Articles

Early Language and Literacy Development Among Young English Language Learners: Preliminary Insights from a Longitudinal Study

Hetty Roessingh and Susan Elgie

This article reports on the preliminary findings of a two-staged empirical study aimed at gaining insights into the variables salient in the early language and literacy development of young English language learners (ELL). Increasingly, young ELL, whether foreign-born or Canadian-born, arrive at school with little developed English-language proficiency. They must acquire oral language and literacy synchronously. Stage one of this study consists of time series data for reading and vocabulary scores using the Gates MacGinitie reading tests. Stage two consists of an early literacy screen and vocabulary profiles generated from an oral storytelling task for 65 kindergarten-aged ELL and a comparison group of 25 native speakers of English (NS). The findings suggest that although reading and vocabulary are closely interrelated in the stages of early literacy development, over time ELL youngsters face the greatest learning challenges in the area of vocabulary development. Implications for the design of early literacy programs are offered.

Cet article fait état des conclusions préliminaires d'une étude empirique à deux étapes portant sur les variables qui sont importantes dans le développement linguistique et l'alphabétisation de jeunes apprenants de l'anglais. De plus en plus, les jeunes apprenants de l'anglais, nés à l'étranger ou au Canada, arrivent à l'école avec des aptitudes en langue anglaise peu développées. Ils doivent acquérir la langue orale et s'alphabétiser en même temps. La première étape de cette étude consiste en des données provenant d'une série chronologique de résultats provenant d'évaluations de la lecture et du vocabulaire Gates MacGinitie. La deuxième étape consiste en un dépistage précoce des capacités de lecture et d'écriture et d'un profil lexical découlant de la narration d'un récit par 65 enfants de la maternelle apprenant l'anglais et d'un groupe de référence composé de 25 locuteurs natifs de l'anglais. Les résultats donnent à croire que, même si les liens entre la lecture et le vocabulaire sont très serrés dans les débuts du développement de la littératie, à la longue, le développement du vocabulaire constitue le plus grand défi auquel font face les jeunes apprenants d'anglais. Les auteures expli-

quent les répercussions de la conception de programmes d'alphabétisation pour les jeunes enfants.

Introduction

Canada's immigration policy is shifting to place an increasing focus on recruiting young skilled workers and professional-class immigrants aged 25-40. These immigrants come to Canada with their young children or they begin their families here. In common with all immigrants, they have hopes and dreams for better opportunities and a better life, but especially for their children. Regardless of immigration status or socioeconomic background, immigrants share a hope for educational achievement by their children and for participation in tertiary education that will lead to career stability and success (Roessingh, 2006).

Large urban school jurisdictions are recognizing and identifying growing numbers of youngsters who are in the beginning stages of acquiring oral language skills in English at the same time as they must begin to develop early literacy concepts and skills in preparation for learning to read. They are often referred to as English language-learners (ELL) in the research literature, and they are the children of Canada's most recent immigration wave.

The broad question that frames our inquiry is as follows: What is the trajectory of early literacy development among young ELL, and what is the role of vocabulary knowledge that can account for the slope of the trajectory as literacy unfolds in the K-grade 5 (aged 5-10) population?

In particular, the research interest here relates to the interplay between vocabulary knowledge and early literacy concepts and skills among young ELL. In large part, that recent research lacks a focus on the question of vocabulary is a consequence of overemphasis on the *get ready to read* skills predictive of early literacy for native English-speaking (NS) children and is also due to the lack of assessment strategies and tools for preliterate youngsters (Biemiller, 2003). Measuring lexical diversity among youngsters is not a straightforward task that looks only at total output, number of words, or type-to-token ratio. Vocabulary distribution over the frequency bands is a key consideration: to measure this we designed and developed an online tool (www.lextutor.ca/vp/kids), which will be the topic of a separate technical article presently under development (T. Cobb, M. Horst, & H. Roessingh).

This article provides preliminary insights gleaned from a large complex database, and it is intended to be the first in a series of related articles. It is organized as follows. First, background information is provided to give the reader additional context for the study. This is followed by a brief review of the literature about the overarching research question. The study plan is explained and the findings presented. The discussion that follows highlights

vocabulary as the crucial variable in the language and literacy development of ELL. Suggestions are made for further research and for curriculum reform in the early literacy program.

Background

Most immigrants to Canada over the last 25 years have arrived with limited English-language proficiency and unfortunately are failing to integrate meaningfully into the economy in large measure because of this (Zong, 2004). They maintain their first language as their preferred means of communication in the home and with their Canadian-born children. Their children face significant but often unrecognized challenges due to their limited English-language proficiency as they begin their educational journey in kindergarten and elementary school classrooms across Canada. School jurisdictions—including those in the lower mainland of British Columbia, Toronto, and Calgary—are slowly recognizing and responding to the perceived learning needs of these youngsters. A recent study released by Alberta Education (2006) indicates that younger-arriving immigrant children perform less well academically than older-arriving students (usually referred to as English as a Second Language [ESL] learners). Canadian-born children of immigrants fare even worse in terms of longitudinal achievement outcomes despite their promising early results in the initial stages of literacy development as measured in grade 3 on the provincial achievement tests. How to explain this phenomenon?

Young immigrant children and the children of immigrants share some of the characteristics of older-arriving ESL learners and some of the characteristics of native speakers (NS), but are not exactly like either group. It is this *neither/nor* profile that makes for difficulties in understanding their learning needs and thus too often overlooking them (McGinnis, 2008). This might account for the underidentification of ELL at risk in the early stages of literacy development (K-grade 2) and an overidentification of ELL in the learning-disabled category in grade 5 (Calgary Board of Education, 2006).

Focusing on the onset of the learning trajectory evolves from several small-scale research studies I (principal investigator in the current study) have conducted and published while working as an ESL practitioner in an academic high school in Calgary (Roessingh, 2008; Roessingh & Kover, 2002, 2003). In sum, age on arrival (AOA) and by proxy the assumed level of first-language proficiency and literacy emerged as the key underlying variable in the longitudinal success of ESL learners together with strong program effects of well-designed ESL support over time (Roessingh, 2004). Although all AOA cohorts were able to achieve relatively high rates for graduation (80%) from high school and to move into university, a crucial insight gained from these studies was that *not all marks of 60 on the grade 12 English language arts provincial examination are equal*. Older arrivals (students who immigrated

at the age of 15+), who can be thought of as additive bilinguals, can achieve this academic success with less developed English-language proficiency than their younger-arriving classmates: *Older is better.* The youngest arrivals (aged 6-10)—who also scored on average close to 60% on the English provincial examination—remain at risk in tertiary educational settings. As subtractive bilinguals they must compete in English with their NS counterparts who read above grade level and score 80% (and better) on the English examination. The youngest arrivals are forever chasing a moving target, and they appear not to have closed the gap even after many years of immersion in an English-speaking educational milieu. For younger arrivals, *sounding good* does not mitigate the effect of educational risk that can be attributed to this gap: *What you see is all that you get*. Ultimately, all AOA cohorts experienced difficulty in university (Roessingh & Douglas, 2008) as the demands of the university curriculum outstripped the students' ability either to access it directly in English (i.e., younger arrivals) or to mediate meaning through the lens of the first language (i.e., older arrivals). Correlational analysis of the English examination results and the students' Gates MacGinitie Reading Test (MacGinitie & MacGinitie, 1992) scores points to vocabulary size as the underlying factor that can account for this variability in educational achievement outcomes. Our study is inspired by the findings of the foundational work described here, as well as a desire to understand the learning profile of the young arrival: having been one of these youngsters myself more than 50 years ago.

