Articles

Academic Literacy Requirements of Health Professions Programs: Challenges for ESL Students

Lillie Lum, Mahmoud Alqazli, & Karen Englander

To succeed in Canadian health professions, university education programs students must initially meet a variety of program-specific and English-language admission requirements. For non-native English-speaking (NNES) students, a major challenge can be the demonstration of profession-specific academic literacy and, in particular, adequate language competency prior to admission and throughout the program. Despite the increased numbers in the adult NNES student population in Canada, the current academic literacy requirements within these programs have received minimal research focus. This study explores the congruency of program requirements and learning supports within three major health professions programs across six Canadian universities. The data analyzed for this qualitative study include program documents on publicly accessible websites and a focused literature review. Findings suggest that in medicine, nursing, and pharmacy programs, discipline-specific academic literacy manifests itself in a wide variety of specialized written genres, ranging from reflections to theoretical analysis. Academic literacy is essential to the socialization of new students into these specialized programs and into the professions. Suggestions are offered to enhance universities' support of the development of academic literacy of NNES students.

Pour réussir comme professionnels de la santé au Canada, les étudiants inscrits aux programmes d'enseignement universitaire doivent d'abord satisfaire à une variété de conditions d'admission relatives au programme qu'ils ont choisi et à leur connaissance de l'anglais. Pour les étudiants dont la langue maternelle n'est pas l'anglais (NNES, pour « non-native English speakers »), la nécessité de faire preuve de littératie académique dans la profession de leur choix et, en particulier, celle d'une compétence langagière suffisante avant leur admission et tout au long du programme choisi peuvent constituer un défi de taille. Bien que la population des étudiants adultes de type NNES ait augmenté au Canada, les exigences actuelles de littératie académique liées à ces programmes n'ont fait l'objet que de travaux de recherche rudimentaires. La présente étude explore la concordance entre les exigences des programmes d'études et les soutiens pédagogiques au sein de trois importants programmes de formation de professionnels de la santé dans

six universités canadiennes. Les données analysées pour cette étude qualitative comprennent la documentation sur les programmes concernés disponible sur des sites Web accessibles au grand public ainsi qu'une analyse documentaire ciblée. Les constatations suggèrent que, dans les programmes d'études médicales, infirmières, et pharmaceutiques, la littératie académique liée à une discipline particulière se manifeste dans une grande variété de genres d'écriture spécialisés allant de réflexions à l'analyse théorique. La littératie académique est essentielle à l'insertion des nouveaux étudiants dans ces programmes spécialisés de même que dans les professions. Des suggestions sont offertes pour rehausser le niveau du soutien des universités au développement des étudiants NNES dans le domaine de la littératie académique.

Introduction

The development of student academic literacy is a key component of higher education in Canada. As early as 1984, Street described it as a social process. In 2010, Street expanded the definition based on New Literacy Studies:

> An academic literacies approach views the institutions in which academic practices take place as constituted in, and as sites of, discourse and power. It sees the literacy demands of the curriculum as involving a variety of communicative practices, including genres, fields, and disciplines. (Street, 2010, p. 349)

Academic literacy in its broadest sense is not strictly a cognitive activity but also includes the interpretation and production of a variety of texts often within important social contexts. Leki (2007) defined it as an "activity of interpretation and production of academic and disciplined-based texts" (p. 3). The level of academic literacy required of students is unique to individual programs. It involves, "the special registers and genres of language used in the learning of academic subject matter in formal schooling contexts" (Richards & Schmidt, 2013, p. 2). Each field of study is comprised of the specific terminologies, text types, discourse features, and speech styles that students must learn. Success in university education programs is based on students demonstrating a sophisticated level of literacy encompassing a variety of language skills including reading, speaking, listening, and writing, which are reflective of academic scholarship in higher education (Barton & Hamilton, 2000; Geisler, 2013; Lea & Street, 1998).

To succeed in specialized professional undergraduate education, such as health professions programs, students must master not only generalized academic literacy (Carter, Ferzli, & Wiebe, 2007) but also the distinct spe-

cialist language of their field (Carter & Rukholm, 2008; Woodward-Kron, 2008). Without adequate academic literacy upon completion of university programs, students will experience greater difficulties in becoming successfully licensed within their chosen profession. While the fields of English as a Second Language (ESL) and English for Academic Purposes (EAP) have focused much attention on supporting non-native English-speaking (NNES) students in their university endeavors, their English-language learning needs in Canadian higher education have been under-researched, particularly in highly competitive health professions programs (as exceptions, see Choi, 2005; and Donnelly, McKiel, & Hwang, 2009).

In Canada, with its culturally and linguistically diverse populations, proactive educational strategies are needed to promote equity and access to higher education (Crossman, 2014). With globalization and international mobility, the diversity of students in Canadian universities increased dramatically. NNES students are a diverse group of students, including international, adult immigrant students, and the children of new immigrants. More than 350,000 international students were studying in Canada in 2015, a 92% increase over 7 years earlier (Canadian Bureau for International Education, 2017). Ontario, followed by British Columbia, hosts the highest number of international students (Ontario Ministry of Education, 2017). A second group of postsecondary students, although smaller in number, includes adult immigrants who seek additional higher education as a career entry pathway (Adamatui-Trache, Anisef, Sweet, & Walters, 2013).

