

Catholic District School Board Writing Partnership

Course Profile

Integrated Technologies

Grade 9

Open

• *for teachers by teachers*

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Central Ontario Catholic Curriculum Cooperative

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Unit 3: Transportation Theme

Time: 16 hours

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Unit Description

Students develop and demonstrate an understanding of the concepts related to Transportation Technology. Students use a design model to solve challenges related to the safe transportation of people and cargo. The students research, design, fabricate, test, and evaluate models of real world transportation systems and present the results of their findings. Students create a vehicle that safely transports an egg through a crash (Egg Crash Test) and a boat to transport cargo quickly over open water (The Boat Race).

Strand(s) & Expectations

Ontario Catholic School Graduate Expectations: 2b, 2c, 3b, 3c, 5a, 5e, 7d, 7i.

Strand(s): Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01X, TFV.02X, TFV.03X, SPV.01X SPV.02X, SPV.04X, SPV.05X, ICV.01X, ICV.03X.

Specific Expectations: TFS.01X, TFS.02X, TFS.03X, TFS.04X, SPS.01X, SPS.02X, SPS.07X, SPS.08X, ICS.01X, ICS.05X.

Activity Titles (Time + Sequence)

Activity 1	Introduction to Vehicle Crash Testing	60 minutes
Activity 2	Egg Crash Test	420 minutes
Activity 3	The Boat Race Design	420 minutes
Activity 4	Closure and Integration	60 minutes

Unit Planning Notes

Students work in groups of two or three. Students are challenged to form an “engineering firm” that designs and builds model vehicles. Students use a design model, such as SPICE, to solve the design challenge. The results of student research are presented to the class. One design problem deals with crash testing and protection of the passenger while the second deals with boat design (for material or passenger transfer). Appendices 1.1 and 1.2 deal with the student activities.

Prior Knowledge Required

Students are required to have basic measurement skills and an awareness of the design process.

Teaching/Learning Strategies

Strategies include: whole group teaching to introduce the challenge; brainstorming for ideas exploration; expert groups to develop skills; conferencing to share ideas and develop proposals; small groups and peer teaching; and model building and reporting through presentations.

Assessment/Evaluation

Formative and summative evaluation are used during the unit. Formal and informal teacher observations, as well as teacher conferencing with individuals and groups, monitor student progress. Students are asked to evaluate themselves and their peers. The process is evaluated on an on-going basis. The presentation at the end of each activity represents a form of summative evaluation.

Resources

Print

Design and Technology. Toronto: McGraw-Hill Ryerson, 1997.

Experience Technology. Peoria, IL: Glencoe/McGraw-Hill, 1997.

Technology: Science & Math in Action. Peoria, IL: Glencoe/McGraw-Hill, 1997.

Technology Science Mathematics. Peoria, IL: Glencoe/McGraw-Hill 1997.

Technology: Today & Tomorrow. Peoria, IL: Glencoe/McGraw-Hill, 1997.

Videotapes

Contact: "Crash Test" - Golf Class, Volkswagon, Canada

Incredible Frontiers: Episode 2, "Crash Test", GRB Entertainment (Studio City, CA, 1998)

Internet Sites

www.crashtest.com

www.safetycity.com

www.nhtsa.dot.gov/

www.safetybeltsafe.usa

Activity 1: Introduction to Vehicle Crash Testing

Time: 60 minutes

Description

Students are introduced to the technology behind vehicle crash testing and the impact that vehicle collisions have on the individual, family, community, and parish. They are also introduced to the process of gathering scientific data and investigating safety policies pertaining to the research involved in vehicle crash testing and post-accident investigations. Students examine the technologies used to prevent or reduce human suffering resulting from vehicular collisions.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

- CGE2b - reads, understands, and uses written materials effectively;
- CGE2c - presents information and ideas clearly and honestly and with sensitivity to others;
- CGE3b - creates, adapts, and evaluates new ideas in light of the common good;
- CGE5a - works effectively as an interdependent team member;
- CGE7d - promotes the sacredness of life.

Strand(s): Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01X, TFV.02X, TFX.02X, SPV.01X, SPV.02X, ICV.01X.

Specific Expectations: TFS.03X, SPS.02X, ICS.01X, ICS.05X.

Planning Notes

- A VCR should be available.
- The instructor should have prior knowledge of the key points regarding vehicle safety and crash testing procedures. The video could be stopped to emphasize key points.
- A review or question sheet may be used at the teacher's discretion to ensure understanding.
- Show selected sections of movies related to safety improvements (dash design modifications, seat-belts, etc. The videotape *Tucker* is an excellent choice).
- Local police can be invited to talk to the class.
- Automobile Associations (CAA), driving schools, and people who have been in accidents can be used.

Prior Knowledge Required

- Demonstrate awareness that a moving mass has kinetic energy that can be transferred to a stationary object (e.g., a car hitting a wheelbarrow will cause the wheelbarrow to move).
- Identify various criteria for selecting a product (e.g., safety, reliability, durability, environmental concerns, costs, etc.).
- Understand the impact of modern transportation systems (e.g., trucks, snowmobiles, and boats on the environment and on living things (e.g., loss of natural habitat, neighborhoods changed, highways, smog, etc.).

Teaching/Learning Strategies

Students will:

- discuss the personal and tragic implications of vehicle crashes (on the family, the community and parish, the sacredness of life);
- discuss the fact that it is their duty to protect all life;
- identify the need for vehicle safety devices and explain methods of their testing (Internet sources);
- identify the methods used to prevent serious injury in collisions.

Teachers will:

- introduce the topic of passenger and vehicle safety (over the last 40 years);
- show the video on crash testing and discuss various methods of testing;
- have students discuss findings in small groups (observe, do not evaluate);
- encourage and evaluate student participation in discussion;
- review the need for safe operation modern vehicles due to the increase in power (driving schools);
- promote discussion on the fact that life is a gift from God and is to be treasured and when life is taken away, it is your duty to console and help family members through the grieving process.

Assessment and Evaluation

- The teacher monitors the classroom during the video and ensures that the questions are being answered.
- Student participation is noted but not evaluated at this time.

Accommodations

- Ensure that visual aids and other devices are available for special needs students (large screens, headphones, written material in large print).
- Design discussion groups to ensure that all students have the opportunity to participate equally and succeed.

Resources

- TV and VCR
- videos on crash testing and/or vehicle safety
- Internet sites and videos (see Activity 2A Resources)
- local automobile dealers may supply photos, parts, and videos for discussion
- local parish priest to discuss the Church's position on the value of life and how we are to ensure we afford it every opportunity for protection

Activity 2: Egg Crash Test

Part A: Introduction to Vehicle and Passenger Safety Devices

Time: 60 minutes

Description

Through teacher initiative and group discussion, students are introduced to the development of safety devices that have resulted in the present-day features on present-day vehicles. Students research the topic of vehicle and passenger safety devices on the vehicle of their choice, using the school's library or resource centre, as well as any Internet workstation. Additionally, students research the number and types of these devices incorporated into their personal family vehicle. This information will be incorporated into their design.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

CGE2b - reads, understands, and uses written materials effectively;

CGE3b - creates, adapts, and evaluates new ideas in the light of the common good;

CGE5a - works effectively as an interdependent team member.

Strand(s): Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: SPV.04X, TFV.02X, ICV.03X.

Specific Expectations: TFS.04X.

Planning Notes

Teachers may choose to do either the Egg Crash or the Boat Race (Activity 3) first. Ensure that students have a clear understanding of the design and fabrication process and reinforce this process for the second project.

- Review the checklist of vehicle safety features and modify for local use.
- Review the documentation sheet and modify for local use.
- Reserve a period of time in the resource centre for the entire class to perform research.
- It is important to demonstrate to the students how the energy from the impact will be absorbed. The use of crumple zones, steel side bars, etc. are used for protection of the passenger in modern cars, so must the student make the transition to their vehicle. They can weaken the sticks by cutting notches, sanding them down to aid in energy dispersal away from the passenger (the egg), glue them in different shapes, make bumpers, etc.

Prior Knowledge Required

- familiarity with the library text and circular filing system;
- familiarity with the use of an Internet browser and downloading/printing techniques.

Teaching/Learning Strategies

Students will:

- present research data to instructor for comment prior to beginning assembly stage;
- consider the use of modified versions of these safety features for their model;
- work co-operatively with their classmates in sharing resource material.

Teachers will:

- ensure group formation provides a chance for all students to succeed and be treated with respect;
- introduce and discuss various common safety features found on past and present vehicles;
- ensure there is a library/resource centre and Internet facility for the class;
- monitor that the correct information is being gathered by the students;
- ensure students remain on task and are working effectively;
- relate the investigation of safety devices to the sacredness of life and the need to protect it (a gift from God);
- make the connection between this exercise and the real-life opportunities that exist in the automotive design field where one person's contribution can have a positive effect on the family and community of people who purchase their product, and where protecting lives is the end result.

Assessment and Evaluation

- Evaluate research data collected by students.
- Observe group interaction for conduct, work habits, and responsibility (not evaluated at this time).

Accommodations

- Students requiring enrichment may be in charge of video-documenting the design and fabrication process for final review and viewing for Activity 4.
- Ensure that visual aids and other devices are available for special needs students (large screens, headphones, written material in large print).
- If there are older students in the class, their driving experiences could be of value.

Resources

- <http://www.car.volvo.se>
- public library and local police
- car manufacturers (Ford, GM, Chrysler)
- personal family vehicle
- videotapes (*Tucker*)

Part B: Crash Testing Challenge, Design

Time: 90 minutes

Description

The students are introduced to the crash test design and construction challenge. Pairs of students use the information gathered through Activity 1 and Activity 2A to design and produce a crash test vehicle built to specifications supplied by the teacher. The passenger, in this case an egg, must survive the crash. Students follow the design process by producing thumbnail and working drawings before they move on to the construction phase. As well, students are expected to complete daily reflective journals at the end of class. The drawing segment of this activity provides exemplars to be used to direct student achievement.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

- CGE2b- reads, understands and uses written materials effectively;
- CGE2c- presents information and uses written materials effectively;
- CGE3c- thinks reflectively and creatively to evaluate situations and solve problems;
- CGE5e- respects the rights, responsibilities and contributions of self and others;
- CGE7i - respects the environment and uses resources wisely.

Strand(s): Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01X, TFV.02X, TFV.03X, SPV.01X, ICV.01X.

Specific Expectations: TFS.01X, SPS.01X, SPS.07X, SPS.08X.

Planning Notes

- Be familiar with the design specifications and limitations.
- Review the challenge description and steps and modify for local use.
- Evaluate thumbnail sketches and final drawings with each group as they complete them allowing for guidance and constructive criticism to ensure that all criteria are being met.
- Make the students aware that each day is an evaluation day where all facets of their class work are assessed.
- Make certain students are familiar with the required tools and materials and their safe and proper use; discuss the need not to waste materials and that only environmentally sensitive materials are to be used.
- Power tools are not necessary for this activity.
- Provide each group with 21 Popsicle sticks, two pieces of cotton seatbelt material (1"x4"), two straws, and wood glue.
- Review rules of behaviour in the Construction Lab.
- Encourage special needs students to participate to the maximum of their ability and modify groups to ensure this happens.
- Material selection may be varied for students who require an enhanced program to ensure they are working at an enhanced level.

Prior Knowledge Required

- some experience with the safe use of hand tools;
- basic time-management skills;
- basic journal writing skills;
- an ability to identify design features that improve the energy efficiency of devices and systems;
- an ability to communicate the procedures and results of investigations for specific purposes and to specific audiences, using media works, written notes and descriptions, drawings, charts, and oral presentations (e.g., give a presentation on the process of designing and making a specific structure);
- apply specific considerations to the actual manufacture of a product that they have designed and made (e.g., availability of materials, height and weight restrictions, etc.);
- demonstrate an awareness that a moving mass has kinetic energy that can be transferred to a stationary object and must be absorbed and not transferred to the passenger (the egg);
- formulate questions about and identify needs and problems related to structure and mechanisms;

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- communicate the procedures and results of investigations for specific purposes and to specific audiences using media works, written notes and descriptions, charts, drawings, and oral presentations;
 - identify various criteria for selecting a product (e.g., safety, reliability, durability, environmental sensitivity, cost).

Teaching/Learning Strategies

Students will:

- express interpersonal communications skills by working effectively and responsibly within a partner/group situation;
- exhibit industrious and co-operative work habits in a consistent manner;
- complete a daily reflective journal and have the journal initialled by the teacher;
- explain their design choices to the instructor as required.

Teachers will:

- provide the students with ample background material, information, and resources to allow for maximum success;
- monitor student progress on a daily basis (roving conferencing, daily log);
- provide guidance in the organization of personnel for shop clean-up;
- reinforce the need *not to waste resources* as they are a gift from God;
- ensure special needs students and students who require an enriched program are encouraged/challenged for maximum success;
- review design processes that can be incorporated in the students vehicle to ensure success (e.g., bumpers, crumple zones [weakening the area], etc.);
- relate assigned tasks to real work activities (automobile design, Canadian Standards Association, Ministry of Transport, etc.);
- discuss possible co-op placements for students.

Assessment and Evaluation

The assessment of this activity includes both summative and formative evaluations on the following topics:

- Drawings - include the thumbnail drawings and the scale finished drawing.
- Daily Work - includes the quality of participation within the class, group, and shop environment.

Accommodations

- Allow students to form their own pairs with extra attention being paid toward special needs students.
- Use large print materials, computer drawing programs, large screen monitors, etc. with special needs students.

Resources

- popsicle sticks, glue, straws, cotton fabric (old tea towels work well)
- hand tools, power tools if necessary
- co-op teacher to discuss job availability in the design field

Part C: Construction and Testing of Vehicle

Time: 270 minutes

Description

Students construct their test vehicle to their design specifications and then run a test. The survival of the passenger, the egg, is to be stressed; it is an indicator of the ability to use design and problem-solving processes. This test has a direct relationship to the work environment (automobile manufacture and vehicle testing) and is seen as an example of applied engineering skills. Students collect all test data to be used in the final report.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

- CGE2b- reads, understands, and uses written materials effectively;
- CGE2c- presents information and uses written materials effectively;
- CGE3c- thinks reflectively and creatively to evaluate situations and solve problems;
- CGE5e- respects the rights, responsibilities, and contributions of self and others;
- CGE7i - respects the environment and uses resources wisely.

Strand(s): Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01X, TFV.02X, TFV.03X, SPV.01X, SPV.05X, ICV.01X.

Specific Expectations: TFS.01X, TFS.02X, SPS.01X, SPS.07X, SPS.08X, ICS.01X, ICS.05X.

Planning Notes

- Ensure that the test mechanism is operational.
- Have a test area that is away from any valuable equipment. (This is going to be messy. Cover floor and table with paper and/or provide access to a hose.)
- Allow students time to complete daily log entries and final report containing all pertinent information at the completion of the test.
- Videotape class results where possible for use as exemplars (this may be an additional activity for students who require an enriched program).
- Invite Physics students to observe and take notes on the tests to provide a hands-on application of Energy Applications. Their notes could be used as part of the final report.

Prior Knowledge Required

- safe operation of hand and power tools;
- the rules of conduct in the Construction lab for the safety of all;
- how to work as a valued team member sharing all responsibilities and decisions.

Teaching/Learning Strategies

Students will:

- express interpersonal communications skills by working effectively and responsibly within a partner/group situation;
- exhibit industrious and co-operative work habits in a consistent manner;
- complete a daily reflective journal and have the journal initialled by the teacher;
- apply the design process to the development of the crash test vehicle and chronicle its development;

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- explain their design choices to the instructor and other groups as required;
 - ensure safety measures are taken to ensure their own safety and that of others (tool safety, etc.);
 - prepare to present all drawings, data and results (Activity 4).

