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Article

Fostering the integration of information literacy and journalism practice: a long-term study of journalism students

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Abstract

Journalism students draw on a range of information skills and resources to complete both practical and academic assignments. A five-year qualitative study gathered annual reflections on information use from a total of 215 students. A thematic analysis of the statements made by students demonstrates the value of reconfiguring information literacy (IL) instruction to align with the professional needs and practices in their discipline. Deliberate scaffolding encouraged students to transfer ways of understanding and using information between personal, academic, and journalistic contexts. Student statements provide evidence that many are integrating formal learning with experience to develop IL that serves their academic and professional information needs. The long-term nature of the study also provides evidence of students developing their understanding of threshold concepts in IL and internalising those concepts into their practice. Insights from the study may inform changes to instruction within and beyond professional programmes to encourage transfer of IL skills and knowledge between students' personal, professional, and academic information ecosystems.

Keywords

information literacy, professional programmes, journalism, teaching, threshold concepts

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1. Introduction

From 2008 to 2013, journalism students at a small Canadian university completed annual assignments to reflect on and document how they used information. Their reflections include statements about a breadth of skills, resources, and knowledge that support a very broad definition of IL. The Association of College and Research Libraries (ACRL 2014) has also recognised the need for a wider understanding of IL and in the revised draft of the *Framework for Information Literacy for Higher Education* released on June 17 this year proposes the following (p. 2).:

> *Information literacy is a repertoire of understandings, practices, and dispositions focused on flexible engagement with the information ecosystem, underpinned by critical self-reflection. The repertoire involves finding, evaluating, interpreting, managing, and using information to answer questions and develop new ones; and creating new knowledge through ethical participation in communities of learning, scholarship, and practice.*

This definition encompasses the range of attributes students identified in this study, and incorporates the idea of an information ecosystem – which can be understood to include both resources and relationships between resources. In the data, student statements reveal not one ecosystem, but three overlapping ones: personal, academic and professional. While some elements are common to all, there are differences in which elements are more prominent, and in the roles certain resources serve, that affect how students accomplish information tasks.

A re-conceptualisation of the Mount Royal University journalism programme in 2008 afforded the opportunity to rethink the IL support provided to these students based on the data gathered in a previous study that ran from 2003 to 2008 (MacMillan 2009; Field and MacMillan 2011). The two critical aspects of this reconfiguration were to link IL more directly and explicitly to their needs as professionals and to support students in transferring knowledge between academic, professional and scholarly ecosystems. I gathered data for the first five years of the new programme using the same instrument and protocols as in the previous study and gained informed consent from 215 students to include their data in the current project. Reviewing the students' reflections from this second round indicated that more of them were drawing on personal information skills, particularly those related to social media, and that they were articulating the journalistic uses of information skills much earlier and more frequently than in the previous study. This paper is intended to provide a sense of how that integration appeared in their reflections, what factors may have encouraged it, and how this knowledge can inform IL instruction in both academic and professional programmes. The long-term nature of the study also provides some insight into how students develop their understanding of threshold concepts in IL.

1.1 Literature review

While the literature on IL instruction is voluminous, relatively few papers discuss how students attain and use IL for purposes beyond academic papers and projects. Discussions of IL in the workplace, much of it reliant on Lloyd's groundbreaking work, indicate that the use of information outside academia is quite different (Lloyd 2007; Lloyd and Williamson 2008). Interest in IL learning for the workplace is growing (Tuominen et al. 2005; Beetham et al. 2009; Head et al. 2013; Hicks 2014) with general consensus among these researchers that there needs to be a more holistic understanding of IL that encompasses information needs and practices beyond academia. While there has been some work that examines IL in professional programmes where the boundaries between school and work are less clear (see for example Forster 2013), there is still a sense that in most cases academic librarians concentrate on developing IL skills and habits for academic research.

In programmes for knowledge industries such as journalism IL instruction must include, if not focus on, the information needs of the profession. The links between IL and journalism have been studied by Bolding (1996) and later Singh (2005) who found that, while journalism faculty thought information skills were important, few were incorporating them in the curriculum. A number of papers describe work to make IL more relevant to journalism students, most often by developing curated resource lists tailored to some journalistic functions or assignments (Gunaratne and Lee 1996; Drueke and Streckfuss 1997; Boyle and McPherson 2012). A more integrated approach was taken by Brown and Kinglsey-Wilson (2010) who developed an activity and assessment modelled on an authentic simulation of a breaking story. A critical element in most of these programmes was deep collaboration between librarians and discipline faculty that allowed for an understanding of how journalists work with information. This was seen on a much larger scale when the Association of College and Research Libraries worked with the Accrediting Council on Education in Journalism and Mass Communication to refine the *Information Literacy Competency*

Sandards for Higher Education (Association of College and Research Libraries 2000). The resulting document essentially maps the standards to journalism practices and examples (Association of College and Research Libraries 2011) which is useful but still looks at IL from the library rather than the journalism perspective.