Convinced that the failure of the youngest arrivals need not be inevitable, we are concentrating our research efforts in the present two-stage study on the question of early language and literacy development based on Gates MacGinitie Reading Test scores for 800 ELL students who attend a local K-grade 9 school. I was invited by this school to begin the systematic collection of these data in 1998, and by 2006 enough longitudinal data were available to provide insights into the research question that is central to our study. Additional data required to cast light on the language and literacy development of children at the onset of the educational trajectory include an online early literacy screen and narrative data gathered from 65 ELL kindergarten children who currently attend this school and a neighboring school with similar student demographics; and 25 NS for comparison purposes. Early identification and intervention may hold the key to changing the slope of the educational trajectory, especially in the K-grade 2 range where there might be potential for accelerated acquisition of language and early literacy skills. In the following section, we review research literature relevant to this question.

Review of the Literature

Decades after the terms *BICS* (Basic Interpersonal Communication Skills) and *CALP* (Cognitive Academic Language Proficiency) were coined to describe the intertwined and unfolding development of language and cognition, Cummins' (1981) framework remains intuitive, relevant, and widely recognized. Although the construct of CALP has been the topic of lively academic debate (MacSwan, 2000; Aukerman, 2007), at a macro level Cummins' framework provides a useful and accessible conceptual model for the acquisition of both first and second language, as well as for the pedagogical implications of providing shifting learning supports as language and cognition unfold (Coelho, 2008). Most practitioners are familiar with the premise that language and context are interrelated and develop along a continuum from less to more cognitively demanding tasks, and from high levels of contextual supports to low. The quadrants of the model might be characterized respectively as *here and now* language; *language of lived experiences*, *there and then* language; and finally, symbolic uses of language and especially metaphor. Although thought and language are clearly not the same, they are inextricably connected.

Recently research interest has been increasing in establishing the link between language—especially vocabulary measures—and cognition. Several studies (August, Carlo, Dressler, & Snow, 2005; Marzano, 2004; Hart & Risley, 2003) have suggested that vocabulary size is one of the best single measures of overall intelligence and the ability to think and indeed that it may act as a proxy for cognition, especially in early childhood (to age 9). Hart and Risley's landmark study points to the staggering amount of meaningful, comprehensible input that a child must receive in order to acquire the linguistic building blocks that are foundational for early efforts to communicate, to think, and to control his or her unfolding world of needs, wants, and relationships. A child of 36 months is estimated to have a vocabulary of 1,200 words as a consequence of 45,000,000 words of caregiver input (largely *motherese*, Moskowitz, 1978). By age 6-7 the general consensus in the research literature is that children have a vocabulary of about 5,000 words or 2,500 root words (i.e., *go*, *goes,* and *going* count as one word) and that they increase this by some 3,000 words each year, or about 1,000 root words (Murphy et al., 1957; Moe, Hopkins, & Rush, 1982; Biemiller & Slonim, 2001). These basic building-block, high-frequency words—although not necessarily required for early literacy development, which focuses on skills such as phonemic awareness and letter and print knowledge—become increasingly important to later success in literacy when the focus is on making meaning, beginning as early as grades 3-4. These researchers have noted remarkable consistency in the patterns of first-language development and the frequency of use of core building-block words among youngsters aged 5-6. Table 1 displays this information.

Table 1
Frequency, Coverage, and Cumulative Percentage of 5-6-Year-Old Children's Oral Vocabulary in Root Words

Frequency level in root words	*Coverage %*	*Cumulative %*
First 250 words	78-80%	78-80% of words spoken
Second 250 words (500 words)	5-7%	85% of words spoken
Third 250 words (750 words)	2-4%	87-89% of words spoken
Fourth 250 words: (1,000 words)	2-3%	91-92% of words spoken
Next 1,500 words: (2,500 words)	Only 8%	100% of words spoken

Note that a 6-year-old can do *a lot* of talking with only 250-500 words. A plateau is reached at this point, and to gain one percentage point in growth hundreds of new words must be acquired. However, to understand messages, a high threshold must be in place. Various researchers (Luhn & Johns, 1983; Laufer, 1992) have suggested that the criteria accepted for the *instructional* reading level should be set at 95% word recognition: the lexical bar is even higher for the *independent* level (i.e., the level at which the reader can understand text information with no instructional support). This is easy to accomplish in the early stages of literacy development when children are exposed only to materials with tightly controlled vocabulary (e.g., basal readers) or in the context of whole-language approaches such as the language experience approach (LEA) where only words the children already know are used to generate text from a shared experience such as *a trip to the zoo* for the purposes of reading. To reiterate, the emphasis is not on comprehension, but on skills such as phonemic awareness, an important precursor of early literacy development. Few words must be encountered repeatedly for youngsters to notice, understand, segment, and manipulate sounds to form words and then make the systematic connection between phonemes in spoken words and the letters used to represent them in print. Thus in the early stages of literacy development, ELL are found to do better than their NS counterparts (Genesee, Lindholm-Leary, Saunders, & Christian, 2005). All these youngsters have (and need) only a small literate vocabulary. The significance of vocabulary has often been underestimated in the early years because it is not a prerequisite for grades 1 or 2 reading success (Biemiller, 2004). However, to make the transition from learning to read to reading to learn (around grade 4), a critical mass of about 12,000-15,000 words needs to be in place. The connection between vocabulary and reading comprehension, as well as vocabulary and school performance in all content areas, is one of the most strongly established in the educational research. In about grade 4 ELL, begin to fall noticeably behind: reading comprehension is increasingly compromised, and the effect on academic achievement is seen.

This threshold is also well established in the educational research and is often referred to as *the grade 4 slump* (Chall & Jakobs, 2003). It becomes clear from this information how easy it would be to be misled about a child's lexical knowledge and ability to communicate. So much *beneath the surface* can go unnoticed and is masked by strengths in decoding skills and BICS.

Common underlying proficiency (CUP) theory (Cummins, 1979, 1981) posits that conceptual information is fluid and can be accessed across linguistic boundaries. Collier (1987/1988, 1992, 1995), Roberts (1994), and Lee and Schallert (1997) among others identified age 9 (grade 4 equivalent, GE 4) as the point at which children can independently access, retrieve, and transfer information stored in these mental frameworks. In the case of literacy development, second-language learners rely on highly similar strategies and underlying processes that transfer at an even younger age (Vaughn, Linan-Thompson, Pollard-Durodola, Mathes, & Hagan, 2006). Mapping new linguistic information onto existing mental frameworks is a far less onerous task than having to construct conceptual information in a language that the learner is still acquiring. Such is the challenge facing the younger ELL. Whereas even among very young children there is evidence of transfer efforts, clearly if the CUP is only shallow, they will quickly outgrow the ability to do so.

