Ontario School Library Impact Project (OSLIP) Research Report:
Information Literacy from High School to University

How does it feel to come into a new place, like the campus, and need to find and use information to fulfill assignments for courses?

"overwhelming … time-consuming"

"confusing"

"strangely common and on a much larger scale"

"stressful … and also exciting"

How has finding and using information in university differed from what you did in high school?

"In high school, the … teachers didn't require any specific kind of correct information, so we could just Google online whatever question you have and take a website and cite it. It wasn't as serious as it was in university. It's kind of harder in university."

"In high school … there definitely wasn't a library database, but I usually started with Wikipedia [to] see if there is a fact or topic that is going to help me with my assignment. And then I scroll down to the reference page and see whatever is there. Also, I used a lot of textbooks in high school … I would say that finding information in university is definitely a more organized process … whereas in high school, maybe because we weren't taught about it, it was just random search on Google."

Table of Contents

Executive Summary

The Ontario School Library Impact Project (OSLIP), an initiative of the *Ontario Library Association (OLA)*, investigated the impact of school libraries on the development of key information literacy skills in students entering post-secondary education. The OSLIP research strategy consisted of three main elements: literature reviews to determine current research gaps and to inform the study design; questionnaires for first-year post-secondary students; and focused interviews of first-year university students.

The core members of the research team come from *OLA* and from school boards and universities. The co-chairs of the team were Mary Cavanagh (University of Ottawa) and Marc d'Avernas (originally Waterloo Region District School Board, now Mount Royal University, Calgary). The other members were Sarah Roberts (OLA), Dianne Oberg (University of Alberta), Heather Buchansky (University of Toronto), and Kate Johnson-McGregor (Grand Erie District School Board). The team was supported by a 15-member Advisory Committee, chaired by Courtney Lundrigan (University of Toronto), which provided ongoing feedback and guidance on all stages of research. This group represented diverse stakeholder groups, including school libraries and academic libraries (colleges and universities), from small and large communities, distributed across various regions of Ontario.

With the assistance of academic librarians, library staff, and university administration at Nipissing University, University of Toronto, and University of Waterloo, the OSLIP questionnaires were administered online to first-year undergraduate students at the end of the Fall and the Winter terms of the 2019-2020 academic year. The timeline of the study was interrupted by the closing of universities in Winter 2020, due to the COVID-19 virus pandemic.

The closed and open-ended questions included on the questionnaire were informed by the key information literacy skills as defined by the Ontario Ministry of Education's *Model of Discovery and Inquiry* (2007). Questions 2-5 asked respondents to assess their competence in relation to 14 skills identified in the Ontario model, beginning with "I am able to elect a content area suitable for an in-depth investigation," and ending with "I am able to generate ideas that could lead me to future inquiries." An open-ended question in the Fall 2019 questionnaire gave respondents the opportunity to share their high school library experiences from a personal perspective. The Winter 2020 questionnaire added open-ended questions which asked respondents to comment upon and compare their experiences with library staff and resources during high school and during their first year at university. Both questionnaires provided a screening question to identify students who had completed their secondary education in a publicly-funded Ontario school.

The number of first-year university students responding to the questionnaires was small: 165 in Fall 2019 and 33 in Winter 2020. The small dataset presents a serious limitation to the findings of this study; no generalizations to the larger population of Ontario secondary schools can be made. However, the experience of the researchers will be valuable in the design of future research (one of the goals of OSLIP). Moreover, the data collected for the study offers teacher-librarians and academic librarians opportunities for insight and reflection related to the work of information literacy instruction with high school students and first-year undergraduate students in Ontario.

Analysis of data from the questionnaires showed that there were no meaningful differences in the scores for self-assessment of skills by respondents from across the three universities in Fall 2019 and from one university (Nipissing) in Winter 2020. The average answers for Questions 2-5 were almost all between 5 and 6 on a scale of 1-7, with 1 being "Strongly Disagree" and 7 being "Strongly Agree." Comparing the Fall 2019 and Winter 2020 scores for self-assessment of skills by respondents from one university (Nipissing University) suggested that students were less confident about their abilities after completing their first term at university.

The data also showed that there were no meaningful differences in the self-assessment of skills of respondents between those who answered Yes, No, or N/A in relation to whether they received instruction from a teacher-librarian in their last year of high school. However, when the respondents responded to the open-ended question about experiences in learning how to use libraries across their high school years, some differences can be seen: respondents who benefited from instruction from a teacher-librarian in their last year of high school made more positive comments about their library experiences and more frequently mentioned learning core skills related to research, writing and citation.

At the end of the Winter term, four first-year students from the University of Toronto were individually interviewed by the project's graduate student research assistants. All of the first-year students noted differences in expectations of instructors between high school and university specifically related to the types of sources supporting their work. They found that the research and selection strategies applied in senior high school instruction have less application and relevance in a university environment of information overload, where the library's vast digital and physical collections easily overwhelm a novice searcher. Students also noted the valuable assistance they received from various human intermediaries in both high school and university contexts, including their teachers and professors, teaching assistants, and library staff.

Overall, the findings of both OSLIP questionnaires seem consistent with the findings of larger and more in-depth studies such as those conducted by Project Information Literacy (Head, 2013) in the United States. First-year college and university students are challenged by the

demands of post-secondary course research assignments—assignments for which students must select a topic, define a topic focus, and locate and use resources from a large and complex information environment. Unfortunately, the opportunities for students entering post-secondary in Ontario to develop those skills are inconsistent both across and within the 72 (English and French language) school boards in Ontario. This situation is a multifaceted problem confronting both teacher-librarians and academic librarians as well as their teaching partners in schools and universities.

Project Background and Purpose

In order to probe further into the school library learning experiences among matriculating high school students, the Ontario School Library Impact Project (OSLIP) was launched as a research initiative of *OLA*. This project was launched to conduct a research study investigating the impact of school libraries on the development of key information literacy skills in students entering post-secondary education.

Specifically, this project was designed to discover whether a staffed secondary school library has a discernible impact on first-year post-secondary students' information literacy skills. There were two sub-goals of the project as follows:

1. To create preliminary research findings by examining the connection between the skills and competencies of first-year university students and their prior access to and use of their Ministry of Education funded secondary school library (in Ontario).

2. To design a rigorous mixed methods research framework and methodology meeting requirements for validity and reliability that would be able to be replicated in other provincial and territorial jurisdictions in Canada.

