view
- Synthesize and make connections between information and arguments
- Interpret information and draw conclusions based on the best analysis
- Reflect critically on learning experiences and processes
- Identify and ask significant questions that clarify various points of view and lead to better solutions

COMMUNICATION AND COLLABORATION

- Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts
- Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)
- Utilize multiple media and technologies, and know how to judge their effectiveness as well as assess their impact
- Communicate effectively in diverse environments

- Demonstrate ability to work effectively and respectfully with diverse teams
- Assume shared responsibility for collaborative work, and value the individual contributions made by each team member

INFORMATION LITERACY

- Access information efficiently (time) and effectively (sources)
- Evaluate information critically and competently
- Use information accurately and creatively for the issue or problem at hand
- Manage the flow of information from a wide variety of sources
- Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information

MEDIA LITERACY

- Understand both how and why media messages are constructed, and for what purposes
- Examine how individuals interpret messages differently, how values and points of view are included or excluded, and how media can influence beliefs and behaviors
- Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of media
- Understand and utilize the most appropriate media creation tools, characteristics and conventions

ICT (INFORMATION, COMMUNICATIONS AND TECHNOLOGY) LITERACY

- Use technology as a tool to research, organize, evaluate and communicate information
- Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy
- Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies

FLEXIBILITY AND ADAPTABILITY

- Adapt to varied roles, job responsibilities, schedules and contexts
- Work effectively in a climate of ambiguity and changing priorities
- Incorporate feedback effectively
- Deal positively with praise, setbacks and criticism

INITIATIVE AND SELF-DIRECTION

- Set goals with tangible and intangible success criteria
- Balance tactical (short-term) and strategic (long-term) goals
- Utilize time and manage workload efficiently
- Monitor, define, prioritize and complete tasks without direct oversight
- Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
- Demonstrate initiative to advance skill levels towards a professional level
- Demonstrate commitment to learning as a lifelong process
- Reflect critically on past experiences in order to inform future progress

SOCIAL AND CROSS-CULTURAL SKILLS

- Know when it is appropriate to listen and when to speak
- Conduct themselves in a respectable, professional manner
- Respect cultural differences and work effectively with people from a range of social and cultural backgrounds
- Respond open-mindedly to different ideas and values

PRODUCTIVITY AND ACCOUNTABILITY

- Set and meet goals, even in the face of obstacles and competing pressures
- Prioritize, plan and manage work to achieve the intended result
- Demonstrate additional attributes associated with producing high quality products including the abilities to
 - Work positively and ethically
 - Manage time and projects effectively
 - Multi-task
 - Participate actively, as well as be reliable and punctual
 - Present oneself professionally and with proper etiquette
 - Collaborate and cooperate effectively with teams
 - Respect and appreciate team diversity
 - Be accountable for results

LEADERSHIP AND RESPONSIBILITY

- Use interpersonal and problem-solving skills to influence and guide others toward a goal
- Leverage strengths of others to accomplish a common goal
- Inspire others to reach their very best via example and selflessness
- Act responsibly with the interests of the larger community in mind

Appendix C:

Student Final Reflection

Student Final Reflection

The student final reflection is a mandatory summative assessment piece for the Independent Study Course. During the application process, you identified the value this assessment will have (20 – 30%) in relation to the entire evaluation plan and also the date this reflection is to be submitted to your supervising teacher for evaluation.

Format for the Student Final Reflection

The format for the final student reflection is left to your discretion in consultation with your supervising teacher. You will need to select a format in which you can effectively communicate your learnings from the entire Independent Study Course. You may select a formal written product, a digital product (e.g., website, video, podcast), a live interview, or another form of product. The success of the final reflection lies in your ability to reflect on your own learning experience and effectively communicate those findings. Your final reflection should be included in your course portfolio and made available during your Presentation of Learning.

Content for the Student Final Reflection

The following are intended as springboards for your reflection. You may choose to include your responses to some of the following:

- Overall, how successful was your independent study? Explain.
- What do you like best about your project? Why?
- What were the most difficult steps? How did you overcome these difficulties?
- What are some of the new skills you learned while working on this project?
- How did you build on the 21st Century Skills you identified in your application?
- In what ways was your action plan reasonable? In what ways might you have improved your plan?
- Who else was interested in your project? With whom did you share your results? How did you do this? What was the reaction of your audience(s)?
- Do you have unanswered questions about the topic? Do you have ideas on how you might like to extend/expand this project or any ideas for new projects?