The research literature, then, suggests two critical thresholds. The first is at around age 9 (GE 4), which can be thought of as a literacy threshold (the beginning of the shift from learning to read to reading to learn and the transition from BICS to CALP). The second is around age 15 (or GE 9-10), which can be thought of as a cognitive threshold: the shift to symbolic thought that is marked by metaphoric competence. It is no accident that newspapers in Canada are written at around a GE 9, as this coincides with the average reading age of the adult population.

Young-arriving immigrant children and the Canadian-born children of immigrants face a multitude of learning challenges, not the least of which may be misunderstandings on the part of the significant adults in their lives—their parents and teachers—related to the ease with which they can *come up to speed*. Their apparent ease in acquiring native-like pronunciation and fluency with BICS language (Krashen, Long, & Scarcella, 1979) may mask their vocabulary shortfall and serve to distract parents and teachers from this educational need. Most young ELL will become *subtractive bilinguals* (Wong Filmore, 1991), meaning that English must overtake their first language for the purposes of communication outside the home and for academic purposes in school. "Among the children of immigrants, English emerged as an unequivocal winner in the struggle for their linguistic souls" (Suárez-Orozco & Suárez-Orozco, 2001, pp. 136-137). This process of language loss and shift occurs rapidly once these children have experienced their first exposure to the broader English-speaking community and begin to

attend school (deVries, 1999; Uccelli & Paez, 2007). In this window of time young ELL may find themselves in linguistic limbo (Glennen, 2002) just as they are about to make their initial steps into emergent and early literacy development in K-grade 2 and beyond.

The acquisition of basic literacy skills among NS youngsters has been well researched, and there is a voluminous body of publications on this topic. This process is understood to comprise a variety of micro-skills including, for example, phonemic and phonological awareness (e.g., rhyming words, initial sounds of words), letter recognition, print knowledge, and phonics. Vocabulary knowledge is assumed and indeed not assessed on measures such as the Gates MacGinitie Reading Tests Forms Pre and R (for kindergarten and children in grade 1)—hence perhaps the lack of tools to measure and gain insights into vocabulary size and distribution of preliterate children. As noted above, vocabulary knowledge does not play a major role until the construction of meaning via expository expression, textbook information, and content area studies—all associated with the shift from learning to read to reading to learn—occurs at around grade 4. What of ELL learners and their basic literacy instructional needs? Must we wait until grade 4 or in many cases grade 10 (Roessingh & Kover, 2002) to notice the yawning gap in their vocabulary knowledge and the devastating effect of this on academic achievement? We need to examine our notion of what it means *to read* even at a young age so as to include the role of vocabulary knowledge, especially for ELL.

The research community has only recently begun to address this question (August & Shanahan, 2006), and views are distinctly divided. Chiappe, Siegel, and Wade-Woolley (2002), D'Angiulli, Siegel, and Maggi (2004), Lesaux and Siegel (2003), and Kelly, Gomez-Bellenge, Chen, and Schulz (2008) focused their research on the underlying micro-skills noted above, which are predictive of early literacy development among NS. They largely concluded that, "The development of reading skills in ELL children is very similar to the development of reading skills in children with English as their first language" (D'Anguilli et al., p. 202). By these criteria, and in large measure, ELL can close the early literacy gap, and any interventions that are offered should hold for two years. Lesaux and Siegel wrote,

> By grade 2, the ESL children had acquired the sound-symbol relationships of the English language to the extent that they were reading and spelling at a level equivalent to, and in some cases better than, that of the L1 peers. (p. 1017)

Indeed, children exposed to bilingual experiences often show heightened phonemic awareness and can outperform their unilingual counterparts on these measures predictive of early literacy success. On these basic literacy measures, with minimal investment in a hard-hitting and systematic ap-

proach (e.g., the *Response to intervention* models currently in vogue) for phonics, for example, schools can change the education that they provide to children at risk of experiencing reading difficulties so that they become *successful readers*. *The younger the better*, *sounding good*, and *off to a good start* have both intuitive appeal and research support. These outcomes are tangible, measurable, and within the accountability framework often used to reflect on yearly school improvement plans attractive. It is simply assumed that such early literacy success will translate into long-term school success and so avoid dropping out of school and failure. This perspective on learning to read may account for the underidentification of ELL at risk in the early stages of literacy development and the overidentification of ELL in the learning-disabled category, spiking at around grade 5 (Calgary Board of Education, 2006).

Geva and Verhoeven (2000), Biemiller (2003, 2004), August et al. (2005), Vermeer (2006), and Uccelli and Paez (2007), on the other hand, stress the importance of vocabulary knowledge in a balanced early literacy approach for young ELL. They recognize that vocabulary development will be a long, gradual process and that the initial gap between ELL and their native-speaking counterparts may never completely close. Appel and Vermeer (1998) noted that after four years of direct vocabulary instruction, children learning Dutch as a second language were still one full year behind: the original target of 1,000 root words per year had not been realized. Unfortunately, they observed that few elementary schoolteachers considered vocabulary teaching an important part of their responsibility. August, Calderon, Carlo, and Snow (2005) followed their young participants for five years. Results of regression analysis indicated that Spanish phonemic awareness, Spanish letter identification, and Spanish word reading as measured in grade 2 were reliable predictors of English performance on parallel tasks at the end of grade 3. On measures of vocabulary knowledge, however, grade 4 outcomes indicated only a high grade 1 level of English vocabulary knowledge. The researchers noted the interplay among vocabulary knowledge, listening comprehension, and reading comprehension. Moreover, vocabulary exerted not only a significant proximal effect, but also a distal effect on reading comprehension such that positive changes in vocabulary knowledge influenced not only reading comprehension, but also listening comprehension, through which reading comprehension was further influenced. A key finding of these studies was that vocabulary knowledge was found to have more of an effect on the reading comprehension of L2 learners than on L1 learners. Last, Cameron (2002), in a study of young-arriving ELL (mean AOA=4 years 6 months), recorded significant gaps in lexical knowledge at surprisingly low levels (i.e., approximately GE 4) even 10 years after having been immersed in English-medium instruction. It would seem, therefore, that attention to early

vocabulary assessment and instructional intervention for ELL is urgently required.

