

**INFORMATION AND COMMUNICATION
TECHNOLOGY**

KINDERGARTEN TO GRADE 12

**A SAMPLE SCOPE AND SEQUENCE
JUNE 30TH, 2000**

EVERGREEN CATHOLIC SEPARATE REGIONAL DIVISION #2



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Information and Communication Technology Program of Studies

The *Information and Communication Technology (ICT), Kindergarten to Grade 12, Program of Studies* was released as an interim document in June 1998, with optional implementation in September of the same year. The Program of Studies was released in June 2000 with provincial implementation in all schools over a three-year period starting in the 2000/2001 school year. It was intended that these outcomes be addressed in the context of the various subject areas in the classroom so as to give students the opportunity to apply their knowledge and skills to real-life situations. The ICT Program of Studies identifies learning outcomes that students are to complete by the end of Grades 3, 6, 9 and 12, in a series of three interrelated categories:

- ☐ ***Communicating, Inquiring, Decision-Making and Problem-Solving*** - emphasizing the ability to process information, i.e. researching techniques, critically assessing information, managing inquiry, solving problems and successfully communicating their ideas with others
- ☐ ***Foundational Operations, Knowledge and Concepts*** – including basic computer operations, ergonomic and safety issues, an understanding of the nature and impact of technology on today’s world, as well as the moral and ethical use of technology
- ☐ ***Processes for Productivity*** – including the knowledge and skills required to use a variety of productivity tools and techniques, i.e. word processing, spreadsheets, databases, graphics, multimedia, communication, Internet

The outcomes have been further divided into general and specific outcomes at each of the division levels:

- ☐ ***General Outcome*** – These general outcomes are statements common to all division levels identifying what students are expected to know. There are seven **Communicating, Inquiring, Decision-Making and Problem-Solving** outcomes (listed C1-C7), six underlying **Foundational Operations, Knowledge and Concepts** outcomes (numbered from F1-F6), and six **Processes for Productivity** (identified from P1-P6).
- ☐ ***Specific Outcome*** – The specific outcomes identify components of each of the above that are required as exit outcomes at each Division Level I through IV.

Outcomes identified at earlier grade levels are not repeated in the next level, however it is assumed that the skills are progressive, with simple skills leading to more complex ones and earlier outcomes being maintained and demonstrated at higher levels of efficiency and application.



Overview and Rationale

Since it is the responsibility of the school and/or school jurisdiction to determine where the outcomes should be achieved at each division level, a process was set in place to develop some consistency across the jurisdiction. This document will become a companion resource to the *Information and Communication Technology (ICT), Kindergarten to Grade 12, Program of Studies*. The purpose of this document is to:

- 🖨 provide a scope and sequence for the implementation of the various general and specific outcomes at each grade level
- 🖨 suggest ways to integrate the technology outcomes with the programs of study of the core curriculum areas: English Language Arts, Math, Science and Social Studies

Each of the lessons provides the following:

- 🖨 curriculum connection
- 🖨 task title
- 🖨 productivity tools involved in completing the activity
- 🖨 timeline (listed by classes or weeks)
- 🖨 level of difficulty: rated with a 1-3 mouse click rating scale:
 - 🖨 Easy (for easier activities taking 1-2 classes),
 - 🖨🖨 Average (for more involved activities that take 2-4 classes), or
 - 🖨🖨🖨 Project (quite involved activities that require a good deal of class time)
- 🖨 a summary of the student task
- 🖨 a list of the ICT outcomes that can be accomplished through the completion of the activity
- 🖨 a list of the related curricular outcomes as they relate to the Programs of Study that are currently in effect

Developing the Scope & Sequence

Stage 1 – Establishment of Scope and Sequence for CTS (Information Processing) courses currently being taught at the Junior and Senior High Schools

