Examining Students' After-School Literacy Activities and Their Literacy Performance on the Ontario Secondary School Literacy Test

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This study examined relationships between the after-school literacy activities and test performance of students who passed and students who failed the 2003 administration of the Ontario Secondary School Literacy Test. It included both students who have been in the Canadian school system for most of their school lives and mostly use English as a first language (L1), and students who have recently entered the Canadian school system and use English as a second language (L2). This study demonstrates the relatively small yet complex relationship between the test performance of these different groups of students on this literacy test and their after-school reading and writing activities.

Key words: after-school reading, after-school writing, literacy testing, test performance, secondary students, Ontario Secondary School Literacy Test, ESL/ELD students, second language learners

Cet article analyse les activités de littératie parascolaires des élèves et les résultats qu'ils ont obtenus lors du Test provincial de compétences linguistiques administré en Ontario en 2003. L'étude porte à la fois sur des élèves qui ont été dans le système scolaire canadien pour la majeure partie de leur vie et dont la langue première (L1) est l'anglais et sur des élèves qui sont entrés récemment dans le système scolaire canadien et pour qui l'anglais est une langue seconde (L2). L'analyse dévoile un lien relativement ténu mais néanmoins complexe entre le rendement de ces divers groupes d'élèves dans le test provincial de compétences linguistiques et leurs activités de littératie – lecture et production d'écrits – parascolaires.

Mots clés : lecture parascolaire, production d'écrits parascolaire, test de compétences linguistiques, résultats de test, élèves du secondaire, Test provincial de compétences linguistiques en Ontario, élèves ESL/ELD, élèves usagers d'une langue seconde

CANADIAN JOURNAL OF EDUCATION 32, 1 (2009): 118-148

Large-scale testing has become increasingly common in public education as a means to ensure students are attaining fundamental educational outcomes. Tests are a differentiating ritual for students, and the consequences for students can vary dramatically depending on their performance. As Stobart (2003) notes, "testing is never a neutral process and always has consequences" (p. 140). The Ontario Secondary School Literacy Test (OSSLT), a high school graduation requirement in Ontario, provides a vivid example of a large-scale test that has an impact on students both significantly and differentially (Cheng, Klinger, & Zheng, 2007; Luce-Kapler & Klinger, 2005; Sider, 2003; Stroud & Cheng, 2002). Successful completion of the OSSLT, or the Ontario Secondary School Literacy Course (OSSLC), a specially developed literacy course, is a requirement for graduation in Ontario.

Large-scale high-stakes literacy testing like the OSSLT can be particularly problematic for vulnerable groups of students who are second language learners or who have little formal education in English, the language in which literacy is being tested. These second language students are estimated to be from 20 to 50 per cent of the general student population in urban K-12 school systems across Canada (Roessingh, 1999). Ontario secondary schools in particular have seen the greatest increase of these students over the past 20 years. Simultaneously, large-scale achievement testing is increasingly used to measure and ensure student competency or provide system accountability (Firestone, Mayrowetz, & Fairman, 1998; Ryan, 2002). As evidenced by these second language students' low success and high deferral rates on the OSSLT (Education Quality and Accountability Office, 2002, 2004, 2007, 2008), many of these students are struggling as they attempt to quickly obtain and demonstrate fundamental English literacy skills. Given the relative importance of the OSSLT for graduation, it is important to identify and understand those factors related to their test performance.

Although the goal of testing programs is largely to measure students' knowledge and skills of the domain being tested, previous research has demonstrated that students' test performance may not simply demonstrate their ability in the specified domain (Bachman, 1990; Kunnan, 1995). The OSSLT is purported to measure students' essential reading and writing skills that they must attain by the end of grade 9 (EQAO,

2007). Variations in student performance on this test should not occur because of factors irrelevant to the construct the test intends to measure (e.g., Messick, 1989, 1996). Nonetheless, test performance will, in most cases, interact with students' personal attributes, personal experiences, and family background along with the factors derived from the test itself, for example, test format. As an example, learning or knowledge is heavily dependent on social interaction (Bandura, 1986). Bandura's social cognitive theory postulates that "human functioning is explained in terms of a model of triadic reciprocality in which behaviour, cognitive and other personal factors, and environmental events all operate as interacting determinants of each other" (p. 18). Further, socio-cognitive factors have been shown to influence test performance (Tarone & Bigelow, 2005; Tarone, 2007).

Although there is increased interest in the testing of second language learners (e.g., Abedi, 2004; Bishop & Mane, 2001; Cheng, 1998; Fox, 2003; Hakuta & Beatty, 2000; Horn, 2003), these studies have examined second language student populations alone, ignoring the broad context of the entire student population. Also researchers exploring the social and cognitive factors associated with test performance, including home language, computer ownership, and after-school activities have not considered the potentially differential contributions of these factors on test performance of sub-populations of students (see Kunnan, 1998). Although one would expect to find relationships between students' performance on a literacy test such as the OSSLT and the types and frequency of literacy-related activities in which these students engage outside school, it is not clear if this relationship is consistent across first and second language learners.