That journalism has a definite perspective on IL is in no doubt. As Case (2008, p. 250) notes, "In a concrete way, journalism is largely information seeking". Major journalism education bodies all include aspects of IL in their lists of competencies (European Journalism Training Association. 2006), their training materials (National Council for the Training of Journalists 2012; National Council for the Training of Journalists 2014) or their accreditation requirements (Accrediting Council on Education in Journalism and Mass Communication. 2012). Studies examining the priorities of journalism educators and professionals, or employers, often disagree on specific aspects of the journalist's ideal skillset. However both groups tend to rate skills and attributes linked to finding and using information highly (Du and Thornburg 2011; Opgenhaffen et al. 2013; Finburg and Klinger 2014). Studies by journalism researchers that look at more specific skills not only include IL, they link it directly to critical activities in journalism (Attfield and Dowell 2003; Machill and Bieler 2009; Agarwal and Barthel 2013; Drok 2013; Wenger 2013). There is general agreement that journalists need a range of skills in order to use information to find stories, sources and background information, and that much of this activity has been radically changed by the internet and now social media. Machill and Beiler (2009, p. 201) concluded that the journalists in their study had only "a moderate level of search engine competence". Diekerhof (2013, p. 234) spoke more directly to the need for better education in information use: "Journalism educators need to explain the difference between 'journalistic research skills' and 'academic research skills'". It is interesting to note that neither the recent studies in the journalism literature, nor the materials from organisations mention libraries or librarians.

Perhaps the clearest guide to the intersection of IL and journalism skills comes from Bornstein (2003). His background as both an academic librarian and as a news reference librarian for the NBC network gave him an excellent perspective on the integration of journalism and IL. His recommendations start from the journalist's perspective rather than from the librarian's. He describes seven critical areas of information use: to develop story ideas; to provide background information; to provide context for stories; to identify expert and non-expert sources; to prepare for interviews, to locate statistics; and to verify facts. These resonate far more clearly with the literature from the journalism profession than the ACRL guidelines. Bornstein (2003, p. 207) notes "These competencies are necessary not only for career success, but also to be able to perform profession tasks in a manner that will contribute to the social good". In re-conceptualising the IL support provided to students in the Mount Royal University journalism programme, I focused on finding stories, finding sources, finding background information and fact-checking. Evidence of these and other journalistic aspects of IL emerged from the student reflections in the current study. In interpreting the data, as well as the workplace IL materials noted above, early discussions of threshold concepts in IL which I was fortunate to hear of at conferences in 2009 (Townsend, et al. 2011) helped me broaden my conception of IL. More recently, Holliday and Roger's 2013 paper has helped me understand both journalists' and students' perspectives on IL as a means not an end, as the development of ways of finding out about something rather than using specific tools or skills.

2. Research project on the information skills of journalism students

2.1 Context

I gathered data on how journalism students acquired and used IL skills from 2008-2013, a period of sweeping change in the Mount Royal University journalism programme. As our institution changed from a college to a university, the programme developed from a three-year applied degree to a four-year Bachelor of Communication. As part of that evolution, the entire first year introduction to journalism practice courses were completely reconceived. Several courses were merged into a single team-taught course in which I was embedded as the librarian for the programme. This course integrated practices in print, online, broadcast and photo-journalism, with a focus on 'story first'. Students were expected to engage in the practice of journalism from the very first day of classes, developing their skills as they worked on multimedia projects, typically on topics of their choice. The faculty involved in the course met regularly to co-ordinate instruction and assignments.

I attended as many of the writing classes as my schedule allowed, participating in discussions, giving demonstrations or leading activities as the need arose, and learning a lot about journalism. The majority of my IL instruction for this course was integrated with students' projects. It occurred at time of need and usually as an individual or small-group consultation, rather than in one-off classes. I continued to provide more formal instruction both in the students' theory courses throughout the programme, and in many of their later practice courses. Throughout my formal and informal meetings with students I was careful to explicitly connect learning in one domain to fulfilling information needs in another. I was also deliberate about linking each new tool and technique to finding story ideas, sources and/or background information. Students were also likely to encounter some academically-focused IL instruction in their option courses.