Literature Review: School Library Impact

The positive impact of quality school library programs on student achievement has been thoroughly investigated within the context of elementary and secondary schools, but the long-term impact (beyond high school graduation) of high-quality school library programs has been rarely examined. Universities provide one context within which to examine the long-term impact of high school library programs.[1]

What we know about the impact of school libraries based on previous research:

● high-quality library programs and librarians who share their expertise make a positive impact on student learning, on student graduation rates and on students' mastery of academic standards (Kachel, 2013; Lance & Kachel, 2018) – studies from 26 states in the USA & 1 province in Canada (Ontario)
● investments in school libraries and in school librarians make a difference in student achievement (Haycock, 2011) – one study from British Columbia

---

[1] The term "librarian" is used because it is the term used in the literature cited. Definitions of the various roles for school or university library instructional staff are not specifically provided throughout this study. The project team acknowledges there are various educational and employment profiles among school and university library staff offering instruction. In both settings, informal and formal instruction may be delivered by library workers who are not "librarians" (i.e., teacher-librarians and/or MLIS librarians).

- many first-year university students exhibit academic skill deficiencies and this remains unchanged for fourth year students (Grayson et al, 2019) – four universities in Ontario [York, Western, Waterloo, Toronto]
- academic libraries and librarians often are not prepared to or able to address the needs of university students with academic skill deficiencies (Smith, Given, Julien, Ouellette, & DeLong, 2013) – Alberta
- libraries and librarians are rarely featured in recommendations for addressing academic skill deficiencies in schools and universities (see, for example, Grayson et al, 2019; *21st Century Competencies [Ontario],* 2016) – Ontario

"When schools have high-quality library programs and librarians who share their expertise with the entire school community, student achievement gets a boost" (Lance & Kachel, 2018, p. 15).

Thirty years of research in the United States and elsewhere has established that school libraries and school librarians make a positive impact on student learning, on student graduation rates and on students' mastery of academic standards. The active presence and participation of qualified librarians and the form and content of their classroom support are what make the most significant differences. Smith (2013) found that "curricular mandates are insufficient to ensure information literacy (IL) is incorporated into instruction and teachers are ill-prepared to instruct IL effectively" (p. 216). Many students arrive at university, "lack[ing] the IL proficiency required to succeed in the post-secondary educational environment, and the [academic] libraries are not prepared to effectively address this gap" (Smith et al, 2013, p. 88).

Multiple studies have found that test scores tend to be higher in schools where qualified school librarians spend more time:

- Instructing students, both with classroom teachers and independently,
- Planning collaboratively with classroom teachers,
- Providing professional development to teachers,
- Meeting regularly with the principal,
- Serving on key school leadership committees,
- Facilitating the use of technology by students and teachers,
- Providing technology support to teachers, and
- Providing reading incentive programs. (Lance & Kachel, 2018, p. 17).

However, the long-term impact of high-quality high school library programs on students' success in further education, in work, or in personal life has been rarely examined. Universities provide one context within which to examine this impact. A few studies related to the long-term impact of school libraries and librarians have been conducted in the United States:

- Smalley (2004) -- mid-year grades of college students were substantially higher for those who had completed high school with the benefit of librarians and library programs than those who did not – California, US
- Latham and Gross (2008) – when asked about their K-12 information literacy experiences, low-performing college students identified peers as sources of knowledge while high-performing identified librarians and teachers – US
- Head (2013) – first-year students found college course research both exciting and overwhelming – they faced libraries that were large and complex (19 times the number of databases and 9 times the books as their high school libraries), and their high school research competencies were inadequate for the demands of college work – US

School librarians and academic librarians share similar concerns and challenges regarding information literacy instruction (Ingvaldsen & Oberg, 2017), but few studies have examined the impact of academic librarians' work on student learning.[2] Academic skill deficiencies in first-year university students have been documented, but researchers examining this problem often do not include libraries and librarians in their recommendations for addressing this problem (see, for example, the 2019 study of undergraduate students in four Ontario universities by Grayson et al). This omission can be seen as well in Ontario Ministry of Education documents such as *21st Century Competencies: Foundation Document for Discussion, Phase 1: Towards defining 21st century competencies for Ontario (*2016). The first mention of school libraries appears late in this document under Implications, "Physical Space: Research supports the notion that where we learn affects the quality of how we learn"; importantly, this Ministry document makes no reference to school library staff whatsoever.

Current State of School Libraries in Ontario

In 2019, the *Ontario Library Association* (OLA) conducted its first school library inventory to gather data on the state of resources in school libraries in publicly-funded English and French elementary and secondary schools in Ontario. This survey was sent to OSLA members as well as contacts through the Forest of Reading program and therefore did not reach all school boards evenly. The *OLA* data complements data collected annually by *People for Education*, an independent non-partisan group that has been working to support and advance public education in Ontario since 1996. The *OLA* data was used to capture a

---

[2] The term "school librarian" is used because librarians in schools in other countries are not necessarily trained as teachers. Only Canada and Australia are insistent about that and use "teacher-librarian" (CAN) and "teacher librarian" (AUS).

snapshot of school libraries and school library staffing models across the province and to support future research, notably the Ontario School Library Impact Project.

The results of the *OLA* school library inventory mirror two key trends shown by *People for Education* data:

- Both elementary and secondary schools in northern Ontario are less likely to be staffed by professional library staff (teacher-librarians or library technicians) compared with the rest of the province.
- While at most school boards elementary school libraries were staffed by just one staff member, many secondary school libraries are staffed by a combination of teacher-librarian and library technician.

These results underline the diversity in school library staffing models across the province. This diversity is not only among school boards but also between individual schools within a single school board. This suggests that while some boards have a policy regarding how they staff school libraries, this is not consistent across the province. The result is that students across the province do not have consistent and equitable access to trained library professionals and library instruction in their secondary schools.

The *OLA* school library inventory initiative faced a number of challenges. As a library association, most of their contacts are individual (i.e., library staff), not institutional (i.e., board administrators). Reaching school boards with no school libraries, or with limited school library staffing, was a challenge. Some school boards have closed their school libraries in recent years, but the Inventory does not capture this reality. Additionally, there are a wide variety of staffing models at elementary and secondary schools across the province. This poses challenges for both gathering data and for aggregating data in a meaningful way.

