Technology/Media-Based Applications

Technology and media-based applications are vital aspects of the learning environment in an information-based society. It is therefore important that students learn the strategies and tools to use technology effectively and wisely in their learning – for productivity (databases, spreadsheets, graphic applications), research (the Internet and on-line public access catalogues), and communication (email, the Internet, and multimedia). *The Ontario Curriculum: Program Planning and Assessment, 2000* (pp. 9–10) identifies the role of technology in the curriculum as:

- assisting students to become computer literate;
- developing information literacy skills;
- assisting students to become familiar with a wide range of software applications;
- developing the ability to critically evaluate information;
- ensuring students use technology safely, effectively, confidently, and ethically.

Technology facilitates the transfer of learning through presentation of learning, the synthesis of information, and the production of new knowledge. Students require the skills to choose appropriate formats for presenting their culminating products and to use the appropriate technological tools to do so.

*The Ontario Curriculum: Program Planning and Assessment, 2000* (p.10) also states that teachers should work collaboratively within and across disciplines to effectively plan for the integration of computers and information technologies into the teaching/learning process. As the technology capable of enhancing student learning becomes available, teachers should, within a reasonable period of time, incorporate that technology into their planning of instruction and learning activities in individual disciplines and, collaboratively, across disciplines. Effective school library programs can also help to promote the development of information literacy skills among all students by supporting and coordinating the collaborative planning and implementation of reading programs, inquiry and research tasks, and independent study.

Principles of evaluation and discernment apply equally to the use of information accessed electronically as they do to media images and text. Students must be encouraged to develop the habits of mind that are essential for dealing with technology: commitment to accuracy, precision, and integrity in observation, experimentation, and reporting; respect for evidence; concern for safety procedures; and respect for the environment and living things (*The Ontario Curriculum: Science and Technology, 1998*, p. 9).

**Independent Learning Strategies**

- Communication Applications
- Computer-Aided Design (CAD)
- Computer-Assisted Learning
- Database Applications
- Email Applications
- Graphic Applications
- Internet Technologies
- Media Presentation
- Media Production
- Multimedia Applications
- On-line Public Access Catalogues
- Spreadsheet Applications
- Time-Management Applications
Communication Applications

Description
Communication software falls into several categories. Productivity software consists of word-processing, database, and spreadsheet software for communication and data management. Telecommunications software includes email programs and web browsers for electronic access. Desktop publishing and graphics programs heighten visual display. Multimedia and hypermedia software help create multimedia presentations, slide shows and web-based publications. Students develop skills in using the appropriate application to communicate new learning, either through interactive communication or the creation of a product. Use of communication software provides opportunities for students to consolidate knowledge and clarify thinking in preparation for delivery to a specific audience. The process of preparing a final product for presentation develops skills in editing, critical thinking, and synthesizing information to transform it into an effective format.

Method
The teacher:
• provides access to appropriate equipment and software;
• teaches the basic skills involved in each software application and allows for peer teaching in areas where students have particular expertise;
• provides models of exemplary products;
• arranges for students to share their products with an appropriate audience.

Considerations
Communication applications:
• require that students and teachers have appropriate access to communications hardware and software;
• require time to research, prepare, and present the product;
• can be used for group projects to practise decision-making and team-work skills;
• should enhance learning and meaning;
• should be assessed for appropriateness and currency in curriculum implementation.

Illustrations
Elementary
• communicate information using media works, oral presentations, and written notes and descriptions (2z35)

Using a presentation software program, each student designs and presents a slide show consisting of five slides to show what they have learned about a specific Canadian topic. The structure of the presentation can follow a pre-designed or student-created template.

Secondary
• demonstrate a knowledge of the characteristics of natural systems (SS1.02B)

Working in groups of two or three, students use a desktop publishing program to produce an informative, attractive, and detailed two-sided, three-panel brochure to illustrate and promote a protected wildlife conservation area. The brochure should outline the aspects of
the natural habitat that require protected status (i.e., the types of birds and animals that must be protected as well as the natural vegetation that supports the wildlife).