The structure of the journalism programme encourages the integration of academic and practical work. Students generally take courses in theory, practice and academic options each semester. Students in their second year start contributing to the community newspaper based within the programme and, generally in their third year, have an internship in journalism or communications. All of the faculty in the programme are or have been professional communicators, most in journalism.

2.2 Methodology

I used the I-SKILLS résumé, a tool developed and tested in the prior study (MacMillan 2009) to gather data. It deliberately uses a familiar, simple form with very open prompts.

Figure 1: The I-SKILLS résumé form

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I-Skills Résumé
(Information Skills and Knowledge for Lifelong Learning Success)
Personal: *(Name, Course, Semester, Year)*

Special Expertise: *(What kinds of info or topics are you especially adept at finding/evaluating/using)*

Education: *(What classes, training reading, self-teaching etc. have you done in the area of information skills)*

Experience: *(what types of information can you find and what tools can you use – e.g. article databases, library catalogues, deep web sites, laws, addresses, etc)*

Other: *(Anything else pertaining to your information finding/evaluating/usage skills you'd like an employer to know, e.g. citing/analysing/bias checking)*

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Students were introduced to this tool late in the fall semester of their first year when they completed it and emailed it to me. I returned it to them for updating during a fall course in each of their subsequent years in the programme. Students revised their I-SKILLS résumés in a second-year professional preparation course and a third-year research methods course, each of which allocated some marks for its completion and in each case emailed me the revisions. For the first cohort (2008) I was also able to insert it as an assignment in a 4th year course, but curricular changes made that final data collection point optional for the other cohorts. As I was minimally involved in grading first year projects, students were invited to participate in the research project in their second year, from which point on I had no evaluative responsibilities. Students completed a consent form approved by our campus Human Ethics Research Board, and 215 students (approximately 88% of students enrolled) consented to participate. I gave students the opportunity to review and revise their participation status each year. I also made it very clear that, while the I-SKILLS résumés were assignments, participating in the research project was entirely voluntary. Only I knew who was participating, and I was the only person who saw the I-SKILLS résumés. While I provided feedback to all students on their I-SKILLS résumés, they were not marked for content. This may have increased the honesty with which students reported their skills, - some students even removed early statements about skills from later résumés.

Students found the I-SKILLS résumé easy to complete, and the assignment prompted very few questions over the years, even from students who were absent when it was introduced. Several students indicated explicitly in their emails that they had found the opportunity to reflect rewarding and useful, both for identifying areas where they needed to work on skills and in prompting consideration of how much they had learned. The email conversations around submission and feedback enabled me to direct the students to useful resources in their areas of interest and alerted me to new resources that students had found.

The advantages of student-reported data are that they provide different, often surprising perspectives on what information skills and knowledge comprise. The open-ended nature of the tool allowed students to decide what to report and what to emphasise. There was no specific suggestion either on the form or in the verbal instructions I gave to connect skills explicitly to practice, but the nature of the form (based on a résumé) and the wording of the final prompt may have inclined them to make those connections, even though the information they provided was going to me rather than to an employer. The rationale I provided for completing the résumé, and indeed my initial purpose in developing the assignment, was to prompt students to reflect on and articulate aspects of their developing IL.

I reviewed and coded the completed I-SKILLS résumés for instances of various IL skills and for development of skills over time. During the coding, uses of IL in professional context emerged as a dominant theme. The seven categories identified by Bornstein (2003) around finding and using stories, sources and various types of background material proved useful in clustering the statements that illustrated the integration of journalism and information skills. In many of these, social media plays an increasingly important role, often first in personal information uses, and then as part of professional skills. Beyond Bornstein's (2003) categories, themes emerged around the integration of IL from personal or academic information ecosystems into professional information uses, and the inclusion of descriptions of affect and personal attributes within information skills, that are also vital to success in journalism.

2.3 Results

Data from the students' reflections illustrate the use of information to accomplish journalistic tasks. Not all students wrote at length; many just listed tools, or kinds of information they could find, without linking them explicitly to particular aspects of work. Some initially minimalist résumés were followed up by more expansive ones in later years. The quotations give a sense of the breadth and depth of responses within a category, and were drawn from many students across all cohorts.

2.3.1 Finding story ideas

Finding story ideas is the foundational skill in journalism. From the very first year of the programme students are tasked with developing multiple story ideas, some of which become print stories and/or multimedia projects. In the second year this demand expands to providing stories for online and print publication of the Calgary Journal, a community newspaper based in the programme; in the third year there is more emphasis on multimedia storytelling, and in their fourth year most have editing/masthead roles and undertake larger print or documentary projects. All of these depend on their abilities to develop and pitch story ideas. To do this, they employ traditional IL skills such as using databases, statistics and other information, but are increasingly likely to diversify their searching with social media resources.

