



Literacy with ICT* Across the Curriculum

A Developmental Continuum

COGNITIVE DOMAIN

Knows–Comprehends–Becomes Aware

Analyzes–Applies–Believes

Synthesizes–Evaluates–Values

Plan and Question	P-1.1 recalls and/or records prior knowledge and asks topic-related questions	P-2.1 constructs “how and why” questions, predictions, hunches, educated guesses, and hypotheses and identifies information needs	P-3.1 evaluates original inquiry questions and creates new questions for future inquiry
	P-1.2 follows given plans	P-2.2 adapts given electronic plans (examples: electronic storyboards, outlines, timelines, graphic organizers, science experiment reports...) ◆ sc1.1, sc1.3, sc1.4, sc1.5, sc1.7, sc2.1	P-3.2 designs own electronic plans (examples: electronic storyboards, outlines, timelines, graphic organizers...) ◆ sa2.2, sa2.3, sc2.3
Gather and Make Sense	G-1.1 finds and collects information (text, images, data, audio, video) from given media sources (examples: within applications, CD-ROMs, the Internet, broadcast media, email...) ◆ sa1.1, sa1.2, sa1.3, sa1.4, sa1.5, sa1.7, sa1.8, sa1.10, sa1.11, sb1.1, sb2.1	G-2.1 refines information searches using a variety of media sources ◆ sa1.6, sa1.9, sa2.4, sa2.5	G-3.1 incorporates new information with prior knowledge and adjusts inquiry strategies
	G-1.2 identifies sources of information and provides bibliographic/reference data (examples: titles, authors, publication dates, URLs, standard bibliographic formats...) ◆ sb1.2, sc1.6	G-2.2 analyzes textual, numerical, aural, and visual information gathered from media sources, applying established criteria (examples: accuracy, currency, credibility, validity, reliability, objectivity, fairness, relevance...) ◆ sa2.6	G-3.2 assesses textual, numerical, aural, and visual information, as well as the sources of the media, to determine context, perspective, bias, and/or motive
	G-1.3 records data or makes notes on gathered information and ideas using given categories and given ICT (examples: tables, graphic organizers, spreadsheets...) ◆ sa1.1, sa1.2, sa1.3, sa1.5, sa2.3, sb1.2, sc1.3	G-2.3 categorizes information using the ICT suitable for the purpose (examples: tables, graphic organizers, spreadsheets, outlines, prioritized email, geographic information system layers...) ◆ sa1.5, sa2.3, sc2.1	
	G-1.4 collects primary data using electronic devices (examples: digital cameras, email, video cameras, digital audio recorders, digital microscopes, archived original artifacts, online surveys, Global Positioning System [GPS], probeware...) ◆ sb1.3	G-2.4 analyzes whether information collected from media sources is sufficient and/or suitable for purpose and audience (examples: CD-ROMs, websites, wikis, blogs, podcasts, syndications, broadcast media, email from peers or experts...)	
	G-1.5 questions whether information from media sources is real, useful, and/or distracting (examples: falsified digital images, banners, and/or pop-up advertisements...)	G-2.5 analyzes whether information from media sources has been manipulated (examples: bogus websites, bogus email, spam, graphs showing selected data...)	
Produce to Show Understanding	Pr-1.1 participates in establishing criteria for student-created electronic work	Pr-2.1 selects a suitable ICT application and/or device to create electronic work and explains the selection ◆ sb2.1	Pr-3.1 designs and creates non-sequential ICT representations (examples: hyperlinked web pages, layered graphic organizers, branching multimedia presentations, multiple-sheet spreadsheets, virtual realities, relational databases...) ◆ sc2.3
	Pr-1.2 composes text, records sound, sketches images, graphs data, and/or creates video ◆ sa1.1, sa1.2, sa1.3, sa1.5, sb1.1, sb1.2, sc1.1, sc1.2, sc1.3, sd1.1, sd2.1	Pr-2.2 revises electronic work to improve organization and clarity, enhance content and artistry, and meet audience needs, according to established criteria, feedback, and personal preferences (examples: by creating and/or critically revising text, images, and/or sound to enhance electronic work; by revising audio/video clips or effects; by adjusting the pace and transitions in multimedia presentations; by adding animation to web pages...) ◆ sc1.1, sc1.2, sc1.3, sc1.4, sc1.5, sc1.6, sc1.7, sc2.1, sc2.2, sc2.3	Pr-3.2 self-assesses ICT representations to go beyond established criteria by enhancing meaning and/or artistry, according to topic, audience, purpose, and occasion
	Pr-1.3 edits electronic work according to established criteria, conventions, and/or standards (examples: text, images, sound, concept maps, multimedia presentations, email, tables, spreadsheets, graphs, video, animation, web pages, wikis, blogs...) ◆ sa1.4, sa1.6, sa1.11, sa2.1, sc1.3, sc1.4, sc1.5, sc1.6, sc1.7, sc2.3	Pr-2.3 solves problems, reaches conclusions, makes decisions, and/or proposes answers to questions by analyzing data/information and concepts using ICT devices and/or applications (examples: virtual manipulatives, animation, simulation software, simulation websites, spreadsheets, geographic information systems, probeware...) ◆ sa1.5, sa2.3, sc2.1	Pr-3.3 designs and creates simulations and models using ICT applications (examples: spreadsheet modelling of a real situation, animation of an abstract concept or process, computer-aided design of a real object...)
Communicate	C-1.1 displays and/or discusses electronic work (examples: text, images, sound, concept maps, multimedia presentations, email, tables, spreadsheets, graphs, video, animation, web pages, wikis, blogs...) ◆ sa1.1, sa1.2, sa1.5, sa2.2, sb1.1, sb1.2, sb2.1	C-2.1 discusses information, ideas, and/or electronic work using tools for electronic communication (examples: email, electronic whiteboards, web pages, threaded discussions, videoconferences, chats, instant messages, camera phones, wikis, blogs, podcasts, online whiteboards...) ◆ sa1.11	C-3.1 adjusts communication based on self-evaluation and feedback from a global audience
Reflect	R-1.1 participates in guided conferences to think about using ICT to learn (examples: with peers, parents, teachers...) ◆ sd2.1	R-2.1 invites and shares constructive feedback, related to established criteria, to reflect on using ICT to learn (example: explains selection of ICT...)	R-3.1 self-monitors learning goals, reflects on the value of ICT to complete learning tasks, and sets personal goals for using ICT to learn