Teachers will:

- provide the students with ample background material, information, and resources to allow for maximum success;
- constantly supervise the use of any hand or power tools used in fabrication;
- monitor student progress on a daily basis (roving conferencing, daily log);
- provide guidance in the organization of personnel for shop clean-up;
- reinforce the need not to waste resources;
- ensure special needs students and students who require an enriched program are encouraged/challenged for maximum success;
- relate this test process as being a real-life trial.

Assessment and Evaluation

The assessment of this activity includes both summative and formative evaluations. These must cover six main areas:

- Drawings - include the thumbnail drawings and the scale finished drawing.
- Daily Work - includes the quality of participation within the class, group, and shop environment.
- Oral presentation - noting things such as description of the vehicle safety features, equal participation, and good oral communication skills.
- Crash Test - How many eggs “survived”?
- Journal entries
- Self- and peer-evaluation

Accommodations

- Give special needs students additional time if needed.
- Students who require an enriched program could videotape and record the safest car and the most spectacular crash.

Resources

- popsicle sticks, glue, straws, cotton seatbelt material
- hand tools, power tools
- test stand, newspapers or plastic
- video camera

Activity 3: The Boat Race Design

Part A: Introduction to Boats and Other Watercraft

Time: 60 minutes

Description

Through teacher initiative and group discussion, students are introduced to the technology behind boat and watercraft construction. Students research the history of watercrafts using the school's library or resource centre, as well as the Internet. Students research the terms related to watercrafts, including hull shapes and designs, sail, rudder, bow, stern, ballast, and buoyancy. The information is incorporated into their design. This is a design activity where the safe transfer of the passenger or product is as important as speed. Success is defined by the safe arrival of the cargo in a reasonable time.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

- CGE2b- reads, understands, and uses written materials effectively;
- CGE3b- creates, adapts, and evaluates new ideas in the light of the common good;
- CGE5a – works effectively as an interdependent team member.

Strand(s): Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: SPV.04X, TFV.02X, ICV.03X.

Specific Expectations: SPS.07X.

Planning Notes

- Review the checklist of nautical terminology (see Appendix 1.3).
- Reserve a period of time in the resource centre for the entire class to perform research.
- Ensure students are aware that the completion of the task can only be achieved when the boat arrives safely at its destination.
- Discuss how speed is a factor in accidents (e.g., Titanic, personal watercraft, speed boats, the effect of alcohol, etc.).
- Life is important and must be protected (a gift from God).

Prior Knowledge Required

- familiarity with the library text and circular filing system
- familiarity with the use of an Internet browser and downloading/printing techniques

Teaching/Learning Strategies

Students will:

- present research data to instructor for comment prior to beginning assembly stage;
- work co-operatively with their classmates in sharing resource material.

Teachers will:

- discuss the use and importance of watercraft for commercial and leisure pursuits;
- ensure group formation provides a chance for all students to succeed and be treated with respect;
- introduce on-going testing for design discussion and modification (Appendix 1.4)
- ensure there is a library/resource centre and Internet facility for the class;
- monitor that correct information is being gathered by the students;
- ensure students remain on task and are working effectively;
- relate the investigation of safe watercraft use to the sacredness of life and the need to protect it (a gift from God);
- make the connection between design requirements and the need for safe recreational craft, which leads to enjoyment for family and friends (quality of life);
- employment opportunities in the design, build, and sales fields (power and sail boats, as well as personal watercraft)

Assessment and Evaluation

- Evaluate research data collected by students.
- Observe group interaction for conduct, work habits, and responsibility (not evaluated at this time).

Accommodations

- Put students who require an enriched program in charge of video-documenting the design and fabrication process for final review and viewing in Activity 4.
- Ensure that visual aids and other devices are available for special needs students (large screens, headphones, written material in large print).

Resources

- <http://www.HomePort.com/Nautical Know How>
- public library
- boat and yacht manufacturers
- two 10” lengths of vinyl eavestrough capped at both ends
- a 24” fan
- small weights (grams)
- local sailing clubs, power squadron, harbour police

Part B: Transportation Design Challenge

Time: 90 minutes

Description

The students are introduced to the boat design and race challenge. Each student, along with a partner, designs and fabricates a watercraft built to carry a cargo or passengers from point A to point B quickly, safely, and completely dry. Students follow the design process by producing thumbnail and working drawings before they move on to the construction phase. As well, students are expected to complete daily reflective journals at the end of class.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

- CGE2b- reads, understands, and uses written materials effectively;
- CGE2c- presents information and uses written materials effectively;
- CGE3c- thinks reflectively and creatively to evaluate situations and solve problems;
- CGE5e- respects the rights, responsibilities, and contributions of self and others;
- CGE7i - respects the environment and uses resources wisely.

Strand(s): Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01X, TFV.02X, TFV.03X, SPV.01X, ICV.01X.

Specific Expectations: TFS.01X, SPS.01X, SPS.07X, SPS.08X.

Planning Notes

Teachers may choose to do either the Egg Crash (Activity 2) or the Boat Race first. Ensure that students have a clear understanding of the design and fabrication process and reinforce this process for the second project.

- It is important that the teacher be familiar with the nautical terms used and the testing procedures.
- Evaluate thumbnail sketches and final drawings with each group as they complete them allowing for guidance and constructive criticism to ensure that all criteria are being met.
- Make the students aware that each day is an evaluation day where all facets of their class work is being assessed.
- Make certain students are familiar with the required tools and materials and their use; discuss the need not to waste materials and that only environmentally sensitive materials are to be used.
- Power tools are not necessary for this activity.
- Provide each group with 21 popsicle sticks and plastic material for the sail.
- Encourage special needs students to participate to the maximum of their ability and modify groups to ensure this happens.

Prior Knowledge Required

- some experience with the safe use of hand tools (if this activity is done before the Crash test);
- basic journal writing skills (if this activity is done before the Crash test);
- an ability to identify design features that improve the energy efficiency of devices and systems;
- an ability to communicate the procedures and results of investigations for specific purposes and to specific audiences, using media works, written notes and descriptions, drawings, charts, and oral presentations (e.g., give a presentation on the process of designing and making a specific structure);
- apply specific considerations to the actual manufacture of a product that they have designed and made (e.g., availability of materials, height and weight restrictions, etc.).

Teaching/Learning Strategies

Students will:

- express interpersonal communications skills by working effectively and responsibly within a partner/group situation;
- exhibit industrious and co-operative work habits in a consistent manner;
- complete a daily reflective journal and have the journal initialled by the teacher;
- explain their design choices to the instructor as required;
- develop new skills in the design and building of watercraft (how hull design affects speed, displacement, and carrying capacity).

Teachers will:

- provide the students with ample background material, information, and resources to allow for maximum success;
- monitor student progress on a daily basis (roving conferencing, daily log);
- ensure special needs students and students who require an enriched program are encouraged/challenged for maximum success.

Assessment and Evaluation

The assessment of this activity includes both summative and formative evaluations in the areas of:

- Drawings - include the thumbnail drawings and the scale finished drawing.
- Daily Work - includes the quality of participation within the class, group, and shop environment.

Accommodations

- Allow students to form their own pairs with extra attention being paid toward special needs students.

Resources

- popsicle sticks, glue, plastic material
- hand tools, power tools if necessary

Part C: Construction and Pre-testing of Watercraft

Time: 210 minutes

Description

In this section, students construct their watercraft to their design specifications and then run a preliminary water test. The floatation and speed of the craft is to be stressed; it is an indicator of their ability to use design and problem-solving processes. This test has a direct impact on their design modifications and final testing.

Strand(s) and Expectations**Ontario Catholic School Graduate Expectations:**

- CGE3c - thinks reflectively and creatively to evaluate situations and solve problems;
- CGE4b - demonstrates flexibility and adaptability;
- CGE4d - responds to, manages, and constructively influences change in a discerning manner;
- CGE7i - respects the environment and uses resources wisely.

Strand(s): Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01X, TFV.02X, TFV.03X, SPV.01X, SPV.05X, ICS.01X.

Specific Expectations: TFS.01X, TFS.02X, SPS.01X, SPS.07X, SPS.08X, ICS.01X, ICS.05X.

Planning Notes

- Ensure that the test mechanism is operational (fan works, eavestrough does not leak).
- Have a test area that is away from any valuable equipment (this could get wet).
- Cover work area with papers to help in clean-up.
- Allow students time to complete daily log entries and test report containing all pertinent information at the completion of the test.

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- Ensure the electric fan is far enough away from the water that no student is put in danger should the fan tip or fall.

Prior Knowledge Required

- safe operation of hand and power tools;
- rules of conduct in the Construction lab;
- how to work as a valued team member sharing all responsibilities and decisions.

Teaching/Learning Strategies

Students will:

- express interpersonal communications skills by working effectively and responsibly within a partner/group situation;
- exhibit industrious and co-operative work habits in a consistent manner;
- complete a daily reflective journal and have the journal initialled by the teacher;
- apply the design process to the development of the watercraft and chronicle its development;
- modify the design as required;
- ensure safety measures to be taken to ensure their own safety and that of others (tool safety etc.);
- prepare to present all drawings, data, and results (Activity 1.4).

Teachers will:

- supervise the use of any hand or power tools used in fabrication;
- monitor student progress on a daily basis (roving conferencing, daily log);
- ensure special needs students and students who require an enriched program are encouraged/challenged for maximum success;
- relate this test process as being a real-life trial.

Assessment and Evaluation

The assessment of this activity includes both summative and formative evaluations in these areas:

- Daily Work - includes the quality of participation within the class, group, and shop environment.
- Pre-test – Did the cargo arrive safely? Was it dry? What improvements could be made to make it more successful?
- Journal entries
- Self evaluation

Accommodations

- Give special needs students additional time if needed.
- Students who require an enriched program videotape strategic points in the design, construction, and pre-testing.

Resources

- hand tools, power tools
- test location, newspapers or plastic

Part D: The Boat Race

Time: 60 minutes

Description

Students race their watercraft against each other and the floatation and speed of the craft is recorded. This test has a direct relationship to the work environment (watercraft manufacture and testing). Each team races their watercraft once with the four finalists racing off in a final challenge. The winning watercraft is the one that quickly and safely transports its cargo to the end. The cargo must be completely out of the water and completely dry.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

- CGE5e - respects the rights, responsibilities, and contributions of self and others;
- CGE5g - achieves excellence, originality, and integrity in one's own work and supports these qualities in the work of others;
- CGE7i - respects the environment and uses resources wisely;
- CGE4h - participates in leisure and fitness activities for a balanced and healthy lifestyle.

Strand(s): Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01X, TFV.02X, TFV.03X, SPV.01X, SPV.05X, ICV.01X.

Specific Expectations: TFS.01X, TFS.02X, SPS.01X, SPS.07X, SPS.08X, ICS.01X, ICS.05X.

Planning Notes

- Ensure that the test mechanism is operational (fan works, eavestrough does not leak).
- Have a test area that is away from any valuable equipment. (This could get wet).
- Cover work area with paper to help in clean-up.
- Ensure video cameras are set up and operational (and will stay dry) to tape class results.
- Allow students time to complete daily log entries and final report containing all pertinent information at the completion of the test.

Prior Knowledge Required

- how to work as a valued team member sharing all responsibilities and decisions

Teaching/Learning Strategies

Students will:

- work effectively and responsibly within a partner/group situation;
- exhibit industrious and co-operative work habits in a consistent manner;
- complete a daily reflective journal and have the journal initialled by the teacher;
- apply the design process to the development of the watercraft and chronicle its development;
- ensure safety measures to be taken to ensure their own safety and that of others (tool safety, etc.);
- videotape key race activities and chronicle the results.

Teachers will:

- organize the race so that boats of equal quality race at the same time;
- monitor student progress (roving conferencing, daily log);

-
- ensure special needs students and students who require an enriched program are encouraged/challenged for maximum success;
 - relate this test process as being a real-life trial.

Assessment and Evaluation

The assessment of this activity includes both summative and formative evaluations in these areas:

- Oral presentation - noting things such as description of the vehicle safety features, equal participation and good oral communication skills.
- Test – How much cargo arrived safely? Why was the fastest watercraft faster than the others?
- Journal entries
- Self- and peer-evaluation

Accommodations

- Give special needs students additional time if needed.

Resources

- popsicle sticks, glue, cotton balls, plastic sail material
- hand tools, power tools
- test location, newspapers or plastic
- video camera

Activity 4: Closure and Integration

Time: 60 minutes

Description

In this section, the students watch the video of the egg crash and the boat race. The winning teams discuss their design strategy and why they believe their design was so successful. Students then write a reflection on the overall transportation theme and how it relates to their daily lives.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

- CGE2c - presents information and ideas clearly and honestly and with sensitivity to others;
- CGE2e - uses and integrates the Catholic faith tradition, in the critical analysis of the arts, media, technology, and information systems to enhance the quality of life;
- CGE4g - examines and reflects on one's personal values, abilities, and aspirations influencing life's choices and opportunities;
- CGE4h - participates in leisure and fitness activities for a balanced and healthy lifestyle;
- CGE5b - thinks critically about the meaning and purpose of work.

Strand(s): Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01X, TFV.02X, TFV.03X, SPV.01X, ICV.03X.

Specific Expectations: TFS.03X, SPS.01X, SPS.03X, ICS.05X.

Planning Notes

- Ensure video cameras are set up and operational at the completion of the test.
- Allow students time to complete daily log entries and final report containing all pertinent information.

Prior Knowledge Required

- understand how to reflect on design decisions and the success of a design

Teaching/Learning Strategies

Students will:

- complete a daily reflective journal;
- chronicle the development of both projects including difficulties and positive experiences;
- play videotape of key activities for enjoyment and project review.

Teachers will:

- discuss how each design is individual and unique;
- discuss the impact that vehicle and watercraft have had on our everyday lives, both for enjoyment and business.

Assessment and Evaluation

The assessment of this activity is formative. Teachers review reflective journals and peer and self evaluations using a rubric (Appendix 1.4).

- Journal entries
- Self and peer evaluation

Accommodations

- Give special needs students additional time if needed.

Resources

- video camera
- paper and pencil evaluation, and peer evaluation rubric

Appendix 1.1: Transportation Technology Challenge - Egg Crash Test

Crash Test Dummy

Challenge

The purpose of this challenge is to introduce automotive design principles. You will design and build a vehicle to safely transport an egg a specific distance and have the vehicle pass a direct impact test to ensure the safety of the passenger. Your mark will be based on the completeness of your research, the design and construction of the vehicle, and the final testing and report (regardless of whether your egg survives the crash).

Materials

Only the following materials may be used:

- popsicle sticks (21 allowed);
- straws (2 allowed);
- seat belt material (will be supplied);
- glue (will be provided);
- egg (will be provided);
- wheels (are to be provided by the student).

Evaluation

- Research of car design and safety features (Internet search and report)
- Design drawings and orthographic projections of design idea
- Construction/fabrication of the vehicle
- Advertising campaign (print advertisement using *CorelDRAW™*)
- Testing (before and after test report)
- Final report of possible design improvements
- Ability to work as an interdependent team member

Design Criteria

Develop a set of design criteria (i.e., safety, appearance, speed, and other important items that should be included).

Groups

Groups of two students only. Students complete a self and peer evaluation form.

Appendix 1.2: Transportation Technology Challenge Two - The Boat Race

Challenge

The purpose of this challenge is to introduce watercraft design principles as they relate to the transfer of goods and materials. You will research, design, and build a watercraft that quickly and safely transports cargo through open water using sail power only. The cargo must arrive at the destination safely and be dry when it arrives.

Materials

The following materials may be used:

- popsicle sticks (21 allowed) - can be cut in half;
- plastic for the sail;
- other material (No paper cardboard or fabric should be used as these will get wet and weigh the boat down.);
- glue (will be provided);
- weights (will be provided);
- fan.

There is no weight limitation to the watercraft. (It can weigh anything you want.)