Now in the second year of journalism I find myself looking through the newsstand service a lot, looking at other articles written and getting ideas, and to see how others would write that. (2011 cohort, year 2)

Email subscription to multiple news sites (for daily news updates) Email subscription to local organizations (for updates on issues around the city) (2010 cohort, year 2)

I have gotten more comfortable with using official documents or interpreting laws/charts/statistics, and been taught how to use them to determine trends and find a story (2011 cohort, year 2)

Blogs and other social media outlets offer more inspiration than news sites and therefore, I am now resorting to them more and more to discover new information and fashion-related topics (2008 cohort, year 3)

Students noted social media as a resource for story ideas with increasing frequency in each year of the study. This may in part be related to growing familiarity with these tools among the instructors, which led to more deliberate inclusion of Facebook, Twitter and tools which could search these resources in the curriculum. However, there were almost no mentions of being taught to use social media, while there were several statements linking more traditional information tools explicitly with being taught particular skills or resources.

2.3.2 Finding sources

Finding sources is an area where students have to develop creative strategies. As novices in the profession they are just beginning to develop networks of expert sources and what Bornstein (2003, p. 206) characterises as 'real people', such as witnesses and concerned citizens who they can contact for information on diverse stories. The few formal sessions I teach in the first year practice course are generally geared to finding sources through social media, online directories, and somewhat arcane tools like phonebooks. Activities also involve using local news stories to find people who may work as sources for their own articles, and Google Scholar to locate experts. Students seem to enjoy using tools developed for other purposes as 'sneaky' ways to find sources, and in many cases their information skills extend well beyond the library.

I use Facebook a lot to find local groups or persons that I need to contact, as well as Twitter when I need a broad question answered by a large group (#yyc anyone?) (2010 cohort, year 1)

I also use "old-school" ways of receiving information with yellow and white pages. One can easily look up a person or business simply by opening the book and finding their name, number, or area code. (2010 cohort, year 1)

I enjoy finding people sources because I think that is one of the easiest things to search. For example, in this year's multimedia presentation we needed to find someone who is currently unemployed. To do this we went to Kijiji and searching under "wanted jobs", there was immediately hundreds of jobless people in our local district that we could contact and within an hour, we had our source. (2008 cohort, year 1)

Finding individuals using news databases provided on the library website. (2011 cohort, year 2)

By learning how to find these [scholarly] sources I have also discovered how I am able to find sources of information from the authors themselves and use them as interview sources. (2009 cohort, year 2)

Hitting the streets and actually talking to people is the best way to find information or story ideas (2008 cohort, year 2)

I can find any source necessary… sometimes… (2010 cohort, year 2)

Finding sources for stories was where the largest number of students expressed a link between IL and journalism skills. Many students identified more than one way of finding people, a large proportion of which involved social media. The range of tools students use may be linked to the diversity of the requirements for various stories; effective ways of finding contact information for CEOs will not work as well for finding people who like bagpipe music. This was also an area where students expressed a great deal of confidence in their abilities, a self-efficacy that may indicate the strategies they are using work well for their needs.

2.3.3 Finding background and contextual information for stories

Closely related to searching for sources is searching for background material on these individuals.

Twitter and Facebook for researching the personality of the person I will interview (2010 cohort, year 2)

As a journalist, I believe that it is important to know something about the subject you are writing on ahead of time. In many cases during my internship, I would have had [no] idea what I was supposed to ask my interview subjects unless I knew a bit about the subject. (2009 cohort, year 3)

Students also have to locate background information to provide historical, statistical or local context to their stories.

I was able to complete a data analysis project regarding one of my stories on player disparity amongst Canadian lacrosse players. The analysis was crucial to making the story work and the results were great. (2011 cohort, year 2)

I also find myself (from time-to-time) utilizing many databases like ProQuest to enhance my knowledge of a subject prior to completing an interview. (2009 cohort, year 3)

Exploring through Canadian Newsstand, IPSOS, FPInformart, Associated Press databases. I've taught myself to use multiple *available resources, and access multiple sites, even just for background info.* (2010 cohort, year 3)

Finding statistics that specifically apply to an article and add to it to make it more informative (2008 cohort, year 4)

While Bornstein (2003, pp. 205-6) links the journalism principles of fairness and accuracy to finding stories, the students' statements linked fairness and avoiding bias more often to finding background information. Many students wrote about reading around an issue to gather multiple perspectives.