**Computer-Aided Design (CAD)**

**Description**
Computer-aided design (CAD) is a software application used to design, create, simulate, and test products for a variety of professions and industries. The ease of use in changing design variables allows student to visually see the results before undertaking a modelling or building project. CAD programs allow students to engage in creative experimentation without risk. At the same time, students develop reasoning and decision-making skills. Related to CAD applications are CAM applications (computer-aided machining/manufacturing applications) which may be used in secondary manufacturing technology course, and 3-D modelling software that allows users to create three-dimensional objects, which can then be rotated, stretched, and combined with other model objects in complex 3-D representations.

**Method**
The teacher:
- arranges for access to equipment and resources;
- teaches the basic skills connected with using these specific software applications;
- provides the specifications of form and purpose for the design or modelling project;
- encourages students to experiment and consider “what if” questions in their experimentation;
- provides time for students to examine and discuss their own and other students’ findings.

**Considerations**
Computer-aided design (CAD) applications:
- require equity of access to hardware and software – based on availability of school resources and level of computer expertise;
- require time for students to test and then accept or reject various designs or models.

**Illustrations**

**Elementary**
- *draw and build three-dimensional objects and models* (3m56)

Students work with a computer-aided design program to draw and build three-dimensional objects and models according to specific measurements of angles and sides. The flexibility of the draw and design program permits experimentation and trial and error to arrive at the final products.

**Secondary**
- *identify, through investigation, the relationship between the volume and surface area of a given rectangular prism or cylinder* (MG1.02)
Students use a geometry-based computer-aided design program to construct models of a rectangular prism or cylindrical design package that minimizes the surface area and therefore the use of expensive packaging material.

**Computer-Assisted Learning**

**Description**
Computer-assisted learning/instruction describes the use of a computer to learn new material, practise skills, or reinforce material already learned through individualized instruction and immediate feedback. Such applications allow students to pace their own learning, retrace the steps if necessary, and track their progress. Students can develop problem-solving skills through the use of open-ended software, or they can focus on specific skill development, learn new software applications through tutorials, or participate in simulations. Computer-assisted learning is a motivating tool that can engage students when doing repetitive tasks and assist in building their self-esteem through successful experiences. Computer-assisted learning is a strategy used in distance learning, where students work independently on-line to meet specific curriculum expectations in courses.

**Method**
The teacher:
- provides access to the appropriate software programs and hardware to meet student needs;
- is familiar with using the software and provides basic instruction on its use to the student;
- conferences with the student to reinforce instruction, monitor progress, and provide feedback;
- provides opportunities for the student to use newly acquired skills and knowledge through follow-up activities.

**Considerations**
Computer-assisted learning:
- requires a certain level of independence;
- requires consideration of prerequisite skills required for software use and understanding and some awareness of keyboarding;
- requires consistent access to hardware and software;
- may require students to understand and sign with parents an “Acceptable Use Policy” before proceeding independently.

**Illustrations**
Elementary
- *identify and name major parts of the sentence (e.g., subject, object, predicate)* (7e11)

Students use a grammar program on the computer to reinforce their ability to identify and name the parts of a sentence. To demonstrate learning, each student completes three sequential activities, focusing on the subject, object, and predicate.
Secondary
• describe how effective accounting and financial statements contribute to the success of a business (CC5.02)

Students work through the balance sheet and income statement activities in the template provided in a simple accounting software program. Any errors they enter will automatically be highlighted in the summary analysis.

Database Applications

Description
A database is an organized collection of information that can be categorized, sorted, analysed, and stored in a computer. The information can be manipulated, controlled, and retrieved as required. A complete set of related information is called a record. A field is a category of information (for example, “name” and “address”) in a database record. Each field can be searched and sorted as required to analyse and use the information gathered. Students can use a database to organize information in a useful and retrievable format, applying decision-making and reasoning skills in the process. Students must decide which information they have gathered is important; determine under what headings (fields) it is to be entered; develop a search strategy; and transform the data into tables, lists, or diagrams that form the basis of the analysis and investigation. Databases are also available in commercial formats – CD-ROM and online – which provide access to full-text records of journals or encyclopedias, bibliographic databases with citations or abstracts, directories of lists, numeric census or stock market figures, and on-line library catalogues.