Evaluation

- Research of boat shapes and terms
- Design drawings and draft plans of ideas (marks for creativity and uniqueness)
- Construction/fabrication of the watercraft
- Pre-test run and modifications
- Testing - boat race
- Ability to work as an interdependent team member
- Final report of test/race results

Groups

Students work in groups of two to research, design, fabricate, and race the watercraft.

Appendix 1.3: Nautical Terminology

Note: This information has been gathered from the www.NauticalKnowHow.com Internet site (Microsoft Internet Explorer). This resource lists all nautical terms and definitions.

Aft - Toward the stern of the boat.

Ballast - Any heavy material placed in the hold of a vessel to enhance stability

Boat - A fairly indefinite term. A waterborne vehicle smaller than a ship. One definition is a small craft carried aboard a ship.

Bow - The forward part of a boat.

Displacement - The weight of water displaced by a floating vessel, thus, a boat's weight.

Hull - The main body of a vessel.

Ship - A larger vessel usually thought of as being used for ocean travel. A vessel able to carry a "boat" on board.

Starboard - The right side of a boat when looking forward.

Stem - The forward most part of the bow.

Stern - The after part of the boat.

Tiller - A bar or handle for turning a boat's rudder or an outboard motor.

Sail- A fabric panel used to collect wind energy in order to propel or aid in maneuvering a vessel

Windward - Toward the direction from which the wind is coming.

Yacht - A pleasure vessel, a pleasure boat; in American usage the idea of size and luxury is conveyed, either sail or power.

Appendix 1.4: Transportation Challenge Rubric

	Level 1	Level 2	Level 3	Level 4
<p>Communicates ideas through the use of drawings and sketches</p> <p>TFV.02X, CGE4f</p>	- demonstrates limited understanding of the concepts that sketches can be used to communicate ideas and does so	- demonstrates some understanding of the concepts that sketches can be used to communicate ideas and does so	- demonstrates considerable understanding of the concepts that sketches can be used to communicate ideas and does so	- demonstrates thorough and insightful understanding of the concepts that sketches can be used as a method of communicating ideas and does so
<p>Safe use of tools, lab facilities and rules of conduct</p> <p>ICV.01X</p>	- demonstrates a limited knowledge of safe tool use and respect for lab facilities and rules of conduct	- demonstrates only a moderate understanding of safe tool use and respect for lab facilities and rules of conduct	- demonstrates considerable understanding of the safe use of tools and respect for lab facilities	- demonstrates a high degree of understanding and respect for the safe use of tools and rules of conduct
<p>Oral presentation of design ideas</p> <p>TFS.03X, CGE2c</p>	- uses technical drawings and language to communicate design ideas and concepts with limited success	- uses technical drawings and language to communicate design ideas and concepts with moderate success	- uses technical drawings and language to communicate design ideas and concepts with considerable success	- demonstrates and promotes the correct use of technical drawings and language to communicate ideas and concepts
<p>Construction of vehicle/watercraft to design specifications</p> <p>SPV.01X</p>	- makes the connection between drawings and the actual construction of the vehicle with some difficulty	- makes the connection between drawings and the actual construction of the vehicle with moderate effectiveness	- makes the connection between drawings and the actual construction of the vehicle with considerable effectiveness	- makes the connection between drawings and the actual construction of the vehicle with a high degree of effectiveness
<p>Interdependent team member</p> <p>CGE.5a</p>	- works effectively as an interdependent team member with some difficulty	- works effectively as an interdependent team member with only moderate effectiveness	- works as an interdependent team member with considerable success	- understands and works as a valued interdependent team member
<p>Understanding and proper use of nautical/automotive terminology</p> <p>CGE2b, TFS.03X</p>	- understands and uses the proper terminology with limited success	- understands and uses the proper terminology with moderate success	- understands and uses the proper terminology with considerable success	- demonstrates and promotes the correct use of terminology

Unit 4: Communications Theme Tools and Processes

Time: 20 hours

Unit Developers: Paul Owens, Joanne Durst

Development Date: May 16, 1999

Unit Description

Students develop and demonstrate an understanding of concepts related to communications technology to express their Christian beliefs. Students use a design model to solve a challenge related to a Catholic Church celebration of their choice that may come from a parable, Commandment, or Beatitude. The final product is presented as an expression of their personal understanding of Christian doctrine. Students demonstrate their learning by designing a stained glass window (*CorelDRAW™*) based on a theme, which is then be incorporated into a short animated film (animation software, video, and audio dub).

Strand(s) and Expectations:

Ontario Catholic School Graduate Expectations:

CGE1d - develops attitude and values founded on Catholic social teaching and acts to promote social responsibility, human solidarity, and the common good;

CGE2e - uses and integrates the Catholic faith tradition in the critical analysis of arts, media, technology, and information systems to enhance the quality of life;

CGE3d - makes decisions in light of gospel values with an informed moral conscience;

CGE4f - applies effective communication, decision-making, problem-solving, and time and resource management skills;

CGE5b - thinks critically about the meaning and purpose of work.

Strand(s): Theory and Foundation, Skills and Processes, Impacts and Consequences

Overall Expectations: TFV.01X, TFV.02X, TFV.03, SPV.03X, ICB.05X.

Specific Expectations: TFS.03X, SPS.01X, SPS.03X, SPS.04X, SPS.05X, SPS.07X, ICS.07X.

Activity Titles (Time + Sequence)

Activity 1	Stained Glass Window	60 minutes
Activity 2	Communicating Ideas, Research of Topics	120 minutes
Activity 3	Communicating Ideas through Sketches	60 minutes
Activity 4	Communicating Ideas using <i>CorelDRAW™</i> Software	300 minutes
Activity 5	Communicating Ideas using Animation	420 minutes
Activity 6	Creating a Short Film	120 minutes
Activity 7	Formal Presentation	60 minutes
Activity 8	Personal Reflection and Spiritual Growth	60 minutes

Unit Planning Notes

The focus of this unit is to allow the students to express Christian beliefs through a variety of media. This unit uses graphic arts, animation, video, audio, and written word as pathways to communicating religious ideas and sentiments.

Prior Knowledge Required

- Biblical and sacramental knowledge
- liturgical knowledge
- research skill (access to the Internet and public libraries)
- communication sketching and drafting
- formal presentations
- computer skills

Teaching/Learning Strategies

Students work individually to complete the activity. Stress the importance of this opportunity for the students to express their understanding and love for the Church and God. Special needs students and students who require enriched programs must be considered and accommodated for full potential and personal development.

Assessment and Evaluation

This unit allows students to creatively express a personal idea of Christian belief through communication tools. The teacher and students collect evidence of learning using observational checklists, rubrics, and personal communication tools.

Resources

Print

Fox, Thomas C. *Catholicism on the Web*. MIS Press. ISBN 1-553828-516-4

The Bible or other Church Texts

Coburn, Foster and Peter McCormick. *CorelDRAW 7: The Official Guide*. Osborne McGraw Hill. ISBN 0-07-882278-5

Computer Software and Peripherals

CorelDRAW™ 8

Animation software

Colour printer

Web Site

<http://www.craftweb.com/org/steve/steve.shtml>

Audio/Video

AVerKey or other computer transfer program

Video editing suites for audio dubbing

Miscellaneous

Public libraries, Diocesan Church libraries

Local churches of all denominations

Activity 1: Stained Glass Window

Time: 60 minutes

Description

Students work independently on this assignment to allow them an opportunity to express their Christian faith in the form of a stained glass window. The artistic composition of the window is the student's choice and reflects their personal direction and feelings towards a parable, Commandment, or Beatitude that is reflective of their Christian perspective.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

CGE4c - takes initiative and demonstrate Christian leadership;

CGE1i - integrates faith with life.

Strand(s): Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01X, TFV.03X, SPV.03X.

Specific Expectations: TFS.03X, SPS.03X, ICS.07X.

Planning Notes

The first day includes a discussion of how messages and stories are transmitted through the use of pictures. Discussion includes topics from the past as well as the present. An introductory lesson should be given with a focus on Christian beliefs and how they were related through artistic expression (the emphasis on stained glass). Introduce the topic of church windows and promote an open discussion on how they related a story or a faith belief. Students are required to write a daily log as well as the audio overdub for their window (Activity 2).

Prior Knowledge Required

- use of computers for Internet searches
- understanding of and respect for the ideas and beliefs of others when participating in group discussions

Teaching/Learning Strategies

Students will:

- begin a daily log that outlines their personal growth through the activity;
- be an active participant in the discussions, contributing personal ideas and beliefs to others and listening respectfully to the beliefs of others.

Teachers will:

(Whole group)

- introduce the project and reinforce classroom expectations;
- provide a list of possible sources and show examples to the students of completed windows;
- encourage students to be creative in their sources and final design;
- encourage open discussion on windows students have seen and what made the window have an impact on them.

Assessment/Evaluation

- The teacher ensures discussions are on topic.
- A formative self-assessment using daily reflective log is to be checked, not evaluated.

Accommodations

- Special needs students are mentored, when necessary, to ensure full potential is reached.
- Encourage students who require enriched programs to work at their own pace to achieve maximum results.

Resources

- *The Bible*
- Fox, Thomas C. *Catholicism on the Web*. ISBN 1-553828-516-4
- Internet locations
- Art books, slides, and videotapes
- Churches of various denominations and ages

Activity 2: Communicating Ideas, Research of Topics

Time: 120 minutes

Description

Students begin their research using various media in order to be exposed to the maximum number of sources. Verse, stories, parables, etc. are excellent sources of information. The students should narrow their selection to three or four choices before making final selections. Consideration of the final topic should include how it can be adapted to the media used in this activity. Material should be appropriate for the assigned task and have the teacher's approval before beginning the next step, which is writing the reflective message they wish to convey. This reflective message is used as the overdub for Activity 5.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

- CGE3b - create, adapt, and evaluate new ideas in light of the common good;
- CGE2c - presents information and ideas clearly and honestly and with sensitivity to others;
- CGE7d - promotes the sacredness of life.

Strand(s): Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01X, TFV.02X, SPV.03X, ICV.05X.

Specific Expectations: TFS.03X, SPS.03X, SPS.05X, SPS.07X.

Planning Notes

- Book library or computer lab time to ensure availability for Internet access.
- Ensure resource materials and examples are ready.
- A guest speaker or school trip to churches of different denominations and ages is suggested.
- Remind students that the completed video must contain both theological and artistic merit.
- Students who are taking religion at this time in the semester can obviously use the Religion Course as a source; those who haven't had religion yet may wish to concentrate on their Confirmation or religious course material from Grade 8.

Prior Knowledge Required

- research techniques including use of the Internet
- sketching and drafting techniques
- biblical, sacramental and liturgical knowledge

Teaching/Learning Strategies

Students will:

- research their ideas through a variety of media and select three for final consideration;
- ensure that all topics can be adapted to final format;
- be aware of copyright regulations.

Teacher will:

- ensure no copyright violations occur;
- ensure all sources are included in daily log for future reference;
- ensure special needs students have full and complete access to all resource materials;
- ensure final draft of the reflective message is appropriate.

Assessment/Evaluation

- Daily logs are read but not evaluated.
- Observation of research techniques are noted (not evaluated) and corrected where necessary.
- Teacher and student conference in order to make final selection on window design and written message; research is evaluated and returned.

Accommodations

- Special needs students are mentored when necessary.
- Students who require enriched programs work at their own level and are encouraged to facilitate others through mentoring.
- Ensure all students have access to examples and facilities.

Resources

- public libraries and school libraries/resource centres
- historical sites (Martyr's Shrine, Midland, ON)
- local churches (all denominations)
- Internet sources
- <http://www.craftweb.com/org/steve/steve.shtml>
- examples from posters and books
 - Harris, Hywell G. *390 Traditional Stained Glass Designs*.
 - Stoddard, Whitney S. *Art and Architecture in Medieval France: Medieval Architecture, Sculpture, Stained Glass, Manuscripts, Art of the Church Treasuries*.
- guest speakers or field trips
- videotapes, slides, etc.

Activity 3: Communicating Ideas Through Sketches

Time: 60 minutes

Description

Students communicate their ideas by means of thumbnail sketches. All ideas are presented visually through rough sketches and a final full size (8½ x 11) prior to going to the computer.

Strands(s) and Expectations

Ontario Catholic School Graduate Expectations:

CGE1I- integrates faith with life;

CGE3c- thinks reflectively and creatively to evaluate situations and solve problems;

CGE4f- applies effective communication, decision making, problem solving, and time and resource management skills.

Strand(s): Theory and Foundation

Overall Expectations: TFV.02X.

Specific Expectations: TFS.01X, TFS.03X, SPS.01X.

Planning Notes

- Share examples of rough sketches and thumbnail sketches and discuss their importance in the design process.
- Provide blank paper, a variety of coloured pencils, and tracing paper.
- Provide art books that demonstrate completed samples.
- Have an art teacher visit the class as a resource.

Prior Knowledge Required

- Communications sketching (Unit 1)

Teaching/Learning Strategies

Students will:

- produce four rough thumbnail drawings (quarter page);
- produce one final, coloured, letter-size final thumbnail sketch.

Teachers will:

(Whole group);

- discuss the individual development of rough thumbnail sketches to final sketches
- discuss the importance of having a design idea prior to trying to develop the idea on computer;

(Individual)

- reflect on personal development shown in each design;
- demonstrate potential improvements that reflect ideas more successfully.

Students explain their four different ideas through presentation of the thumbnail sketches and discuss the rationale for the final selection.

Assessment/Evaluation

- Evaluate each student on the creativity of their sketches and the individuality and self expression shown.

-
- Evaluate each student on their ability to accurately communicate their design ideas verbally and visually.
 - Incorporate personal values into this process.

Formative evaluation of communication skills, problem solving, completion of assigned tasks, and work habits are entered into the teacher's log.

Accommodations

- For special needs students:
 - show examples in various stages of completion;
 - provide a limited number of drawings;
 - give simple design solutions to expand upon.
- Special needs students may trace or use computer drawing programs.
- Students who require an advanced program should make connections to design types previously researched.

Resources

- examples of finished sketches
- pencil and paper demonstration

Activity 4: Communicating Ideas using *CorelDRAW™* Software

Time: 300 minutes

Description

Students communicate their ideas by means of *CorelDRAW™* software. Final thumbnail sketches are transferred to computer

Strands(s) and Expectations

Ontario Catholic School Graduate Expectations:

CGE2b - read, understand, and use written materials effectively;

CGE4f - applies effective communication, decision making, problem solving, and time and resource management skills.

Strand(s): Skills and Practices

Overall Expectations: TFV.02X, SPV.03X, ICV.05X.

Specific Expectations: SPS.05X.

Planning Notes

- Share examples of finished *CorelDRAW™* posters and discuss the use of computers as an integral component of the design process.
- Book computer lab time.
- Provide tutorial books or provide online tutorials, which are available with software.

Prior Knowledge Required

- basic computer applications

Teaching/Learning Strategies

Students will:

- work independently through a variety of tutorials in order to understand the computer software available;
- produce one final colour poster on computer software (of final thumbnail sketch).

Students demonstrate their understanding of the program by presenting finished tutorials for review and a colour printout of their final poster.

Teachers will:

(Whole group)

- discuss the use of tutorials for developing computer skills;
- reinforce the importance of having a design idea prior to trying to develop the idea on computer;
- discuss the importance of the computer as a design tool to be used in conjunction with a design idea;

(Individual)

- address individual computer skill levels;
- demonstrate proper computer use and respect for computer environment;
- ensure special needs students are accommodated (see Accommodations).

Assessment/Evaluation

- Evaluate each student on their ability to work independently and to read and follow written instructions.
- Evaluate each student on their ability to accurately communicate design ideas visually using computer software.
- Appendix 4.3 - Rubric 2 is used in the evaluation of computer skills.