> *When it comes to gathering information I find numerous sources. I do not simply stop at one information source. Even when I find my information I dig deeper in order to make sure nothing has been left unturned.* (2009 cohort, year 1)

> *I am now fairly good at analysing papers and sources which helps me to distinguish their validity. I have also come to terms with biases always making an appearance in writing, and despite what we have been taught, I have come to appreciate biases. I find that when a writer is able to proficiently back up their thoughts and values, it makes for a more interesting read than one who is trying to argue both sides.* (2008 cohort, year 3)

> *Never just look at one paper on a topic, will read many different papers that I know generally have different views (based on the political spectrum) to come to conclusions on my own.* (2010 cohort, year 4)

Searching for background knowledge may be where journalism information overlaps most with the academic information ecosystem. In many cases the search for background on an expert source or news topic may require similar sources to work on an academic essay. The deliberate search for diverse points of view is also critical to both journalistic and academic work. Some students exhibit a development in thinking around bias, moving from a black-and-white belief in absolute objectivity to more nuanced understandings of the range of possible perspectives on a topic.

2.3.4 Fact-checking

Core to the practice of journalism is the notion of verification – ensuring that the facts of the matter are presented accurately, that quotations are reported as recorded and that details are based on evidence. As Bornstein (2003, p. 206) notes, this is a "non-glamorous aspect". However it is one that sharpens some of the more basic IL skills as students develop more efficient routines to check spellings, dates, and other information. Often students' entry into the profession involves fact-checking stories written by others and this is certainly a requirement of work in the journalism programme. Students rarely note the tools they use for checking, but understand that the activity demonstrates an ability to use information and therefore report it frequently in the I-SKILLS résumés.

> *Linking from site to site to verify sources, and just through different databases is one way I gather, and double check information.* (2011 cohort, year 1)

> *Through my experience in journalism school and in the professional field I have had to do plenty of fact-checking. Whether that be through internet or databases searches or directly calling sources* (2008 cohort, year 3)

> *Many things require checking before publication, such as names, dates and other essential facts. Quite often these need to be made under deadline, so I've become adept at getting them done quickly. As an editor, I'm developing a sixth sense when it comes to spotting factual errors.* (2009 cohort, year 4)

Students rarely linked fact-checking to any direct instruction. Rather they appear to use a range of tools, predominantly 'the internet,' to check their information. There may be some room here for IL instruction that helps them develop collections of trusted sites beyond Wikipedia, and also more efficient workflows.

2.3.5 Using the work of others as examples and to identify gaps

Students use the work of others both as examples of how to cover particular kinds of stories and as a way of identifying new angles on current issues or untold stories. This extends beyond their print work, and provides some insights on how they see themselves as information creators, not just consumers. It shows them becoming aware of how journalists converse with the world, and of finding places within that conversation for their own contributions. Attfield and Dowell (2003) and Machill and Beiler (2009) noted frequent use of news databases for these purposes among the journalists they studied.

> *Using search engine Google to find other photographers and techniques to improve my own skills....* (2011 cohort, year 2)

> *Television and radio broadcasts: listening to how others report information, help journalists improve the way they write and report stories.* (2011 cohort, year 2)

> *I can find news articles that have similar topics to what I plan to do a story on, which allows me to pool resources so my story is different and more informed.* (2010 cohort, year 3)

> *Analysing news articles to search for different angles of a story which may better appeal to readers* (2010 cohort, year 3)

The comments in this category have led me to wonder about the place of examples in academic IL instruction. While I frequently teach students to search for academic articles, I rarely hold them up as examples of writing to emulate. It may be that the gap between student journalistic writing and that of professionals is narrower and therefore the students can more easily see themselves as capable of adopting the styles they read. This highlights an area where I can foster transfer from journalistic to academic writing more explicitly not only so that students can see academic articles as having a definite style, but also so they can look for patterns in what has already been written so that they might write something new.

2.3.6 Dissemination and copyright

A very few students explicitly refer to dissemination and copyright in their understanding of information skills. The first quotation comes from a mature student who was active in editing publications both on- and off- campus. Students now routinely use social media to promote their articles, but this was not common during the data-gathering period. I have begun to teach the use of social media to widen the reach of one's work more explicitly to students *and* faculty.

> *Comprehensive understanding of social media usage, primarily Facebook and Twitter, for gathering sources for potential stories (by strategic use of hashtags to get attention from a specific audience) as well as content promotion.* (2008 cohort, year 4)

Other students spoke directly to the translation role journalists have in information dissemination

> *Interpreting information and conveying it in a comprehensive manner* (2011 cohort, year 1)

> *Can write news stories from both qualitative and quantitative research articles* (2009 cohort, year 4)

There were very few mentions of copyright, indicating an area ripe for improvement in both formal and informal IL work with these students. We have since incorporated a session with the campus copyright officer into the Law and Ethics course, and there are plans to include material on copyright into journalism practice courses.