The *People for Education* 2019 survey was completed by 1,224 principals, from 70 of the province's 72 school boards. The *OLA* school library inventory received 551 responses, from 53 of the province's school boards. Notably, OLA's school library inventory was only administered in English, and had responses from only 3 of the 12 Francophone school boards. Data was reported in both surveys, according to the same five regions, defined by postal code:

- K – Eastern Ontario
- L – Central Ontario (excluding the GTA)
- M – Greater Toronto Area (including GTA)
- N – Southeastern Ontario
- P – Northern Ontario

Because the OLA inventory is only in its first year, it cannot be used to make comparisons with staffing in past years. However, *People for Education* reported that across Ontario, in

the past two decades, staffing of elementary school libraries with at least one full or part-time teacher-librarian has dropped from 80% in 1998 to 54% in 2019. Staffing varies considerably across the five regions of the province:

> Three-quarters of elementary schools in Central Ontario and the GTA are staffed with only a teacher librarian, while 67% of those in Eastern and 58% of those in Northern Ontario are staffed with only a library technician [and] 27% of elementary schools in Northern Ontario have neither a library technician nor a teacher librarian. (People for Education, 2019, p. 9)

The OLA school library inventory also indicated that school boards in Central Ontario and the GTA employed a higher percentage of teacher-librarians; approximately 65% of the elementary schools in Central Ontario and the GTA reporting on the OLA Inventory had a full or part-time teacher-librarian. Plans for the 2020-21 school year across the province remain in flux. The staffing and availably of school libraries may be impacted as boards respond to the COVID-19 pandemic.

Research Methodology

Research Context and Problem

The mandate of OSLIP was to conduct a research study that investigates the impact of school libraries on the development of key information literacy skills in students entering post-secondary education. The study was designed using a mixed methods approach. Research participants were first-year university students. The OSLIP strategy was designed around three main elements: literature reviews to determine where the current research gaps exist and to inform the study design; questionnaires for first-year post-secondary students in order to gauge their information literacy skills; and focused interviews of first-year university students to determine what is being taught and how it is being taught. Due to COVID-19, universities were closed in March 2020; this resulted in lower than expected responses to the second questionnaire administered in the Winter term, as well as the cancellation of staff interviews.

A recently completed literature review prepared for *OLA* on research related to school libraries in Canada references trends in the reduction of funding, fewer teacher-librarians, and more school library closures (Fiore, 2017). There is a lack of research on the impact of school libraries on information literacy (IL) skills and competencies of K-12 students in Canada. Measuring the impact of both school libraries and teacher-librarians in those school libraries on the educational performance, specifically IL skills of students leaving the K-12 system is a difficult challenge and one that has not been addressed with specific attention to the provision of IL through secondary school libraries by secondary school library staff.

Two specific research questions guided the OSLIP investigation:

1. What information literacies do first-year Ontario university students have at the start of their academic careers?

2. How do first-year university students' experiences of information literacy/inquiry-based learning and instruction via their secondary school libraries (staff, collections, spaces) influence their information literacy/inquiry-based learning assessment in first-year university?

Study Timeline

Study planning started in November 2018, growing out of the work of the core research team in advising *OLA* on the design of OLA's school library inventory. The core research team worked to design the OSLIP mandate, research questions, and research methods. Responsibilities of the advisory group involved supporting the core group in their work. Mary Cavanagh, as principal investigator, took the lead in connecting with three academic librarians at three Ontario universities who would be willing to administer the OSLIP

questionnaire to their first-year undergraduate students. Obtaining research ethics was a major responsibility also undertaken by the principal investigator, first at her home institution, the University of Ottawa, and then in collaboration with academic librarians at the partner universities – Nipissing University, University of Windsor, and University of Toronto.

The study was interrupted by the university closures in Winter 2020, due to the COVID-19 pandemic. The surveys were administered as planned in Fall 2019 and Winter 2020, but the Winter 2020 response rates at two partner universities were too low to be included in the final study data. The pandemic also affected plans for interviews at the end of the Winter 2020 term: four first-year students were interviewed at the University of Toronto by graduate student research assistants. Planned library staff interviews had to be set aside.

Design of the Questionnaires and Interviews

The Fall 2019 questionnaire focused on students' experiences with their secondary school library staff and resources. The penultimate version of the questionnaire was piloted with one class of Grade 12 students. Open-ended questions gave respondents the opportunity to share their high school library experiences from a personal perspective. The Winter 2020 questionnaire was revised slightly, based on the results of the September questionnaire, adding open-ended questions about the students' experience with their university library staff and resources. Both questionnaires provided a screening question to identify students who had completed secondary education in Ontario.

The closed and open-ended questions included on the questionnaire were informed by the 12 key information literacy skills as defined by the Ontario Ministry of Education's *Model of Discovery and Inquiry* (2007). The Ontario Model of Discovery and Inquiry was the framework most likely to be used in information literacy instruction since it was developed and authorized within Ontario. Models used in other provinces were also examined for alignment. The project advisory committee comprised of library staff from both Ontario high schools and universities also reviewed the questionnaire and provided feedback to the core project team. The *ACRL Framework for Information Literacy for Higher Education* (2015), developed by the Association of College and Research Librarians (ACRL), also informed the study design and analysis, since it is the framework used most commonly among academic librarians. Figure 1 identifies the four key areas of activity that are reflected in both inquiry frameworks. Questions were mapped to these four quadrants for analysis.
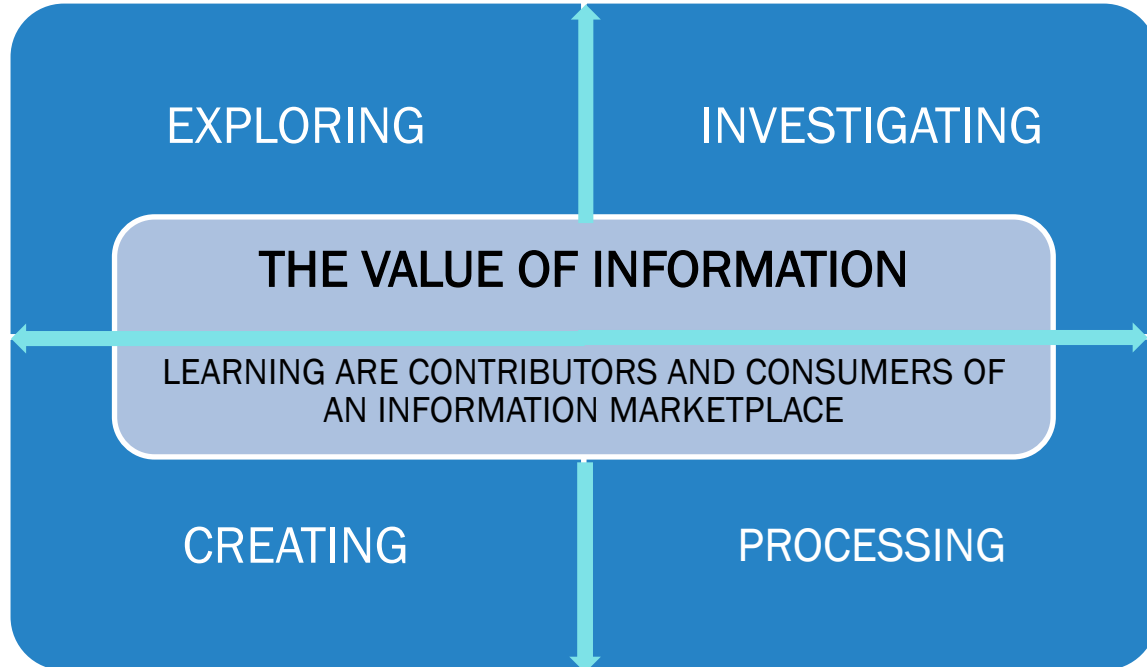
FIGURE 1 CONCEPT MAP FOR THE OSLIP RESEARCH

Questionnaires were administered online to first-year undergraduate university students at two points in the academic year, late in the Fall 2019 term and late in the Winter 2020 term, followed by in-depth interviews by four graduate student research assistants from the University of Toronto's Munk School of Public Policy. Student assistants were guided and trained in the research stages by the project PI and subject expert researcher.