Teachers perform roving conferencing and ensure proper time management is being followed.

Formative evaluation of communication skills, problem solving, completion of assigned tasks, and work habits are entered into the teacher's log.

Accommodations

- Group special needs students with students who require enrichment where applicable.
- Students who require enriched programs work independently; they show understanding of computer software and respect for fellow students by peer tutoring and assisting others with problems.

Resources

- examples of finished posters
- individual or small group demonstration and review

Activity 5: Communicating Ideas using Animation

Time: 420 minutes

Description

Students communicate their ideas by means of *Adventures in Animation* software. Final poster from *CorelDRAW™* is developed into an animated short film.

Strands(s) and Expectations

Ontario Catholic School Graduate Expectations:

CGE2a - listen actively and critically to understand and learn in light of gospel values;

CGE2b - read, understand, and use written materials effectively.

Strand(s): Skills and Processes

Overall Expectations: TFV.02X, SPV.02X.

Specific Expectations: TFS.01X, TFS.03X, SPS.03X.

Planning Notes

- Share examples of finished animations and discuss the use of a variety of computer programs to create a final product.
- Student produce a computer animation using the *CorelDRAW™* poster as the central theme.
- Book computer lab time.
- Provide tutorial books or online tutorials which are available with software.

Prior Knowledge Required

- basic computer applications
- *CorelDRAW™*
- understanding proper computer lab use

Teaching/Learning Strategies

Students will:

- work independently through a variety of tutorials in order to understand the computer software available;
- create a .GIF file of their *CorelDRAW™* poster to be used in the animation;
- produce one final animation using *Adventures in Animation* computer software.

Students demonstrate their understanding of the program by presenting finished tutorials for review and final computer animation using the poster as a central theme

Teachers will

(Whole group)

- discuss the role of animation as an entertainment and educational tool; discuss moral issues surrounding computer animation and television;
- demonstrate a completed story using a poster. The story should have a clear beginning, middle, and end and be detailed on an animation storyboard.

(Individual)

- address individual computer skill levels;
- demonstrate proper computer use and respect for computer environment;
- ensure special needs students are accommodated (group with strong student for tutorials and possibly to create final animation using both posters). Students who require an enhanced program create more detailed storyboards that describe a modern day parable using their posters.

Assessment/Evaluation

- Evaluate each student on their ability to work independently and to read and follow written instructions.

-
- Evaluate each student on their ability to convert their *CorelDRAW*TM file to a usable .GIF file for use with animator and to create a story.
 - Rubric Model (Appendix 4.4) is used in the evaluation of computer skills.

Teacher should use roving conferencing and time management review
Formative evaluation of communication skills, problem solving, completion of assigned tasks, and work habits are entered into the teachers log.

Accommodations

- Group special needs students with students who are experiencing greater success or give them partially completed animations to work with.
- Students who require an enhanced program work independently to maximize potential; they show understanding of computer software and respect for fellow students by peer tutoring and assisting others with problems.

Resources

- examples of finished tutorials, storyboards, and completed projects
- individual or small group demonstration and review

Activity 6: Creating a Short Film

Time: 120 minutes

Description

Students create a short animated film (one to two minutes) with an audio overdub that when complete will bring together different skills into a complete form of communication. The student can present their Christian beliefs in a form they can relate to and take personal ownership of.

Strand(s) and Expectations:

Ontario Catholic School Graduate Expectations:

- CGE1b- illustrate a basic understanding of the **saving story** of our Christian faith;
- CGE2e- uses and integrates the Catholic faith tradition, in the critical analysis of the arts, media, technology, and information systems to enhance the quality of life;
- CGE4f- applies effective communication, decision-making, problem-solving, and time and resource management skills.

Strand(s): Theory and Foundation, Skills and Processes

Overall Expectations: TFV.02X, SPV.02X.

Specific Expectations: TFS.03X, SPS.03X, SPS.04X.

Planning Notes

The teacher introduces students to the use of “T-scripts” to aid them in organizing the elements they have created and then place them into a completed short film. The process will be to organize the elements in the animation program (using join and transition tools and others), then save the completed product as a file for transfer to videotape. The film is transferred to video by means of the *AVerKey 3* (or similar) where the tape can then be transferred to the video-editing suite. The final step is for the student to read their personal message or reflection and place it on the videotape (audio dub). Review editing procedures and demonstrate an audio dub. Special needs students should be mentored or given extra time where required.

Students who require enriched programs are encouraged to use multi-track facilities, video editing mixers and effects generators.

Prior Knowledge Required

- use of the animation computer software program (*Animator Pro* or similar)
- ability to connect *AVerKey* system for transfer of animation to video
- operation of a video edit suite (mark in, mark out, time code, assemble or insert, edit, etc.)
- ability to complete an audio dubbing over the videotape

Teaching/Learning Strategies

Students will:

- demonstrate an understanding of an animation software program to create the short film on computer;
- demonstrate an understanding of the process that transfers the animation from the computer to video tape (*theory and practical*);
- demonstrate an understanding of the video editing process (*theory and practical*);
- demonstrate an understanding of the audio dubbing process (*theory and practical*);
- assist others by the sharing of acquired knowledge in the transfer and editing process;
- convey their reflective message (Activity 2) in the form of the audio dub.

Teacher will:

- provide hands-on instruction to students on the operation of the *AVerKey* system (or similar);
- demonstrate and provide an opportunity for all to use the edit suites for video and audio editing;
- ensure special needs students are given the opportunity to achieve success in the editing process;
- encourage students who require enriched programs to use multi-track recording to ensure an advanced level project is ready for evaluation;
- ensure personal growth log is continuing and confer with the student on their personal Christian growth (no evaluation);
- invite other teachers (Religion) to discuss the progress with students and how they interpret their project.

Assessment/Evaluation

- Evaluation is assessed as each stage is completed (transfer, video editing, audio dub) by instructor.
- The instructor and student evaluate the final assembled video (meets T-script design).
- self-evaluation

Accommodations

- Give special needs students additional time and mentors to ensure success.
- Encourage students who require enriched programs to work at an advanced level.

Resources

- *AVerKey* system or similar
- *Animator Pro* or similar program
- video editing suite with audio dubbing facility
- videotapes
- selected music

Activity 7: Formal Presentation

Time: 60 minutes

Description

Students watch all of the animations created by the class.

Strands(s) and Expectations

Ontario Catholic School Graduate Expectations:

The graduate is expected to:

CGE1I - integrates faith with life;

CGE2a - listens actively and critically to understand and learn in light of gospel values;

CGE2e - use and integrate the Catholic faith tradition, in critical analysis of the arts, media, technology, and information systems to enhance the quality of life.

Strand(s): Impact and Consequences

Overall Expectations: SPV.02X.

Specific Expectations: SPS.03X.

Planning Notes

- Discuss the opportunities for careers in computers and animation.
- Discuss how moral lessons shape the Catholic community and how a supportive community applauds diversity, creativity, and uniqueness in each member of society.
- Emphasize that this is a learning and recreational tool and that students should be reflecting on their own and others' work during the viewing.
- Instruct students that all comments should be positive and constructive.
- Students write about the process and the final product and how successfully they feel their idea was communicated to the audience.

Prior Knowledge Required

None

Teaching/Learning Strategies

Teachers will:

(Whole group)

- discuss why it is important to reflect upon work that has been completed for personal growth and in order to learn valuable life lessons;
- discuss how to appreciate the work of others in an open and supportive way.

(Individual)

- reflect on personal development throughout project;
- while watching the videos suggest that students reflect on improvements and changes that they could have used to communicate their message more successfully.

Assessment/Evaluation

Students comment on but do not formally evaluate work.

The teacher evaluates computer skills and reflective message using rubric (Appendix 4.3/4.4).

Accommodations

Presentations may be modified for students who are unable to or have difficulty with presenting before the class. The use of prepared overhead sheets, flip charts, and video or audio equipment should be at the disposal of all students. Encourage students who require an enriched program to mentor those students who are having difficulty with presentations.

Resources

- VCR and television
- any materials required by students (e.g., flip charts, audio tapes, overheads, etc.)

Activity 8: Personal Reflection and Spiritual Growth

Time: 60 minutes

Description

Students reflect on their finished projects by means of a reflection paper and discussion. All animations are viewed as a class and moral issues are discussed.

Strands(s) and Expectations

Ontario Catholic School Graduate Expectations:

The graduate is expected to:

CGE4g - examine and reflect on one's personal values, abilities, and aspirations influencing life's choices and opportunities;

CGE5b - think critically about the meaning and purpose of work;

CGE2e - use and integrate the Catholic faith tradition, in critical analysis of the arts, media, technology, and information systems to enhance the quality of life.

Strand(s): Impact and Consequences

Overall Expectations: ICV.03X.

Specific Expectations: TFS.03X, TFS.04X, SPS.03X.

Planning Notes

The teacher opens the discussion with why reflection leads to personal growth.

- Support open, honest discussion of how moral lessons shape the Catholic community.
- Emphasize honesty, integrity, and confidentiality of the personal reflection.

Prior Knowledge Required

- how to write a reflective log
- basic understanding of liturgical and theological church practices (Grade 8 level)

Teaching/Learning Strategies

Students will:

- write a reflective paper on the subject of how this activity effected them personally;
- during discussions, rules of conduct are followed showing respect for others.

Teachers will:

(Whole group)

- discuss why it is important to reflect upon work that has been completed for personal growth and in order to learn valuable life lessons;
- ensure the focus of the reflection is the message within the animation;

(Individual)

- reflect on personal development throughout project (skills developed);
- reflect on changes that would reflect idea more successfully;
- discuss the moral of the story and why it is applicable to everyday life.

Students write about the process and the final product and how successfully they feel their idea was communicated to the audience.

Assessment/Evaluation

- Evaluate each student on the insight they display when discussing the finished project and possible improvements that could have been made.
- Evaluate each student on the honesty and integrity of the reflection. Have they asked themselves whether the moral lesson has been successfully communicated?
- Incorporate personal values into this process.

Accommodations

- Special needs students may verbally or visually present their insights depending on comfort level.
- Students who require an enriched program may make suggested improvements for additional presentations once written insights are completed.

Resources

None

Appendix 4.1: Converting CoreDRAW™ Files for Use with Animation Programs

Note: CoreDRAW™ files have .cdr suffixes and cannot be used in animation or graphic design programs. It is important to export the image in order to change its overall format and suffix.

For example:

- to use CoreDRAW™ files in *Photoshop* or *Pagemaker* they must be exported as .tif files (targa information format)
- to use CoreDRAW™ files for animation they must be exported as .gif (graphic information format)

To Convert a .CDR to a .GIF

- Open file in CoreDRAW™ and save it as a CoreDRAW™ file in case something goes wrong with the transfer.
- Go to FILE and EXPORT and CoreDRAW™ asks what format.
- Choose Compuserve Bitmap (GIF) and EXPORT.
- The following screen shows up:



- The width of the drawing must be 320 pixels x height of 200 pixels
- If the drawing is portrait (upright) format it must be converted to landscape (horizontal) format and reduced. This will reduce to 320x200 better.
- The resolution can be high and the colours can be 16 colours or more. The size in pixels, however, is critical.

Note: Experiment with opening a picture (.GIF) file in your animation program to be sure you are doing it correctly.

Appendix 4.2: Communications Technology Challenge - Stained Glass Window

Challenge

You have been asked by your Parish priest to enter a design competition for a stained glass window for the new church being built in your neighborhood. Your design will be part of a selection of proposals that will be voted on by the parish council. You have been asked to develop a theme which will be the basis for your design and a short film to depict your final stained glass window.

The design criteria includes the following activities:

- research of a religious theme (interpretation of a modern day parable, song);
- four different thumbnail sketches with one idea developed into final thumbnail in poster format;
- a *CorelDRAW*TM poster that depicts the final design on computer;
- a short animated film that uses the stained glass window as the central theme, complete with sound and on videotape;
- personal reflection on the success of the design and why it meets the design criteria.

Your video will be presented to the parish council and viewed along with all of the other entries. After the presentation you may improve your design for selection by the committee.

Marks will be based on

- the personal reflection and expression shown in the design;
- the completeness of each activity;
- the creativity shown in the design ideas;
- the ability to use *CorelDRAW*TM and the quality of the poster;
- the ability to learn and use animation software to depict the theme;
- the final video complete with sound;
- the ability to express one's ideas with respect and dignity and the ability to allow others to express theirs.

Appendix 4.3: Rubric 2

Assessment and Evaluation of Skills and Processes

	Level 1	Level 2	Level 3	Level 4
Communication of information CGE2D, SPS.03X	- communicates ideas and information with limited clarity and accuracy	- communicates ideas and information with moderate clarity and accuracy	- communicates ideas and information with considerable clarity and accuracy	- communicates ideas and information with a high degree of clarity and accuracy
Reflective and creative thinker CGE3C	- thinks reflectively and creatively to solve problems with limited ability	- thinks reflectively and creatively to solve problems with moderate ability	- thinks reflectively and creatively to solve problems with considerable ability	- thinks reflectively and creatively to solve problems with a high degree of ability
Identify solutions to given design problems TFS.01X	- identifies limited number of solutions to given design problems	- identifies moderate number of solutions to given design problems	- identifies different and unique solutions to given design problems	- identifies many diverse and unique ideas and solutions to given design problems
Share information using media tools and a variety of technologies SPS.03X	- uses a limited number of media tools and technologies	- uses a moderate number of media tools and technologies with moderate success	- uses a wide variety of media tools and technologies to complete the project	- uses a wide variety of appropriate media tools and technologies to complete the project
Describe project ideas and solutions TFS.03X	- describes ideas and solutions with limited clarity	- describes ideas and solutions with moderate clarity	- describes ideas and solutions with considerable clarity	- describes ideas and solutions with a high degree of clarity and confidence

Appendix 4.4: Rubric 3

Employment and Life Skills

	Level 1	Level 2	Level 3	Level 4
Work habits (punctuality)	- demonstrates limited understanding of concepts such as arriving each day on time	- demonstrates some understanding of concepts such as arriving each day on time	- demonstrates considerable understanding of concepts such as arriving each day on time	- demonstrates thorough understanding of concepts such as arriving each day on time
Problem solving/initiative	- uses thinking skills with limited effectiveness in the solving of problems	- uses thinking skills with moderate effectiveness in the solving of problems	- uses thinking skills with considerable effectiveness in the solving of problems	- uses thinking skills with a high degree of effectiveness in the solving of problems
Interaction with group members	- communicates/ receives ideas and information to/from other group members with limited clarity and accuracy	- communicates/ receives ideas and information to/from other group members with moderate clarity and accuracy	- communicates/ receives ideas and information to/from other group members with considerable clarity	- communicates/ receives ideas and information to/from other group members with a high degree of clarity and accuracy
Completion of work task on time	- submission of assigned work on time is met with a great degree of difficulty	- submission of assigned work on time is met with limited success	- submission of assigned work on time is met with little or no difficulty	- demonstrates the knowledge of the importance of having work completed on time in all cases
Ability to accept constructive criticism	- understands and accepting constructive criticism where necessary with limited effectiveness	- understands and accepts constructive criticism moderate effectiveness	- understands and accepts constructive criticism where necessary with considerable effectiveness	- makes the connection between constructive criticism and improving one's value to the group or final product's completion

Unit 5: An Integrated Theme

Time: 20 hours

Unit Developer(s): Brian Andres, Brenda Kenney

Unit Description

Students are presented with a group challenge that focuses on the creation of a local Catholic Youth Centre. Students work individually and in groups to acquire data on the interests and needs of youth and use this information to develop a proposal for the Centre. The proposal includes a scale model and artist conception using CAD as part of project design. In the Textiles Manufacturing area, students create products to compliment the interior design of the Centre.