> *I learned about copyright laws of photographs and articles which are important for when I become a journalist because it's important to understand copyrights of others but also how to put out my work as well.* (2011 cohort, year 2)

The statements in this category all rely on students seeing themselves as content creators as well as consumers, a dual role built into the programme which encourages students to think of themselves as journalists from the first day of classes. It is hardly surprising that statements around the mechanics of dissemination were most common in the small set of fourth-year resumes, as students in that year take on editorial responsibilities for both the print and online production of the *Calgary Journal*, and many are also active on community newspapers or have completed internships in other media outlets.

2.3.7 Transfer and integration

In studying the changes in individual student's résumés over time, there was a strong pattern of identifying information expertise relating to personal interests in the first résumé for example hockey, movies, music, or fashion. Students then developed their skills in working with that information professionally in subsequent résumés, either for their beat for the *Calgary Journal*, or for other outlets. While for most this seemed a natural and unremarked transition, some résumés explicitly describe the transfer of skills between information ecosystems, where a student's personal interests led to research skills they were able to use for journalism.

Personal to professional

> *Animal statistics or welfare groups. Maybe it is because I look harder for them, or because they are trying hard to get the word out there! This year I am on the pets and animal beat so I have continued to use what I already know* (2010 cohort, year 2)

> *As a practitioner of hot yoga I feel I already have a network of people (instructors, studios, friends) who I can utilize to dig up relevant information.* (2010 cohort, year 2)

> *My personal experience in competitive sports has allowed me to understand sports writing and how to evaluate articles, broadcasts, blogs, and editorials.* (2011 cohort, year 2)

Academic to professional/personal

> *I use a lot of article databases through MRU even for things not associated through school* (2010 cohort, year 1)

> *Using early communications theories to relate to current media practices.* (2009 cohort, year 2)

> *Over time you learn to use the research methods not just for school but to find information that you need, it's very helpful in finding articles that will help you determine if your story has been covered and offer some insight into the subject,* (2011 cohort, year 2)

> *As a journalist-in-training I find myself interested in numerous topics especially history, media, culture and the environment. As a result of these interests I notice myself researching and constantly reading up on them through news resources* (2009 cohort, year 2)

> *My anthropology course requires a lot of research, most of which I acquire using library catalogues, This is an ability that has transferred over to the journalism aspect of my education.* (2011 cohort, year 2)

> *Understanding and applying textbook and literature as both sources, and inspiration.* (2010 cohort, year 3)

Over the course of the study, I worked to explicitly promote this transfer of information skills and knowledge between activities, often including 'How can journalists use this?' as a question in class activities. It was interesting for me to see students approaching academic resources introduced in their option courses in the same way.

2.3.8 Personal characteristics and aptitudes

A number of statements reveal more affective dimensions of both IL and journalism practice. Each of these quotations identifies qualities equally useful in IL and journalism. Some of these related directly to searching, others to broader characteristics.

> *I just remember/retain things really well, a spongy mind you could say.* (2011 cohort, year 1)

> *Reading a lot of different genres of books has also helped in my information skills as it has given me a well-rounded concept of literature and facts.* (2009 cohort, year 1)

> *My family comes to me to find information too, I am pretty well-rounded. I keep up to date on my news, I listen to a lot of CBC radio and I know my sports statistics especially hockey and football. I follow a lot of speciality blog sites for science, science fiction, horror films, indie music, Canadian music* (2010 cohort, year 1)

> *I am insanely organized and cannot live without organisation on my computer, whether it is folder systems or bookmarks.* (2008 cohort, year 1)

> *My greatest advantage in research is my natural curiosity. This characteristic is one of the reasons I entered into journalism.* (2009 cohort, year 3)

> *I have learned to be patient because researching information takes time. Time to teach myself how to use a new search tool and time to sort through all the useless information.* (2010 cohort, year 4)

This last statement relates to one of the most frequently-appearing characteristics, an aptitude for lifelong learning. Numerous statements highlighted the ability and willingness to find resources that would help them to learn new skills.