Over the years, the school division has placed a high priority on technology: acquisition and maintenance of the infrastructure, employee computer purchase plan, professional development of its teachers, program planning, as well as the integration of technology into the curriculum. The ICT project began with a meeting of the teachers responsible for the Career and Technology Studies (CTS) program in each of the Junior High and High Schools. The decision was made that the CTS basic Information Processing modules would be mandatory at the Junior High level in our school division. Next, the intent was to develop



a scope and sequence of basic CTS (Information Processing) modules at the Junior High level, in order that all students feeding the High Schools would have had a similar program. It was decided that the topics covered at the Junior High level would be as follows:

 **Grade 7**

- Computer Operations/Basic Computer Competencies
- Keyboarding (Enhance touch typing skills)
- Word-Processing
- Information Highway

 **Grade 8**

- Graphic Tools
- Hypermedia Tools
- Data Base
- Word-Processing
- Internet Searching

 **Grade 9**

- Spreadsheet
- Word-Processing
- Information Highway

Knowing which modules are being covered at the Junior High level, the High School could then plan its program starting with the intermediate modules.

Stage 2 - Development of Technology Enhanced Lesson Plans and/or Units

Elementary - At the Elementary level, technology skills are often taught by the homeroom teacher in conjunction with the content and skills being covered in the core subject areas. The elementary schools have had a teacher responsible for technology integration available to work cooperatively with the elementary teacher, both in and out of the lab.

Junior High – In Junior High, the project progressed to working with teachers at the grade and subject area levels. Assuming that students would have the prerequisite technology skills coming from their CTS (Information Processing) classes in Junior High and High Schools, the intent is to use those skills across the curriculum by infusing technology into units currently being taught in the core subject areas. As a first step leading to full integration of the ICT curriculum, team teaching opportunities arose whereby the subject area teacher worked in conjunction with the Information Processing teacher. Planning and organization time in the subject area classroom related to content, followed by development time in Information Processing



using the tools technology has to offer. Students were given the opportunity to work on subject-related assignments in their Information Processing classes with resulting assignments marked by two teachers: the subject area teacher marked for content and processing skills, and the Information Processing teacher marked for format. As teachers' comfort level with technology increases, more and more full integration is happening across the subject areas.

High School – At the High School level, the process began with an analysis of current practices across the various subjects and grade levels. While integration of technology into the curriculum will be important in all subject areas, special emphasis will be placed on those subjects that are requisite to a high school diploma in order to ensure that all students graduating from High School will have had sufficient exposure to the skills outlined in the ICT curriculum.

Stage 3 – Tentative ICT Scope & Sequence

The next step was to formalize the technology-enhanced lesson plans to include both core curriculum and ICT outcomes. Working with individual teachers at each grade level, at least one lesson plan was developed for each of the following: English Language Arts, Math, Science and Social Studies. Where time, resources and/or interest were available, more than one lesson plan was developed in the four core subjects, or in Health as it relates directly to some of the technology outcomes. The ICT outcomes covered in each lesson were then recorded on an inclusion chart for each division. At this point, we were able to note which outcomes were currently being addressed at which grade level and in which subject areas. Areas of strength and weakness would then be readily apparent and plans could be made to fill in any gaps.

A general overview was then established for all the grade levels:

Kindergarten

- mouse skills
- multimedia/CD-Rom software for number and letter recognition activities

Grade 1

- introduction to the keyboard (left/right hand, space bar)
- powering up/down, logon with userid/generic password
- word processing, drawing and graphing activities



 **Grade 2**

- logon with userid and personal password
- word processing, drawing, graphing, Internet and activities reading a prepared database
- email composed and sent as a group activity

 **Grade 3**

- introduction to Keyboarding (home row technique)
- word processing, drawing, graphing and Internet activities

 **Grade 4**

- extend keyboarding skills
- word processing, drawing, graphing, Internet activities and research projects

 **Grade 5**

- extend keyboarding skills
- word processing, drawing, graphing, Internet activities, research projects, scanning images and mindmapping activities, student email accounts

 **Grade 6**

- extend keyboard skills
- word processing with page numbering, drawing, graphing, Internet activities, research projects, using images from a scanner or digital camera, mindmapping activities and multiple-link documents
- Note: Digital cameras may be used prior to Gr. 6 under teacher direction, but we feel confident that students could handle expensive equipment safely and independently by Gr. 6.