Method
The teacher:
• demonstrates database creation and relevant use;
• teaches the concepts of record, field, field name, and database layout;
• provides opportunities for students to examine and work with a number of types of databases available, including commercial products;
• encourages the use of student-created databases;
• provides access to information or poses a question for investigation that will require the use of a database to organize and manipulate the data;
• engages in discussions with students to examine their reasoning for determining which fields are created and which data are entered in the appropriate fields;
• works with other staff (e.g., the teacher-librarian, the guidance teacher) to develop a strategy for teaching essential searching skills to students.

Considerations
Database applications:
• require hardware and software accessibility;
• provide opportunity to consolidate and manipulate the results of whole-class investigations;
• are available in a variety of formats, each with its own set of features.
Illustrations
Elementary
• identify human uses of mixtures and solutions in everyday life, and evaluate the environmental impact of some of these uses (7s27)

Students create a database of mixtures and solutions, including warning symbols or cautionary notes, information about the properties of the solution or mixture, and an imported picture of the container. Students also generate a rating-scale diagram and rank each solution and mixture on its environmental friendliness, adding explanatory comments to support the rankings.

Secondary
• demonstrate an understanding of the information terms used in business (IMV.01)

Students create a database of information-technology terminology using appropriate categories, such as Definition, Origin, and Use. They use this file in an interactive manner, allowing for searching and retrieving of important terms. Use of the extended capabilities of a database program enables the sorting to occur easily.

Email Applications

Description
Electronic mail (email) is a form of electronic communication from one computer to another that allows users to communicate with each other locally and globally. Email is available through a commercial Internet service provider (ISP) or a school board provider and gives users an electronic address. Email enables the user to send and receive messages and add file attachments of documents, images, or sound. Messages and files sent through email can be copied/imported into a word-processing program, which allows the document to be manipulated and edited. This makes it an ideal format for curriculum sharing among students and teachers. Email serves a variety of other purposes, enabling students and teachers to:
• contact global experts in any field to satisfy information needs;
• participate in bulletin boards, listservs, news-groups, and on-line conferences;
• collaborate in local and international projects;
• gather data in activities such as research of primary and secondary sources;
• experience virtual field trips;
• communicate with parents and others in the school community.

Method
The teacher:
• models and encourages appropriate use of email;
• works with staff and parents to promote a school-wide “Acceptable Use Policy” to ensure the safe, legal, and ethical use of personal information at all times;
• provides opportunities for students to compose, send, and receive email and for access to appropriate email partners in other schools/countries;
• uses email for curriculum projects by encouraging students to submit work and participate in on-line conferences and collaborative work groups;
• explains the purpose, conventions, and necessary safeguards when using listservs, news groups, and bulletin boards;
• participates in the use of email for conducting school business (e.g., attendance, planning, and student and parent communication).

Considerations
Email applications:
• vary in accessibility depending on speed and cost of access – long-distance charges may apply;
• raise issues of student safety and security regarding contact with unknown email users;
• raise problems of inappropriate use under the guise of anonymity.

Illustrations
Elementary
• demonstrate an understanding of the characteristics of rural communities (3z35)

With the assistance of the teacher, students in an urban classroom use email to partner with students in a rural school. They develop a survey collaboratively to collect information about their neighborhoods and share this information electronically.

Secondary
• exchange information by writing an email message (WR1.27)

Using a template consistent with the school/board “Acceptable Use Policy” (for instance, with regard to “netiquette,” safety, and privacy), students compose an email message that introduces and describes themselves to another student. Upon receiving a reply, students then describe current class projects in a variety of subjects and elicit responses and suggestions from their correspondent.