AFFECTIVE DOMAIN

Knows–Comprehends–Becomes Aware

Analyzes–Applies–Believes

Synthesizes–Evaluates–Values

Ethics and Responsibility	E-1.1 respects ICT equipment and personal technology space of other ICT users	E-2.1 applies school division's acceptable-use policy for ICT	E-3.1 evaluates effects of personal ICT behaviour on others
	E-1.2 recognizes guidelines for safety and security (examples: guidelines for Internet safety, security of user names and passwords, responsible use of email...)	E-2.2 applies safety guidelines when communicating electronically (examples: email, web pages, threaded discussions, videoconferences, chats, instant messages, camera phones, wikis, blogs, podcasts, online whiteboards...)	E-3.2 weighs personal benefits and risks of using ICT
	E-1.3 recognizes the need to acknowledge authorship of intellectual property (examples: text, images, data, music, video...)	E-2.3 explains consequences of unethical behaviour (examples: cyberbullying, promotion of prejudice and hatred, copyright violations, plagiarism, wilful destruction/manipulation of data, hacking, propagation of viruses, spamming, software piracy, consumer fraud, identity theft...)	
	E-1.4 identifies possible health issues associated with using ICT (examples: ergonomic factors, inactivity, carpal tunnel syndrome, repetitive stress injury, eye strain, addictive/obsessive behaviour...)	E-2.4 applies guidelines for ethical and responsible use of ICT (examples: respects others' privacy, protects personal information, follows security procedures, respects intellectual property and credits sources, uses licensed software, discourages cyberbullying, collects data ethically, analyzes information ethically...)	
Social Implications	S-1.1 identifies uses of ICT at home, at school, at work, and in the community (examples: recreation, communication, education, sales, health care...)	S-2.1 analyzes current trends in ICT to predict effects of emerging technologies	S-3.1 weighs society's right to information access against right to individual privacy
	S-1.2 relates societal consequences of ethical and unethical use of ICT	S-2.2 analyzes various ICT skill and competency requirements for personal career choices	S-3.2 weighs benefits versus risks to society of creating new ICTs (example: outsourcing jobs...)
	S-1.3 chooses appropriate times and places to use wireless games and/or communication devices (examples: electronic pets/games, iPods, MP3 players, cell phones, PDAs...; at school, on buses, in theatres, in restaurants, in meetings, while driving...)	S-2.3 analyzes advantages and disadvantages of ICT use in society (examples: lack of access, consequences of unethical use, ease of manipulating data, ease of communicating information, addictive/obsessive behaviour...)	
Collaboration	Co-1.1 works with others in teacher-directed learning tasks using ICT and assists others with ICT knowledge and procedures (examples: listens actively to a partner, collaborates in creating ICT products, participates in team webquests...)	Co-2.1 collaborates with peers to accomplish self-directed learning with ICT in various settings (examples: assumes assigned group roles, sets group goals, solves group productivity issues...)	Co-3.1 leads a group in the process of collaborative learning (examples: motivates team members, values contributions of team members, manages group conflict, works toward consensus...)
	Co-2.2 collaborates with others over distance using ICT (examples: email, web pages, threaded discussions, videoconferences, chats, instant messages, camera phones, wikis, blogs, podcasts, online whiteboards...)	Co-3.2 weighs benefits and challenges of collaborating on learning with ICT	
Motivation and Confidence	M-1.1 demonstrates confidence and self-motivation while doing ICT tasks alone and with others	M-2.1 investigates ICT problems and applies strategies to solve them	M-3.1 synthesizes knowledge and information to solve unique ICT problems
	M-1.2 recognizes ICT problems and seeks assistance to solve them (examples: consults peers, teachers, help menus, online supports, telephone helplines...)	M-2.2 perseveres in working through complex ICT problems using higher-level thinking skills (examples: open-mindedness, precision, accuracy...)	
	M-1.3 recalls prior knowledge of procedures for troubleshooting and attempts to solve ICT problems		

For detailed information, samples, learning experiences, glossary, and bibliography, see <www.edu.gov.mb.ca/ks4/tech/lict/index.html>.