Strand(s) & Expectations

Ontario Catholic School Graduate Expectations:

- CGE1a - illustrates a basic understanding of the saving story of our Christian faith;
- CGE2a - listens actively and critically to understand and learn in light of gospel values;
- CGE2b - reads, understands, and uses written materials effectively;
- CGE2c - presents information and ideas clearly and honestly and with sensitivity to others;
- CGE2d - writes and speaks fluently one or both of Canada's official languages;
- CGE2e - uses and integrates the Catholic faith tradition, in the critical analysis of the arts, media, technology, and information systems to enhance the quality of life;
- CGE5e - respects the rights, responsibilities, and contributions of self and others;
- CGE7j - contributes to the common good.

Strand(s): Theory and Foundation, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01, TFV.02, TFV.03, SPV.02, SPV.03, SPV.04, ICV.02, ICV.01.

Specific Expectations: TF1.03, TF1.04, SP1.01, SP1.03, SP1.04, SP1.05, SP1.07, IC1.01, IC1.03.

Activity Titles (Time + Sequence)

Activity 1	The Challenge - Catholic Youth Centre Proposal	120 - 140 minutes
Activity 2	Expert Groups: Area One – Textiles Manufacturing	420 minutes
Activity 3	Expert Groups: Area Two - Construction	420 minutes
Activity 4	Putting It Together	120 minutes
Activity 5	Presentations	120 minutes

Unit Planning Notes

Students work in groups of four or five and use a community newspaper ad looking for a team to develop a Catholic Youth Centre. During the first activity, students brainstorm for ideas of what could be included in the Centre. Depending on resources and teacher's expertise, each member of the group may choose to become an expert in each of the areas, or each member may choose to become one of the experts in one area. Expert areas include: Construction - Builder, Architect, Artist; Textiles Manufacturing - Artist, Computer Designer, Sewing Technician. Each group also has a Project Manager who is responsible for the development of the project. As they spend time in each of the areas, students continue to research and make decisions on what should be included in their group's proposal. A portfolio is used to manage the project. During the last activity, students present their proposal in a mock city council meeting format. The teacher may invite members of the Catholic community to hear the presentations and give feedback. Although the Integrated Unit suggests two physical areas of integration (i.e., Construction, Textiles

Manufacturing), if these are not available the project can be modified based on available facilities. Working independently, students submit a want ad which highlights one of a variety of careers relating to the design, construction, and management of a youth centre.

Prior Knowledge Required

Students are required to have basic computer literacy, measurement skills, and awareness of the design process.

Teaching/Learning Strategies

Strategies include: whole group teaching to introduce the students to the challenge (see Appendix 5.3 - Web Diagram); brainstorming for ideas of what to include in one proposal; expert groups to work on and develop skill level in each of the areas; conferencing to share ideas and develop one proposal; small group and peer teaching; model building; and report/presentation the proposal.

Assessment/Evaluation

Diagnostic, formative, and summative evaluation is used during the unit. Formal and informal teacher observation, as well as teacher conferencing with individual students and groups, is used to monitor student growth and behaviour. Reflection methodology is used through self assessment, peer assessment, and learning logs. Teacher conferencing with the student is also a part of the formative assessment. Portfolios are used for summative evaluation (see Appendix 5.2). The presentation at the end of the unit represents a performance task and is also used as a form of summative evaluation (see Appendix 5.1).

Resources

Print

Teacher developed modules for each of the areas (e.g., Textile Manufacturing & Construction) for experts.

Growing Collaboratively. Prentice-Hall Inc., 1993.

Building Construction Technology. McGraw-Hill Ryerson, 1982.

Drafting Tips and Tricks on Drawing and Designing House Plans. The Globe Pequot Press, 1993.

Learn to Draw Buildings. Harper Collins, 1993.

Computer Software

Integrated software package

CAD software

Digitizing software

Internet access software

3D Home Architect

Microsoft Publisher

Netscape Navigator

(Refer to Board policy regarding the use of information technology)

Activity 1: The Challenge - Catholic Youth Centre Proposal

Time: 120 minutes

Description

Students work in teams to develop plans for a proposed Catholic youth centre. Using a want ad, students identify the parameters and components of the challenge through brainstorming and the creation of a planning web. Students are required to develop a name and mission statement for their youth centre. Students will also conduct a survey to identify current needs and interests of young people within the community. As part of a career component which highlights one of a variety of careers relating to the design, construction, and management of a youth centre, each student is assigned a want ad, with a due date at the end of the unit.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

The graduate is expected to:

CGE1i - integrates faith with life;

CGE2a - listens actively and critically to understand and learn in light of gospel values;

CGE2b - reads, understands, and uses written materials effectively.

Strand(s): Theory and Foundation, Skills and Processes

Specific Expectations: SP1.01, SP7.07, TF1.01, TF3.03.

Planning Notes

This unit has been created to be team taught to two classes by two teachers. This allows for flexibility in terms of groupings and also allows students to choose a variety of activities/areas.

- Create heterogeneous groupings of four to five students.
- Generate templates including: challenge, brainstorming sheet, survey, flow chart, planning web, mission statement, youth centre name, work log template with an emphasis on self reflection, self evaluation, and co-operative learning.
- For organizational purposes, a monthly calendar that indicates rotation schedules and other important dates is strongly recommended.
- Provide copies of rubrics: group presentation (Appendix 5.1), portfolio (Appendix 5.2), web diagram (Appendix 5.3), and other materials for distribution to students.

Prior Knowledge Required

- creation of a planning web
- brainstorming techniques
- co-operative learning skills

Teaching/Learning Strategies

1. Students are placed in groups and receive a copy of a fictional want ad as found in the local newspaper.

The Community Requires a Creative Team

City Council invites creative team proposals from Grade 9 students for a local Catholic Youth Centre. Each proposal should focus on the needs of local Catholic churches, the community, and the needs and interests of youth. Proposals must be presented in a portfolio which includes a scale model, an artist-conception drawing, floor plan designs using CAD, and a placemat on which your youth centre's logo has been embroidered or applied. The applicants must have a good command of the English language, a healthy lifestyle, and show an awareness of personal growth. The ability to solve problems and work co-operatively is a must. A team proposal by candidates who show creativity, enthusiasm, and are self-motivated will be given first priority. Presentations will be viewed on (date). Please submit proposals to City Council no later than: _____.

Note: The following sentence might be included in the want ad, if teacher were to develop an optional alternative relating to the Hospitality Services environment. - Your proposal may also provide evidence of an analysis of personal lifestyles and eating habits, as well as a creative menu for nutritious meals and snacks to be served at the Catholic Youth Centre. (See brief outline in Activity 2, Optional Activity.)

- One student reads the ad aloud to group members.
 - Group members orally review the main idea of the challenge.
2. Each group is issued a blank planning web. Each student is issued a web diagram which defines the contents of the portfolio (see Appendix 5.3).
- Using the web diagram, group members fill in a planning web identifying specific tasks.
 - Using the planning web, students discuss and select preferred expert responsibility or responsibilities. (*maximum number of experts - see brackets)

Area One – Manufacturing Experts	Area Two – Construction Experts
Artist (1)	Artist (1)
Sewing Technician (2)	Builders (2)
Computer Designer (1)	Architect (1)
Project Manager (1)	Project Manager (1)

3. Each group receives a brainstorming guide sheet.
- Students list a minimum of 25 possibilities for components/activities for the Catholic youth centre based on the following:
 - i) needs of the church ii) needs of the community iii) interests/needs of local youth
 - Using their completed brainstorming sheet, students develop a list of 6 survey questions to be distributed to friends and family.
4. Students report back to the group, using the completed surveys. The purpose is to narrow their youth centre focus to the top three to five areas of need.
5. Each group receives a handout outlining the need to develop an appropriate mission statement and to create an original name for their youth centre that includes the needs of church, community, and local youth. (Emphasize creativity and originality - prohibit use of copyright protected names, slogans, and logos.)

-
6. Teacher collects and assesses the following from each group - brainstorming sheets, planning web, mission statement, youth centre name, and their top three to five chosen areas of focus.
 7. Teacher provides information to students on rotation schedules between the two areas using a monthly calendar. (See Activities 2 and 3.)
 8. Students read Romans 12: 6-8. The teacher leads the class in identifying the unique gifts God has bestowed on each of us (e.g., the ability to act as caregivers, to serve others, to speak, to write, to empathize, to work with our hands, etc.). The teacher ensures that students are able to articulate, or apply to themselves, the Catholic view of the dignity of work and God's call to each person to a vocation.
 9. Teacher distributes and clarifies career assignment (want ad for youth centre) with students who work, primarily outside of class, to complete a want ad for submission by the end of the unit. Access to Career Cruising for research purposes may be provided. Alternatively, guest speakers from business or industry may be brought in to share career-related expertise (e.g., chefs, restaurant managers, plumbers, electricians, framers, cabinet makers, etc.).

Assessment/Evaluation

- Formative assessment of group's brainstorming ideas for youth centre proposal including references to church, community and the needs/interests of local youth.
- Formative assessment of the three to five identified areas of focus, planning web, mission statement, and name for the youth centre.
- Formative assessment and evaluation of daily work log reflection with complete answers to all five questions.
- Self-evaluation of individual performance as a member of a team.
- Formative assessment of want ad assignment using teacher-specified evaluation criteria - e.g., 1) ad contents - name of youth centre, position being advertised, salary range, God-given human qualities/attributes, contact person, telephone number, education, training requirements, qualifications/desirable experiences, other -i.e., vacation, benefits, promotion possibilities; 2) spelling; 3) grammar; 4) concise wording (quick, easy read); 5) text quality (choice of font or printing); 6) creativity; 7) quality (effort, attention to detail) 8) visual appeal (neatness, format, graphics); 9) use of computer technology; 10) timely submission.

Accommodations

- Students work with a partner or in groups to complete assigned tasks.
- Students give oral responses or solutions to challenges while working with a peer or educational assistant.
- Students are given additional time to complete assigned tasks - acceptable answers may include provision for the use of physical products, pictures, or symbols in lieu of text, where appropriate.
- Students may be shown exemplars or given sample want ads for use as guides/models in the completion of the career assignment.
- Students may be provided with access to a template using computer software, such as *Microsoft Publisher*, to facilitate completion of the assignment.

Resources

Growing Collaboratively. Prentice-Hall Inc., 1993.

Career Cruising on CD-Rom. Anaca Technologies, 1997.

Transitions - A Practical Guide to the Workplace. Collier MacMillan Canada, Inc., 1989.

The Communications Handbook, Second Edition. Nelson Canada, 1996.

Fox, Thomas C. *Catholicism on the Web*. MIS Press. ISBN 1-553828-516-4

The Bible or other Church Texts and Documents

School resource centres (library, guidance, computer labs, etc.)

Local church community groups and activities- CYO, CWL, church bazaars, fundraisers, food drives, disaster relief, etc.

Microsoft Publisher software

Refer to Board policy regarding the use of information technology.

Activity 2: Expert Groups: Area One - Textiles Manufacturing

Time: 420 minutes

Description

Students work independently or with a partner to produce products which meet specified quality control measures. In their chosen role as either i) project manager, ii) artist, iii) sewing technician or iv) computer designer, students are expected to demonstrate respect for self, others, and the environment. Student awareness of environmental issues relating to effective materials/resource management is evaluated using performance and self-assessment strategies.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

The graduate is expected to:

CGE5e - respects the rights, responsibilities, and contributions of self and others;

CGE7i - respects the environment and uses resources wisely.

Strand(s): Theory and Foundations, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01, SPV.04, ICV.01, ICV.02.

Specific Expectations: IC1.01, IC1.03.

Planning Notes

- Teacher-prepared modules include:

Introduction Package - describes the main tasks to be completed by each member as determined by the assigned role in this specific area. This module may also include general information about specific roles as well as space for each group to sketch and record brainstorming ideas for logo designs and placemats for the youth centre.

Project Manager - describes the role of the project manager and, using the introduction package, allows students to complete a planning web with the projected time lines needed to meet all required due dates.

Artist's Package - describes the role of the artist and, using the introduction package, allows students to complete a planning web with projected deadlines needed to complete their responsibilities and fulfill their obligations to the sewing technician and computer designer, respectively. The package will also include information on: parameters to be used in creating logos, the scanning of custom graphics (logos), saving scanned images as bitmaps, and adding colour to bitmaps using specific software (e.g., *Paintbrush*).

Computer Designer's Package - describes the role of the computer designer, and, using the introduction package, allows students to prepare a planning web with the deadlines necessary to meet due dates. The package also includes information on: parameters in creating logos, scanning custom graphics (logos), saving scanned images as bitmaps, adding colour to bitmaps using specific software (e.g., *Paintbrush*).

Sewing Technician's Package - describes the role of the sewing technician and permits students to complete a planning web with the projected time lines necessary to meet due dates. If deemed necessary, the package may also include handouts to review safety, sewing machine parts, and sewing techniques.

- instructional modules on Sewing Machine Applique Techniques, Husqvarna Digitizing Pro Techniques, Husqvarna Customizing Pro Techniques, and Husqvarna ReaderWriter Pro Techniques
- teacher-generated handouts on safety in textiles manufacturing, parts of the sewing machine, know your sewing machine (includes threading machine and winding a bobbin), creating sewing samples of a traditional 1.5cm backstitched seam, and two serged seams (a 3 thread rolled hem and a 4 thread overlock seam)
- instruction on safe use of equipment given to all students (i.e., demonstration, practice, teacher modeling, etc.)
- The teacher purchases fabric stabilizer, paper-backed fusible interfacing, embroidery thread, spools of sewing thread, serger thread, and medium weight woven fabric.

Teaching/Learning Strategies

1. Students meet, as a group, to review the challenge as it relates to the Textiles Manufacturing area before securing their choice of one of the four interdependent expert roles: the Artist, the Project Manager, the Computer Designer, or the Sewing Technician. With teacher guidance, students discuss the four main tasks to be completed. Students are given a copy of the introduction package. Within the group, students collaborate to confirm the final choice of role each member wishes to fulfill in the area. Each group also brainstorms ideas and produces quick sketches for logo and placemat designs appropriate to their chosen youth centre.
2. The teacher uses the jigsaw to group experts (project managers, artists, computer designers, or sewing technicians) for specific instruction and then returns them to the main group. In rotation, each expert group is removed for instruction until all four areas have received specific instruction on their major task. As experts, students fulfill specific teacher and self assigned tasks and responsibilities relating to the main project components (e.g., logo/placement design, which may include one or more of the following: computer or hand rendering, scanned image of hand rendered design, saved bitmap in black and white, hard copy of coloured logo, hand or computer rendered placemat design, computerized sewing machine rendering of logo embroidery, sewing machine rendering of logo applique, sewing machine or serger rendering of placemat).

3. Expert area instruction:

Project Managers (one student from each group) - Students receive their specific module. The teacher shows a sample of a completed project as it evolves through the efforts of each expert from initial artist sketches to embroidered or appliqued placemat. Reinforcement is provided on essential versus optional items as per the web diagram (e.g., optional item - a colour rendering of the group's placemat design using *3D Home Architect* or *CorelDRAW™ 8*). Students are expected to use computer software extensively as they work to create logos, placemats or other related materials.

Artists (one student from each group) - Students receive their expert specific module and work closely with the computer designer to complete all assigned tasks. The teacher shows sample logo designs using a range of samples in different sizes and formats (hand sketched, scanned, computer created, coloured, etc.) from those which closely adhere to and meet given parameters to those which do not meet specified limitations. After the teacher provides a sequential sample of each phase of the process, from beginning to end, the artists design logos and placemats and save the chosen logo design, as a bitmap, to a floppy disk. The group's bitmap is given to the computer designer who digitizes the logo in preparation for its embroidery onto a placemat (or banner square, aprons, napkins, t-shirts, etc.).