Graphic Applications

Description
Graphic applications are computer software programs, such as paint and draw programs that are used to create and edit images, pictures, and other visuals. They are also used to capture and alter images through digital means such as scanners and digital or video cameras. Clip art files, charts, and graphs are graphics included in many word-processing and presentation software programs or as stand-alone products, and they can also be edited, grouped or ungrouped, and located or aligned on a page or document. Graphic organizer software is a specific application that visually creates and dynamically manipulates images such as flow charts and conceptual maps. The use of graphic applications and desktop publishing software can enhance work by clarifying and illustrating the text to improve communication, provide additional information, illustrate ideas, appeal to the visual learner, and act as memory aids.
Method

The teacher:
• identifies specific purposes for the use of graphic applications;
• teaches the basic skills involved in using graphics;
• uses graphics to create professional worksheets, banners, newsletters, and other vehicles to enhance communication;
• uses graphic images to highlight important ideas on worksheets and handouts;
• models the use of slide presentations and other self-created visuals for teaching and learning;
• encourages creative thinking by using graphics such as webs and organizers;
• provides time to explore and investigate the many features of the software, while maintaining focus on the task at hand.

Considerations

Graphic applications:
• are often quite costly, especially if network or site licenses are involved;
• are time consuming in skill development and require expertise for success;
• may unfairly advantage some students who routinely use graphic application to enhance their projects;
• may create inequity of access because of cost and hardware and software limitations.

Illustrations

Elementary
• *identify the emotional quality of lines (e.g., smooth, flowing, horizontal lines create a feeling of peace and harmony; sharp, jagged, vertical lines create a feeling of energy and unease)* (4a36)

Students use the free-hand tools of a paint program (e.g., pencil and brush tools) to create a series of line drawings that represent ordinary objects (e.g., books, buildings, sports equipment). They then recreate the drawings by using paint tools that create smooth lines (e.g., rectangle and curve tools). Students share their work in small groups and compare the emotional effect of each set of drawings.

Secondary
• *identify and implement perception-enhancing design devices to create images* (VC1.03)

Students manipulate a traditional painting to create a parody by changing the original intention or meaning of the work (e.g. changing the portrait of Da Vinci’s Mona Lisa and its sublime background to a portrait of a figure called “Moe Lisa” in front of an industrial park). Photo and digital-image editing software applications are used to do this.
Internet Technologies

Description
The Internet (Net) is a worldwide computer network connecting users to each other for communication. This “network of networks” was originally conceived for academic and military research and now connects educational institutions, private and public services, commercial enterprises, and individuals. Computer users connected to the Internet can read and post messages, download software and media files, research information by browsing directories and following hyperlinks on diverse websites, communicate with experts, and search catalogues of major libraries around the world. The Internet provides an open, unmonitored forum to which anyone can contribute and publish different viewpoints. Because of its open structure, the Internet requires that students learn critical searching and communication skills in order to find and use relevant, valid information in a timely, safe, and ethical manner.

Method
The teacher:
- teaches terminology associated with the Internet (e.g., WWW, URL, web pages, search engine, browser, hyperlinks, frames);
- coordinates with the teacher-librarian to focus research and search strategies, such as Boolean operators and key word searching skills, that can be transferred to other information sources;
- raises student awareness of issues of security, safety, bias, authority, and currency of information;
- reinforces the school’s “Acceptable Use Policy” for Internet use;
- provides problems and assignments that are appropriate for Internet investigations;
- plans time and access to computers to work on investigations.

Considerations
Internet technologies:
- may be expensive to set up for schools (e.g., service contracts, connectivity issues, subscriptions to content);
- require specific knowledge and skills to use effectively (e.g., appropriate search strategies by keyword or directory; identification of source and authority of information; maintenance of safe and ethical practices);
- raise issues of safety and security for students;
- raise issues of plagiarism, intellectual freedom, and copyright;
- require critical thinking about bias, authority, reliability, and the currency and quality of information.

Illustrations
Elementary
- describe ways in which weather conditions affect the activities of humans and other animals (5s123)
Students track and compare meteorological data in four centres around the world for a two-week period, using on-line web-based resources.