Assessment of the Student Final Reflection:

The supervising teacher is to use the following rubric when assessing the Student Final Reflection:

Student Final Reflection Rubric

	Developing 1	Proficient 2	Strong 3
Reflection on Results (x 2)	The student struggles to make connections between learnings and is only beginning to identify problems, mistakes, and misunderstandings. Considerable reflection is needed.	The student makes some connections between learnings and is able to reflect on problems, mistakes, and misunderstandings. In order to move to the next level, the student must demonstrate more depth of thought and provide additional evidence to support his/her findings.	The student clearly makes connections between learnings and demonstrates a depth of thought. Insightful reflection on problems, mistakes, and misunderstandings is presented. Sufficient evidence is provided to support his/her findings.
Organization, Structure, and Communication	The student has not selected the most appropriate format and the structure and communication of the findings is in need of attention.	Although the student has selected an appropriate format, attention is needed to the structure of the findings. Communication is clear for the most part but lacks consistency.	The student has selected an appropriate format and has effectively structured his/her thoughts and findings within that form. Communication techniques are consistent, clear, and effective.
Commitment to High Quality Work	The product is still in the revision stage.	Although evidence of revision is present, the product requires attention to detail in order to move to the next level.	The product demonstrates the attention to detail, care, and revision reflective of high quality work.

TOTAL: / 12 (Max. 100%)

ADDITIONAL FEEDBACK:

Appendix D:

Formal Presentation of Learning

Formal Presentation of Learning

The Formal Presentation of Learning (POL) is a mandatory summative assessment piece for the Independent Study Course. During the application process, you identified the value this assessment will have (40 - 50%) in relation to the entire evaluation plan and also the date this presentation will occur. Because this oral presentation will involve additional teachers, community members, mentors, parents, family members, and friends, considerable planning and communication will be needed in advance of the presentation.

The POL is a powerful opportunity for you to present your work, learning, experiences, and future goals. During the presentation, you will demonstrate knowledge and understanding as well as reflect on the process, struggles, and successes of your Independent Study Course. It is an effective way to involve families and community members as the panel of jurors is made up of adults and experts from the related field. You will also gain valuable experience planning presentations, public speaking, and fielding questions.

Format of Presentation:

Student Presentation: (15 – 30 min)

This is an opportunity for you to share your work with the panel. You will need to communicate why you selected the Independent Study Course and what was the focus of the investigation. You will also need to share your final product and communicate any struggles and successes experienced along the way. Be sure to re-examine the specific learning outcomes you created and demonstrate to the panelists how you have achieved those outcomes. There should be evidence of quality reflection, critical thinking, problem solving, and creativity.

Conversation: (15 – 30 min)

This part is equally as important as the student presentation. This is the opportunity for the panelists to provide feedback to you and ask in-depth questions related to your work and learning. Part of this experience is for you to gain experience fielding questions. Sample questions for the panelists are listed later in this document.

Debrief and Assessment: (15 – 30 min)

At the conclusion of the POL, all of the panelists should confer in a separate location to discuss the presentation and also prepare feedback for you. The assessment rubric is included and the supervising teacher will be able to provide additional information and support if needed. At the

end of the panelist debrief session, the panelists should take the opportunity to provide you with immediate feedback.

The POL should occur in a location that is conducive to this type of presentation. It may occur at the school or perhaps at a venue in the community that is related to the work of the course. The presentation may be open to an audience or invited guests if you and your supervising teacher feel it is appropriate.

Panel Members (min. 3):

The panel *must* include

- the supervising teacher;
- a panelist selected by your supervising teacher;
- a panelist selected by you.

The panel *may* also include

- the community mentor;
- a family member;
- an additional teacher;
- an administrator;
- an additional expert in the field of study.

Content and Assessment

The POL will be evaluated based on four broad categories: Purpose, Reflections, Findings, and Communication. The scoring rubric and sample questions for the panelists are included in this document and will help you prepare for the presentation. During the POL, you may include, but are not limited to:

- the Final Product;
- information from the Student Final Reflection;
- the course outline and application form;
- learning logs, minutes from meetings with the mentor or supervising teacher, excerpts from weekly reflections;
- additional products and artifacts created during the course;
- evidence of growth as a learner;
- evidence you have achieved your specific learning outcomes;
- evidence of 21st Century Skill development (Refer to Appendix B);
- future goals and/or additional questions to examine;

- evidence of challenges and successes.

The assessment scores of all the panelists will be averaged by the supervising teacher to achieve a final mark for the POL.

Formal Presentation of Learning

Thank you for agreeing to be a panelist during this Presentation of Learning (POL). This student is near the completion of his/her Independent Study Course and this POL is one of the major assessment components of that course. Below you will find an overview of the Independent Study Course. The student and supervising teacher should also provide you with a copy of the student's approved application form.

Overview

The Department of Education and Early Childhood Development (the Department) recognizes the importance of providing students with opportunities for self-directed learning. The Independent Study Course allows students to engage in personally meaningful, authentic, real-world learning within an inquiry and problem-solving framework. Students have the opportunity to investigate a self-selected topic or theme that extends the curriculum of an authorized provincial course(s) and contributes to their knowledge, skills, and attitudes necessary for lifelong learning. The Independent Study Course should be a student-directed investigative project that is planned in collaboration with a supervising teacher and community mentor, that is monitored frequently, and allows the student to assume the role of first-hand inquirer. This study should uncover new questions and ideas for further inquiry and may solve real-life community issues. It is designed as an opportunity to pursue further studies and should not be regarded as a student entitlement. This course will showcase a student's care, attention to detail, and overall pride in his or her work while requiring a considerable commitment of time, effort, and energy on the part of the student.