The focus population of this article is the NNES students, including all adult immigrants participating in postsecondary education, but excluding Canadian-born children who are most likely to possess higher levels of English-language ability. The NNES students may not necessarily be called "immigrants," but they are by definition foreign-born and entered the country of residence as adults (Sohn, 2016). All of these students may experience challenges in meeting the academic literacy requirements in Canadian higher education (Roessingh & Douglas, 2012). Apart from acculturation and social supports, English fluency is consistently identified as one of the most influential factors in predicting success or distress among international students (Dao, Lee, & Chang, 2007) and may have a similar impact with NNES students.

Although no accurate data exist as to how many apply or successfully enroll, several studies reveal lower achievement in educational systems and higher dropout rates for adult immigrant students (Alvarez & Abriam-Yago, 1993; Choi, 2005; Kanu, 2008). The vast amount of literature documenting challenges experienced by international students suggests that immigrant students in professional education programs are likely to have similar experiences. The proportion of these categories of students could amount to approximately 44% of the enrollment in some Canadian universities (Roessingh

& Douglas, 2012) and around 40% of university graduates in Canada (Hango, 2014).

Language abilities and literacy requirements are observed to affect immigrants' full participation in the workplace and higher education with "about 45% of the foreign-born in the lower literacy range (level 2 or below), while 16% of the Canadian born were in the same situation" (Hango, 2014, p. 3). Crossman (2014, p. 3) noted that despite "the fact that children of immigrants" are more likely to enter and complete university studies, they may "take longer to graduate, be placed on academic probation, and be required to withdraw more often than their monolingual peers." There is an absence of similar research for adult immigrant students especially in Canadian professional educational programs.

Study Purpose

There is scarcity in the current literature exploring students' academic English-language challenges as they proceed from their initial attempts to enroll and, once accepted, progress into the chosen programs. How Canadian universities support the transition of NNES students into specialized fields of study is not well understood. The implications for language assessment and learning support have received little attention. Likewise, research on disciplinary language support or discipline-specific academic literacy in health professions education (Andre & Graves, 2013), especially at the university level, is minimal (Lum, 2015). For this study, we endorse the position of Strange and Cox (2016) who state that "student success is not solely a matter of individual effort, but also a function of how well the institution adapts to the needs of each student" (p. 215). With implications for NNES professionals at the forefront, we took an institutional view, that is, the overall learning requirements and supports, to the issues of NNES student success in the health professions education.

The purpose of this study is to explore academic literacy issues within health professions' undergraduate education programs of three major Canadian health professions (medicine, nursing, and pharmacy) by drawing on two secondary data sources: university websites and published literature. Admission to these programs is competitive. Large numbers of applicants with diverse language backgrounds seek admission but only a small proportion are successful. NNES students may be unfairly disadvantaged as a result of their inadequate English-language ability. The primary author's extensive expertise in health education and research experience identified an increased need to explore potential support pathways that encompass the entirety of the academic journey for NNES health professions students in the context of Canadian undergraduate programs. Looking at the trajectory of NNES health professions education at the university level holistically, we would, potentially, see complex interconnectedness between language-entry requirements,

academic-literacy demands, and university academic supports. In this sense, the article seeks to explore, analyze, and synthesize these three important elements to explore the potential support pathways for NNES students in health professions in the context of Canadian universities. In particular, the article addresses the following research questions:

Research Question 1: What types of academic literacy demands are placed on students in three major health education programs (medicine, nursing, and pharmacy), and how do these differ?

Research Question 2: What level of academic English-language skill is required for admission to Canadian health professions undergraduate programs and how is this assessed?

Research Question 3: What are the implications for NNES students' English-language instruction and institutional learning supports in order to enhance their discipline-specific academic literacy?

Methodology

A case study design was used to address the research questions. This design is suitable to exploring the "real life context" of a limited number of institutions using a descriptive approach to the issue of academic literacy demands within health professions education (Nieswiadomy & Bailey, 2008; Yin, 2009). The design also provides the opportunity to examine a variety of types of pre-existing evidence or information sources not previously used in research. The secondary data consisted of published literature on academic literacy and current program and institutional data of three highly specialized health professions programs. The initial data collection occurred during 2015-2016 and was updated in 2017.

Literature Review

An integrative literature review, pertaining to all three professions, was conducted to establish a baseline for analyses of website documents. This review allows for surveying broad perceptions of published information to "deal with mature topics [academic literacy and academic writing] of which sufficient literature has been written" (Feak & Swales, 2009, p. 2), yet also allows for identifying emerging gaps and helps in evaluative analysis (Torraco, 2005). From the literature search, 31 studies were chosen based on relevancy to research questions with a priority on North American publications as well as English-speaking countries in the inner circle (Kachu, 1992): United Kingdom, Australia, New Zealand, and South Africa.

The keywords guiding the searches included academic literacy; higher education writing tasks/assignments/genres; writing across the curriculum;

discipline specific writing; and writing challenges/barriers/needs for health-care professions. The following themes also guided the searches: writing challenges of NNES learners; expected learning outcomes of writing programs and courses in undergraduate health disciplines; effective teaching and learning strategies to promote writing skills in health professions education; and any additional educational support. Inclusion criteria consisted of literature published between 2000 and 2017.

A second source of data included admission information from Canadian university program websites, referred to only by number to maintain anonymity. Faculties of Medicine, Nursing, and Pharmacy were selected as units of analysis. Programs at six large universities across Canada, in British Columbia, Alberta, Ontario, and the Maritimes, were chosen to represent a variety of programs in urban areas that were likely to attract large numbers of immigrant applicants. This purposive sample, in combination with the comprehensive literature review, forms the basis of this study (Whittemore & Knafl, 2005). All six universities feature nursing programs while four institutions offered Faculties of Pharmacy and Medicine. Only undergraduate programs were selected for analysis as they provide the basic preparatory education for licensure in the largest regulated professions in Canada.