 **Grade 7**

- enhance touch typing skills
- computer operations and basic computer competencies
- word-processing including document editing, formatting and printing of reports (with headers/ footers, page numbering, table of contents and bibliography), correspondence and tables suitable for personal applications, introduction to desktop publishing activities, Internet and research skills, mindmapping activities, and simulation activities

 **Grade 8**

- master touch typing skills
- on-going file management
- word-processing, manipulation of graphic images, database projects, Internet and research skills, some graphing, multimedia presentations

 **Grade 9**

- mastery of touch typing skills



- on-going file management
- word processing with columns, spreadsheet activities with formulae and linked pages, web page development
- advanced integration of applications

Grades 10-12

- continue to demonstrate the outcomes achieved in prior grades with simple skills leading to more complex ones and earlier outcomes being maintained and demonstrated at higher levels of efficiency and application
- use the competencies with the technology to facilitate communicating, inquiring, decision making and problem solving across the subject areas

Stage 4 – Formalizing the ICT Scope & Sequence

The Technology Committee, formed by lead teachers from each school, then perused the Tentative Scope & Sequence charts at each division level in order to formalize the ICT Scope & Sequence.

At the completion of this project, we have developed a Scope and Sequence chart for the implementation of the ICT outcomes that has been driven by teacher and curricular needs across the grade levels and subject areas. Sample lesson plans are available for use in the years to come as the ICT program is implemented. This document, as well as samples of related student work, where available, can be found at www.evergreencsrd.ab.ca/technology. It is also linked from Alberta Learning's website as a sample scope and sequence [Online: <http://ednet.gov.ab.ca/ict>]. Teachers are encouraged to use these and other plans they find suitable. This can be through the *Illustrative Examples* [Online: <http://ednet.gov.ab.ca/ict>], those found at the *TELUS Learning Connection (TLC)* [Online: <http://www.2Learn.ca>], with *Teaching and Learning with Technology (TLT)* [Online: <http://www.tlt.ab.ca>], or with others they develop as the need arises.

Because this project had its beginnings at the grass-roots level, is based on cooperative planning with teachers, has involved 70% of the teachers within the school division, and receives educational and technical support from a Technology Integration Coordinator and the Division's Technology Committee, it is expected that technology integration across the subject areas will be very successful.



Other Relevant Information

Evergreen Catholic Schools

Evergreen Catholic Separate Regional Division #2 has five schools located in Spruce Grove, Stony Plain and Westlock, serving approximately 2200 students.

- ☞ John Paul II, (K-9), Stony Plain
- ☞ St. Joseph (K-4), Spruce Grove
- ☞ St. Marguerite (Gr. 5-9), Spruce Grove
- ☞ St. Mary (K-12), Westlock
- ☞ St. Thomas Aquinas (Gr.10-12), Spruce Grove

School Board Priorities

The School Board has established 11 priorities for improvement in the next three years. The two priorities relating to technology are:

- ☞ to increase program offerings and enhance the delivery of Career and Technology Studies
- ☞ to develop and implement an Evergreen technology plan, and to increase the utilization of technology in educational research, communications and the delivery of our educational programs

Jurisdiction Student to Computer Ratio

The student/computer ratio has improved dramatically in Evergreen CSRD in the past two years. Ratio of students to modern(ized) classroom computers less than 5 years from the manufacture/upgrading date varies in each of the five schools, ranging from 4:1 to 6:1. Each of the schools in Evergreen has access to computers in a lab setup, as well as in the Learning Resource Centre (LRC) and/or individual classrooms. Elementary students have 1-2 classes per week in a lab setting, depending on grade level and resources available at the school. Junior High students have 2-3 classes per week in a lab setting. Some classes have found that block timetabling is more effective and will choose to timetable intensive use during project times, rather than 1-3 blocks per week throughout the year. The LRC computers are available for classroom, teacher and student use on a sign-up basis. Funding for technology has been made possible through school budget resources and *Technology Integration Funding*. The schools also apply on an annual basis for computers from *Computers for Schools* (CFS) [Online: <http://ednet.edc.gov.ab.ca/cfs>]. The CFS have been used in the LRC, as single computers in the classrooms for teacher and student access, or in pods in various classrooms.