Limitations of the study

The small number of respondents completing both the Fall 2019 and Winter 2020 questionnaires is a serious limitation of the study. The design of future studies will need to address how to increase responses. Although the questionnaire asked whether students received instruction from a teacher-librarian, we were unable to corroborate those responses with information on staffing models from other sources.

Data Analysis

Fall 2019 Questionnaire

Number of Respondents to the Fall 2019 Questionnaire

Because respondents to the questionnaire constituted a convenience sample, no response rate can be calculated for this study. Table 1 reports the number of students responding from each university to the Fall 2019 questionnaire as a whole and the number of students responding to the invitation in Question 13, "Please tell us about your experiences in learning how to use libraries for learning during your high school years (Grades 9-12)." The data excludes "test" answers, answers from respondents who had not attended Ontario high schools, answers where the respondent did not agree to participate, and answers where the respondent agreed to participate but did not answer any questions in the survey. Over half of each group of students wrote about their secondary school library experiences.

TABLE 1 NUMBER OF FIRST-YEAR STUDENTS RESPONDING TO THE FALL 2019 QUESTIONNAIRE

University	Total No. of Students Responding to Questionnaire	No. of Students Responding to Open-ended Question (Qu. 13)
Nipissing	86	66
Toronto	29	23
Windsor	50	32
Total	165	121

Analysis of Responses to the Fall 2019 Questionnaire (close-ended questions)

Questions 2-5 explored the four aspects of the inquiry process: Exploring (E), Investigating (I), Processing (P), and Creating (C). Respondents were asked to rate their abilities (i.e., "I feel I am able to:") from "1-Strongly Disagree" to "7-Strongly Agree" on 14 phases of the inquiry process (see Table 2). "Decline to Answer" was offered as an eighth option. Responses are reported as weighted averages for each university. Weighted averages take into account differences in the number of responses for each question. For example, while

64 students may have responded to the questionnaire as a whole, only 51 students may have responded to one item and only 44 may have responded to another. Weighted averages reduce the impact of extreme outlier responses.

TABLE 2 STUDENT SELF-ASSESSMENT OF INFORMATION LITERACY SKILLS BY UNIVERSITY

Information Literacy Skills	Nipissing	Toronto	Windsor
(E) 2A Select a content area suitable for an in-depth investigation.	5.18	5.14	5.02
(E) 2B Choose a topic from that content area that is interesting to me.	5.49	5.51	5.61
(E) 2C Develop meaningful questions to guide my investigation.	4.94	5.03	5.02
(I) 3A Design a plan and timeline for my investigation.	4.94	4.93	4.75
(I) 3B Locate reliable information.	5.49	5.33	5.34
(I) 3C Formulate a clear focus for my investigation.	5.15	5.23	5.11
(P) 4A Select information that is relevant to the focus of my investigation.	5.59	5.04	5.38
(P) 4B Make connections between my ideas and the ideas that I have found in information sources.	5.67	5.22	5.46
(P) 4C Organize my findings in a logical way.	5.59	5.04	5.41
(C) 5A Create an informative final product and use it to present the results of my investigation.	5.43	5.00	5.27
(C) 5B Assess the quality of my final product.	5.19	5.04	5.18
(C) 5C Reflect on what I have learned about my personal learning process.	5.23	5.04	4.94
(C) 5D Identify ways in which I could improve my process for conducting other investigations.	5.16	5.22	5.24

(C) 5E Generate ideas that could lead me to future inquiries.	4.90	4.78	5.33

Question 8 asked "Did you receive library instruction from a teacher-librarian in your last year of high school? Table 3 compares the respondents' self-assessment of their skills based on whether they answered Yes (32 respondents) or No (80 respondents) to that question.

In the questionnaire, students were asked specifically about their experience with a teacher-librarians, but it is likely that many students did not distinguish between teacher-librarians and other non-librarian library staff.

TABLE 3 STUDENT SELF-ASSESSMENT OF INFORMATION LITERACY SKILLS BY TEACHER-LIBRARIAN INSTRUCTION

Information Literacy Skills	Qu. 8: Yes		Qu. 8: No	
Question - I am able to …	n	Mean	n	Mean
(E) 2A Select a content area suitable for an in-depth investigation.	32	5.31	80	5.30
(E) 2B Choose a topic from that content area that is interesting to me.	32	5.63	80	5.69
(E) 2C Develop meaningful questions to guide my investigation.	32	5.00	80	5.19
(I) 3A Design a plan and timeline for my investigation.	32	4.97	80	5.11
(I) 3B Locate reliable information.	32	5.66	80	5.59
(I) 3C Formulate a clear focus for my investigation.	32	5.03	80	5.39
(P) 4A Select information that is relevant to the focus of my investigation.	32	5.41	80	5.53

(P) 4B Make connections between my ideas and the ideas that I have found in information sources.	32	5.41	80	5.64
(P) 4C Organize my findings in a logical way.	32	5.22	80	5.6
(C) 5A Create an informative final product and use it to present the results of my investigation.	32	5.59	79	5.47
(C) 5B Assess the quality of my final product.	32	5.44	79	5.27
(C) 5C Reflect on what I have learned about my personal learning process.	32	5.31	79	5.18
(C) 5D Identify ways in which I could improve my process for conducting other investigations.	32	5.25	79	5.28
(C) 5E Generate ideas that could lead me to future inquiries.	31	5.19	80	5.06
	30	5.31	80	5.38

Analysis of Fall 2019 Questionnaire (open-ended questions)

Two questions in the survey explored respondents' experiences related to school libraries and school librarians: Question 8 focused on instruction provided by the teacher-librarian in the respondents' final year of high school (Table 3 reports response numbers), while Question 13 invited students to comment more broadly on their experiences across their secondary school years, from Grades 9-12 (Table 1 reports response numbers).