Website Data
Data were collected from six different faculty and registrar website posts. We began by accessing the university home page of each program and then navigated to the admission requirements available on the link to the registrar page. Additional documents available through links on the websites, such as academic calendars, online brochures, and Frequently Asked Questions (FAQs) were also collected. In order to obtain more program discipline-specific information about academic literacy, the next step included accessing each health program website to obtain any available course descriptions; writing requirements for each program or course including variety of writing assignments when stated; and writing supports and online resources.

Data Analyses
A general analytic strategy is recommended as the best way of contrasting any differences in case study data in order to develop theoretically significant explanations (Yin, 2009). Data analyses focused upon developing a contextual understanding of the academic literacy requirements reported in the literature and within three different health professions programs with a view to focusing on how each university understands and talks about academic literacy expectations of NNES students. There is a specific way academic literacy is discussed in the literature, and the analysis focused on how or if the websites incorporate this understanding.

Programs within institutions and between institutions were compared in order to identify patterns of differences and similarities in English-language literacy requirements, language assessment procedures, and writing supports. Inter-rater reliability checks were used for the website data. A subset of 15% of the website data was randomly selected and classified by two raters. These results were then compared and discussed with two additional raters for an inter-rater reliability rating of 80%.

In order to ensure credibility of the findings, a triangulation strategy was used during the final data analyses and manuscript preparation phases. A four-member team consisting of the two principle investigators and two research assistants worked together to reach consensus on interpretation and to ensure findings were addressing the key research questions.

A major limitation of the study design is the lack of distinction between different types of NNES, that is, international and adult immigrant students. Each subgroup may experience challenges that are common or unique to each group. We reported student characteristics when evident in the published literature. A sample of six health professions programs was selected for this study although this may not be representative of all other programs in Canada. An attempt was made to highlight the common features of these programs while recognizing that each program and profession has unique characteristics influencing academic literacy. Further research is needed for these findings to be generalizable to other professions. Secondary data sources such as publicly accessible websites only provide limited information about their program requirements. Examination of actual program materials and interviews with program faculty would have provided a more nuanced data set.

Findings

Two sets of findings related to developing an improved understanding of the academic literacy demands within the three selected health professions education programs included results from a comprehensive review of relevant literature and examination of publicly accessible admissions information on program websites.

I. Literature Review of Academic Literacy Demands in Health Professions

The current literature focuses upon two types of English-language requirements in health professions programs: written and oral communication. Oral communication skills have gained more prominence with the increased diverse, multicultural nature of the English-speaking healthcare settings and have been reported to be major challenges for foreign-trained practitioners in the employment setting (Candlin & Roger, 2013; Lum, Dowedoff, & Englander, 2016; Sedgewick & Garner, 2017). Despite its importance, high levels

of oral communication skill are not required within health professions programs and have received much less attention in the academic literature. The second type, which more closely addressed academic literacy, was written English-language skills, and this is the focus of the study (see note 1).

What is the overall purpose of academic writing in higher education? Historically, academic writing viewed as an important skill for all university graduates arises from a traditional concept; that of literacy as a demonstration of autonomous cognitive capacity. It is one way to distinguish between a literate and non-literate individual (Barton, Hamilton, & Ivanic, 1993, p. 238). Although this perspective has not been further explored with empirical research, it is a commonly held view. More recently, writing assignments across the curriculum within professional programs are intended to provide students with the ability to write as would be required in pre- and postgraduate professional settings (Leki, 2007). Writing is the primary way in which students demonstrate and are evaluated on their understanding of their field, and is often the principal means of assessing (and, by extension, marking) students' progress (Hyland, 2006). Learning how to productively use and deal with written language "in disciplinarily approved ways" (Hyland, 2006, p. 38) is crucial to students' success in their time at university (Zeng, Everett, Glew, & Salmonson, 2014). Academic writing comprises a large portion of assessment criteria (Hyland, 2006; Hyland, 2013; Latham & Ahern, 2013).

Taxonomy of Writing Assignments within Three Health Professions
The types of writing requirements within health professions programs have changed as the professions themselves have evolved. Andre and Graves (2013) documented changes in the nursing profession in Canada, identifying three recent developments in theory and practice that have contributed to the increased attention on academic literacy. These include (a) reconsideration of the importance of disciplinary scholarship, (b) a new institutionalized focus on evidence-based (or evidence-informed) practice as a competency, and (c) an increased emphasis on reflective practice and on the role of writing-to-learn.

The most comprehensive review of writing assignments was conducted by Graves, Chaudoir, Ru'aini, & Lasiuk (2009) who found that nursing students wrote between one and nine writing assignments in any given course. Thirteen different writing genres were identified, serving two purposes: (a) promoting reflective thinking (e.g., self-evaluations, personal goals, journals, and peer evaluations); and (b) essay/report writing (e.g., discussion papers, reports, outlines, annotated bibliographies, proposals, field notes, in addition to presentation and handouts). Assignments focused broadly on "reflective thinking" and evidence-based synthesis of research.