Measuring lexical knowledge among preliterate children is not a straightforward task. One promising approach is to elicit spontaneous narrative from a prompt such as a wordless picture storybook. Profiling narrative output along such measures as total number of words (T), number of words (NDW), and type-token ratio (T divided by NDW) has been the most common approach (Reich & Reich, 1977; Watkins & Kelly, 1995; Uccelli & Paez, 2007). However, these measures have generally not been found sensitive indicators of English narrative productivity. Accordingly, we decided to develop a lexical profiler tool that would provide insights into these measures as well as the distribution of words across the first 10 frequency bands of children's unfolding vocabulary development in English. This could be considered a measure of vocabulary *richness* and can be tracked over time using the data presented in Table 1 as a baseline. Working collaboratively with a colleague whose area of expertise is computational linguistics, an online vocabulary profiling tool was designed for one of the instruments needed for Stage 2 of this study (see www.lextutor.ca/vp/kids). The development of this lexical profiler tool is explained in a Powerpoint presentation entitled *Lextutor for kids: Profiling the vocabulary of K-2 learners* (Roessingh & Cobb, 2007) and is available online.

Study Plan

Participants

The study took place in a Calgary-area school with kindergarten to grade 9. The student population is overwhelmingly composed of students who speak another language at home. Most are immigrants; however, in the last three years there has been a noticeable shift in registration to include more Canadian-born children of immigrants, a trend that is visible in many urban school jurisdictions. The kindergarten program has expanded to five classes (approximately 90 children); most of the youngsters are in the beginning stages of acquiring English language proficiency on arrival at the school. There is a long waiting list for registration in the kindergarten program.

The languages of origin represented most prevalently include Arabic, Urdu, Somali, and Kurdish. Many of the students' families consider themselves transnationals, dividing their time between Canada and their country of origin for purposes of schooling, business, holidays, and family connections. The children are considered typical learners of mid- to high socioeconomic status.

This school has generously provided access to Gates-MacGinitie Reading Test scores (vocabulary and reading comprehension) that have been collected from approximately 800 students over approximately eight years: five

years' worth of these data were used for this study. Cognizant of the trend reported by Alberta Education (2006) of generally poorer academic performance by Canadian-born ELL than foreign-born, we report our findings on the Gates-MacGinitie Reading Test measure to reflect this.

For Stage 2 of the study, 65 youngsters from the kindergarten group of 2007-2008 in this and a neighboring school were recruited to participate in a basic literacy screen of 20 items (Stecker, 2002) available online (www.getreadytoread.org) and a storytelling task. These tasks were completed in the children's first language and in English. Overwhelmingly these youngsters are Canadian-born ELL.

For comparison purposes for Stage 2 of the study, 25 NS children in the age range of 4 years 6 months to 6 years 6 months were recruited to participate from among faculty members and graduate students and children enrolled in summer play programs in the local campus area. These children represent the *moving target* that ELL—whether foreign-born or Canadian-born—must catch up to if they wish to fulfill their ambition of participating in tertiary education programs and from there launching a career in the knowledge professions.

Instruments

The school administers the Canadian edition of the Gates-MacGinitie test to students enrolled in English as a second language (ESL) instruction twice yearly in September and May. The Gates-MacGinitie is a widely used survey test of reading achievement available for grades K-12. The test has seven levels, and all questions are multiple-choice. Each level has two forms, which were alternated between the fall and spring tests. Five of the seven levels have vocabulary and reading comprehension subtests: Levels Pre and R, used in kindergarten and grade 1, measure early literacy concepts and skills and do not include a vocabulary measure. Scores were provided by the school in grade equivalent (GE) form. However, extended standard scores (ESS) were available for some students. These are equal unit scores that extend from the lowest level of grade 1 to the highest level of grade 12 and so can be compared from grade to grade. The range in theory is from 100 to 1,000. The findings are reported in GE form as this metric is more accessible to many readers.

In this article we report the results of testing in English on two instruments from Stage 2 of the study. First, the Getreadytoread! (Stecker, 2002) screening tool was chosen for its ease of administration by nonprofessionals, its ability to engage children in an online game-like activity, and its technical specifications, which indicate its utility for the early identification of youngsters likely to have reading difficulties by the end of grade 2. It is recommended for youngsters in pre-K to kindergarten. Three broad domains (20 items) of emergent literacy are tested (literacy concepts, letter recogni-

tion, and phonics), and a total score is calculated. Five bands are used to interpret the scores: 17-20: strong; 13-16: strong; 10-12: average; 7-9: weak; 0-6: very weak.

Second, narrative data were generated from a storytelling task using Mayer's (1967) wordless picture book, *A boy, a dog and a frog* (BDF), as a prompt. The storytelling task was chosen as a strategy to collect narrative data as storytelling is an authentic activity familiar to most children across cultures. It is constructivist, nonthreatening, and developmentally appropriate, yet cognitively challenging. The book provides scaffolding for the narrative task and eliminates the pressure of the child being asked simply to make something up. The book consists of 29 ink sketches of a boy who tries in vain to catch a frog. He ultimately goes home empty-handed, but the frog follows his footprints to his home where they become friends. Making predictions and inferences, hypothesizing, and seeing humor and cause and effect are all elements that emerge in this story. The vocabulary profiler tool developed for this study permits a more refined analysis of the lexical output than earlier studies have been able to accomplish. As we see in the results, the feature of *lexical richness* emerges as a key variable in analyzing children's lexical output.

Method

The Gates MacGinitie Reading Test scores together with demographic data that we received from some 800 school records were entered into Excel and eventually into SPSS by a research assistant on the project. These data had originally been collected for educational rather than research purposes. Considerable data were missing for variables that were essential for the study. Steps were therefore taken to develop the dataset by a statistician (and co-author) on the project, in particular to ensure data accuracy and completeness. Thus records that were missing the date of birth, date of arrival in Canada, or test date were dropped. Records that had fewer than two tests, where the test results had out-of-range results, or where the test dates were not in sequence were also dropped. These basic data-cleaning steps resulted in a sample of 411.

For Stage 2 of the study, the principal researcher met with each of the 65 ELL and 25 NS kindergarten-aged participants individually for approximately 25 minutes. Each child was invited to *play a computer game* (Getreadytoread! screening tool). A practice item is followed by 20 items, each consisting of four pictures and a question. The question was read to the children, and those determined from the practice item to control the clicker (mouse) on their own were permitted to do so. Others who were not as computer savvy were simply asked to point to the answer, and the researcher clicked for them. Second, each child was asked to tell a story using the wordless picture book *A boy, a dog and a frog* (Mayer, 1967) as a prompt.

They willingly did so, often only reluctantly ending our session. Few prompts were required, consisting simply of *Tell me more* or *What happens next?* The researcher transcribed the taped narratives and submitted them to the online vocabulary profiler tool developed for this purpose (www.lextutor.ca/vp/kids). Scores for total number of words, number of different words (NDW), type-token ratio (i.e., the ratio of total words divided by NDW), and the distribution of the vocabulary across 10 word bands (each of 250 words) were generated as measures of lexical diversity. These data were entered into an Excel spreadsheet and eventually into SPSS. Because vocabulary development is such a dynamic process at this age, the results were organized by cohort groups, each of three months in age span.

Findings

Gates MacGinitie Reading Test Results (N=411)

The correlation of Reading and Vocabulary Grade Equivalent Scores was high at .85 ($p<.001$). Overall in this data file, the difference between reading and vocabulary results is small, less than 1.1 grade equivalent units, higher for vocabulary than reading.