> *I'm excellent at problem-solving when it comes to computer programming problems, especially when installing software. If I am unsure of how to fix the problem I can easily find the solutions on the internet and use those solutions to my advantage.* (2008 cohort, year 1)

> *I take basic skills that I learn in class or hear from people… and develop them on my own (with a combination of searching the byzantine passages found in the average Adobe instruction manual and searching online for video tutorials).* (2011 cohort, year 1)

> *I have always used the internet to learn different miscellaneous skills so I feel that if an employer needed me to know how something works or how to do something that I would be able to learn it from the internet no problem.* (2010 cohort, year 2)

> *When I did my practicum at* [local news station] *I taught myself how to use their news gathering system* (2009 cohort, year 2)

This capacity for lifelong learning is referenced often in the literature but seldom with the details noted here by the students. I am now including activities that incorporate searching for resources that enable self-teaching, and how to use them effectively. The aptitude for lifelong learning is as critical to journalism as it is to IL.

3. Discussion and connections to instruction

The many indications of learning transfer throughout the students' statements demonstrate that students develop, apply and adapt IL knowledge through time and across multiple contexts. While this can and does occur spontaneously, it is too important an aspect of learning to leave to chance. The students benefited from the consistent efforts of the instructors and librarian to make explicit connections between disciplines and courses; between academic, professional and personal information use; between scholarly and journalistic information practices; and between communication theory and the production and reception of journalism. Students' statements provide evidence that, through the programme, they develop an understanding of their roles both as producers and consumers within multiple information ecosystems.

This understanding is related to changes in the overall journalism curriculum which involves students in practical experiences from the beginning, and by changes to IL instruction within that curriculum. By being embedded in the first year I have become more aware not only of the needs of journalism students, but also of their abilities. The résumés reveal the results of focusing IL on the specific purposes for which journalists use information and on fostering learning transfer between information ecosystems.

Examples of activities that I have developed as a result of these foci include:

- An assignment requiring the use of local statistics to generate story ideas,
- Activities using Google Scholar to find local current experts for their stories,
- Brainstorming session on finding sources that generate a range of directories, social media, and database resources, as well as conversations that identified possible sources within each other's social circles,

- A legal information assignment that includes extracting quotations and potential sources from case reports,
- An activity where students teach themselves how to use a new database.

I am now incorporating social media in most practice classes and often use research papers on aspects of social media as examples in the theory courses to connect personal and professional knowledge with academic information. The way students use social media as a research tool is only beginning to be discussed in the library and journalism literatures (Diekerhof 2013; Kim et al. 2014). Most students come in with an experience of social media that exceeds my own, and they need only some prompting or, in some cases, permission to use them for journalism. The most frequent question recently has been "But are we allowed to use it to find sources?" which has led to some very productive discussions of ethics in both IL and journalistic domains.

The résumés of individual students often demonstrated transitions from using social media in casual and personal ways to more professional uses as information sources or media outlets. This highlights differences between a student's personal information ecosystem where social media might be the main resource, the journalism ecosystem that might emphasise directories and other kinds of personal networks, (although this is changing), and the academic information system where social media plays a minor role and dominance is accorded to scholarly articles.

It has been interesting to analyse these results in the light of discussion around the new *Framework for Information Literacy for Higher Education* (Association of College and Research Libraries 2014) based on the threshold concepts work of Townsend et al. (2011). The long-term nature of this study and the comments students make about where and how they learn IL - from experience, from friends, from trial and error, as well as from classes and consultations - lends itself to understanding student learning in the more complex and dynamic way demanded by the *Framework*. This document is still in draft form at the time of writing but, while specific concepts and the language that describes them may change, several underlying themes are less likely to. The Introduction includes the following statement:

> *Students have a greater role and responsibility in creating new knowledge, in understanding the contours and the changing dynamics of the world of information, and in using information, data, and scholarship ethically. Teaching faculty have a greater responsibility in designing curricula and assignments that foster enhanced engagement with the core ideas about information and scholarship within their disciplines. Librarians have a greater responsibility in identifying core ideas within their own knowledge domain which can extend learning for students, in creating a new cohesive curricula for information literacy, and in collaborating more extensively with faculty. (Association of College and Research Libraries 2014, p. 1)*

The student reflections gathered during the study provide evidence that these changing roles and responsibilities are being incorporated into the journalism programme. These students are keenly aware of their role as creators; to them content creation for external audiences is the end to which IL is the means. Their understanding of the need for multiple perspectives and diverse sources dovetails with the journalism ethic of reflecting and informing the larger community, and many students included abilities to use citation styles among their 'Other' skills, indicating an acknowledgement of more academic applications of information ethics. The curriculum in the journalism programme deliberately encourages students to approach information as journalists, as well as academics, to apply their understanding of information to tasks in both domains. As the librarian working with these students, I cannot overstate

how valuable it has been to reconsider my understanding of IL from the perspective of the journalism profession, both in deepening my collaborations with faculty and in developing more effective learning activities for students. It is clear from the students' statements that formal IL instruction by a librarian is by no means their sole source of learning in this domain, that they in fact blend knowledge from experience, the classroom and practice to accomplish their information tasks.