Academic writing assignments in nursing have been further classified into three "levels" of progressive difficulty depending on the degree of com-

plexity of the required cognitive skills (Gimenez, 2008). Level 1 primarily consists of care plans and portfolios. Level 2 includes discharge summaries and dissertation proposals, while level 3 includes argumentative essays and dissertations. Some written assignments represent two levels, for example, reflective essays, which are required by all three professions and reported to be difficult, are spread over levels 1 and 2. Article reviews and case studies represent levels 2 and 3. According to Gimenez (2008), level 3 assignments such as critical analysis, evaluating source material, and providing supporting claims pose the most difficulty for nursing students. Other types of writing assignments include short writing assignments, sequential writing assignments, replication of examples of successful writing, providing peer feedback, and revising writing assignments in response to faculty or peer feedback (Troxler, Vann, & Oermann, 2011).

Yanoff and Burg (1988) surveyed types of writing assignments in 100 medical schools in the United States and found 29 different types. The most important genres reported by the respondents include writing patient's history, physical examination reports, progress reports and discharge summaries, clinical or laboratory research, and grant proposals. Hobson et al. (2002) studied writing tasks of Doctor of Pharmacy students that revealed that they write 28 types of documents but the most important ones are in-service presentations, summaries, patient's case write-up, formulary reviews, and newsletters. Interestingly, both studies, notwithstanding old, pinpointed a current gap, that is, there is "[a] need to develop curricula in medical schools that address the systematic and effective teaching of medical writing" (Yanoff & Burg, 1988, p. 37). A review of more current medical literature supports their earlier recommendation.

Reflective practice and writing were identified as common program requirements in nursing, medical, and pharmacy programs (Lavelle, Ball, & Maliszewski, 2013; Mann, Gordon, & MacLeod, 2009; Van de Poel & Gasiore, 2012). Reflective writing is a generic term used for exploring one's experiences and knowledge in order to develop a greater awareness of the professional role. It is used by healthcare practitioners and students "as a tool for revisiting experience both to learn from it and for the framing of murky, complex problems of professional practice" (Mann et al., 2009, p. 597). The intention is to promote analytical responses to intuitive aspects of learning or clinical experiences and assists with the acculturation of professional students irrespective of their language or cultural backgrounds.

Ottenberg, Pasalic, Bui, and Pawlina (2016) and Wald, Borkan, Taylor, Anthony, and Reis (2012) suggest that reflective writing provides medical students with the opportunity to develop communication skills and professionalism along with clinical (practice) knowledge. Reflecting on their learning experience builds capacity for critical thinking and problem-solving for future situations requiring deliberation and action in challenging situations (Fischer, Haley, Saarinen, & Chretien, 2011; Koh, Wong, & Lee, 2014). Increas-

ingly, reflection is also seen to promote collaborative learning among peers and colleagues (Biesta, 2007). This type of writing activity acts as a "bridge" between theory and practice, encouraging students to imagine what it will be like to care for patients as well as coping with the stresses of medicine (Lachman & Pawlina, 2006). From a teaching/learning perspective, reflective assignments provide an opportunity to identify students with low reflective capacity and for teachers to provide formative feedback in order to strengthen students' experiences (Ottenberg et al., 2016).

Pharmacy education also emphasized the importance of reflective writing. The reflective writing program required students to "reflect on their patient care experiences to identify, act on, and evaluate learning opportunities" (Nuffer et al., 2013, p. 8), and evaluations by students, preceptors, and administrators agreed that these outcomes were met through the reflective writing activities. Tsingos, Bosnic-Anticevich, and Smith (2014) reported on the benefits of reflective writing in an Australian pharmacy program, which provided a bridge between theoretical knowledge and practice. In addition to reflective practice and writing in pharmacy, educational strategies such as blogging and portfolios were recommended.

NNES Writing Challenges
The earlier literature identified the difficulties experienced by NNES students within nonprofessional general education programs. Chiseri-Strater (1991) conducted the first detailed study of these undergraduates in English and other courses and found that they were at risk of academic failure largely due to difficulties with reading and writing in English. Carroll (2002) reported that NNES students continued longer within their programs even if they mastered the requirements of general writing courses at the beginning stages. Carroll's study suggests that the "link between general writing courses and writing across the curriculum is tenuous" (p. 10). Kilbride and D'Arcangelo (2002) who surveyed the needs of immigrant students at a Canadian college found that the institution was only partially meeting NNES student needs, and linguistic needs, in particular, were not being sufficiently addressed. Language support was found to be the most highly reported unmet requisite for the 146 students surveyed. In addition, students, on the whole, felt that, "they did not have access to the support necessary for their academic success" (Crossman, 2014, p. 40).

Professional education requires not only learning content but each disciplinary community's specific ways of making meaning and communicating knowledge. This is true for the native and non-native English speakers (Fenton-Smith & Frohman, 2013; Ferguson, 2012). However, the transition of NNES students to a university academic setting requires their engagement in professional discourse, negotiating new situations, and knowledge of the textual conventions particular to the discourse, all of which are difficult to achieve without adequate language skills (Myles, 2002, p. 2). Internationally

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educated nursing aide students in Canada reported difficulties understanding medical texts that were long and linguistically dense (Duff, Wong, & Early, 2000). These students found challenges with classroom discourse that contained mixed registers, medical anecdotes, rapid and colloquial speech, and professional jargon associated with the local culture.

Another language challenge faced by NNES students in general is vocabulary and lexical richness. The discipline of medicine is dense with technical and specialized lexicon that adds another layer to the complexity of input (listening and reading) and, consequently, may affect the academic writing outcomes. Chung and Nation (2003, cited in Ferguson, 2012, p. 253) estimated that

> technical words, defined as ones with a narrow range of occurrence and largely unknown in general use, accounted for as much as 37.6 percent of all word types in an anatomy text as against 16.3 percent of types in an applied linguistics text.