Differences between Canadian-born (CB) ELL and immigrant ELL children are shown in Table 2 and in Figures 1 and 2. Although CB and immigrant children who arrived at less than 7 years of age and 7 years of age and over are similar in language achievement at 6-8 years of age, a gap begins to

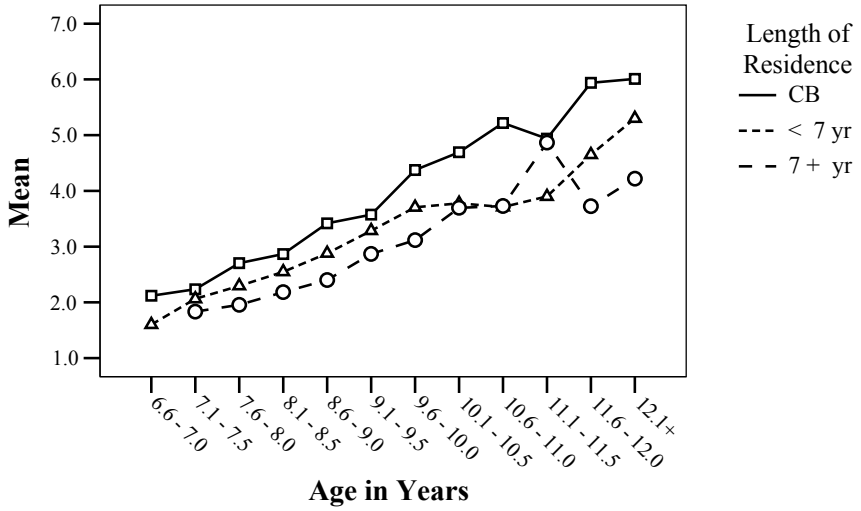

Figure 1. Mean grade equivalent vocabulary scores by age and immigration status.

Table 2
Vocabulary and Reading Scores for Canadian-Born ELL, and Immigrant Children who Arrived at ≤ Age 7 and Age 7+

	CB		*Arrived ≤ 7*		*Arrived 7 +*	
	Vocabulary	*Reading*	*Vocabulary*	*Reading*	*Vocabulary*	*Reading*
6.6-7.0	2.12	2.09	1.60	1.74	n/a	n/a
7.1-7.5	2.23	2.21	2.06	1.95	1.83	1.87
7.6-8.0	2.70	2.68	2.29	2.24	1.96	1.97
8.1-8.5	2.87	2.81	2.55	2.61	2.18	2.08
8.6-9.0	3.42	3.55	2.88	2.80	2.40	2.31
9.1-9.5	3.57	3.59	3.29	3.36	2.87	3.06
9.6-10.0	4.37	4.57	3.71	3.95	3.12	3.56
10.1-10.5	4.69	5.06	3.78	3.76	3.70	4.27
10.6-11.0	5.22	5.68	3.71	3.62	3.73	4.12
11.1-11.5	4.94	5.71	3.90	4.53	4.87	4.83
11.6-12.0	5.94	7.06	4.65	4.00	3.73	3.74
12.1+	6.01	5.55	5.30	4.40	4.22	4.18

appear at 10 years of age and widens somewhat with the increase to 12 years of age. This trend is especially evident in reading.

Figures 2 and 3 show achievement by age and length of residence in vocabulary and reading tests respectively, and Table 2 shows the same data.

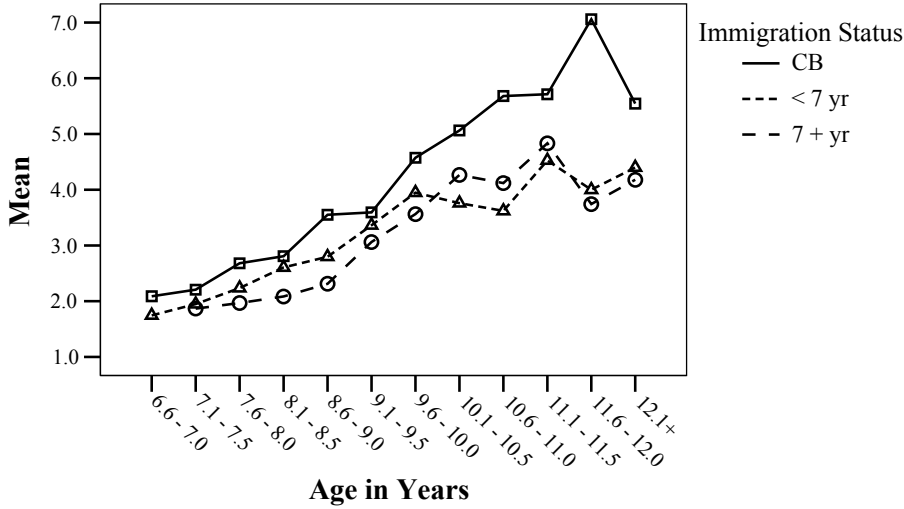

Figure 2. Mean grade equivalent reading scores by age and immigration status.

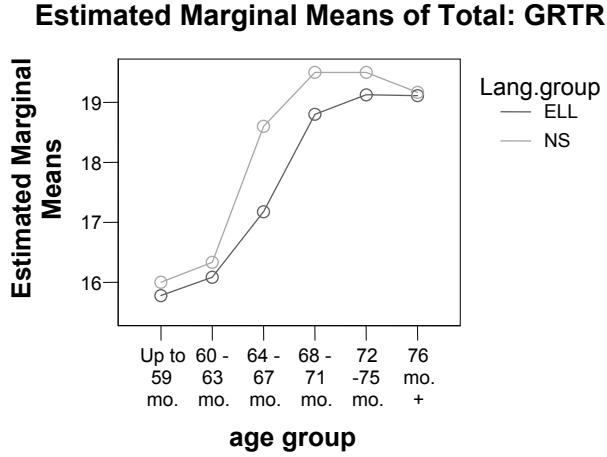

Figure 3. Results of the total score for Getreadytoread! screening tool.

Table 2 shows that the mean vocabulary and reading scores are quite close although there are differences between the three groups of children according to years of residence in Canada.

Note that by age 11 (beginning grade 6) all three cohort groups are well below grade in both vocabulary and reading comprehension. The small spike in the data at age 11.6-12.0 for the Canadian-born participants may be attributable to a small number of students who were good readers at this age.

Getreadytoread! (GRTR) Screening Tool

Each of the three domains of emergent literacy was analyzed as well as the total score to reflect on the general level of emergent literacy readiness.

Literacy concepts. Age group is significant $F(5,78)=3.92$, $p=.003$. The linear trend is significant at $p<.001$. Letter Recognition: No factor is significant, but the linear trend is significant at $p=.011$. Phonics: Age group is significant $F(5,78)=2.92$, $p=.02$. The linear trend is significant at $p=.001$.

Total score for Getreadytoread! screen. Age group is significant $F(5,78)=4.47$, $p=.001$. The linear trend is significant at $p<.001$. Figure 4 shows these findings.