Sewing Technicians (two students from each group) - Students receive their specific module. The teacher shows examples of placemats and banners - both appliqued and embroidered. Instruction is given on the process of pattern creation. Students return to their home group. Sewing Technicians need to collaborate and work closely with the artists to ensure they have the information they need in time to complete the tasks assigned.

Computer Designers (one student from each group) - Students receive their specific module and work closely with the artists to complete computer-related tasks surrounding logo creation/saving. The teacher shows sample logo sketches (scanned and computer-generated) and demonstrates digitizing techniques on computer. The teacher gives instruction on the essential items to be included when creating the logo designs: the number of elements to be included (maximum of four where text is one element and three additional simple shapes), size limitations (no greater than 7cm x 7cm or 3" x 3" - a black & white bitmap saved to a floppy disk), and a colour hard copy of the actual final draft logo.

4. Students begin their individual expert tasks. The teacher gives instruction as requested or when necessity dictates. Students are encouraged to problem solve within their individual and expert groups. Further instruction will be necessary as follows:

Artists - Once students have completed logo and placemat designs, they need to make decisions surrounding the most efficient method for achieving their goals. These decisions include whether or not to re-create the hand-sketched design using a drawing program such as *CorelDRAW™ 8* or whether to scan, size, and colour the image in *Paintbrush*. Students are encouraged to take risks as they work towards success in completing their assigned tasks on time.

Sewing Technician - The teacher gives safety instruction on the correct application of tools and equipment used in the creation, assembly, and finishing of products: straight pins, seam rippers, rotary cutters, cutting shears, pressing equipment (irons), sewing machines, and sergers. Students complete the Know Your Sewing Machine handout which includes completing Safety in Textiles, Sewing Machine Parts, and two sewing samples (one stitched, one serged) on four pieces of medium weight woven fabric cut to 8cm x 15cm. When necessary, the teacher gives instruction on other aspects of sewing machine and serger techniques. At this point, students are made aware of the location and availability of materials for the project. Students complete the Know Your Sewing Machine handout and finish off by evaluating their sewing samples according to a marking rubric provided by the teacher. When individual sewing technicians are given their artist's placemat conceptions, they create a pattern using teacher-generated quality-control specifications (instruction guidelines). Respect for

and the wise use of resources will be stressed. Wherever possible, students are encouraged to supply additional materials and develop other creative approaches to the completion of assigned tasks.

Computer Designers - The teacher challenges the computer designer to independently learn the digitizing process by creating an embroidery stitch file using a simple butterfly bitmap and a detailed digitizing module. The modules contain numerous visual representation of the steps required to fully complete the process. The teacher may also do spontaneous demonstrations to stress specific aspects of the process or provide encouragement to students. Once the butterfly has been successfully digitized, students apply the same techniques to digitize their group's original logo design.

Project Managers - The teacher challenges the project manager to oversee and supervise the process of project creation in this area. The project manager is responsible for seeing that everyone is on schedule and for stepping in to assist wherever and whenever help is needed. The project manager touches base with the group each day for a brief update on the progress being made. A summary report is handed in to the teacher before the day's work begins to provide proof that the group is on task, on schedule, and collaborating. If deemed necessary, project managers work closely with the sewing technicians and are responsible for assisting with the creation of logo appliques and embroidery. Using a checklist, project managers are also responsible for the organization and assembly of the group's portfolio contents.

5. Artists may complete their tasks before the final project is finished. In this case, the teacher and project manager encourage them to help others in the group who are in need.
6. Evaluation for each of the experts is ongoing and includes self evaluation of all of the tasks assigned using a self constructed rubric. Additional self and peer evaluations provide additional information to support the nature, quantity, and quality of work ethic, and working relationships.

Assessment/Evaluation

- Diagnostic assessments surrounding safety issues and the correct identification of equipment components, as the two relate to the effective use of tools and/or equipment associated with manufacturing in a textiles environment.
- Formative assessment of environmental issues surrounding the design, materials, and resources of textiles manufacturing.
- Self assessment relating to the completion of assigned tasks, and to attitudes/behaviours, as contributing factors or barriers to success in the development of physical products.
- Peer assessment on the contributions of individual group members, as identified by the teacher, which may include attitudes such as the level of respect, caring, and willingness to assist; the degree of responsibility, including initiative, leadership, preparedness and dependability.
- Summative evaluation of web diagram (portfolio contents) using rubric (see Appendix 5.2).

Accommodations

- Monitor special needs students and pair stronger and weaker students for peer teaching.
- Use visual aids as needed.
- Provide extra instruction on a group-by-group basis.
- Allow students to modify and expand ideas and existing guidelines.

Prior Knowledge Required

- drawing skills
- familiarity with imperial and metric linear measurements
- sewing machine basics
- serger basics
- computer basics

Resources

Husqvarna Sewing Machines AB 1998 (U.K.), CD Professional Husqvarna Embroidery System Version 2.1

Martensson, Kerstin. # 1+ *Husqvarna 1250, Operating Manual 1995*. KWIK SEW Pattern Co., Inc., 3000 Washington Avenue North, Minneapolis, MN 55411-1699, U.S.A., 1988

Husqvarna *VIKING Huskylock*, Operating Manual, Model 905 and Model 910.0

Guest speakers or field trips

Simplicity DECOR Seat Covers and Place Mats. 1993, Simplicity Pattern Co. Inc., 200 Madison Ave., New York, N.Y., U.S.A.

Simplicity Heartland Appliques. 1994, Canada, 445 Finchdene Square, Scarborough, Ontario

Optional Activity - Hospitality Services

Description

Students may work independently, or with a partner to produce products that meet specified quality control measures. In their chosen role as either i) project manager, ii) head chef, iii) nutritionist or iv) computer designer, students are expected to demonstrate respect for self, others, and the environment. Student awareness of environmental issues relating to hospitality services and the effective management of foods/materials/resources are evaluated using diagnostic, formative, and self-assessment strategies. Catholic Youth Centre proposals provide evidence of the analysis of personal lifestyles and eating habits, and will include creative menu(s) for nutritious meals and snacks to be served at the centre.

Area One – Hospitality Services Experts	Maximum number of students
Nutritionist	2
Head Chef	2
Project Manager	1

Expert groups are used to define responsibilities and permit students to fulfill assigned tasks related to the expert role as outlined below. Teaching/Learning Strategies similar to those identified for the expert roles associated with Textiles Manufacturing area may be applied or modified to meet the specific requirements of this activity.

Nutritionist - The primary task will be to create nutritionally sound sample daily menus with teen appeal. Initially they collect personal nutritional data about each group member and analyse the data to identify healthy food preferences of teens. Using *Canada's Food Guide* and personal goals set by individuals in the group, the nutritionists conduct research and create several menus of snacks and meals which might be served to teens at the youth centre.

Head Chef - The primary task will be to ensure that sample foods are prepared according to the recipes obtained from the research efforts of nutritionists. Head chefs are also expected to learn correct measurement techniques and equipment selection in order to provide effective guidance/instruction to peers as they prepare for food labs. The head chef also plans the food lab which includes all items on the food lab plan; an itemized shopping list is submitted to the teacher on the expected due date. At the end of a given food lab, head chefs oversee the completion of a food lab evaluation by all team members.

Project Manager - The primary role involves acting as the consumer expert who oversees every detail of the project. The project manager identifies the group's food preferences for a given lab and works with the head chef to ensure that all details of the food lab have been accounted for.

Activity 3: Expert Groups: Area 2 - Construction

Time: 420 minutes

Description

Students design and create four main projects: i) a scale model, ii) an artist's conception, iii) a computer-generated floor plan design, and iv) a brochure. Students gain an understanding of some basic construction concepts. They learn the basic components of wall section construction and how to construct a scale model. Students also develop skills using a variety of wood working equipment, develop drawing skills, and create floor plans using computer-aided design. Collaboration and teamwork are essential for each group's success.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

The graduate is expected to:

CGE5e - respects the rights, responsibilities, and contributions of self and others;

CGE7i - respects the environment and uses resources wisely.

Strand(s): Theory and Foundations, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.01, SPV.04, ICV.01, ICV.02.

Specific Expectations: IC1.01, IC1.03.

Planning Notes

Provide:

- shop safety handout;
- instruction on safe use of equipment given to all students (i.e., demonstration, practice, teacher modeling, etc.);
- pre-cut to scale pine material for scale model building (i.e., based on a scale of 1' = 1", 2x6 material can be scaled down to approx. $\frac{1}{4} \times \frac{3}{4}$. Ease of handling and nailing must be considered);
- 1" nails and glue;
- cardboard for the exterior wall covering of the model;
- markers and pencil crayons;
- sample brochures;
- computer software - *3D Home Architect* and *Microsoft Publisher* (or similar software).

Provide teacher-generated modules including:

Introduction package - describes the main tasks to be completed in the Construction Technology lab. This module could include general information and space for students to sketch and design floor plans for the youth centre.

Artist conception drawings - describes a variety of drawing techniques (sketching, plan, elevation and orthographic view drawings. This module could also describe a variety of drawing tools (pencils, pens, markers, technical and felt tip pens, charcoal pencils, etc.). Other important aspects to cover include: shading, texture, materials, and adding depth and dimension.

Building design and construction - describes the basics of wall construction, exterior wall coverings, and an introduction to scale model building. This module should include details on developing a suitable scale for their project. The module could also include details of material to be used, resources available, and a picture illustrating the components of a wall section (studs, header, plates, trimmer studs, etc.). The final page could be used as drawing space for students to develop a front elevation drawing of their youth centre.

Computer designer - describes the task of creating floor plans for the youth centre. *3D Home Architect* has an easy to follow quick start card (six pages) giving instruction on the major tasks required in creating computer-generated drawings. (Several other software programs are available for the computer designer task.)

Manager - describes the task of creating a brochure. The teacher creates a simple module outlining the creation of a brochure using a software package such as *Microsoft Publisher*.

Prior Knowledge Required

- drawing skills
- familiarity of imperial and metric measurements
- familiarity with wood working tools and equipment
- basic computer skills

Teaching/Learning Strategies

1. The teacher reviews the challenge and discusses the four main tasks to be completed. Students are given a copy of the introduction package. Each of the groups are given the minimum and maximum dimensions available to work with (e.g., an existing two-storey building in the downtown area - 30'x100'). Within each of the groups, students collaborate and sketch potential floor plans for their youth centre. Students need to refer to their planning sheets and make accommodation for the three to five main areas of focus.
2. The teacher removes a group of experts (the artists, builders, computer designers, or managers) from the floor plan design stage for specific instruction and then returns them to the main group. Similarly, another expert group is removed for instruction and so on until all four areas have received specific instruction on their major task.
3. Expert area instruction:
Artist's conception (one student from each group) - Students receive their expert specific module. The teacher shows sample drawings of artists' conceptions of a variety of architectural structures. Instruction is given on oblique and isometric drawing. The teacher displays a three-dimensional structure for students to practise drawing after they have returned to the group and helped complete the floor plan designs. (See strategy 4 for further instruction.)

Building design and construction (two students from each group) - Students receive their specific module and are shown an example of a wall structure (full size if available or a scale model sample). Instruction is given on scale model building and selecting an appropriate scale (e.g., 1" = 1'). The teacher also gives instruction on elevation drawings. Students return to their home group. Once the floor plans are finalized, the builders need to collaborate with their group in order to design a front elevation drawing. The front elevation drawing serves as a guide for constructing the wall section and is useful for the artist once they begin drawing the final artist's conception. (See strategy 4 for further instructions.)

Computer designers (one student from each group) - Students receive their specific module. The teacher shows sample drawings of computer-generated floor plan drawings. Instruction is given on the essential items of a floor plan design including overall and individual room dimensions, fixtures (sinks, toilets, cabinets, stairs, etc.), doors, windows, emergency exits, etc. Students return to their groups to finalize the floor plans. (See strategy 4 for further instructions.)

Managers (one student from each group) - Students receive their specific module. The teacher shows samples of a variety of brochures. Instruction is given on the essential and optional items to include (e.g., mission statement, youth centre name, logo, activities, hours, location, pictures, etc.). Students are encouraged to use computer software to create their brochures (e.g., *Microsoft Publisher*). Students return to their groups to finalize the floor plans. (See strategy 4 for further instructions.)

4. Students begin their individual expert tasks. The teacher gives instruction as necessary. Students are encouraged to problem solve within their individual and expert groups. Further instruction is necessary as follows:

Artist experts - Once students have completed drawing the three-dimensional object, students sketch the front view of their youth centre using either oblique or isometric detail. Students then use the sketch to experiment with shading, texture, colour, etc. Finally, students are given an 11x17 sheet of paper to create their final drawing. Drawings are mounted on cardboard for display. Students should be encouraged to take several steps toward the finished project.

Building experts - The teacher gives safety instruction on the tools and equipment used for the construction of the model including: mitre saw, band saw, radial arm saw, stationary sanders, and a variety of small hand and power tools. Students complete the shop safety handout. The teacher gives instruction on wall layout and marking material for cutting and assembly. Students are made aware of the location and availability of materials for the project. Students begin constructing the wall section following the group generated front elevation design. Cardboard can be decorated and used for the exterior wall covering. Respect for resources and using them wisely must be stressed. Encourage students to supply materials and develop ideas in order to create interesting and unique front elevation scale models.

Computer experts - The teacher challenges the computer designer to create interesting, yet functional, designs following the group's floor plan sketches. Based on a two-storey 30'x100' building, the computer designer can create three floor plans including the basement, main, and second floor. The teacher may discuss with the group basic layout and minimum and maximum dimensions required for commercial buildings.

Managers - The teacher challenges the manager to create an interesting and informative brochure for their group's youth centre. The manager is responsible for overseeing the overall project in the construction technology lab. The manager should work to ensure the group is on task, on schedule, and collaborating. The manager should assist other group members as necessary. Using a checklist, project managers are also responsible for the organization and assembly of the group's portfolio contents.

-
- Both the computer design and artist experts complete their task before the activity is finished. The teacher and manager encourage both experts to help the builders complete the scale model. The artists can help decorate, draw, and colour the exterior covering to match their artist's conception. The computer designer can help finish the model assembly and create objects to complement the exterior of the model (e.g., trees, bench, side walk, etc.).
 - Evaluation for each of the experts is ongoing and includes self-evaluation of all of the tasks assigned using a self constructed rubric. Additional self and peer evaluations will provide additional information to support the nature, quantity and quality of work ethic, and working relationships.

Assessment/Evaluation

- a formative assessment using a skill demonstration of tools, equipment, and materials and their safe use.
- a formative assessment using a skill demonstration of the proper selection of production techniques and materials to meet design specifications.
- summative evaluation of web diagram (portfolio contents) using rubric (see Appendix 5.2).

Accommodations

- Monitor special needs students and pair stronger and weaker students for peer teaching.
- Use visual aids as needed.
- Provide extra instruction on a group-by-group basis.
- Allow students to modify and expand ideas and existing guidelines.

Resources

Building Construction Technology. McGraw-Hill Ryerson, 1982.

Drafting: Tips and Tricks on Drawing and Designing House Plans. The Globe Pequot Press, 1993.

3D Home Architect Deluxe. Broderbund Software Inc., 1997.

Learn to Draw Buildings. HarperCollins Publishers, 1993.

Microsoft Publisher 2.0a. Microsoft Inc., 1991-1993.

Modern Carpentry. The Goodheart-Willcox Company Inc., 1987

Design of Wood Structure, Third Edition. McGraw-Hill Ryerson. ISBN 0-07-007678-2

Guest speakers or field trips

Activity 4: Putting It Together

Time: 120 minutes

Description

Students gather in their designated groups to begin the process of scripting their final presentation and organizing their presentation materials based on a student guide sheet. The final presentation includes all of the required components as outlined in the web diagram issued at the beginning of the unit.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

The graduate is expected to:

CGE7j - contributes to the common good.