Diaz-Gilbert (2004) found that NNES students showed a lack of "fundamental knowledge" of pharmacy and health-related vocabulary.

Concern was expressed about the quality of writing and critical thinking demonstrated by students in the health professions generally (Miller et al., 2015; Rawson et al., 2005; Roberts & Goss, 2009). However, NNES students encounter additional challenges. Weaver and Jackson (2011) identified two major areas of difficulty: problems with understanding course content written in English and expressing their understanding of that content in English. Crawford and Candlin (2013) reported that NNES students in nursing programs cited difficulties with paraphrasing, sentence and paragraph structure, grammar, and the correct use of transition signals.

Leki (2007) who conducted a longitudinal study of nursing, social work, and engineering students identified common academic writing difficulties although the difficulty level was dependent on their basic English skills and complexity of the written assignments. Students reported that written English appeared to have no relevance in improving their oral communication skills nor was there obvious relevance to practice (Lum, Dowedoff, & Englander, 2016). Academic writing is time consuming because, in comparison to native speakers, it may take three to four times longer for NNES students to complete written assignments (Muller, Arbon, & Gregic, 2015). Patient-care plans and reflective assignments appeared to be "alien" in the sense that they did not resemble normal written or spoken English.

Within nursing programs and most likely in medicine and pharmacy as well, the lack of adequate linguistic skills has been linked to a slower progression through degree programs, higher amounts of frustration, and greater difficulties in completing degree requirements (Alvarez & Abriam-Yago, 1993; Donnelly, McKiel, & Hwang, 2009; Murray, 2011, 2012). Second-lan-

guage nursing and midwifery students found it difficult to use language to establish a clear relationship between the focus of the assignment question and their response to the assignment itself (Gimenez, 2012). This linguistic difficulty is often exacerbated by an uncertainty regarding the meaning of the essay question or what the lecturer expects to be the correct answer (ibid, p. 160).

II. Health Professions Programs: English-Language Admission Requirements

Examination of six health professions programs' websites revealed that all programs required evidence of language proficiency to obtain entry. Assessment approaches include (a) standardized test scores from recognized English-testing organizations; or (b) previous secondary school education or education in accredited postsecondary institutions in English-speaking countries; or (c) the completion of a university-approved English course. We note that there were as many as nine different methods of demonstrating proficiency in the case of one institution (Institution 5).

Standardized Language Tests

Standardized language tests are skills-based tests that feature writing, listening, speaking, and reading sections or "language bands." Two tests frequently used for admission purposes globally include the International English Language Testing System (IELTS) and Test of English as a Foreign Language (TOEFL). The language tests for all six institutions are displayed in Table 1.

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Table 1
Standardized Language Tests and Minimum Scores

Proficiency tests*		Institution 1			Institution 2			Institution 3			Institution 4			Institution 5			Institution 6		
		Pharmacy	Nursing	Medicine	Pharmacy	Nursing	Medicine	Pharmacy	Nursing	Medicine	Medicine	Pharmacy	Nursing	Pharmacy	Nursing	Medicine	Pharmacy	Nursing	Medicine
TOEFL iBT	T	100	100	100	—	89	—	90	90	90	—	—	90	90	90	90	90	90	90
	S	20	20	20	—	—	—	20	20	20	—	—	20	21	21	21	26	26	26
	W	22	22	22	—	—	—	20	20	20	—	—	20	21	21	21	21	21	21
	L	20	20	20	—	—	—	20	20	20	—	—	20	22	22	22	21	21	21
	R	20	20	20	—	—	—	20	20	20	—	—	20	22	22	22	21	21	21
IELTS	T	6.5	6.5	6.5	—	7	—	6.5	6.5	6.5	—	—	6.5	6.5	6.5	6.5	6.5	6.5	6.5
	S	6	6	6	—	7	—	6	6	6	—	—	6	6	6	6	7.5	7.5	7.5
	W	6	6	6	—	6	—	6	6	6	—	—	6	6	6	6	5.5	5.5	5.5
	L	6	6	6	—	6	—	6	6	6	—	—	6	6	6	6	5.5	5.5	5.5
	R	6	6	6	—	6	—	6	6	6	—	—	6	6	6	6	5.5	5.5	5.5
CAE	T	B	B	B	—	—	—	—	—	—	B	—	B	B	B	B	B	B	B
CPE	T	C	C	C	—	—	—	C	C	C	—	—	—	C	C	C	C	C	C
CAEL	T	70	70	70	—	—	—	70	70	70	—	—	70	60	60	60	70	70	70
CanTEST	T	4.5	4.5	4.5	—	—	—	4.5	4.5	4.5	—	—	—	—	—	—	4.5	4.5	4.5
MELAB	T	85	85	85	—	—	—	81	81	81	—	—	90	85	85	85	85	85	85
PTE	T	—	—	—	—	—	—	81	81	81	—	—	—	65	65	65	61	61	61

Note. *Proficiency Tests:
TOEFL iBT = Test of English as a Foreign Language; IELTS Academic = International English Language Testing System; CAE = Certificate in Advanced English, also known as Cambridge English: Advanced; CPE = Certificate of Proficiency in English, also known as Cambridge English: Proficiency; CAEL = Canadian Academic English Language assessment; CanTEST = Canadian Test of English for Scholars and Trainees; MELAB = Michigan English Assessment Battery; PTE (Academic) = Pearson Test of English Academic.
(—) indicates that data are not available in the institution's website.
(T = total; S = speaking; W = writing; L = listening; R = reading)

According to Educational Testing Service (ETS), the TOEFL test can be completed using Internet-based (TOEFL iBT) or paper-based testing formats. Most formats of the test are accepted by some institutions (Institutions 1, 4, 5, 6). The TOEFL iBT, which is the most common format, has a highest score of 120, and most universities required scores ranging from 86 to 100 (ETS, 2015), with the majority of universities requiring an 89 or 90 (Institutions 2, 3, 4, 5). An additional requirement included no scores less than 20-22 out of a maximum of 30 points in any section (Table 1). In terms of language-proficiency standardized tests for a specific program, only Institution 2 specified a minimum score for speaking to be 26 or more TOEFL iBT or 7.5 IELTS for nursing, medicine, or pharmacy.