Secondary

- locate and use effectively geographic material from secondary sources to research a geographic issue (M13.03D)

Following a series of links, some of which may have been previously bookmarked, students use the Internet to participate in a fact-finding mission and debate regarding modern practices in forestry, mining, and fishing. Students carefully analyse on-line information for bias and perspective.

**Media Presentation**

**Description**

A media presentation involves the use of various media to present information and ideas. The presentation could involve such formats as audiotape or videotape, presentation slide shows, or multimedia graphics using sound systems, television or computer monitors, overhead projections. The presentations can increase interest in a topic by providing currency and variety and by appealing to different learning styles, such as visual-spatial styles. Presentations may be interactive and involve some form of audience participation. Presentation graphics software automates the creation of visual aids for lectures, skills training sessions, and group presentations, often in the form of colourful and animated slides and handouts.

**Method**

The teacher:

- plans for relevant use of student and teacher media presentations in the classroom;
- models the planning process, from inception of the idea to the booking of the equipment and the use of the appropriate presentation format;
- establishes guidelines for the safe and ethical use of media presentations;
- may preview student productions before they are presented to ensure suitability for all students in the class;
- provides opportunities and access to a wide range of technology tools;
- outlines clear expectations for all aspects of the student presentation;
- assists students in planning and organizing their presentations in order to support relevancy, accuracy, currency, creativity, and variety.

**Considerations**

Media presentations:

- may be effective assessment tools for gathering culminating findings (for instance, in an electronic or media portfolio);
- require care to use only the relevant portions of larger works.
Illustrations
Elementary
• create and present drama anthologies independently and in a group, manipulating various techniques of drama and dance and incorporating multimedia technology (7a68)

Students listen to several clips of radio dramas and develop a list of elements that elicit various audience responses (e.g., laughter, anger, joy, and sadness). Using multimedia technology, the students then create their own dramas, incorporating both audio and visual elements.

Secondary
• design and complete an organizer comparing the benefits and disadvantages of selected energy megaprojects (HE2.02P)

Students view a televised debate between representatives of an energy company and local environmentalists. Using an organizer, students compare the benefits and disadvantages of the selected energy project featured in the televised debate.

Media Production
Description
Media production involves the use of a variety of technological and media tools for student-created work that conveys information or represents a culminating performance or project. Tools used in media production include cameras, video or digital editing equipment, television, video players, audio recorders and players, slide projectors, computers, and the appropriate software required to use these tools. Media productions provide the opportunity to integrate and present text, graphics, sound, video, and animation in unique and exciting ways. The use of technological tools for media production encourages students and teachers to learn new skills, solve problems, create and demonstrate new ways of learning, extend thinking in flexible and challenging ways, and reflect on their products. Students learn by creating products using emerging skills and by talking about and reflecting on their products.

Method
The teacher:
• models the appropriate use of media productions for teaching and learning in the classroom (e.g., using only appropriate clips rather than the entire video to demonstrate a point);
• provides access to required equipment and instruction in it;
• provides appropriate topics, access to information sources, and a framework for the creation of media works;
• confers with students to monitor progress and assist with problems encountered;
• ensures that students have a basic understanding of the components of media presentations;
• encourages creativity in presentations and products;
• reinforces the key components of media literacy so that content is respected and not sacrificed for extraneous technological innovations.

Considerations
Media productions:
• require access to appropriate equipment for the proposed format of the production;
• require that students have an understanding of issues of bias, stereotyping, violence, point of view, and manipulation as they relate to their own works.

Illustrations
Elementary
• identify uses of electricity in the home and community and evaluate the impact of these uses on both our quality of life and the environment (6s53)

In small groups, students select an electrical device. They prepare a videotaped “infomercial” to promote how it should be used and to demonstrate its effect on their lives.

Secondary
• present prepared conversations in dialogues or dramatizations (OC1.05P)

In small groups, students prepare and present humorous talk-show interviews based on stories from daily newspapers. The shows are videotaped and shared with other classes.