Note that both ELL and NS score in the *strong* to *very strong* range. It would seem that age rather than linguistic background indicates success in the acquisition of emergent literacy readiness. At the upper age of testing (72-76+ months) the Getreadytoread! scores plateau as would be expected as children mature and become solid in early literacy development and move into grade 1. These findings fit with those noted in the Gates MacGinitie data: at earlier stages of literacy development, ELL are able to make good progress.

Table 3
Descriptive Data for Total Words, NDW, T-T Ratio

Language group	*Total words*	*NDW*	*Type-token ratio*
ELL: *n*=65 children	Mean: 252.85 words	Mean: 78.22	Mean: .3308
	Std. deviation: 119.916	Std. deviation: 24.315	Std. deviation: .06268
NS: *n*=25 children	Mean: 242 words	Mean 84.32	Mean: .3548
	Std. deviation: 57.532	Std. deviation: 15.443	Std. deviation: .04779
Total: *N*=90 children	Mean: 249.83	Mean: 79.91	Mean: .3374
	Std. deviation: 106.099	Std. deviation. 22.294	Std. deviation: .05965

It is later in the trajectory that vocabulary falters, and it may be assumed that reading comprehension is increasingly compromised.

Storytelling Task Analysis (A boy, a dog, and a frog: BDF)

In sum, for the BDF story the overall age trend was not significant, but the linear trend of age was significant $p<.05$ for both Total Words and Number of Different Words (NDW). The linear trend measures an increase or decrease in the means. No effect was significant for Type-Token (T-T) ratio. Table 3 summarizes these descriptive data.

It is in the use of the first 250-word band that findings of real interest emerge. We noted that ELL were significantly higher in their use of these high-frequency words on average than NS ($F(1,78)=18.30$, $p<.001$. Figure 4 illustrates this finding.

There is a visible gap in the use of high-frequency words between the two learner profiles ELL and NS. It is interesting to note that these data for NS

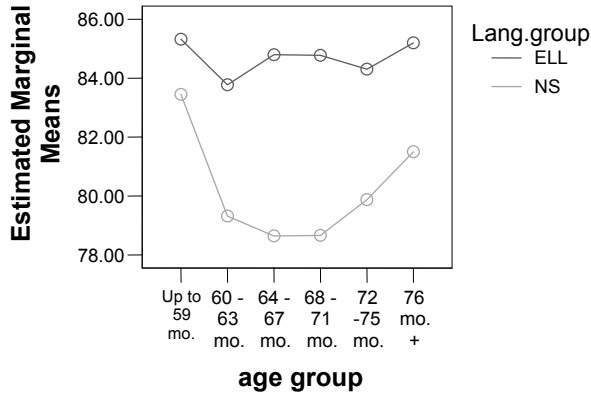

Figure 4. Estimated percentage marginal means of band 1.

children correspond with those recorded in Table 1 based on research by Murphy (1957) and Moe et al. (1982). This is the gap that other researchers have identified as the *misunderstood giant* (Sénéchal, Ouellette, & Rodney, 2006): the underlying variable that predicts later reading success but that is largely silent in the emerging literacy skills. It would seem that for both ELL and NS it is possible to acquire early literacy skills and concepts with a small vocabulary, but for ELL the consequences of neglecting vocabulary development in the early stages are not noticed until it may be too late. By then the academic performance of ELL has become so compromised that few of these learners are able to recover.

Discussion

These findings support the work of many other researchers who have addressed the question of early language and literacy development among young ELL. To reiterate, these youngsters have distinct strengths in acquiring the early literacy concepts and skills generally predictive of early decoding abilities among NS. A heightened sense of phonemic awareness appears to facilitate phonics skills. In a relatively short time in the early stages of literacy development (K-grade 2), most ELL can catch up to and even surpass their NS counterparts on these measures. They develop a basic vocabulary quickly and can use it to acquire early literacy skills. This is reflected in the high correlation between vocabulary and reading measures. Note, however, that as time passes vocabulary falls behind and the literacy gap widens, beginning in the mid-school years and placing these children at risk.

These children lag behind in the crucial area of vocabulary development, and with each passing year the gap increases. By upper elementary grades these children are more than a year behind, echoing the findings of Appel and Vermeer (1998) and August et al. (2005). Results of the storytelling task reflect gains on all measures of lexical diversity over time. The trend is linear for age on measures of talkativeness or total word output, NDW, and type-token ratio. There is no significant difference on these measures between NS and ELL, again suggesting that ELL youngsters can acquire a few hundred basic words and develop BICS language fairly readily and quickly. Hidden below the surface, however, is the lack of low-frequency vocabulary, the key to longitudinal reading success. ELL are highly dependent on the first-250-word band to convey meaning. This was noted in the distribution or richness of the lexical output. Whereas ELL were limited to the word *tree*, NS used an array of words such as *branch, log, stump, twig,* or *tree*. In the frame where the boy is shaking his fist, ELL were limited to the word *mad, mad, mad* (or, *really, really, really MAD*). NS, on the other hand, used words such as *disappointed, angry, bothered,* or *mad*. Efficiency and precision of meaning necessary to render a more nuanced story retelling are compromised for young ELL.

Implications for the K-grade 2 literacy program would include thinking of how to provide instruction in the basic skills and concepts that both ELL and NS children need in order to acquire early literacy: phonemic awareness, letter recognition, phonics, and literacy concepts associated with emergent reading skills. But this will not be enough. ELL also need to acquire thousands of new words, and these need to be taught directly in contexts that are meaningful, personally relevant, engaging, and interconnected by way of loose thematic instruction. ELL need to engage in word play; to take risks with language; and to develop discovery, curiosity, imagination, and creativity. Small-group work and a smaller ratio of children to adults are needed to provide the comprehensible input +1 (Krashen, 1989) or, in Vygotskian terms, to challenge the child to move along the zone of proximal development (Vygotsky, 1978) and to provide more talk time for children, which is not possible when one teacher must respond to as many as 18 youngsters in the class. ELL children are dependent on adult input and direct teaching to advance their English language proficiency, and they need opportunities to practice, recycle, and extend their word knowledge in ways that NS may not require (Stahl, 1999). NS children go home after school, and parental input vastly overshadows any instructional influence the school may have in the area of vocabulary acquisition. We need to explore the potential of technologies such as the Internet, SMART boards, chat rooms, and software applications to motivate children to want to engage in literacy practices and to support their learning after school hours. And we need to think of how to extend learning into the after-school hours. Connections need to be made with the immigrant community to promote family literacy practices in the first language. Because opportunities for incidental and environmental input of the first language are so limited in a language minority context, it becomes even more important for families to challenge their young children with rich language input (Leseman & Van Tuijl, 2006).

Conclusion

Educators need to watch for the child who *sounds good* and has strong decoding skills, but who is recognized as an ELL. It is a mistake to declassify these youngsters at the end of grade 2 and take them out of ELL support only to reclassify them in grades 5-6 as needing resource or special education.