The Independent Study Course (ISC521A/621A) is designed to provide students with an opportunity to

- apply interests, knowledge, skills, creative ideas, and task commitment to a self-selected topic or theme;
- acquire advanced-level understanding of the knowledge (content) and methodology (process) that is used within particular disciplines, artistic areas of expression, and interdisciplinary studies;
- identify and achieve learning outcomes in a self-directed environment;
- increase flexibility and individualization of programming at the high school level.

Students interested in enrolling in ISC521A/621A should

- demonstrate the ability to work independently with minimal direction;
- be committed to a high quality level of work;
- be interested in pursuing a topic or theme that is authentic and personally meaningful;

- demonstrate an interest and ability to collaborate with and learn from others;
- demonstrate strong problem solving skills, critical thinking skills, and creativity;
- be willing to share their learning experiences with others.

Format of Presentation:

Student Presentation: (15 – 30 mins)

This is an opportunity for the student to share his/her work with you. He/she will communicate why he/she selected the Independent Study Course and what he/she set out to investigate. The student will also share his/her final product with you and communicate struggles and successes he/she experienced along the way. Be sure to examine the specific learning outcomes the student created on his/her application form and look for evidence of this learning in the presentation. There should be evidence of quality reflection, critical thinking, problem solving, and creativity.

Conversation: (15 – 30 mins)

This part is equally as important as the student presentation. This is the opportunity for you as a panelist to ask the student in-depth questions related to his/her work and learning. Part of this experience is for the student to gain experience fielding questions. Potential questions are listed on the next page to assist you.

Debrief and Assessment: (15 – 30 mins)

At the conclusion of the POL, all of the panelists should confer in a separate location to discuss the presentation and also prepare feedback for the student. The assessment rubric is included and the supervising teacher will be able to provide additional information and support if needed. At the end of the panelist debrief session, the panelists should take the opportunity to provide immediate feedback to the student.

Sample Questions for Panelists: (in addition to questions related to the product/subject itself)

- Did you meet your specific learning outcomes?
- Of your work so far, what are you most proud of? Why?
- What part of the project did you most enjoy? Why?
- What is the most valuable thing you have learned in this course? Why?
- What is the most interesting thing you have learned in this course? Why?
- Why did you choose this project?
- How does your work connect to the real world outside of school?
- Why is this project important/relevant?
- How does this project include multiple perspectives? How did it help you better understand a different perspective?
- How much did you know about this subject before you studied it?
- Have you done a similar kind of work in the past (earlier in the year or in a previous grade; in or out of school)?
- In what ways have you improved at this kind of work?
- In what ways do you think you need to improve?
- What problems did you encounter while you were working on this piece? How did you solve them?
- What resources did you use while working on this piece? Which ones were especially helpful? Which ones would you use again?
- Did your goals change as you worked on it?
- What was especially satisfying to you about either the process or the finished project?
- What did/do you find frustrating about it?
- Do you feel this project was worthwhile? Why?
- What does this piece reveal about you as a learner?
- What did you learn about yourself as you worked on this piece?
- What is the one thing you particularly want people to notice when they look at your work?
- If someone else were looking at the piece, what might they learn about it?
- What would you change if you had a chance to do this piece over again? What would you change in the next revision of this piece?
- How does this project demonstrate that you are ready to do further study? Pursue career goals?
- What is one goal you would like to set for yourself for next year?
- How well do you think you have done in this POL? Why?
- What questions would you like to ask us?
- What have we failed to ask you?

Presentation of Learning Assessment

4 – Strong Performance 3 – Meets Expectation 2 – Approaches Expectation 1 – Needs Attention
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Purpose

Has the student clearly stated the purpose for doing this project, particularly in terms of its personal and social relevance?

The student described how he/she became interested in the topic/project.	
The student clarified the personal meaning of the project.	
The student identified those who could benefit from or be influenced by the work.	

Comments/Clarifications:

Findings

Has the student arrived at a coherent set of findings?

The student made it clear what he/she learned about the field of study.	
The student provided ample evidence to demonstrate his/her achievement of the specific learning outcomes identified during the application process.	
The student provided ample evidence to demonstrate his/her development of the 21st century skills identified during the application process.	
The student described clearly how his/her work connects to the work of other people within this field of study.	
The student identified new questions, ideas, or activities to pursue as a result of the work.	

Comments/Clarifications:

Reflection

Has the student told the story of his/her project and analysed what he/she learned?

The student provided a coherent narrative of the project, including obstacles and surprises.	
The student reported what he/she learned about doing this kind of major independent project.	
The student assessed his/her strengths and shortcomings in carrying out the project.	

Comments/Clarifications:

Communication

Has the student presented the work in a way that conveys its meaning and observes the conventions of written and oral communication?

The student has prepared the materials in a clear, concise, and well-organized manner.	
The student gave a well-organized and thoughtful oral presentation, and conveyed a sense of mastery of the material and awareness of audience.	
The student used supporting materials (e.g., visuals) that enhanced the presentation.	

Comments/Clarifications:

TOTAL:

/56