Multimedia Applications

Description
Multimedia applications are computer software programs that integrate a variety of elements such as sound, animation, text, and graphics into a presentation format. Multimedia applications allow students to practise their skills in a variety of technologies to create a multimedia production. Such applications may be non-linear and allow students to compose, communicate, and create new knowledge in innovative ways. The use of multimedia applications for personalizing learning and demonstrating understanding is highly motivating for students. Multimedia authoring software enables the creation and editing of multimedia documents for presentation and publication to a variety of audiences (for example, the classroom, Internet). Hypermedia is multimedia that provides hypertext links among elements such as computer text, visual material, and sound files.

Method
The teacher:
• models the use of multimedia applications by creating classroom presentations;
• provides a relevant framework and purpose for using multimedia applications;
• creates a forum where work can be presented and analysed;
• provides students with guidance on the self-evaluation of process and product in the creation of multimedia presentations;
• provides access and time to use the tools required for multimedia presentation;
provides guidance in the use of multimedia applications to ensure inclusion and analysis of content versus the use of effects for “show.”

**Considerations**

Multimedia applications:
- require large memory and processing power in the computers used;
- require additional time outside of class to create meaningful presentations;
- require a rigorous selection process to ensure quality, relevancy, and value.

**Illustrations**

**Elementary**
- identify Canadians who have contributed to space science and technology (6s119)

Students, working in small groups, create a multimedia presentation highlighting one Canadian who has made a significant contribution to space science and technology. Students can use images in the public domain and student-produced audio files for the presentation.

**Secondary**
- demonstrate understanding of the importance of managing an ergonomically correct work environment (IM3.01)

Students use different information technologies to create a multimedia presentation demonstrating the various aspects of an ergonomically correct workplace. Demonstrations of sound ergonomic practices might be captured on video and played for the audience, or the principles can be outlined with text and graphics through a slide presentation program.

**On-line Public Access Catalogues**

**Description**

On-line public access catalogues (OPAC) are library catalogues that are accessible for searching over a computer network. They are databases of organized information that can be searched by subject headings, keywords, authors’ names, or a variety and combination of elements and strategies. Students are taught these transferable skills to make them effective and efficient researchers of on-line information sources throughout the world. The school library information centre provides access to public, academic, and specialized library catalogues, while maintaining its own OPAC for immediate access to on-site resources selected to support curriculum. On-line public access catalogues are efficient means of sharing cataloguing information that is in a consistent and standardized format. Searching capabilities and information retrieval are faster and more extensive than manual catalogues.

**Method**

The teacher-librarian/teacher:
- ensures access to searching strategy instruction in order for students to develop efficient and transferable searching skills;
• provides opportunities for students to develop their research skills by using all the capabilities of the electronic access;
• provides opportunities for students to extend thinking by searching related terms and topics and recording their findings;
• provides access to resources beyond the school through interlibrary loans;
• develops appropriate assignments to ensure that students must use the wide-ranging features of the OPAC to locate relevant materials.

Considerations
On-line public access catalogues:
• operate on similar, transferable principles for searching, although the interface (appearance of screen) and method of searching may vary;
• provide access to public, academic, and specialized libraries as well as school-based resources;
• improve access and collection development offered through the school library;
• allow a wide variety of searching strategies (e.g., refining searches, storing found citations, printing bibliographies);
• should be used in conjunction with other search/find strategies such as browsing, scanning, and using indexed and reference material.

Examples
Elementary
• investigate physical and behavioural characteristics and the process of growth of different types of animals (2s2)

Students choose an animal they are interested in and begin to structure key words describing their animal. When they have three or four such descriptors, they work in pairs to search the OPAC for suitable resources. Once they have accessed and read the resource materials, students record their findings on an organizer under the headings Physical Characteristics, Behavioural Characteristics, and Growth Process.