Prior Education in English

An alternative method to establish English proficiency consisted of records of prior education in English at secondary schools or recognized universities or colleges in the immigrant's home country. Some require 3 to 4 years of postsecondary education either in countries where English is the primary language or in schools where the predominant language is English, but other institutions required much less. Each institution provided a list of "approved" source countries. However, these also varied between institutions. Alternatively, completing 3 or 4 years of high school in English can also negate an applicant's need for a standardized test score (Table 2). Applicants can provide a proof of language proficiency by demonstrating a prior education in an English-speaking country for at least 3 or more years of full-time studies in five institutions and one that required 6 years (Table 2).

Table 2

Additional Methods to Establish English-Language Proficiency

	Institution 1			Institution 2			Institution 3			Institution 4			Institution 5			Institution 6		
Prior education in English	4+ years; Canadian institution or other English-speaking country			4 years Canadian high school or 1 year university in accredited program			3 years in English-language institution			4 years; Canadian institution or 4 or higher on Advanced Placement English or IB level			4+ years at English A1 or 2 in international BA; 3+ years in Canadian institution			3+ years outside Canada in English-speaking institution		
Course completion	Successful completion of the Academic English Level course			—			Complete two English for academic purposes (EAP) offered at the university			Completion of 1.5 or more units of transfer credit for university-level English courses			—			6 credits of transferable university-level English Language and Literature completed at a postsecondary institution where English is the language of instruction (B grade or better)		
Conditional admission options	Completion of the university bridging program			Completion of English-language training at the university			Complete an ESL program			University admission preparation programs			English-language preparation program			University admission preparation programs		
	Pharmacy	Nursing	Medicine	Pharmacy	Nursing	Medicine	Pharmacy	Nursing	Medicine	Pharmacy	Nursing	Medicine	Pharmacy	Nursing	Medicine	Pharmacy	Nursing	Medicine
Written submissions	×	×	personal essay	—	×	—	×	×	1,500 words personal essay	×	×	×	×	×	Timed writing (30 m)	×	×	×
Interviews	√	×	√	—	×	—	√	×	√	√	×	√	—	√	—	√ On-line	×	√
MMI*	√	×	√				√	×	√	√	×	√						

Note. *MMI (multiple-mini interview); (— = not applicable; × = not required); ESL = English as a Second Language.

University-Approved Language Course

Completion of a university-approved general English-language course in Canada was another means of supporting language proficiency. Each program described a potential course offered by the institution or through affiliates. Some of these courses required a minimum passing grade in order to be credited (Institution 6). A conditional acceptance was available if applicants had completed a bridging program such as EAP (Institutions 3 and 5).

Written Submissions

Two programs required a written submission to accompany the application. One required a 1,500-word personal essay (Institution 3). Another required a timed writing (30 minutes) activity accompanied by an interview (Institution 5). Institution 4 provides a self-assessment language questionnaire, which is not program specific, to be completed prior to applying or postadmission.

Focused Writing Components Within Programs

Only Institution 4 offered two English course options as part of its nursing curriculum. Writing skills were not indicated as part of the curriculum in any of the other course descriptions. In the five other university Faculties of Nursing, skills that could involve writing such as critical thinking, research, and problem-solving were listed in course descriptions but there was no indication that writing skills were taught explicitly as part of the curriculum.

Faculty of Pharmacy course descriptions were similar across all institutions, and all focused on the topic-specific content. Two institutions indicated that students would develop writing skills (Institution 1 and 3) including business writing skills (Institution 1). At Institution 3, writing skills were included in one course in both second and third years. There was no information concerning English courses.

Language Learning Support-Writing Centres

Writing centres were available in all universities. However, these services are rarely discipline-specific with the exception of one institution that has a writing centre dedicated to the health sciences, including nursing and pharmacy. Institution (2) offered a writing centre for all students as well as an additional centre designed specifically for ESL students. The most comprehensive writing support (Institution 1) was offered through both the undergraduate colleges and through their individual faculties. In addition, Institution 6 offered a writing-across-the-curriculum (WAC) webpage with resources such as example essays for specific programs. Nursing and pharmacy papers were included in the list of examples.

Writing Centres provided a wide variety of online resources available to students. Resources include portable document format (PDF) documents on topics such as American Psychological Association (APA) format and on

writing genres such as essays, annotated bibliographies, and proposals as well as grammar and writing style (Institutions 1, 2, and 3). Online tutorials were also available (Institution 5). Institution 4 offered a convenient link to such resources through the faculty homepage. No similar information was available for medical programs.