Strand(s): Theory and Foundations

Overall Expectations: TFV.03.

Specific Expectations: TF1.04.

Planning Notes

- Encourage students to use a variety of software programs in the completion of the assigned tasks.
- A teacher-generated project evaluation guideline includes: a listing of group products created, criteria for evaluation (aesthetics, utility, design, etc.), evaluation of products using those specified criteria, and suggestions for improvement. The teacher also provides a presentation guideline which includes: completeness and quality of the overall project, organization, creativity, enthusiasm, equal group participation, etc.

Prior Knowledge Required

- script writing skills
- presentation skills
- organizational skills

Teaching/Learning Strategies

Group members meet to clearly define the role each person assumes during the presentation. Using a presentation evaluation form to guide them through the process, students create a script for their youth centre proposal that reflects equal participation by all group members when they appear before city council.

Assessment/Evaluation

- Summative evaluation of group's script.
- Formative assessment of the individual's ability to identify and apply appropriate criteria for evaluating projects and to suggest improvements.
- Formative assessment and evaluation of daily work log reflection.
- Self-evaluation of individual performance as a member of a team.

Accommodations

- Provide examples of completed work.
- Provide educational assistant assistance with script writing.
- Pair special needs students with peer mentors.
- Provide extra instructions on a one-to-one basis as needed.
- Provide a script-writing template for student use.

Activity 5: Presentations

Time: 120 minutes

Description

Classroom presentations provide the basis for a summative evaluation of this unit. Students, in their designated groups, present their youth centre proposal to their classmates, who role play as members of city council, and the teachers, who role play as mayor and city planner. Maximum time allowed for presentations and the fielding of questions is limited to 5 to 7 minutes. Each group evaluates peer group presentations according to specified guidelines. Students also complete an individual self and peer evaluation at the conclusion of the presentations.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

The graduate is expected to:

CGE2c - presents information and ideas clearly and honestly and with sensitivity to others;

CGE3b - creates, adapts, and evaluates new ideas in light of the common good.

Strand(s): Theory and Foundations, Skills and Processes, Impact and Consequences

Overall Expectations: TF.02, SPV.02, SPV.03.

Specific Expectations: TF1.04, SP1.01, SP1.03, SP1.04.

Planning Notes

- Provide teacher-generated self and peer evaluation.
- Allow groups time to practise and make final preparations.
- Choose the order of the presentations.
- Select a timer to monitor presentation time lines.

Prior Knowledge Required

- exposure to public speaking techniques
- good command of the English language

Teaching/Learning Strategies

1. Students meet in groups to organize themselves and practise prior to making their presentation.
2. Teacher orally reviews presentation etiquette (polite, respectful attitude, attentive, etc.).
3. Teacher allows each group five to seven minutes to present.
4. Teacher allows each group several minutes to evaluate the presenting group prior to the next presentation.
5. At the conclusion of all presentations students complete a self and peer evaluation.
6. If time allows, students are given an opportunity to share in a debriefing session.

Assessment/Evaluation

- Summative evaluation of portfolio contents as defined in web diagram (Appendix 5.2).
- Performance assessment of group presentation (Appendix 5.1).
- Formative assessment of peer- and self-evaluation.

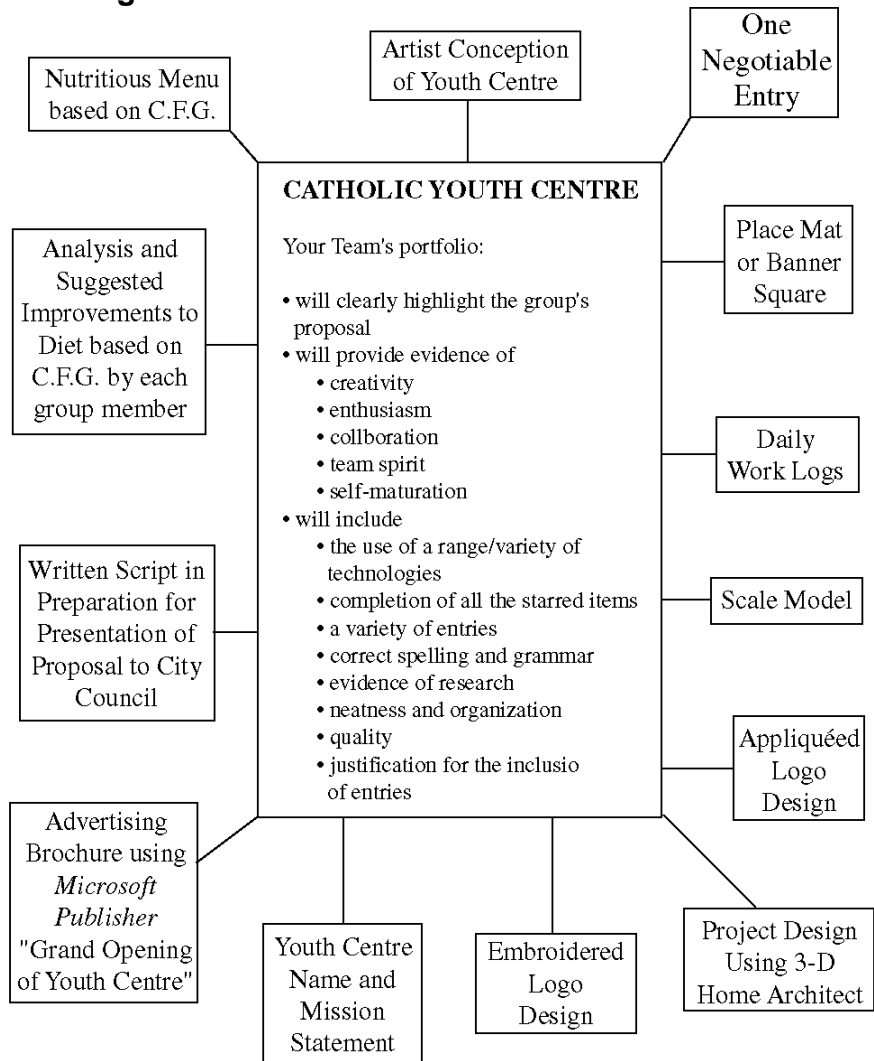
Appendix 5.1: Group Presentation Rubric

Criteria	Level 1	Level 2	Level 3	Level 4
Role play to communicate understanding	- ability to organize thoughts, verbalize knowledge, select and present samples of finished work is in need of improvement	- satisfactorily organizes thoughts, verbalizes knowledge, selects and presents samples of finished work	- effectively organizes thoughts, verbalizes knowledge, selects and presents samples of finished work	- exceptionally organizes thoughts, verbalizes knowledge, selects and presents samples of finished work
Presentation format - introduction - content - summary - questions	- incomplete organization, limited coherence and includes one or two aspects of the presentation criteria	- adequately organized sequentially, limited coherence and includes two to three aspects of the presentation criteria	- effectively organized sequentially, logical and includes all four aspects of the presentation criteria	- exceptionally well organized sequentially, logical and includes all four aspects of the presentation criteria
Presentation delivery	- presents in a low, rushed, monotone manner, with infrequent eye contact and limited clarity 1 - 3 minutes	- presents with adequate enthusiasm with some eye contact, acceptable voice clarity 3 - 5 minutes	- presents with enthusiasm maintaining eye contact, speaking clearly and pausing effectively 5 - 7 minutes	- presents with a high degree of enthusiasm maintaining eye contact, speaking clearly and pausing effectively 5 - 7 minutes
Collaboration/ team work:	- participation by group members, commitment to group, respect, attention and sensitivity to others is in need of improvement	- participation by group members, commitment to group, respect, attention and sensitivity to others is satisfactory	- equal participation by group members, commitment to group, shows respect, attention and sensitivity to others effectively	- equal participation by group members, commitment to group, respect, attention and sensitivity to others is exceptional
Overall effort	- reads from script, minimal evidence of rehearsal, and answers with difficulty	- some lines memorized, limited evidence of rehearsal and answers questions satisfactorily	- lines memorized, evidence of rehearsal and answers questions confidently	- lines memorized, excellent flow, use of props, music, costume and answers questions confidently

Appendix 5.2: Web Diagram Rubric

Criteria	Level 1	Level 2	Level 3	Level 4
Range of technologies (e.g., computer software, hand tools, power tools and equipment)	- portfolio content reflects the use of an exceptionally wide range of technologies (average of 1 -2 per student)	- portfolio content reflects the use of an exceptionally wide range of technologies (average of 3-4 per student)	- portfolio content reflects the use of a wide range of technologies (average of 5 per student)	- portfolio content reflects the use of an exceptionally wide range of technologies (average of 6 or more per student)
Portfolio contents	- products and print are incomplete and the portfolio contains 6 - 7 of the required items	- products and print are completed satisfactorily and the portfolio contains 8 - 10 of the required items	- products and print are fully completed and contents meet the 11 required items	- products and print are excellent and contents exceed the 11 required items
Neatness and organization (e.g., displays, groupings, titles, table of contents, headings etc.)	- portfolio content organization and presentation needs improvement	- portfolio content reflects satisfactory attention to organization and presentation	- portfolio content exemplifies care in its organization and presentation	- portfolio content exemplifies a high degree of attention to its organization and presentation
Quality of contents	- print materials contain frequent spelling and grammar errors, products reflect limited attention to detail and accuracy	- print materials contain few spelling and grammar errors, products reflect satisfactory attention to detail and accuracy	- print materials exemplify error-free spelling and grammar, products reflect attention to detail and accuracy	- print materials exemplify error-free spelling and grammar, products exemplify a high degree of attention to detail and accuracy
Creativity	- emerging originality of designs, concepts and products, and their usefulness relative to the Catholic Youth Centre Proposal	- varying degrees of originality of designs, concepts and products, and their usefulness relative to the Catholic Youth Centre Proposal	- high level of originality of designs, concepts and products, and their usefulness relative to the Catholic Youth Centre Proposal	- impressive originality of designs, concepts and products, and their usefulness relative to the Catholic Youth Centre Proposal

Appendix 5.3: Web Diagram



Unit 6: Impact and Consequences

Time: 10 hours

Unit Developer(s): Roy Parteno

Development Date: May 1999

Unit Description

Technology is a precious resource when placed at the service of man and promotes his integral development for the benefit of all. This unit requires the students become aware of the social consequences of technology and identify the positive and negative impacts of technology on the environment. Students are involved in a group project that involves examination, research, and presentation of an impact of technology and possible solutions. Students also do individual technology career research that is informally shared with the class.

Strand(s) & Expectations

Ontario Catholic School Graduate Expectations: 1d, 1i, 2b, 2c, 3b, 3c, 4e, 4g, 5b, 5c.

Strand(s): Theory and Foundation; Skills and Processes; Impact and Consequences

Overall Expectations: TFV.02, TFV.03, TFV.04, SPV.03, ICV.02, ICV.03, ICV.04.

Specific Expectations: TF1.03, TF1.04, SP1.01, SP1.03, SP1.04, SP1.05, SP1.07, IC1.03, IC1.04, IC1.05, IC1.06.

Activity Titles (Time + Sequence)

Activity 1	Introduction to Assignment and Presentation	60 minutes
Activity 2	Research: Social Consequences of Technology and Effects of Technology on the Environment	120 minutes
Activity 3	Research: My Possible Technology Career Paths	150 minutes
Activity 4	Preparation of Presentations	150 minutes
Activity 5	Class Presentations	180 minutes

Unit Planning Notes

The unit requires students to: (i) identify a possible career path in the technology field; (ii) do an analysis of a social consequence of the technology introduced in each of the units and identify a positive and negative impact of the technology introduced in each of the units; (iii) use technology to do a presentation on a topic from either (i), (ii), or (iii). Opportunities should be taken to introduce the Church's teachings on the identified issues.

Prior Knowledge Required

Students gain expertise in the use of a variety of technologies as they progress through the unit. This knowledge is required to do the presentation. Students are required to have basic writing, organizational, and research skills.

Teaching/Learning Strategies

Through an inquiry approach, students are involved in a process of guided research about the issues identified in the assignment. Students should be provided with a wide variety of research tools using technology (i.e., access to the Internet, research CD-ROMs, etc.). Teachers use student-teacher conferencing to assist students in their inquiry and preparation for presentation.

Assessment/Evaluation

Students are assessed using various tools including conferences, proposals, reports, and passive and full class presentation. The presentation is a performance assessment of the student as he/she uses technology learned to present on the required topic.

Resources

Print

Note: The print resources listed here are intended for teacher reference as opposed to classroom use. These references, in addition to consultations with the school chaplain, provide a strong basis for referencing the teachings of the church.

The Sacred Congregation for Catholic Education: Lay Catholics in Schools: Witnesses to Faith, Vatican Translation

The Synodal Document on the Justice in the World, November, 1971

Encyclical Letter of His Holiness Pope Paul VI on the Development of Peoples, Populorum Progressio.

Catechism of the Catholic Church, Canadian Conference of Catholic Bishops

Computer Software

Internet access software

OESS software

Variety of CDs for research purposes

Presentation software

Activity 1: Introduction to Assignment and Presentation

Time: 60 minutes

Description

Students explore a plan to research the social and environmental consequences of technology. They form groups and use software tools of their choice to construct and deliver a computer presentation of their findings at the end of the unit. Students discuss and make suggestions towards a class presentation rubric.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

The graduate is expected to:

CGE 1d - develops attitudes and values founded on Catholic social teaching and acts to promote social responsibility, human solidarity, and the common good;

CGE 1I - integrates faith with life;

CGE 4e - sets appropriate goals and priorities in school, work, and personal life.

Strand(s): Theory and Foundations, Impact and Consequences

Overall Expectations: TFV.02, TFV.03, ICV.02, ICV.03.

Specific Expectations: TF1.03, TF1.04, IC1.05.

Planning Notes

- Make an inventory of school-based research resources.
- Review local standards or guides for class presentations.
- Define the necessary criteria for a successful research proposal.
- Draft a presentation rubric that could be used for peer evaluation.

Prior Knowledge Required

- use of classroom tool software
- research skills

Teaching Learning Strategies

Students will:

- explore a plan to research the social and environmental consequences of technology;
- review guidelines and expectations for both the research and the presentation;
- discuss and develop a rubric to be used for project evaluation (sample Appendix 6.4);
- settle on a topic choice;
- plan research and assign tasks to team members;
- outline the resulting class presentation;
- decide on the medium for the class presentation.

The teacher will:

- outline the format and expectations of the research and presentation;
- present an open-ended format that students look at as an opportunity to propose a solution to a social/environmental problem (e.g., manufacturing and water pollution) related to technology or examine a technology and project its future impact (e.g., required auto emission testing);
- review available in-school resources such as those from the school library/resource centre;
- demonstrate and discuss presentation methods and equipment that could be used;
- outline several samples of the use of technology and its affects on society and the environment;

-
- involve students in discussion of Catholic social teaching and the use of technology;
 - challenge students to relate the technology used in the course to information they are collecting about the use of technology in society.

Assessment/Evaluation

- Formative assessment in the form of a roving conference to discuss research progress with small groups (Appendix 6.1 - Checklist)
- Summative assessment of the research proposal (Appendix 6.1 - Rubric)

Accommodations

- Provide adaptive physical devices (e.g., specially designed keyboards) for identified students.
- Provide application software instruction as needed.
- Assist in the formation of groups to facilitate a buddy system for research and presentation.

Resources

Software

current Ministry of Education licensed software

Print

local research guides

newspapers and periodicals

school library/resource centre materials

Activity 2: Research: Social Consequences of Technology and Effects of Technology on the Environment

Time: 120 minutes

Description

Students research their assigned/chosen topic area and conference with the teacher about their progress.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

The graduate is expected to:

CGE 2b - reads, understands, and uses written materials effectively;

CGE 3b - creates, adapts, and evaluates new ideas in light of the common good;

CGE 3c - thinks reflectively and creatively to evaluate situations and solve problems.