Software

The software loaded on each workstation is predominantly that found in software suites that include word processing, spreadsheet, database, communications, graphics (i.e. *Clarisworks*[®], *Office 97*[®] *Professional*, *Office 2000*[®] *Premium* available from the provincial *Microsoft*[®] and *Apple*[®] software agreements). Those schools with the newer software have access to web authoring tools (*Front Page*[®]) and desktop publishing software (*Publisher*[®]). *Inspiration*[®] is the software being used for mindmapping/webbing and some flowcharting. Some schools are using the flowcharting capabilities of their word processor.

Network Access

Each of the schools functions with two servers. There is a *Windows NT 4.0*[®] server for academic use, and another server for administration. On the academic server, students have access to a home directory, shared files, pickup and dropoff boxes, as well as shared copies of various CD-ROM software. The schools use shared printing in the computer lab(s), and in the Learning Resource Centre on black-and-white laser printers, with 40% of the schools having color laser printer(s) as well. Classroom computers use zone printers located in various areas throughout the school. One or more portable units with a computer and a projection unit are available on a sign-up basis in each school. Internet access is available on every computer through a proxy server on the network. The proxy server is connected to the Internet via *Sat-Tel*[®], a satellite system in which uploads are done through a modem, while downloads come via the satellite. All staff and students have access to email through the Division server.

Internet Presence

The School Division and each of the schools have websites:

Evergreen: www.evergreencsrd.ab.ca

John Paul II: www.evergreencsrd.ab.ca/johnpaulii

St. Joseph: www.evergreencsrd.ab.ca/st.joseph

St. Marguerite: www.evergreencsrd.ab.ca/st.marguerite

St. Mary: www.evergreencsrd.ab.ca/st.mary

St. Thomas Aquinas: www.evergreencsrd.ab.ca/st.thomas

There is public access to the Division's *Everlinks* communication system that houses the Division and school calendars [Online: <http://www.evergreencsrd.ab.ca>]. There is also member login access to calendars and bulletin boards for "private" discussions on topics of choice. This provides



an excellent venue for students in one classroom to communicate with each other, or with students in another classroom working on the same project.

Professional Development

There have been after-school sessions provided to teachers at individual schools, as well as Professional Development day and formal evening classes (6:00-9:00 p.m.) for skill development in using the tools. As teachers developed proficiency in using the tools for personal use, they were encouraged to participate in the professional development opportunities offered by the *Teaching and Learning With Technology (TLT)* group [Online: <http://www.tlt.ab.ca>], and the *TELUS Learning Connection (TLC)* [Online: <http://www.2Learn.ca>] in order to integrate technology into the teaching and learning process.

Moving from a monthly early dismissal for staff meetings, Evergreen Catholic Schools has arranged several full-day staff meeting/professional development days in the coming year. These professional development opportunities will allow teachers to have grade and subject area meetings for teachers from different schools. Technology integration within the subject areas and the implementation of the new ICT curriculum has also been identified as a topic of interest.

School Leadership for ICT

Each school has representation on the Division's Technology Committee, as well as one or more teachers who have accepted the role of ICT leader for their school. There is also at least one teacher at each school trained as a *Teaching and Learning with Technology (TLT) Mentor*. Several three or five-day TLT workshops have been held within the school division. As well, there are two *TELUS Teacher-Leaders* in the Division who have used their time to work with teachers and students on both technology skills and integration into the curriculum. The process of developing this Sample ICT Scope & Sequence has, in itself, provided professional development and team-teaching opportunities, for teachers in each of the schools within the Division.