Secondary
• locate and use effectively geographic material from primary and secondary sources (MIV.01B)

The teacher-librarian teaches students how to search the OPAC in the school library to locate information from a variety of primary sources (e.g., census or weather data) and secondary sources (e.g., travel guides or encyclopedias) for input into their travel brochure project. Students go back on-line and where possible locate similar sources in the related OPAC in their local public library system. Students select the most appropriate titles from the search results and create brief annotations that will engage the reader of the travel brochure.
Spreadsheet Applications

Description
Spreadsheet applications are software programs that record and manipulate numerical data in a variety of organized and accurate ways. They are used to perform mathematical calculations on numeric information for budgetary purposes, financial or statistical analyses, or the analysis of data from a variety of scientific or other experiments. Spreadsheets perform a useful function in making comparisons and contrasts and for converting numerical information into charts and graphs for visual display. Well-designed reports are easily generated and printed through spreadsheet applications. Spreadsheets can be formatted in varying column widths and text styles, incorporating appropriate labels, formulas, and cell references for specific purposes. They are a useful tool for many curriculum areas, such as data management and probability, scientific simulations, investment management, and grading and reporting.

Method
The teacher:
• models the use of spreadsheet applications for numeric data management and analysis;
• helps students use spreadsheets to tabulate information gathered for projects using surveys or polls;
• encourages the use of the graphical aspects of a spreadsheet program to present graphs and charts as visual representation of information;
• assists student in practising mathematical skills by requiring students to devise and use general formulas for repetitive operations;
• schedules time for students to enter data and formulate spreadsheets on a regular basis.

Considerations
Spreadsheet applications:
• have cross-curricular applications for recording, manipulating, and analysing data;
• may consolidate whole-class data-gathering projects and display results;
• may consolidate and display data collected from various school projects, such as reading programs, fund raising, and charity donations;
• can be integrated into other applications, such as word processing and presentations.

Illustrations
Elementary
• construct and read a wide variety of graphs, charts, diagrams, maps, and models for specific purposes (6z37)

Students locate statistical information about one of Canada’s trading partners and record imports in a spreadsheet application. They also display this information in the form of bar graphs and pie graphs.
Secondary
• _demonstrate a knowledge of technologies used in geographic inquiry_ (MI1.01B)

Using data on bilateral aid for selected countries, students create a spreadsheet to include the fields “Countries” and “Total Bilateral Aid.” Students then take the material generated by the spreadsheet and integrate it with a GIS (Geographic Information Systems) program that has world data for further analysis.

**Time-Management Applications**

**Description**
Time-management applications are effective tools for organizing time, setting goals and priorities, assessing personal use of time, and making realistic decisions. Students learn to use a time-management device or application to schedule study time and keep track of all their classes, activities, and appointments. Students can develop recording sheets to track projects, assignments, and due dates on a daily, weekly, or monthly basis and have them monitored by the teacher or parents if necessary. Using computer-based applications, students can effectively edit and modify the entries as events and times change. Time-management applications can be used individually, at desktop stations and with portable devices, as well as part of work groups within a network-based scheduling system.

**Method**
The teacher:
• models effective use of time-management applications (e.g., class schedules, course outlines, and goal-setting exercises);
• makes the use of time-management organizers an integral part of each student’s daily routine (e.g., recording homework, tracking assignments, setting goals);
• negotiates due dates for assignments and tests so students can practise setting time lines and adhering to them;
• monitors the use of the time-management strategies through periodic checks;
• assists students in reorganizing their schedules when the tasks or time lines change.

**Considerations**
Time-management applications:
• may be in print format (e.g., daybook, agenda, student handbook) or electronic format (e.g., scheduler or contact/task manager, which requires access to computers for entry and modification on a regular basis);
• should include an evaluative component (e.g., “Is my time management effective? Am I meeting all my commitments on time?”);
• provide opportunities to develop a lifelong skill for setting priorities and managing time commitments.

**Illustrations**
*Elementary*
• _incorporate time-management and organizational skills in the goal-setting process_ (5p39)
Students set a realistic goal related to a physical activity of their choice. Students then create a template and record the number of minutes they spend on that physical activity and reflect on what improvement they have seen over that time period.

**Secondary**

- *demonstrate ability to select the most appropriate software applications for creating a particular business document*  
  (SA3.01)

Students use a spreadsheet application as a time-management tool to create a weekly agenda. Using the formula function, they calculate the total number of hours spent on school activities versus recreational activities.