* Information and Communication Technology (ICT)
◆ Supporting Skills are listed on the reverse.

Revised 2006

Supporting Skills		
	Acquires Skills	Applies Skills
Access and Communication (sa)	<p>sa1.1 logs on and off ICT devices</p> <hr/> <p>sa1.2 opens applications and files <i>(examples: using Start menu, My Computer, desktop icons...)</i></p> <hr/> <p>sa1.3 saves files <i>(examples: following a specified file path to networks, hard drives, flash memory devices, CD-ROMs, DVDs...)</i></p> <hr/> <p>sa1.4 prints files <i>(examples: selecting print options such as page range, number of copies, paper tray, fit to page...)</i></p> <hr/> <p>sa1.5 navigates within an application <i>(examples: using icons, menus, keyboard shortcuts...)</i></p> <hr/> <p>sa1.6 navigates between applications</p> <hr/> <p>sa1.7 browses multimedia <i>(examples: CD-ROMs, DVDs, flash memory devices...)</i></p> <hr/> <p>sa1.8 navigates within a website</p> <hr/> <p>sa1.9 browses the Internet</p> <hr/> <p>sa1.10 searches the Internet using teacher-selected search engines and keywords</p> <hr/> <p>sa1.11 sends and receives text messages and electronic files using rules of etiquette <i>(examples: not typing in all capital letters, filling in subject line...)</i></p>	<p>sa2.1 transfers ICT knowledge to new applications</p> <hr/> <p>sa2.2 manages electronic files and folders</p> <hr/> <p>sa2.3 moves data between applications</p> <hr/> <p>sa2.4 chooses and uses search engines using own keywords</p> <hr/> <p>sa2.5 refines searches using Boolean logic</p> <hr/> <p>sa2.6 investigates the currency and/or authorship of electronic sources such as websites, email, CD-ROMs, syndications, blogs, wikis, podcasts, and broadcast media <i>(examples: checking date last modified, analyzing the meta-web information of a URL...)</i></p>
Input/Output (sb)	<p>sb1.1 manipulates input devices <i>(examples: mouse buttons, keyboards, styluses, trackballs, touch screens, electronic whiteboards, adaptive devices...)</i></p> <hr/> <p>sb1.2 recognizes and presses keys on the keyboard <i>(examples: using one finger, using both hands, hunting and pecking, using correct hand position while watching the screen, demonstrating speed and accuracy...)</i></p> <hr/> <p>sb1.3 captures digital data <i>(examples: with microphones, digital audio-recording devices, digital cameras, video cameras, GPS, probeware...)</i></p>	<p>sb2.1 selects and uses peripherals to find, record, manipulate, save, print and/or display information <i>(examples: microphones, digital cameras, video cameras, electronic whiteboards, digital microscopes, joysticks, touch screens, flash memory devices, data projectors, TVs, printers...)</i></p>
Tools and Text (sc)	<p>sc1.1 moves text and images</p> <hr/> <p>sc1.2 draws images using electronic tools</p> <hr/> <p>sc1.3 inserts and edits text, data, images, sound, video, and/or formulas</p> <hr/> <p>sc1.4 formats text, images, graphs, and tables using toolbar icons, menu options, and/or keyboard shortcuts</p> <hr/> <p>sc1.5 edits text using spell check, dictionary, thesaurus, grammar check, and/or track changes</p> <hr/> <p>sc1.6 inserts hyperlinks to electronic sources</p> <hr/> <p>sc1.7 formats page layout <i>(examples: margins, tabs, columns, hanging indents, word wrap, header, footer, cells, watermark...)</i></p>	<p>sc2.1 customizes the template of a graphic organizer, table, multimedia presentation, spreadsheet, and/or database</p> <hr/> <p>sc2.2 analyzes the intended use of images/video, and edits images/video using photo/video-editing software <i>(examples: adjusting the cropping, resolution, compression, number of colours, file size...)</i></p> <hr/> <p>sc2.3 constructs graphic organizers, tables, spreadsheets, databases, multimedia presentations, and/or web pages</p>
Vocabulary (sd)	<p>sd1.1 recalls ICT vocabulary in context</p>	<p>sd2.1 uses ICT vocabulary in context</p>