One professional development model that has proved very successful has been one that follows a three-day rotation. The first day sees a technology teacher leader/mentor having individual meetings with 7-8 teachers across the grade levels. One meeting is held per block or teaching period while a



rotating supply teacher (provided at the school's expense) covers the teachers' classes. The technology teacher leader/mentor's release time has been provided by the *TELUS Learning Connection*. With a plan in place, the facilitator and teacher each do whatever preparation is required in order to implement the plan. With some creative scheduling of computer lab time, the next two days finds the facilitator working in the classroom with each teacher and the students for a double block. In this way, teachers who are hesitant to try some new aspect of technology have expertise and support available to them. Quality teacher leadership and mentorship occurs for up to seven or eight teachers and their students for the cost of a single substitute teacher and TLC release time.

A second professional development model involves team-teaching opportunities whereby the subject area teachers work in conjunction with the Information Processing teachers. Planning and organization time in the subject area classroom relates to content, with development time in Information Processing using the tools technology has to offer. Students are given the opportunity to work on subject-related assignments in their Information Processing classes with resulting assignments marked by two teachers: the subject area teacher marks for content and processing skills, and the Information Processing teacher marks for format. At the Elementary level, technology skills are often taught by the homeroom teacher in conjunction with the content and skills being covered in the core subject areas.

A third professional development model has been hosting a *Teaching and Learning with Technology* summer institute in which the participants develop a technology enhanced activity/unit.

Administrators have access to the *School Administrators' Technology Integration Resource* (SATIR/RITAS) [Online: <http://www.SATIR-RITAS.org>] to assist them with the knowledge, skills and attitudes essential to the provision of leadership to students and staff in the area of technology integration.



What Lies Ahead

It is intended that this project will continue with the development of more lessons, resources and materials that will help teachers implement the Information and Communication Technology curriculum. Areas that have been identified as needs are:

- 🖥️ a list of suggested software and resources
- 🖥️ a glossary to define the terminology appropriate to the technologies being used at the various division levels
- 🖥️ evaluation tools for critically analyzing websites on the Internet appropriate for use at the various division levels
- 🖥️ a style guide for reports, table of contents, bibliography, etc. to be used within Evergreen Catholic Schools
- 🖥️ rubrics to act as criteria by which to evaluate standards of performance
- 🖥️ more illustrative examples of activities across the grade levels
- 🖥️ a plan at the Division IV level in order to accommodate the variety of programs offered within High School diploma requirements
- 🖥️ professional development for teachers

Division and school administration teams have identified several new initiatives for the next school year. Those relating to technology include:

- 🖥️ to coordinate the delivery of instruction through technology by creating and maintaining a division-wide area network for Internet services, and to hire a division technology maintenance person to coordinate the installation and maintenance of school networks and laboratories
- 🖥️ to promote staff awareness of technology through the Employee Purchase Plan and inservices to all staff
- 🖥️ to develop Three-Year Plans for Professional Development and Technology that will allow staff and administration to coordinate school and division strategies

The end result will be students who are prepared to understand, use and apply technologies in effective, efficient and ethical ways. High school graduates will be expected to be able to use information and communication technologies for entry-level work, for further study and for lifelong learning. Through the Information and Communication Technology curriculum, students will gain the knowledge, skills and attitudes required to become inquisitive, reflective, discerning and caring people.



References

ELEMENTARY

English Language Arts K-9	Program of Studies Optional Implementation	September 1999
Mathematics K-6	Program of Studies	1997
Science (Elementary)	Program of Studies	1996
Social Studies (Elementary)	Program of Studies	1990

JUNIOR HIGH

English Language Arts K-9	Program of Studies Optional Implementation	September 1999
Mathematics 7-8-9	Program of Studies	1996
Science (Junior High)	Program of Studies	1990
Social Studies (Junior High)	Program of Studies	1989

HIGH SCHOOL

English Language Arts 10-20-30	Program of Studies	1981
English Language Arts 13-23-33	Program of Studies	1981
Pure Math 10-20-30	Program of Studies Interim	1998
Math 23-33	Program of Studies	1991
Biology 20-30	Program of Studies	1998
Chemistry 20-30	Program of Studies	1998
Physics 20-30	Program of Studies	1998
Science 10	Program of Studies Interim	1995
Social Studies 10-20-30	Program of Studies	1990