Further directions in research would include corpus-based studies of narrative output, home literacy surveys to find out more about the role of language in the home, and pilot studies on curriculum innovations (e.g., dual language book projects) that have the potential to accelerate vocabulary acquisition among ELL. In addition, the current study needs to be expanded so that a more refined analysis of the lexical stretch beyond the first 250-word band is possible. Our study is part of a larger study that examines some of these questions, including the role of the first language as it unfolds over

time and that either diminishes—often for those younger learners who become subtractive bilinguals—or can remain a strong platform for the development of English. The challenges of doing so, however, are immense in cities such as Calgary, which are so diverse and cannot provide curricula, learning resources, and credentialed teachers in many languages. Strategic partnerships with our language-minority communities—together with a strengthened understanding of the learning needs, professional development for K-grade 2 practitioners, and a balanced early literacy curriculum, and maintaining a commitment to tracking and responding to changing instructional needs for ELL right through high school—are all part of the solution.

Acknowledgments

The principal investigator is grateful for SSHRC grant 410-2006-2530, which supported this study. Carla Johnson, research assistant, is acknowledged for inputting the Gates MacGinitie Reading Test scores and student demographic data into a database (2006). We acknowledge with gratitude the contribution of our research partners in the field in granting access to school-based data and to their kindergarten classes for the purposes of gathering the narrative samples and Getreadytoread! data. And to all those NS youngsters who so enthusiastically told us their *Boy, dog, frog* stories and played on the computer with us, we can only assure their parents that their participation has been invaluable and a lot of fun for us. Thank you!

We are grateful to our peers who reviewed our work and provided thoughtful and detailed feedback that strengthened our writing. And we sincerely thank the staff of TESL Canada, Erika Lee and John Sivell in particular, for their efforts in shepherding our manuscript through the steps to publication.

The Authors

Hetty Roessingh works in the Faculty of Education, University of Calgary. She teaches graduate courses in methods, materials, and curriculum in TESL. Her research interests lie in the area of longitudinal tracking, rates of acquisition, academic achievement, and early language and literacy development.

Susan Elgie has an MA in Measurement and Evaluation from the University of Toronto. Now retired from the OISE/UT Research Consulting Service, she works as a consultant in educational research.

References

Alberta Education. (2006). *A review of K-12 ESL education in Alberta*. Available: http://www.education.alberta.ca/teachers/program/esl/eslreview.aspx

Appel, R., & Vermeer, A. (1998). Speeding up second language vocabulary acquisition of minority children. *Language and Education, 12*(3), 159-173.

August, D., Carlo, M., Dressler, C., & Snow, C. (2005). The critical role of vocabulary development for English language learners. *Learning Disabilities Research and Practice, 20*(1), 50-57.

August, D., Calderon, M., Carlo, M., & Snow, C. (2005). *Transfer of reading skills in bilingual children: Subproject 2 of acquiring literacy in English: Crosslinguistic, intralinguistic, and developmental factors*. Retrieved February 20, 2009 from http://www.cal.org/acquiringliteracy/subprojects/project2index.html

August, D., & Shanahan, T. (Eds.). (2006). *Executive summary: Developing literacy in second-language learners: Report of the National Literacy Panel on Language-Minority Children and Youth*. Retrieved February 16, 2009, from: http://www.cal.org/projects/archive/nlpreports/Executive_Summary.pdf

Aukerman, M. (2007). A culpable CALP: Rethinking the conversational/academic language proficiency distinction in early literacy instruction. *Reading Teacher, 60*, 626-635.

Biemiller, A. (2003). Oral comprehension sets the ceiling on reading comprehension. *American Educator, 27*(3). Retrieved February 16, 2009 from: http://www.aft.org/pubs-reports/american_educator/spring2003/biemiller.html

Biemiller, A. (2004). Teaching vocabulary in the primary grades. In J. Baumann & E. Kameenui (Eds.), *Vocabulary instruction: Research to practice* (pp. 28-40). New York: Guilford Press.

Biemiller, A., & Slonim, N. (2001). Estimating root word vocabulary growth in normative and advantaged populations: Evidence for a common sequence of vocabulary acquisition. *Journal of Educational Psychology, 93*, 498-520.

Calgary Board of Education. (2006). *Research proposal: Identifying reading difficulties and evaluating response to intervention on the part of English language learners (ELL) in the Calgary Board of Education, An action research project*. Calgary, AB: Author.

Cameron, L. (2002). Measuring vocabulary size in English as an additional language. *Language Teaching Research, 6*(2), 145-173.

Chall, J., & Jakobs, V. (2003). Poor children's fourth-grade slump. *American Educator, 27*(1). Retrieved February 16, 2009, from: http://www.aft.org/pubs-reports/american_educator/spring2003/chall.html

Chiappe, P., Siegel, L., & Wade-Wooley, L. (2002). Linguistic diversity and the development of reading skills: A longitudinal study. *Scientific Studies of Reading, 6*(4), 369-400.

Coelho, E. (2008, November). *Teaching in the quadrants: A framework for instruction and assessment*. Paper presented at the ESL-C Conference (Alberta Teachers' Association), Kananaskis, AB.

Collier, V. (1987/1988). The effect of age on acquisition of a second language for school. *National Clearinghouse for Bilingual Education, Focus 2*, Winter 1987/1988. Retrieved July 30, 2008, from: http://www.ncela.gwu.edu/pubs/classics/focus/02aage.htm

Collier, V. (1992). A synthesis of studies examining the long-term language minority student data on academic achievement. *Bilingual Research Journal, 16*(1, 2), 187-212.

Collier, V. (1995). Acquiring a second language for school. *Directions in Language and Education, 1* (1). Retrieved February 16, 2009, from: http://www.ncela.gwu.edu/pubs/directions/04.htm

Cummins, J. (1979). Linguistic interdependence and the educational development of bilingual children. *Review of Educational Research, 49*, 222-251.

Cummins, J. (1981). Age on arrival and immigrant second language learning in Canada: A reassessment. *Applied Linguistics, 2*, 132-149.

D'Anguilli, A., Siegel, L., & Maggi, S. (2004). Literacy instruction, SES, and word-reading achievement in English-language learners and children with English as a first language: A longitudinal study. *Learning Disabilities Research and Practice, 19*(4), 202-213.

de Vries, J. (1999). Foreign born language acquisition and shift. In S. Halli & L. Driedger (Eds.), *Immigrant Canada: Demographic, economic and social challenges* (pp. 261-281). Toronto, ON: University of Toronto Press.

Genesee, F., Lindholm-Learly, K., Saunders, W., & Christian, D. (2005). English language learners in U.S. schools: An overview of research findings. *Journal of Education for Students Placed at Risk, 10*(4), 363-386.

Geva, E., & Verhoeven, L. (2000). Introduction: The development of second language reading in primary children—Research issues and trends. *Scientific Studies of Reading, 4*(4), 261-267.