Across the three university groups, 32 of 112 respondents reported that they had received instruction from a teacher-librarian in their last year of high school. Of that number, 23 provided comments on their library-related experiences across their secondary school years (Nipissing 18 out of 24; Toronto 4 out of 9; and Windsor 1 out of 3). The summary that follows represents only the comments of the 23 respondents who reported that they had

received instruction from a teacher-librarian in their last year of high school. The 23 respondents made 107 comments in total; each of the 107 comments was analyzed for content and for affective tone.

The respondents valued the library as a quiet place for study, as a resource for completing assignments and projects, and as a source of materials related to personal interests (10 comments). They found librarians to be helpful and friendly (6 comments); teachers also helped with library-related activities (2 comments). The respondents reported that they learned how to find reliable sources; how to use databases and library catalogues; and how to avoid plagiarism and to cite sources (22 comments). A few respondents reported that they had learned how to "formulate research questions" and how to use books and academic articles as resources for projects and assignments. A few respondents reported more negative experiences, e.g., "never really used the library for help" (2) and "very boring but helpful to learn" (1).

The open-ended comments were also examined for affective tone, that is, how the respondents characterized their feelings related to their library experience: positive; neutral; negative (see Table 4). Positive tone included concepts such as "helpful," "useful," "friendly," or "met my needs." Negative tone included concepts such as "not helpful," "not useful," "not friendly," or "did not meet my needs." Neutral included information as to the presence/absence of a library, of resources, of staff, and so on.

TABLE 4 AFFECTIVE TONE OF COMMENTS RELATED TO SCHOOL LIBRARIES (QU. 13)

University	Positive Tone	Neutral Tone	Negative Tone
Nipissing	20	21	20
Toronto	3	7	5
Windsor	9	9	14
Total	32	36	39

Summary of Analysis of Fall 2019 Questionnaire

The data shows that there were no meaningful differences in the self-assessment of skills by respondents from across the three universities. The average answers for Questions 2-5 are almost all between 5 and 6 on a scale of 1-7, with 1 being "Strongly Disagree" and 7 being "Strongly Agree."

The data also shows that there were no meaningful differences in the self-assessment of skills of respondents between those who answered Yes, No, or N/A in relation to whether

they received instruction from a teacher-librarian in their last year of high school. However, when the respondents' responses to the open-ended question (Question 13) about experiences in learning how to use libraries across their high school years, some differences can be seen: respondents who benefited from instruction from a teacher-librarian in their last year of high school made more positive comments about their library experiences and more frequently mentioned learning core skills related to research, writing and citation.

Winter 2020 Questionnaire

Analysis of Responses to Winter 2020 Questionnaire (close-ended questions)

Once again, on the Winter 2020 questionnaire, Questions 2-5 explored the four aspects of the inquiry process: Exploring (E), Investigating (I), Processing (P), and Creating (C). Respondents were asked to rate their abilities (i.e., "I feel I am able to:") from "1-Strongly Disagree" to "7-Strongly Agree" on 14 phases of the inquiry process (see Table 2). Two open-ended questions invited respondents to comment on their experiences with library staff and resources during their high school years and during their first year of university.

There were too few responses from the University of Toronto and Windsor University to allow for meaningful analysis across the three universities. There were 31 responses from Nipissing University; 12 respondents commented on their high school and first-year university experiences with library staff and resources.

The scores for self-assessed skills (Questions 2-5) did not differ largely between respondents who answered Yes, No, or N/A for Question 8 (whether respondents reported having had instruction from a teacher-librarian during their high school years). Nor did the scores for self-assessed skills differ between the respondents to the Fall 2019 questionnaire (n=171, from three universities) and the respondents to the Winter 2020 questionnaire (n=31, from one university). However, comparing the scores between the Fall 2019 and Winter 2020 questionnaires for one university (Nipissing) suggests that students were less confident about their abilities after completing their first term at university (see Table 5).

TABLE 5 STUDENT SELF-ASSESSMENT OF INFORMATION LITERACY SKILLS – NIPISSING UNIVERSITY

		Fall 2019		Winter 2020	
Q	Question - I am able to...	n	Mean	n	Mean

2A	select a content area suitable for an in-depth investigation	89	5.18	23	4.57
2B	choose a topic from that content area that is interesting to me	89	5.49	23	5.09
2C	develop meaningful questions to guide my investigation	89	4.94	23	4.57
3A	design a plan and timeline for my investigation	80	4.94	19	4.37
3B	locate reliable information	80	5.49	19	4.58
3C	formulate a clear focus for my investigation	80	5.15	19	4.32
4A	select information that is relevant to the focus of my investigation	73	5.59	18	5.00
4B	make connections between my ideas and the ideas that I have found in information sources	73	5.67	18	4.94
4C	organize my findings in a logical way	73	5.59	18	4.94
5A	create an informative final product and use it to present the results of my investigation	70	5.43	16	4.38
5B	evaluate the effectiveness of my final product	70	5.19	16	4.06
5C	reflect on what I have learned about my personal learning process	70	5.23	16	4.25
5D	identify ways in which I could improve my process for conducting other investigations	70	5.16	16	4.19
5E	generate ideas that could lead me to future inquiries	70	4.90	16	4.38

Analysis of Winter 2020 Questionnaire (open-ended questions)

Three questions in the survey explored respondents' experiences related to academic libraries, high school libraries, and the differences between these experiences. Three questions invited students to comment broadly on and to compare their experiences in their first year in university and across their secondary school years from Grades 9-12. The number of respondents making comments was 12 (out of the 31 Nipissing students completing the Winter 2020 questionnaire). The summary that follows represents the comments of the 12 respondents who made comments about their experiences in learning how to use libraries for learning.

The 12 respondents described positive library-related experiences in their first year at Nipissing University, e.g., "really a good experience … helped me grow my research skills," "librarians were always friendly," "very helpful," and "highly informative." Three respondents specifically noted the instruction was course-integrated, that is, connected with their courses. In contrast, the 12 respondents noted their library-related experiences during Grades 9-12 were limited in number and scope, e.g., "a little how to find material but not too much in depth," "overview and background," "strictly databases," "a short intro in 9th grade," and "once for a grade 12 project." Four respondents reported that they did not use their high school library, while two reported positive experiences of library related instruction: "informed us well on finding reliable resources and proper citations" and "did a really good job at showing us how to use the resources available."

The respondents were asked to identify the biggest difference they noticed when comparing their first-year university experiences in finding and using information with their experiences in high school. The most common themes were the university's expectations that students would find "valid" and "credible" sources, such as peer-reviewed and current sources and that students would cite their sources correctly. Other comments related to the size of the collections available to them, the ease of accessing resources, and the availability of helpful library staff.

