

Teaching and Learning in the 21st Century: Information Literacy Standards for Teacher Candidates

Introduction

Today's world of learning resources is as engaging as it is complex. Learners are both users and creators of information content with a world of dynamic visual, aural, interactive, and text-based resources all within the virtual library. Teachers who establish strong information literacy skills are better able to guide the development of these skills in their own students and provide resource-rich inquiry-based learning environments.

Many teacher candidates in the Queen's B.Ed. program enter the teaching profession with a limited understanding of the information literacy challenges they will face in K-12 classrooms and the role they will play in student information literacy development (Lee et al., 2010; Laverty & Reed, 2006). The Ontario Ministry of Education introduced a new curriculum in 1998 that maps out specific expectations by grade from kindergarten to grade 12. In 1999, the Ontario School Library Association extracted the inquiry-related skills across the curriculum and published *Information Studies, Kindergarten to Grade 12* which outlines the information literacy curriculum for Ontario. It includes a significant number of expectations (counted by Dodgson & LaForty, 2005):

Research skills – 913 expectations

Questioning relating to information finding – 634 expectations

Projects – 234 expectations

Information gathering and use– 1745 expectations

Teachers are expected to work with teacher librarians, whenever they are present in schools, to integrate opportunities and methods for developing these skills from the start of elementary school through to the end of high school. Teacher librarians have a significant impact on reading engagement in schools (Klinger et al., 2009) and it is imperative that teacher candidates learn how to work with them to encourage reading and to develop information literacy skills. There is an increasing emphasis on the need for media literacy skill development (Jenkins et al., 2006) as well as information search and critical evaluation skills beginning with students at the elementary-school level (Williams, 2008). The Ontario School Library Association addresses these areas in *Together for Learning* (2010) where a new vision for integrating information literacy across the curriculum using the school's physical and virtual spaces is outlined.

Purpose

The Queen's Faculty of Education is in the process of crafting new directions for its programs that meet the needs of future educators. The articulation of information literacy standards for Teacher Candidates supports the development of a B.Ed. program that prepares teachers to integrate inquiry-based learning both inside and outside physical and virtual classrooms. A 21st education today focuses on the information analysis, evaluation, synthesis, and creation that are critical for sense-making in our vast world of resources. Pre-service teachers need opportunities to explore the changing concept of literacy, including strategies to develop their own literacies (information, visual, news, multimedia, and technological) and those of their students. This would include the concept of "new literacies" that relate to the skills and tactics needed for reading and writing in digital environments (Leu et al., 2004) and the new "information fluencies" necessary for participating in online knowledge creation and exchange such as simulation, appropriation, collective intelligence, transmedia navigation, and networking (Jenkins et al, 2006). A recent study of pre-service teachers' knowledge of information literacy and their perceptions of the school library program (Lee et al., 2010) revealed that they do not feel prepared to address information literacy issues in their classrooms. Mapping standards onto the B.Ed. curriculum will help Teacher Candidates further augment their own information literacy skills and evolve strategies for supporting their future students.

The following set of standards draws on those proposed by the American Library Association Instruction for Educators Committee in the June 2010 draft of *Information Literacy Standards for PK-12 Pre-Service Teachers*. This framework is modelled on the Association of College and Research Libraries guide to *Information literacy competency standards for higher education* (ACRL 2000) and mirrors the stages of the research process:

Standard 1: Defines and articulates the need for information, plans strategies, and selects tools to find that information.

Standard 2: Locates and selects information based on its appropriateness to the specific defined information need.

Standard 3: Organizes and analyzes the information for appropriate use for the specific defined information need.

Standard 4: Processes, synthesizes, and presents the information in a way that is appropriate for the purpose for which information is needed.

Standard 5: Evaluates individual pieces of information for appropriate use as well as the information seeking process as a whole

Standard 6: Knows how to ethically use and disseminate information

The *ISTE national educational technology standards* (2008) and the American Association of School Librarians *Standards for the 21st century learner* (2008) have also informed the creation of this document. The selection of standards has been fine tuned to meet the needs of pre-service teachers in Canada and reflects the education librarians' research of what teachers need to know to develop their own information literacy skills and to support inquiry learning in the Ontario curriculum.