Evidence of student understanding of threshold IL concepts as they currently appear in the draft *Framework* (Association of College and Research Libraries 2014) appears throughout the I-SKILLS résumés, offering some indications about how students might understand and articulate learning around these concepts. For example, when students write about looking at multiple sources to gain a more holistic view of a subject, that may be how they understand that 'Authority is Contextual and Constructed' (Association of College and Research Libraries 2014, p. 7); as journalists, that may also be evident in their understanding that different human sources, such as eye witnesses or experts may have different kinds of authority, which may be useful in different contexts. 'Research as Inquiry' (Association of College and Research Libraries 2014, p. 6) includes attributes and attitudes such as curiosity, awareness of learning as a process, and engagement in lifelong learning that are present in many of the students' reflections. Overall, the *Framework* provides a useful lens for examining all of the data from the reflections and will be particularly helpful in identifying areas where students need to develop their understanding and where scaffolding for that learning is currently missing.

4. Recommendations

This study, my experiences in developing a profession-focused IL curriculum and the literature suggest a number of recommendations. While these are primarily aimed at professional programmes, as Hicks (2014, p .33) notes, a better understanding of workplace IL might inform instruction in more academic domains. All of these activities require explicit direction to make connections, in order to foster the transfer of knowledge between information ecosystems:

- Understand IL as a means to solving information problems, not an end in itself.
- Understand professional information requirements and behaviours to develop authentic activities and assignments that simulate how students will work with information once they graduate.
- Incorporate some of the challenges for workplace IL from the literature into activities and assignments, e.g. unstructured problems, tight deadlines (Head et al. 2013)
- Develop assignments that require the use of both scholarly and professional resources so students can see and make connections.
- Ensure students understand how to use freely-available and open-access resources as well as proprietary databases. We all spend a great deal of time making sure students know how to use resources they may not be able to access after they graduate.
- Start from what they know. Students enter postsecondary education knowing how to find the information that interests them; IL instruction may be more about teaching them to adapt the skills they have than learn brand new ones.
- Explicitly encourage skills and knowledge transfer between information environments (Carey 2012).
- Expand the range of resources included in IL– students may know how to use social media but be unaware of how to search or use it for professional or academic purposes

5. Limitations

This study was based on the work of students in a specific discipline and may not be generalisable to other contexts or disciplines. In particular, journalism students by the nature of their discipline may be more apt to understand and use aspects of IL, and to develop familiarity with a wider range of resources. The recent work of Head et al. (2013) and Hicks (2014) note greater differences between academic IL and workplace expectations than these students may find, given the integration of practice with their studies through courses and internships.

Due to changes in each year of the study to the journalism curriculum and to IL instruction there was no possibility for comparisons between cohorts and no way to establish concrete links between particular learning experiences and particular statements.
While participants wrote statements that make explicit links between IL and journalism, there is no objective measure of students' abilities to enact these links in actual practice. While there may be some performativity in what students wrote, the fact that the assignments were not graded on content, nor seen by instructors in the journalism programme who were evaluating their other work may have reduced the temptation to inflate competencies. There was no risk and no extrinsic reward for students to articulate specific skills, knowledge or transfer, and therefore the data I gathered may have been based on more honest self-appraisals, but without objective evaluation of that knowledge. I cannot be sure.

As the *Framework for Information Literacy for Higher Education* (Association of College and Research Libraries 2014) is still in draft form, it would be premature to look for explicit connections between student reflections and individual threshold concepts, but that will be an interesting direction for future work.

6. Conclusion

The findings from the study illuminate how students in the journalism programme applied IL to their professional work. To do this, they often transferred skills and knowledge gained in their personal or academic lives, developed strategies that exploited a range of sources, and deepened their understanding of the retrieval, evaluation, creation and dissemination of information. Viewed through the lenses of the new *Framework for Information Literacy for Higher Education* (Association of College and Research Libraries 2014) we can see students crossing a number of thresholds in developing IL that serves their needs as communicators as well as students. The use of the I-SKILLS résumé provided the students with an opportunity to reflect on and describe their knowledge as they acquired it, as well as providing me with insights into their development that informed my teaching and research. The journalism programme is now going into a scheduled review process and the material from the résumés will be used in decisions about overall curriculum and the integration of IL within it.

7. Acknowledgements

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