Interviews

Four first-year students identified through convenience sampling via key academic librarians from the University of Toronto were individually interviewed by the project's graduate student research assistants. Respondents were financially compensated for their participation. The interviewers used an interview guide based on that used by Allison Head and her colleagues for *Project Information Literacy* in the United States. Their study of first-year undergraduate experiences of the post-secondary information environment was large and comprehensive. It included a comparative analysis of library resources in 30 US high school and six academic libraries, interviews with 35 first-term students from six US colleges

and universities, and an online survey with 1,941 US high school and college student respondents (Head, 2013).

The interviewers asked the students to describe how it felt to come into a new place, like the campus, and needing to find and use information to fulfill assignments for courses. The students used words such as *"overwhelming ... time-consuming," "confusing," "strangely common and on a much larger scale,"* and *"stressful ... and also exciting."* The interviewers then went on to ask the students about specific aspects of their information-seeking experiences.

All four of the students had to look for information for course-related research assignments during their first year in university, e.g.,

- For math we had a project called ACT. You had to find an article online that relates to derivatives and integrals. It's something that's not related to math, and it's a world problem. I also had a seminar called cryptology, and we also had to find information on cytology. (Student R)
- I am in health sciences, so a lot of my courses you have to find information for various assignments. Especially for bio, we had to use articles from the U of T [University of Toronto] library article search function. We had to use peer-reviewed articles and stuff like that, so we would use the search tool and find the article and then we'd have to make sure it's peer-reviewed and then use that for an assignment as a reference. (Student M)

The students were asked where (and in what order) they looked for information for a course-research assignment they'd done as university students:

- Go online to U of T [University of Toronto] and go look for databases. I usually take the thirty most popular databases and I choose the first one. I think it starts with an E. I click on it and research the topic, and it shows a lot of articles and websites, and I just decide which ones I want to look at more carefully. (2) I go to the Prof [Professor] or TA [Teaching Assistant]. So for math, I talked to the TA and I asked her questions about different articles. I just ask different questions about the articles to get to know better. For cryptology, I ask my professor and he explains in more details what I need to do. Usually it's just to look online, and then go talk to the person in real life. (Student R)
- The library commons ... Or the U of T library website, whichever it's called. ... I mean, besides just general Google searches, that's pretty much the first place I go to. Like I said, most of my stuff had to be peer-reviewed articles, so I found pretty much all the stuff from the U of T library's page, because most of the articles there at least are peer-reviewed, so it's much easier than going through Google and checking every single one to make sure it's okay. (Student M)
- First, I start on the "OneSearch" library website and then from there, I look up keywords to get results for books on the topic. Once I'd find one book on the shelf, after navigating the library, I'd usually find similar books on the topic around it so I'd

look through those books as well. Otherwise, I'd continue using key phrases on the website and just looking into the books I'd find there. (Student E)

- So, often I would start with the U of T library website. And then often I would go to, like when I want to find an article I usually just find a database. And I know there is different databases, so I see which one applies to the topic I am thinking about the best. And then I would just go into the database and try to find articles. After I have found one, I usually put it in Ulrich's to check for peer reviews and see. And it just goes back and forth. (Student B)

The interviewers then asked the students about how they had looked for information for assignments during their high school years and how that compared to finding and using information on the university campus.

- In high school, the professors or teachers didn't require any specific kind of correct information, so we could just Google online whatever question you have and take a website and cite it. It wasn't as serious as it was in university. It's kind of harder in university. Online it's just easier to Google the answer you have. You can just get it from Wikipedia or online. The wording is different in these articles, and a lot of them are written from higher level students and it's harder to understand it. The information has a better source though. It's harder to find information in university because you have to find more correct sources. You can't just use the website and talk about it. (Student R)

- I mean, for high school, I would mostly go to Google and search up stuff, like I would go to Wikipedia and then I would find the general information and get a summary, and then what I'd do is go to Wikipedia's reference list and use that as a source for my assignments, or go to those sources to get more information on a certain topic if I needed it ... Well, I kind of said it a bit earlier but now, you need peer-reviewed articles so I'm not using Wikipedia so much, I'm going to the U of T library's article search and finding more professional and scholarly articles rather than going to Wikipedia and using the reference list. So like the quality of the sources, but like it's also a bit trickier, because with the articles at U of T on their search base, they are more scholarly articles, so in a way they are harder to understand, rather than just something you read off the internet. (Student M)

- So, for high-school, we didn't use books. We had a library but it was very lacking. So when I did have to use books towards assignments in my senior year, I'd go to the public library and what it would be is that I'd usually go to databases that were available to us and find scholarly articles on the topics that I had to look into and then anything else that I needed to find in a book I'd go to the library's website and find books on the topic. ... It's a lot easier, there are a lot more resources at university. (Student E)

- Okay, so in high school years. There definitely wasn't a library database, but I usually started with Wikipedia and then see if there is a fact or topic that is going to help me with my assignment. And then I scroll down to the reference page and see whatever is there. Also, I used a lot of textbooks in high school. ... I would say that finding information in university is definitely a more organized process. There is a filter for everything and it's, like I just feel the process is more pronounced whereas high school was kind of try everything and see what works. ... Oh, yeah. I was saying that it's, I think the process for research for an assignment is more clear. Like, I would usually start with a library site and then, maybe because it's my first year I haven't seen other things, but I would usually start with the library website and see what's in the database, apply filters, and check, apply keywords. Whereas in high school, maybe because we weren't taught about it, it was just random search on Google. (Student B)

The students were asked to rate the difficulty of finding and using information for course-related research assignments, on a 1-7 scale with 1 being easy and 7 being very difficult). The student ratings varied from 1 to 7. Then they were asked to give a specific example about what made finding and using information difficult or easy:

- I'd say maybe a 7, but it also kind of depends on the class, right? Because this semester ... we were doing an assignment on gene expression control for our library assignment, and I found it really easy to find the two sources that I needed. But then, in the semester before that, we had to make a mock hypothesis, and for that my subject was on the XX topic and for that it was impossible for me to find the sources I needed. Like it took me days just to find one article that I could use ... I was just going through articles and articles, like just making sure it was peer-reviewed and everything, but it was just hard to find a source that had the information I needed for my research topic. Like I had to keep going through pages and pages of search results until I found something I could use. (Student M)

- So for the project in math where I had to find an article related to integrals and derivatives, I was looking for finance articles. I found it really difficult to understand the material, and I went to talk to my professor in finance, and he told me some things that had derivatives in them. So bond duration had derivatives. He recommended a bunch of articles that I could use in my projects. At first it was hard to find information on my own, but when I talked to my professor it became easier. (Student R)

- Yeah, so I just wrote an assignment for History on the Treaty of Versailles and it was very easy for me, even throughout, I started off by being able to get books before we were taken off campus so it was very easy for me. There were books everywhere at every library so I didn't have to force myself to go all the way across campus to a different library and it was very flexible on return dates and everything and they had multiple copies as well as an abundance of scholarly articles online. (Student E)