Standard 1	Teacher Candidate Information Literacy Knowledge and Skills
<p>Define and articulate the need for information, plan strategies, and select tools to find that information.</p>	<p>Identify the information literacy objectives necessary for students to engage with subject content and to complete assignments within lessons and units. (e.g. An assignment calls for 3 research articles on an environmental issue from three locations around the world. What are the best search techniques?)</p> <p>Teach the formulation of focused research questions that connect to individual student interests and creativity and engage students in the exploration of real-world issues and in solving authentic problems.</p> <p>Create assignments that relate to the full spectrum of Bloom’s Taxonomy of Educational Objectives.</p> <p>Teach the research process model outlined for Ontario K-12 schools in <i>Together for Learning</i>. Work with Ontario documents relating to information literacy such as the Think Literacy documents by subject.</p> <p>Identify the types of information sources (encyclopedias, newspapers, scholarly articles, textbook, images, etc.) best suited to the need and the means by which to access them.</p> <p>Recognize that different disciplines disseminate their information in different forms and locations.</p> <p>Work with a teacher-librarian to identify and team teach information literacy skills central to each subject area as appropriate.</p> <p>Identify the differences between forms of information sources (scholarly research, primary or secondary sources) and the tools that best organize them.</p> <p>Use visualization techniques such as concept mapping to identify what is known about a topic, develop research questions, identify search terms, and record stages in the research process.</p> <p>Develop technology-enriched learning environments using existing information tools in the school library and those in the local community.</p>

Standard 2	Teacher Candidate Information Literacy Knowledge and Skills
<p>Locate and select information based on its appropriateness to the specific defined information need.</p>	<p>Model and facilitate effective use of current and emerging digital tools to locate, analyze, evaluate, and use information.</p> <p>Use appropriate search techniques for specific information tools (e.g. apply operators in web searches to narrow results).</p> <p>Customize and personalize learning activities to address students’ diverse learning styles, working strategies, and abilities using a range of resources including digital tools.</p> <p>Recognize common misconceptions that students in different age groups and from different backgrounds bring to the research process.</p> <p>Understand the concept of searching by keywords and controlled vocabularies and model how to leverage this knowledge to improve search results.</p> <p>Model a range of general search skills, in collaboration with the teacher-librarian as necessary, to improve results when students are unable to locate sufficient relevant resources. (e.g. Boolean searches, use of specific subject headings and thesaurus when present, identifying synonyms and alternate terminology)</p> <p>Work with a teacher-librarian to model expert database searching strategies that increase relevant search results using cited reference searches, by selecting specific publishers or indexes, or by utilizing alternate search vocabulary, search operators, or strategies unique to individual databases.</p> <p>Determine a method for recording a student’s research process (e.g. journal, portfolio) in a format best suited to the task, including sharing information with classmates in an online collaborative forum.</p>

Standard 3	Teacher Candidate Information Literacy Knowledge and Skills
<p>Organize and analyze the information for appropriate use for the specific defined information need.</p>	<p>Model how to scan and skim textual information sources to locate and select key ideas.</p> <p>Model how to identify key concepts in multimedia.</p> <p>Model note-taking methods using text and images on paper and computer.</p> <p>Organize and manage online information in various formats using personal computer folders, email, or web-based software.</p> <p>Analyse the structure, logic, and presentation of information to determine the type and scope of information sources (e.g. scholarly vs. popular; websites created by reputable organizations vs. those created by individuals).</p> <p>Apply criteria to evaluate information sources by scanning abstracts and subject headings to determine the potential usefulness of the material.</p> <p>Actively model the information seeking process for students to demonstrate how the process can inform and change your perspective on a topic (e.g. new keywords lead to different searches, tracking references leads to related information, different forms of information lead to new perspectives on the a topic).</p> <p>Identify the commercial, cultural, historical, or other significant context within which information was created and disseminated (e.g. purpose of a website).</p> <p>Recognize the similarities and differences across different types of sources (e.g. research reports, web pages, newspaper articles).</p>