Strand(s): Skills and Processes, Impact and Consequences

Overall Expectations: ICV.02.

Specific Expectations: SP1.03, SP1.05, IC1.04, IC1.05.

Planning Notes

- Arrange student time in the school library.
- Develop a research/progress checklist for group self-assessment.

Prior Knowledge Required

- research skills

Teaching/Learning Strategies

Students will:

- use available research resources to gather information for their class presentation;
- filter and organize information;
- report progress on assigned research tasks;
- write and submit a summary of important research information and sources.

The teacher will:

- provide opportunities for students to access all available information in the school;
- help students determine what is valid research information;
- assist groups in planning and accomplishing tasks.

Assessment/Evaluation

- Formative assessment in the form of group checklist (Appendix 6.2)
- Formative assessment in the form of roving conferences to discuss research progress with small groups
- Submission of learning logs/journals
- Summative assessment of the written research report (Appendix 6.2)

Accommodations

- Assist students in the filtering of information as needed.
- Work in a buddy system so that students weak in reading can learn and hear research information from group members.

Resources

Software

OESS Software

Print

local research guides

newspapers and periodicals

school library materials

Suzuki, David. *The Sacred Balance: Rediscovering our Place in Nature*. Melbourne: Allen & Unwin, 1997.

Web Sites

http://www.on.hrdc-drhc.gc.ca/english/lmi/eaid/occ.info/oc20_e.html

Human Resources Development Canada site discusses the impact of new technology on Motor Vehicle Body Repairers

<http://www.ec.gc.ca/regeng.html>

Environment Canada Green Lane site links to environmental sites across Canada

<http://www.gnet.org/>

The Global Network of Environment and Technology

http://www.dinf.org/csun_98/csun98_125.htm

Environment Canada's adaptive computer technology (act) program

http://www.ec.gc.ca/biotech/biotehec_e.html

Environment Canada Biotechnology site

Activity 3: Research: My Possible Technology Career Paths

Time: 150 minutes

Description

Students do a strength and interest inventory and relate it to technology and a possible career path. Students prepare some means of passive sharing of information with the class such as a web page or poster.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

The graduate is expected to:

CGE 2c - presents information and ideas clearly and honestly and with sensitivity to others;

CGE 5b - thinks critically about the meaning and purpose of work.

Strand(s): Theory and Foundations, Skills and Processes, Impact and Consequences

Overall Expectations: TFV.02, TFV.04, SPV.02, ICV.04.

Specific Expectations : SP1.03, SP1.04, IC1.06.

Planning Notes

- Consult with the student services/guidance department.
- Arrange two or three speakers whose careers are in the technology area to share their education and career paths with the students.

Prior Knowledge Required

- awareness of various technologies and possible careers

Teaching Learning Strategies

Students will:

- listen to guest speakers talk about education and career paths in technology areas;
- link interests to technology careers;
- research career-related information for a field of technology;
- create an end-product that can be shared with the class in an informal presentation such as a poster or web page.

The teacher will:

- organize and facilitate a panel of guest speakers;
- provide students with materials needed for their assignment;
- provide students samples of past work and ideas that they may follow-up;
- demonstrate and discuss presentation methods (web page, poster) and equipment used to create them.

Assessment/Evaluation

- Formative assessment in the form of a roving conference to discuss research progress with individuals
- Summative assessment of the career based end-product (Appendix 6.3)

Accommodations

- Provide application software instruction as needed.
- Provide adaptive physical devices (e.g., specially designed keyboards) for identified students.
- Provide structured assignments for students who require specific instructions.

Resources

Software

OESS software – The Ontario government has licensed:

Career Cruising, a CD-ROM reference guide with information on 145 careers

Career Explorer in CD-ROM and Internet versions. The Internet version features four or five new articles each day featuring career information, skill development, and future trends.

Print

college, university, and private institution course calendars

Government publications such as *Horizons* (available in the Guidance Department though most moving to electronic format)

Web Sites

edu.gov.on.ca/eng/career

Ministry Career Gateway site designed to help implement Choices into Action and Guidance and Career Education, Grades 9 and 10, 1999

<http://www.itac.gov.bc.ca/otherapp.htm>

Industry Training and Apprenticeship Commission features links to apprenticeship sites across Canada

http://www.on.hrdc-drhc.gc.ca/english/lmi/eaid/occ.info/cont_e.html

Ontario's Occupational Prospects (1995 to 1997) lists a number of careers related to technological education

www.diversitycareers.com

Diversity Careers in Engineering and Information Processing links to many Canadian and American companies with career and education information

<http://www.wiredwoman.com/society/>

The Wired Woman Society creates an open environment that encourages women to explore opportunities in Information Technology and build successful careers that allow them to play a positive role in the growth and development of the Information Age.

Activity 4: Presentation Preparation

Time: 150 minutes

Description

Students work in groups and use their information researched in Activity 2 to create a presentation for the class. Students rehearse presentations and practise using any equipment involved.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

The graduate is expected to:

CGE 2a - listens actively and critically to understand and learn in light of gospel values;

CGE 2b - reads, understands, and uses written materials effectively.

Strand(s): Skills and Processes, Impact and Consequences

Overall Expectations: SPV.03, ICV.02, ICV.03.

Specific Expectations: SP1.02, SP1.03, SP1.04, IC1.04, IC1.05.

Planning Notes

- Distribute copies of the Appendix 6.4 – Social/Environmental Impact Presentation Rubric.
- Post the presentation schedule.
- Review classroom behaviour expectations for class presentations.
- Arrange to have all necessary equipment in the room for students to test.

Prior Knowledge Required

- use of media equipment for presentations

Teaching/Learning Strategies

Students will:

- complete presentations;
- rehearse the presentation.

The teacher will:

- provide students with materials needed for their presentations;
- provide opportunity for students to practise use of any presentation equipment.

Assessment/Evaluation

- Formative assessment in the form of a roving conference to discuss progress with small groups

Accommodations

- Provide application software instruction as needed.
- Suggest alternate presentation models for students who cannot present orally.

Resources

Software

OESS Software Corel Presentations

Web page editing software

Print

local guides to good presentations

software manuals for presentation software

Web Sites

<http://www.cusp.com/home.htm>

CPS guide to presentations

<http://malun1.mala.bc.ca/seeds/ivc/Teach.html>

Practical guide to good presentations

Activity 5: Class Presentations

Time: 180 minutes

Description

Students make their presentations to the class and do peer evaluation of other presentations.

Strand(s) and Expectations

Ontario Catholic School Graduate Expectations:

The graduate is expected to:

CGE 2c - presents information and ideas clearly and honestly and with sensitivity to others.

Strands: Skills and Processes, Impact and Consequences

Overall Expectations: SPV.03, ICV.02, ICV.03, ICV.05.

Specific Expectations: SP1.03, IC1.04, IC1.05.

Planning Notes

- Arrange any special equipment needed for presentations.
- Quickly review use of Appendix 6.4 – Social/Environmental Impact Presentation Rubric for peer evaluation.

Prior Knowledge Required

use of presentation equipment

Teaching/Learning Strategies

Students will:

- make presentations;
- use the rubric to evaluate other groups (sample provided in Appendix 6.4 or class-developed from Activity 1);
- participate in class discussion of the presentation material.

The teacher will:

- facilitate the presentations and their marking with the rubric;
- involve students in related class discussion (time permitting);
- collect and collate rubrics.

Assessment/Evaluation

- a summative assessment of the presentation that combines teacher and student feedback using a class created rubric or Appendix 6.4.

Accommodations

- Modify the presentation rubric for students who require an alternate mode of presentation.

Resources

Software

OESS software including presentation software

Internet browser for live hook-ups during the presentation

Print

local (school) presentation guidelines

Appendix 6.1

Student Checklist for Roving Conferences

Question	Yes	No
Has the group defined a challenge or topic area?		
Can the group describe the related technology and/or how the technology is related to the topic?		
Can the group describe a research plan?		
Has the group defined roles for the members?		
Can the group describe how Catholic teaching may relate to their challenge/topic?		

Research Proposal Report Rubric

Criteria	Level 1	Level 2	Level 3	Level 4
Knowledge/ Understanding TFV.02	- demonstrates little ability to identify ways to research and present topic	- demonstrates some ability to identify ways to research and present topic	- demonstrates considerable ability to identify ways to research and present topic	- demonstrates exceptional ability to identify ways to research and present topic
Knowledge/ Understanding TFV.03, TF1.04	- demonstrates little understanding of how to evaluate projects and construct rubrics	- demonstrates some understanding of how to evaluate projects and construct rubrics	- demonstrates considerable understanding of how to evaluate projects and construct rubrics	- demonstrates exceptional understanding of how to evaluate projects and construct rubrics
Thinking/ Inquiry ICV.02,IC1.03, IC1.05	- demonstrates limited ability to relate technology to social/ environmental concerns	- demonstrates some ability to relate technology to social/ environmental concerns	- demonstrates considerable ability to relate technology to social/ environmental concerns	- demonstrates exceptional ability to relate technology to social/ environmental concerns
Thinking/ Inquiry SP1.01, CGE4.e	- demonstrates little ability to set goals and priorities in a project environment	- demonstrates some ability to set goals and priorities in a project environment	- demonstrates considerable ability to set goals and priorities in a project environment	- demonstrates exceptional ability to set goals and priorities in a project environment
Communication TF1.03	- demonstrates limited ability to describe ideas	- demonstrates some ability to describe ideas	- demonstrates considerable ability to describe ideas	- demonstrates high ability to describe ideas
Application CGE1.d, 1.i	- demonstrates limited ability to relate Catholic teaching to technology and topic area	- demonstrates some ability to relate Catholic teaching to technology and topic area	- demonstrates considerable ability to relate Catholic teaching to technology and topic area	- demonstrates high ability to relate Catholic teaching to technology and topic area

Comments

Appendix 6.2

Student Checklist for Research Activity

Question	Yes	No
Has the group found information on their topic?		
Is the group interpreting the information correctly?		
Can the group relate a technology to the social/environmental impact?		
Does the group have a method of determining if the research is valid?		
Are all members involved in the research and sharing of information?		
Is the group ready to move on to using the information to design the presentation?		

Research Report Rubric

Criteria	Level 1	Level 2	Level 3	Level 4
Knowledge/ Understanding SP1.07, IC1.04	- selection of material demonstrates little knowledge of environmental, ecological, and social considerations related to the use of technologies	- selection of material demonstrates some knowledge of environmental, ecological, and social considerations related to the use of technologies	- selection of material demonstrates considerable knowledge of environmental, ecological, and social considerations related to the use of technologies	- selection of material demonstrates exceptional knowledge of environmental, ecological, and social considerations related to the use of technologies
Thinking/ Inquiry ICV.03, IC1.05	- demonstrates little ability to identify the impact of technology on society	- demonstrates some ability to identify the impact of technology on society	- demonstrates considerable ability to identify the impact of technology on society	- demonstrates exceptional ability to identify the impact of technology on society
Thinking/ Inquiry CGE3b,3c	- demonstrates little ability to evaluate research information and ideas	- demonstrates some ability to evaluate research information and ideas	- demonstrates considerable ability to evaluate research information and ideas	- demonstrates exceptional ability to evaluate research information and ideas
Communication SP1.03, CGE2b	- demonstrates limited ability to share information in written report format	- demonstrates some ability to share information in written report format	- demonstrates considerable ability to share information in written report format	- demonstrates exceptional ability to share information in written report format
Application SPV.02, SP1.05	- demonstrates limited ability to use software in the research process	- demonstrates some ability to use software in the research process	- demonstrates considerable ability to use software in the research process	- demonstrates exceptional ability to use software in the research process
Application IC1.05	- relates technologies to their impact with limited of effectiveness	- relates technologies to their impact with some effectiveness	- relates technologies to their impact with considerable effectiveness	- relates technologies to their impact with a high degree of effectiveness

Appendix 6.3

Career Research Rubric

Criteria	Level 1	Level 2	Level 3	Level 4
Knowledge/ Understanding ICV.04, IC1.06	- demonstrates limited ability to identify technology-based careers	- demonstrates some ability to identify technology-based careers	- demonstrates considerable ability to identify technology-based careers	- demonstrates exceptional ability to identify technology-based careers
Knowledge/ Understanding ICV.04	- demonstrates little ability to describe educational requirements of selected careers	- demonstrates some ability to describe educational requirements of selected careers	- demonstrates considerable ability to describe educational requirements of selected careers	- demonstrates exceptional ability to describe educational requirements of selected careers
Knowledge/ Understanding TFV.04	- describes few technological activities supported by computer and information technology	- describes some technological activities supported by computer and information technology	- describes a number of technological activities supported by computer and information technology	- describes a thorough list of technological activities supported by computer and information technology
Thinking/ Inquiry TFV.02	- demonstrates little ability to investigate methods of communicating ideas	- demonstrates some ability to investigate methods of communicating ideas	- demonstrates considerable ability to investigate methods of communicating ideas	- demonstrates exceptional ability to investigate methods of communicating ideas
Thinking/ Inquiry CGE5b	- demonstrates little ability to think critically about the meaning and purpose of work	- demonstrates some ability to think critically about the meaning and purpose of work	- demonstrates considerable ability to think critically about the meaning and purpose of work	- demonstrates exceptional ability to think critically about the meaning and purpose of work
Communication SP1.03, SP1.04	- demonstrates little ability to share information using media tools and a variety of technologies	- demonstrates some ability to share information using media tools and a variety of technologies	- demonstrates considerable ability to share information using media tools and a variety of technologies	- demonstrates exceptional ability to share information using media tools and a variety of technologies
Communication CGE2c	- demonstrates limited ability to present ideas clearly and honestly	- demonstrates some ability to present ideas clearly and honestly	- demonstrates considerable ability to present ideas clearly and honestly	- demonstrates exceptional ability to present ideas clearly and honestly
Application IC1.06	- demonstrates little understanding of how technology affects selected careers	- demonstrates some understanding of how technology affects selected careers	- demonstrates considerable understanding of how technology affects selected careers	- demonstrates thorough understanding of how technology affects selected careers

Appendix 6.4

Social/Environmental Impact Presentation Rubric

Criteria	Level 1	Level 2	Level 3	Level 4
Knowledge/ Understanding ICV.02, IC1.04	- demonstrates little knowledge of environmental, ecological, or social considerations of technology	- demonstrates some knowledge of environmental, ecological, or social considerations of technology	- demonstrates considerable knowledge of environmental, ecological, or social considerations of technology	- demonstrates exceptional knowledge of environmental, ecological, or social considerations of technology
Thinking/ Inquiry ICV.03, ICV.05	- demonstrates little understanding of how technology impacts life at home, work, and school from a scientific perspective	- demonstrates some understanding of how technology impacts life at home, work, and school from a scientific perspective	- demonstrates considerable understanding of how technology impacts life at home, work, and school from a scientific perspective	- demonstrates exceptional understanding of how technology impacts life at home, work, and school from a scientific perspective
Communication SPV.03, SP1.03	- demonstrates little ability to use media tools in a formal presentation setting	- demonstrates some ability to use media tools in a formal presentation setting	- demonstrates considerable ability to use media tools in a formal presentation setting	- demonstrates exceptional ability to use media tools in a formal presentation setting
Communication CGE2c	- demonstrates limited ability to present ideas clearly and honestly	- demonstrates some ability to present ideas clearly and honestly	- demonstrates considerable ability to present ideas clearly and honestly	- demonstrates exceptional ability to present ideas clearly and honestly
Application IC1.05	- demonstrates little ability to relate technology to changes in people's lives	- demonstrates some ability to relate technology to changes in people's lives	- demonstrates considerable ability to relate technology to changes in people's lives	- demonstrates thorough ability to relate technology to changes in people's lives