- Okay, so I'm in Life Science and I was taking BIO 120. There was a library research assignment that we are supposed to come up with a novel hypothesis from reading a lot of articles about a plant species. And, for that assignment I couldn't find many things, many articles about my species and I heard later that it was designed this way so we would not find enough information about it so we can think about a new way to experiment. So that was really difficult because it was hard to find articles about my species. And then another example would be in math where we were supposed to find an article with a calculus equation and present this equation to the class. For me, it's just that a lot of the equations they have in an article is very difficult. It is not entry university level. So it was hard to find an equation that I could at least partially understand. (Student B)

The interviewers asked the students if they had developed any new strategies to deal with finding and using information at university. The strategies suggested were focused on finding, rather than using, information:

- [W]hen I use the database, my strategy is just to write the keywords and if you go online and you click on the keyboard for writing, you can write words and it'll highlight the words you'll specifically need. Sometimes I open an article, I just click on CTRL+F and I can find the specific word that I need and see how many times it occurs in this article. It's just nice to compress the information if you need a certain sentence or word. If it's used commonly in the article, then it's probably relatable to what you're looking for. My mom taught me this and told me to do it. (Student R)

- [C]hecking a source, I always check to make sure it's peer-reviewed. Finding the ISSN number, going on UlrichsWeb, making sure it's peer-reviewed. Typically, I still start with Google even in university, when I am trying to find information, and going through Wikipedia pages. But like most assignments require peer-reviewed sources, so I go to the U of T library site and look for articles that are related to what I am looking for. And this was taught to us in BIO120. When we started our hypothesis assignment, they had a whole guide on how to find peer-reviewed articles and stuff. I'm pretty sure there is also a webpage for BIO120 on the U of T library website and it had a bunch of tutorials on how to find peer-reviewed articles and stuff like that, so I found that was really helpful. (Student M)

- I participate in FLC, the Humanities FLC, and there we had a session about using the library and how to find different things. FLC is a First-Year Learning Community where you meet once every week with people who are in the same program as you, for me that was English and History and you undergo different learning activities with them. So we learned that towards the end of year, so it wasn't very beneficial but it was exactly what I learnt from – I forget – we had a mini-seminar on library use, I think it

was through my History tutorial and the FLC. Albeit, the session was late but it mimicked very clearly something I did early on through Orientation. (Student E)

- So, I guess I haven't developed a strategy for myself. But my professor in my first-year seminar class taught me to basically do the process of going to the library, find a database and then read the description under the database to see which field it applies to the most. Because some are math database, some are arts database. And she said that helps me to narrow down and provide better articles for the things I want to use. And then Wikipedia. Some professors still say go to Wikipedia and see which facts speak to you the most and see if a related article about the fact is in the library. (Student B)

The interviewers asked the students who were the most helpful people on campus when it came to finding and using information for course-related research assignments. The students mentioned the professors (3), the librarians (3), the teaching assistants (2), their classmates (1), and "the system" (lab manuals, library websites and tutorials). The interviewers also explored what it was like trying to obtain information about course-related research assignments from professors and other instructors on campus.

- Student R said, "It's easy. They're really willing to help you, especially the professors I encountered. All the professors I've asked for help, they've been super happy to help me."

Class size made a difference. They found asking for help easier in small classes (30 students or less), but it was more difficult in large classes, and in those cases, they were more likely to go to the teaching assistants for help.

The interviewers' last question asked students to identify two of the biggest challenges they had encountered with finding and using information.

- It's really time-consuming, because as a student, you don't have as much time to look online to find the perfect article, and everything that you need. It's a lot of information and it's a lot of sources. It's super time-consuming and it can take hours. Obviously, the wording too is really complicated to understand. But that's understandable, because some people that are PhDs write these articles. (Student R)

- Probably the biggest challenge is finding something that addresses exactly what you want, because sometimes there is or sometimes there isn't what you are looking for. Like I said with my BIO130 story, I immediately found an article that covered exactly what I needed, but the semester before I couldn't find something that was exactly what I wanted, it was all general information, or something so specific it wasn't really related to what I was trying to look up in the first place. And then also there is the pain of going to check to make sure its peer-reviewed because it doesn't say on U of

T libraries if its peer-reviewed usually, you have to find the ISSN number and go on Ulrich's Web or whatever to make sure it's reviewed there. (Student M)

- Sometimes because there are so many resources, there are so many things online, when I search it is difficult to find exactly what I want. Oftentimes, the search is a bit too sensitive so I'd search up "Treaty of Versailles" but I'd find out things about Versailles as a place in general or I'd get kind of bogged down by details. (Student E)

- So, I am a commuter. So, I got some help from my college librarian but it would be nicer if I lived on campus … to have easier access to those resources. Because the few times I went to her it was very effective. So that would be one of the challenges, because I kind of live far away and don't get help that easily. Another challenge for research would be that, it's just that, I think there is so much techniques in research that I still don't know and I don't think my course had thoroughly provided me with that information before I start researching. Sometimes they tell me afterward, but it's already too late. (Student B)

At the conclusion of the interview, students were asked if they had other comments that they would like to add. The two students who took this opportunity commented about their high school experiences:

- I had a librarian in high school, and she taught me about databases in the last week of high school. So I was a little familiar with databases, but it was still not enough. I wish that my teachers would require us to find information from a specific type of databases and sources, that are super accurate and not Wikipedia. The teachers were fine with everything. The essays that you write, they would be okay with those sources. You would be more prepared for university if they had required better sources. (Student R)

- In my high school, we had a librarian, but it was interesting because I don't think many people went to her for research help. It was more research help from teachers. And notably, it was the social science teachers who taught students how to do research. So, my way of researching is a little bit different maybe compared to how people normally research in science. But we only had one librarian so she was also really busy. (Student B)

Several themes emerge from an analysis of these interviews. All of the students noted differences in expectations of instructors between high school and university specifically related to the types of sources supporting their work. Whereas Google and the free web were accepted repositories from which sources could be used for the high school assignments, university professors required that students consult peer-reviewed work from approved research databases. This distinction in systems of organization and dissemination

of knowledge and information is widely understood by IL instructors. Distinctions at both the repository-level in terms of database choices, and the item-level in terms of selecting appropriate "articles" that both meet the student's subject needs, and meet the instructor's requirement for scholarship are noted in these interviews. Research and selection strategies applied in senior high school instruction have less application and relevance in a university environment of information overload, where the library's vast digital and physical collections easily overwhelm a novice searcher. Students also noted the valuable assistance they received from various human intermediaries in both contexts, including their professor, teaching assistants, and library staff. Students expected they could access these human intermediaries to provide interpretative assistance or directional guidance perhaps because they had prior knowledge from high school context, or because they had received some exposure to an academic librarian earlier in their orientation to first-year studies, or both.