Discussion

This study illustrated that NNES students may encounter significant academic literacy challenges at various stages of professional education from pre-admission through the post-admission phase. The findings suggest that two major language-related problems may exist. Current minimum English-language admission requirements, that is, competency levels, of the three health professions programs do not appear to be adequately robust to support prospective NNES students' ability to address the intensive academic writing requirements of these programs. What was not clear from the program websites was how the language standards were determined and whether there was any subsequent evaluation as to the effectiveness of these standards. It is unclear as to how the various methods of assessing the current language competence actually address the program curriculum. Although the minimum language benchmarks are commonly used, the adequacy of these levels needs to be reconsidered. Furthermore, as reported in the literature, the types of writing assignments within programs are highly specialized to the local professional culture and profession and may be particularly difficult for NNES students who must learn both the technical and sociocultural aspects of academic language.

Reliance on a variety of prior ESL courses and standardized language-proficiency tests in order to assess applicants' English-language competency may also be problematic. With increased globalization and internationalization of university student populations, language test results have become commonplace in the applicant selection process in many English-speaking countries (Hawthorne, Minas, & Singh, 2004). Cheng (2015) and Fox, Cheng, and Zumbo (2014) note that standardized language tests such as TOEFL and IELTS have become ever more pervasive and used more widely as decision-making tools but they caution that these tests may not accurately reflect students' actual language ability *within the academic context of professional programs*. Current standardized tests only assess applicants' general level of ability within each skill category and, thus, raise questions about the reliability of these scores in determining NNES learners' readiness for undergraduate health professions programs (Tannenbaum & Wylie, 2008). The use of profession-specific language tests and/or other strategies is needed but currently this is not a common program admissions practice.

Sedgewick and Garner (2017) argued that standardized, non-profession-specific tests such as IELTS are inadequate in assessing applicants' oral com-

munication ability to practice competently or safely in nursing practice in the United Kingdom due to lower levels of socio-pragmatic competence. The ability to converse and express meaning that is only implicit, appropriate, and comprehensible to a particular social context is essential to professional discourse and to engage in safe practice (Jeffries et al., 2018; O'Neill, Buckendahl, Plake, & Taylor, 2007). All health professionals not only require the ability to use technical and everyday language but must also possess considerable cultural and pragmatic knowledge and competence, that is, social capital, so that they can use appropriate registers to communicate with a range of health professionals, patients, and their families (Sedgewick & Garner, 2018, p. 55). Although these requirements have been identified in oral professional communication within the practice setting, it is reasonable to expect that similar expectations would also apply to academic professional writing within these specialized programs. Lum et al. (2014) drew similar conclusions about internationally educated nurses in Canada who reported considerable difficulty in learning oral socio-pragmatic language skills within undergraduate bridging education programs.

Pre- and post-admission language requirements need to include strategies to promote the development of the cultural capital necessary for academic literacy. In light of the apparent challenges experienced by NNES students within health professions, post-admission language testing also needs to be considered. Fox, Haggerty, and Artemeva (2017) suggest that this information could help mitigate risks to academic literacy as these students progress through the program while providing individualized student-specific language supports.

The literature review affirms that successful students must master not simply a generalized academic writing skill but *discipline-specific writing*; that is, "writing that reflects the writing conventions of the discipline, refers to the relevant literature, and ultimately enables a writer to assume membership in a particular discourse community" (Carter & Rukholm, 2008, p. 134; Ferguson, 2012; Wette & Hawken, 2016). Jeffries et al. (2018) stressed the importance of critical thinking in clinical nursing practice and its strong relationship with academic writing skills. Critical thinking is discipline-specific and needs to be taught as discipline-specific literacy genres. All three health professions emphasize the importance of written reflections, critical thinking, and case studies. These writing tasks constitute *higher order cognitive and tertiary level academic literacy* that must be developed in tandem with learning the advanced and technical English required by higher education (Crawford & Candlin, 2013; Jeffries et al., 2018). These academic writing assignments are perceived to have a tangible impact on students' academic success and their competence to practice in their respective professions.

Reflective writing assignments being required in all three professions was illuminating. Leki (2007) and Ottenberg et al. (2016) suggest that reflective writing provides students the opportunity to learn about the professional

context. If writing is socially embedded and viewed as a response to given social contexts, the challenge for faculty is that writing assignments need to accurately reflect the actual realities of professional practice. Often, the context of the workplace does not exist in the classroom. In many cases, students are asked to produce school genres that are invented and that the faculty have neither seen nor written. Genres that students learned in their majors were academic versions of professional writing and not usually the kind of writing that might be expected in professional practice (Leki, 2007).

Of the three health professions, nursing conducted the majority of research into student writing needs, particularly the demands for writing. This is an important contribution and could serve as a model for similar work to be conducted in pharmacy and medical education. Pharmacy and medicine may require similar levels or types of academic literacy implying that their NNES students may need additional language support.

This review of the literature and websites indicates that the development of academic literacy may be more time- and energy-consuming for NNES students, largely due to the potential disconnect between program-entry requirements, lack of familiarity with local cultural and professional norms, and often time-unrealistic expectations regarding language development within programs (Carroll, 2002; Crossman, 2014). Students are routinely evaluated on the basis of their understanding of their academic community's expectations and practices. Failure to meet expectations of academic communication may result in poor marks, discouragement, and even academic failure (Leki, 2007; Sohn, 2016).