Standard 4	Teacher Candidate Information Literacy Knowledge and Skills
<p>Process, synthesize, and present the information in a way that is appropriate for the purpose for which information is needed.</p>	<p>Draw conclusions based on information gathered and determine whether to include or reject viewpoints when constructing an argument.</p> <p>Recognize interrelationships between different sources of information and apply them to develop and extend arguments and ideas (e.g. drawing on professional articles to make and support pedagogical changes in the classroom).</p> <p>Test information using appropriate methodologies such as observation, surveys, or tests.</p> <p>Use analysis tools such as spreadsheets, databases, social networks, to manipulate and investigate information.</p> <p>Choose a communication medium and format that best supports learning outcomes of the intended audience and that supports the purpose of the task (e.g. wiki, blog, printed worksheet, class website).</p> <p>Model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments.</p> <p>Determine if the information is appropriate for the diversity represented in the intended audience (i.e. reading level, access to technology, socio-economic class, culture, special needs, sexual orientation, etc.).</p> <p>Use a range of technologies to accomplish tasks and create products according to the needs of the grade level, subject, and the complexity of the task (e.g. e-portfolios, blogs, podcasts, wikis, web pages, whiteboards, multimedia, etc.).</p> <p>Develop and model cultural understanding and global awareness by engaging with colleagues and students of other cultures using digital-age communication and collaboration tools.</p>

Standard 5	Teacher Candidate Information Literacy Knowledge and Skills
<p>Evaluate individual pieces of information for appropriate use as well as the information seeking process as a whole.</p>	<p>Assess the quality, quantity, and relevance of information against an information need so that students understand how to prioritize and select the best information results for the task.</p> <p>Assess the information literacy and reading levels of students at the beginning of the year and identify methods for ongoing support over the year.</p> <p>Assess information literacy development using inquiry-based assignments (as appropriate to subject content) throughout the year by scaffolding assignments that introduce IL concepts and build over the year and from grade to grade.</p> <p>Provide students with multiple and varied formative and summative assessments and use the resulting data to inform learning and teaching.</p> <p>Articulate information literacy objectives for students as they relate to specific projects and design rubrics and check lists to provide feedback to students on their information literacy development.</p> <p>Discuss best practices in the information seeking process as a whole drawing on the research journals that students create to track their practices and the challenges and tips they share with their classmates.</p> <p>Understand the how different forms of information are disseminated and be able to deconstruct the format for the purposes of analysis (e.g. how to identify a scholarly article and how to analyze its component parts).</p> <p>Analyze the arguments presented in information sources (e.g. for bias, for evidence, and to prioritize the usefulness of sources).</p>

Standard 6	Teacher Candidate Information Literacy Knowledge and Skills
<p>Ethically use and disseminate information.</p>	<p>Advocate, model, and teach safe, legal, and ethical use of digital information and technology, including respect for copyright, intellectual property, and the appropriate documentation of sources.</p> <p>Understand the ethical, legal, and socio-economic issues surrounding information access and use (e.g. Accessibility for Ontarians with Disabilities Act).</p> <p>Understand copyright law in Canada (currently under revision in 2010) and its applications in education (e.g. use of digital images, providing access to online resources).</p> <p>Promote and model digital etiquette and responsible social interactions related to the use of technology and information.</p> <p>Understand and support the methods by which information can be disseminated without copyright restrictions (Open Access) and the methods for designating and sharing copyright free materials (e.g. Creative Commons).</p> <p>Ethically and legally manipulate text, images, and data.</p> <p>Create assignments that engage students in original approaches to information gathering to avoid plagiarism.</p> <p>Apply specific citation styles as appropriate and use a cross-school/province approach as determined by the Ontario library Association models.</p>

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