The two pedagogical frameworks from Ontario's Ministry of Education and the ACRL framework for academic librarians look very different, although their underlying objectives are very similar. Pared to their essentials, both frameworks seek to build students' capabilities to conduct effective information inquiry and research. Evaluating the types of sources is but one part of that larger cycle. It is unclear if and how these respondents have learned other dimensions of the inquiry process beyond the investigative dimension of identifying and locating relevant scholarship.

Discussion

The small number of responses to the questionnaires poses a major limitation to the study's discussion and implications. Consultation with the OSLIP Advisory Committee will be needed to assist in the analysis of the questionnaire data and the design of future research. Each university partner will have access to the data, inviting their further insight and reflection into the work of information literacy instruction with the first-year undergraduate students in their institutions.

Overall, the preliminary findings of the first OSLIP questionnaire appear consistent with the findings of larger, in-depth studies such as those conducted by Project Information Literacy (Head, 2013). First-year college and university students are challenged by the demands of post-secondary course research assignments—assignments for which students must select a topic, define a topic focus, and locate and use resources from a large and complex information environment. Unfortunately, many Ontario students entering post-secondary education have had few or no information literacy experiences and direct instruction in their high school years. This situation is a multifaceted problem facing all types of school library staff conducting instruction with students, and academic librarians as well as their instructional partners.

Recommendations for Research and Practice

For Researchers

- Despite having excellent research partners in the three universities, the process of getting research ethics approval and receiving an appropriate quantity and quality of responses to the questionnaires from first-year university students was challenging. Researchers undertaking mixed method research involving several post-secondary institutions should expect lengthy timelines for the necessary approvals and preparations.

For High School Library Staff

- Students who had the benefit of information literacy instruction in high school seemed to be more aware of the complexities of using information for learning. Perhaps because they knew what they didn't know, they were less confident of their skills and tended to rate their skills lower than did students who hadn't had that instruction. Teacher-librarians should continue to help students understand the affective challenges involved in finding and using information for learning.
- Students who had the benefit of information literacy instruction in high school seemed to have a stronger understanding of the "creating" aspect of the inquiry/research process. Teacher-librarians should continue to help students and their teachers to see the inquiry/research process as a complex personal learning process that involves cognitive and affective changes as well as acquisition of discrete skills.
- Students expressed the need for exposure to, and effective use of, several different types of databases.
- Students who had worked with teacher-librarians and had received library instruction in their high school years generally commented positively on those experiences.

For Academic Librarians

- Only about a quarter of the respondents had instruction from teacher-librarians during their high school years. This suggests that academic librarians need to assess the information skills of first-year students as part of their planning process for programs of information literacy, share that data with faculty, and jointly plan programs.
- Information literacy instruction most frequently addressed information location and use in the humanities and social sciences in high schools, while in universities a broader range of subjects were addressed. For example, the first-year students interviewed in this study were using library resources for course-related research in mathematics, finance, and biology as well as in the humanities and social sciences.
- First-year students who had worked with academic library staff generally commented very positively on those experiences.

Final Thoughts

Information literacy, or "learning to be a learner," is a lifelong pursuit involving finding and using information. The transition from high school to university reveals gaps in the skills and understandings that learners need in their new information environment, whether that be as students in post-secondary institutions, as producers and creators in workplaces, or as citizens in communities. The gaps revealed in high school to university transition, characterized as "deficiencies in academic skills" (Grayson et al., 2019), are skills and understandings that are essential to functioning in workplaces and communities, as well as in post-secondary education: critical thinking, analysis, problem-solving, that is, dealing with complex learning challenges. Librarians, as information professionals, can serve as mediators / translators / intermediaries who can help to bridge the gaps, but that role often is not recognized or understood.

Acknowledgements

References

21st century competencies: Foundation document for discussion, Phase 1: Towards defining 21st century competencies for Ontario. (2016, Winter). Toronto, ON: Ministry of Education.

Association of College and Research Libraries. (2015). ACRL Framework for Information Literacy for Higher Education. Retrieved from https://acrl.ala.org/framework/

Fiore, Leah (2017). *Advocating the Teacher-Librarian in Ontario: Insights from the Research.* Study prepared for the Ontario Library Association, Toronto: University of Toronto iSchool.

Grayson, J. P., Côté, J., Chen, L., Kenedy, R., & Roberts, S. (2019, April). A call to action: Academic skill deficiencies in four Ontario universities [York, Western, Waterloo, Toronto]. https://skillsforuniversitysuccess.info.yorku.ca/files/2019/04/04-26-2019-AcademicSkills.pdf

Haycock, K. (2011). Connecting British Columbia (Canada) school libraries and student achievement: A comparison of higher and lower performing schools with similar overall funding. *School Libraries Worldwide, 17*(1), 37-50.

Head, A. J. (2013). *Learning the ropes: How freshmen conduct course research once they enter college.* Washington, WA: Project Information Literacy, Passage Research Studies. Retrieved from https://www.projectinfolit.org/publications.html

Ingvaldsen, S., & Oberg, D. (2017). Media and information literacy in higher education: Educating the educators. Cambridge, MA: Chandros.

Kachel, D. E. (2013). *School library research summarized: A graduate class project.* Mansfield, PA: Mansfield University. Retrieved from https://issuu.com/dkachel/docs/impactstudy

Lance, K. C., & Kachel, D. E. (2018). Why school librarians matter: What years of research tell us. *Phi Delta Kappan, 99*(7), 15-20. Retrieved from http://www.kappanonline.org/lance-kachel-school-librarians-matter-years-research/

Latham, D., & Gross, M. (2008). Broken links: Undergraduates look back on their experiences with information literacy in K-12 education. *School Library Media Research*, 11.

People for Education. (2019). What makes a school? People for Education annual report on Ontario's publicly funded schools 2019. Retrieved from https://peopleforeducation.ca/wp-content/uploads/2019/06/PFE-2019-Annual-Report.pdf

ola
:. ontario library association

Smalley, T. N. (2004). College success: High school librarians make the difference. *Journal of Academic Librarianship, 30*(3), 193–198. https://doi-org.login.ezproxy.library.ualberta.ca/10.1016/j.acalib.2004.02.008

Smith, J. K. (2013). Secondary teachers and information literacy (IL): Teacher understanding and perceptions of IL in the classroom. *Library & Information Science Research*, 35(3), 216-222.

Smith, J. K., Given, L. M., Julien, H., Ouellette, D., & DeLong, K. (2013). Information literacy proficiency: Assessing the gap in high school students' readiness for undergraduate academic work. *Library & Information Science Research,* 35(2), 88–96.