To become a successful participant in the community of their academic discipline, students must learn this community's communicative currency: the norms, standards, procedures, and linguistic forms that constitute academic discourse. The challenges are compounded by current views of academic socialization, which views "academic socialization (into a profession) as the student's responsibility, rather than a joint enterprise" (Van Poel & Gasiore, 2012, p. 294). While the expectations, customs, and language of each discipline's academic culture are often self-evident to its established members (i.e., academic staff), this is not usually the case for students. Because they need to learn not only language skills but also the social/cultural context of their professional discipline, a self-efficacy approach is needed. This approach to instruction is one that targets awareness, knowledge, skills, and related affect as a means of socializing students into the norms, values, and expectations of academic discourse. Academic staff as well as students share the responsibility for clarifying expectations and making adjustments where necessary. Faculty need to consider the actual benefits of writing assignments and ways to make them less difficult. Clarifying the exact purpose of assignments, providing explicit guidelines, sample papers, and opportunities to write multiple drafts would promote more success for NNES students.

As documented in the literature, the provision of learning supports to promote academic literacy for the duration of health professions education programs would be of benefit in enhancing NNES student success (Crossman, 2014). The use of online writing tutorials has been recommended for nursing students (Roberts & Goss, 2009; Stevens et al., 2014). In this study, the availability of academic writing support, either at the program or institutional levels, for health professions students varied between professions and institutions. However, based upon these findings, its ability to meet discipline-specific demands of the health professions for NNES students is unclear.

Keefe and Shi (2017) suggest that content-based EAP programs addressing written and oral academic language deficiencies are of benefit to international students prior to entry to discipline-specific courses. For first-year architecture students in Australia, content-linked tutorials were beneficial in learning disciplinary-specific English (Baik & Greig, 2009). These learning strategies would most likely benefit NNES health professions students as well.

As required by program language requirements, most NNES writers may have advanced or reasonably adequate knowledge of basic English grammar and lexicon. However, their writing products, although grammatically correct, may sound unnatural and foreign within the local academic or professional context. In light of the highly specialized texts required in professional writing, Al Hassan & Wood (2015) reported the benefits of the use of formulaic sequences for economic students and its potential application in other disciplines in order to augment students' linguistic repertoire. As Lewis (2000) suggests, "in academic writing, where the focus is almost exclusively on accurate communication of information, among colleagues with a shared background in a particular topic, standard words, phrases, collocations and other chunks are an essential prerequisite for effective communication" (p. 189). In order to promote greater success in reflective writing, teaching students how to use common formulaic sequences such as self-reflective statements, behavioural and attitudinal descriptors, and concluding arguments is recommended. This is essential as the NNES students are unlikely to have acquired these in generic English-language courses because each academic discipline has a high frequency of lexical sets (Ellis, Simpson-Vlach, & Maynard, 2008).

Finally, we note the possible connection between computer and academic literacy. English-language requirements and related information on the selected Canadian health professions' program websites illustrated that there was an attempt to provide comprehensive and easy access to information, especially for NNES applicants. However, locating this information on the websites was surprisingly difficult. Specifically, information about admission requirements, learning expectations, and program course description varied in quality and website organization. Accessing and comprehending this key

information required substantial amounts of digital and technological skill, effort, and time. It also required an understanding of the structure of program sites in order to access specific information such as FAQs, academic calendars, and so forth. The level of English language and computer literacy required to access and understand online program information may prevent NNES applicants from fully understanding program requirements (Lum, Vu, & Sharawy, 2015).

Conclusion

The academic literacy demands within large health professions programs such as medicine, nursing, and pharmacy are specialized, requiring their students to possess a high level of general English literacy as well as discipline-specific language skill and knowledge. Because academic literacies are embedded in specific academic contexts, an increased understanding of the "particular ways of constructing meaning, making judgments and determining what counts as valuable knowledge reflecting tacit beliefs and values within these programs" contributes to improved higher education programs (Tapp, 2015, p. 714). The process of developing academic literacy, through a variety of discipline-specific writing assignments, is a key socialization strategy to prepare health professions students to enter practice in employment settings. Illustrating the significance of these assignments, especially reflective writing, which may have been previously unrecognized, is a major contribution of this study to health professions education.

There is an interconnected role between admission proficiencies, students' English academic literacy development, and program learning experiences. Admission policies, especially those concerning English-language ability, represent institutional and program "gate keeping" strategies to ensure that prospective students have the required academic and linguistic ability to be successful (Parmar et al., 2015; Pill & McNamara, 2016). This study suggests that current admission requirements may be too low or incongruent with the higher levels of literacy expected within specialized programs. Further research is needed to determine the relationship, if any, between higher completion rates (and eventual licensure) and the initial language entry requirements of the three professions.

The overwhelming research evidence indicates that even when meeting the pre-admission language requirements, further language support is essential if they are NNES students. Tapp (2015) concluded that undergraduate students find the development of academic literacy to be difficult and that universities have a responsibility to provide access to contextualized academic literacy practices (p. 715). If this is the case, higher education institutions and educators need to adopt a more transparent, comprehensive approach, which includes making learning expectations more explicit as well as the provision of effective teaching and learning supports, especially for

those with language challenges. As discipline-specific writing support carries the most efficacy for students (Bazerman, Adair, & Debora, 2005; Gimenez, 2008), further investigation is needed to understand to what degree and with what efficacy institutional or individual faculty efforts are supporting students' writing development in the health professions education in Canada.

Note
1. A matrix table of the literature review is available from the authors.

The Authors
Lillie Lum, RN, PhD, is a professor in the York University Faculty of Health. Her research focuses on the English-language challenges associated with the labour market integration of internationally educated professionals in Canada.

Mahmoud Alqazli is a doctoral candidate in the York University Department of Languages, Literatures and Linguistics, focusing on the literacy challenges of NNES students in health professions programs.

Karen Englander, PhD, is a consultant specializing in academic English literacy in the science disciplines.

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