Glennen, S. (2002). *Language and the older adopted child*. Retrieved February 16, 2009 from: http://pages.towson.edu/sglennen/Olderchildrenandlanguage.htm

Hart, B., & Risley, T. (2003). The early catastrophe. *American Educator, 27*(1). Retrieved February 16, 2009, from: http://www.aft.org/pubs-reports/american_educator/spring2003/catastrophe.htm
Kelly, P., Gómez-Bellengé, F., Chen, J., & Schulz, M. (2008). Learner outcomes for English language learner low readers in an early intervention. *TESOL Quarterly, 42*, 235-260.
Krashen, S. (1989). We acquire vocabulary and spelling by reading: Additional evidence for the Input Hypothesis. *Modern Language Journal, 73*, 440 - 464.
Krashen, S., Long, M., & Scarcella, R. (1979). Age, rate and eventual attainment in second language acquisition. *TESOL Quarterly, 13*, 573-582.
Laufer, B. (1992). How much lexis is necessary for reading comprehension? In P.J. Arnaud & H. Béjoint (Eds.), *Vocabulary and applied linguistics* (pp. 126-132). London: Macmillan.
Lee, J., & Schallert, D (1997). The relative contribution of L2 language proficiency and L1 reading ability to L2 reading performance: A test of the threshold hypothesis in an EFL context. *TESOL Quarterly, 31*, 713-739.
Lesaux, N., & Siegel, L. (2003). The development of reading in children who speak English as a second language. *Developmental Psychology, 39*, 1005-1019.
Leseman, P., & van Tuijl, C. (2006). Cultural diversity and early literacy: Findings in Dutch studies. In D. Dickinson & S. Neuman (Eds.), *Handbook of early literacy research* (vol. 2, pp. 211-228). New York: Guilford Press.
Luhn, M., & Johns, J. (1983). Informal reading inventories: Reappraising the criteria for the instructional reading level. *Reading Psychology, 4*, 57-64.
MacGinitie, W. & MacGinitie, R. (1992). *Gates MacGinitie Reading Tests* (2nd ed). Toronto, ON: Nelson Education.
MacSwan, J. (2000). The threshold hypothesis, semilingualism, and other contributions to a deficit view of linguistic minorities. *Hispanic Journal of Behavioral Sciences, 22*(1), 3-45.
Marzano, R. (2004). *Building background knowledge for academic achievement: Research on what works in schools*. Alexandria, VA: Association for Supervision and Curriculum Development.
Mayer, M. (1967). *A boy, a dog and a frog*. New York: Penguin Putnam.
McGinnis, S. (2008, December 9). Strong grasp of mother tongue boosts students. *Calgary Herald*, p. B4.
Moe, A., Hopkins, C., & Rush, R. (1982). *Vocabulary of first grade children*. Springfield, IL: Charles C. Thomas.
Moskowitz, B. (1978). The acquisition of language. *Scientific American, 239*(5), pp. 92-108.
Murphy, H., Hodgkins, A., Battit, A., Bowie, D., Caffrey, P, Callahan, M., Collins, M., et al (1957). The spontaneous speaking vocabulary of children in primary grades. *Journal of Educational Research (Boston University), 140*, 1-105.
Reich, C., & Reich, P. (1977). *The vocabulary of primary school children*. Toronto, ON: Toronto Board of Education. Research Report. (ERIC Document Reproduction Service No. ED 147844)
Roberts, C. (1994). Transferring literacy skills from L1 to L2: From theory to practice. Retrieved February 16, 2009, from: http://www.ncela.gwu.edu/pubs/jeilms/vol13/transf13.htm
Roessingh, H. (2004). Effective high school ESL programs: A synthesis and meta-analysis. *Canadian Modern Language Review, 60*, 611-636.
Roessingh, H. (2006). The teacher is the key: Building trust in ESL high school program. *Canadian Modern Language Review, 62*, 563-590.
Roessingh, H. (2008). Variability in ESL outcomes: The influence of Age on arrival and length of residence on achievement in high school. *TESL Canada Journal, 26*(1), 87-107.
Roessingh, H., & Cobb, T. (2007). Lextutor for kids: Profiling the vocabulary of k-2 learners. Powerpoint. Retrieved February 16, 2009, from: http://apollo.ucalgary.ca/eslrw/node/24
Roessingh, H., & Douglas, C. (2008). *ELL students at university: Loss of educational capital, a pilot study*. Manuscript submitted for publication.

Roessingh, H., & Kover, P. (2002). Working with younger arriving ESL learners in high school English: Never too late to reclaim potential. *TESL Canada Journal, 19*(2), 1-20.

Roessingh, H., & Kover, P. (2003). Variability of ESL learners' acquisition of cognitive academic language proficiency: What can we learn from achievement measures? *TESL Canada Journal, 21*(1), 1-21.

Roessingh, H., Kover, P., & Watt, D. (2005). Developing cognitive academic language proficiency: The journey. *TESL Canada Journal, 23*(1), 1-27.

Sénéchal, M., Ouellette, G., & Rodney, D. (2006). The misunderstood giant: On the predictive role of early vocabulary to future reading. In D. Dickinson & S. Neuman (Eds.), *Handbook of early literacy research* (vol. 2, pp. 173-182). New York: Guilford Press.

Stahl, S. (1999). *Vocabulary development. From reading research to practice* (F. Chall, Ed.). Brookline, MA: Brookline Books.

Stecker, D. (2002). The meaning of screening: How the GRTR! Screening tool works. Retrieved February 16, 2009, from: http://www.getreadytoread.org/content/view/196/451/

Suárez-Orozco, C., & Suárez-Orozco, M. (2001). *Children of immigration.* Cambridge, MA: Harvard University Press.

Uccelli, P., & Paez, M. (2007). Narrative and vocabulary development of bilingual children from kindergarten to first grade: Developmental changes and associations among English and Spanish skills. *Language, Speech and Hearing Services in Schools, 38*(3), 225-236.

Vaughn, S., Linan-Thompson, S., Pollard-Durodola, S., Mathes, P., & Hagan, E. (2006). Effective interventions for English language learners (Spanish-English) at risk for reading difficulties. In D. Dickinson & S. Neuman (Eds.), *Handbook of early literacy research* (pp. 185-197). New York: Guilford Press.

Vermeer, A. (2006). *Language teaching to immigrant children: Every teacher's responsibility!* Retrieved February 16, 2009, from: http://www.namsgagnavefurinnkatla.net/Fraedsla_forsida/vermeer%20language%20teaching%202006.pdf

Vygotsky, L.S. (1978). *Mind in society: The development of higher psychological processes*. (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds.). Cambridge, MA: Harvard University Press.

Watkins, R., & Kelly, D. (1995). Measuring children's lexical diversity: Differentiating typical and impaired language learners. *Journal of Speech and Hearing Research, 38*, 1349-1355.

Wong Fillmore, L. (1991). When learning a second language means losing the first. *Early Childhood Research Quarterly, 6,* 323-346.

Zong, L. (2004). *International transference of human capital and occupational attainment of recent Chinese professional immigrants in Canada.* Working Paper Series No. WP03-4. Edmonton, AB: Prairie Centre of Excellence for Research on Immigration and Integration, University of Alberta.