Given the potential importance of the interacting factors noted above, this study examined the after-school literacy activities, computer ownership and activities, and test performance of students who passed and failed the 2003 administration of the OSSLT. Further, the study included both students who were in the Canadian school system for most of their school life and used English as a first language (L1), and students who recently entered the Canadian school system and mostly used English as a second language (L2). The purpose of the study was to compare not only the test response patterns of students having different personal

characteristics related to their language background and having passed or failed the test, but also the after-school reading, writing, and computer activities of these groups of students. The study also further examined the relationship between their test performance on the OSSLT and their after-school literacy activities.

Why Study L2 Students in Comparison with L1 Students?

Large-scale, high-stakes literacy testing is particularly problematic for vulnerable groups of students who are second language learners, or who have had little formal education in the language being tested. Currently, an increasing numbers of such students in Ontario secondary schools bring an increasingly linguistic and cultural diversity to their learning. The Ontario curriculum (Ministry of Education and Training, 1999) and the Education Quality and Accountability Office[1] (EQAO) further distinguish these students as English as a Second Language/English Language Development (ESL/ELD) students. ESL students are those who have recently arrived in Ontario schools "from another country with a first language other than English and with little or no previous experience with English." They are the students who may be proficient users of their own language(s). ELD students are "those who arrive in Canada from countries where English is the first language but other varieties of English are in common use" (EQAO, 2002, p. 7) or those who have had little formal education in English. Two distinctions are acknowledged in this definition. The first is whether English is a student's first language. The second is whether a student has previously received formal schooling whether a student has previously received formal schooling before entering the Ontario system. In our study, these two categories were treated and coded as one category termed as ESL/ELD students and based on the data we obtained from EQAO.[2]

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[1] The Education Quality and Accountability Office (EQAO) develops, distributes, collects, and scores the OSSLT.

[2] The newest policy and procedure document – *English Language Learners: ESL and ELD programs and services* (Ministry of Education, 2007) – redefines these students as English Language Learners (ELL). This category is further categorized into Canadian-born English Language Learners and Newcomers from other countries (for details see http://www.edu.gov.on.ca/eng/document/ esleldprograms/).

To study these ESL/ELD students within the broad context of the entirety of the population of students taking the OSSLT, we included a sample from the population of students who wrote the OSSLT as a baseline for comparison. We categorized these students (test-takers) as non-ESL/ELD students in our study. These are students who have been in the Canadian school system for most of their school lives and mostly use English as a first language (L1). This category may contain students who have a first language other than English, but have been in Canada for a number of years and their teachers and schools do not regard them as ESL/ELD students. ESL/ELD or non-ESL/ELD status was determined by the EQAO's *Student Information Form*[3] that the students' schools completed.

In sum, this study, which involves a comparison of students with different characteristics (including language and schooling background), examines the relationship between test performance of these different groups of students on this literacy test and specific socio-cognitive factors such as after-school reading and writing activities.

LITERACY ACTIVITIES AND STUDENT LEARNING

The study of literacy and its contribution to student learning have been well documented in education (e.g., Montigny, Kelly, & Jones, 1991; Willms, 1997). Not surprisingly, literacy development is linked to engagement in literacy-related activities (Early, 1992; Emmitt, Komesaroff, & Pollock, 2006; Montigny et al., 1991; Tarone & Bigelow, 2005; Tarone, 2007). Hence, it is important to examine the contributions of extra-curricular and independent literacy activities and computer use to students' learning, especially for those students who have less formal exposure to the language being tested.

Empirical studies suggest the extent of knowledge and exposure to English literacy materials are key factors in language development (Emmitt, et al., 2006; Tarone & Bigelow, 2005; Tarone, 2007). Similarly, both the time devoted to and the types of after-school English reading and writing activities have been linked to literacy achievement in English (Early, 1992; Montigny et al., 1991). Krashen (1985, 2007) maintains that

[3] For details see http://www.ontla.on.ca/library/repository/mon/6000/ 10314940.pdf

extensive comprehensible input in terms of reading in English is crucial to English language acquisition. Caldwell and Gaine (2000) claim the best predictor of reading achievement is determined by the amount of time students spend on independent reading. More specifically, they found that at least one third of students' vocabulary growth could be accounted for by after-school independent reading because it helped to provide students with a wide range of background knowledge, and in turn, enhanced their reading achievement on tests.

Similarly, extensive after-school reading helps improve the level of reading proficiency in a global sense, reinforcing the acquisition of grammar, vocabulary, and rhetorical structure, as well as increasing students' general knowledge base (Gradman & Hanania, 1991). Therefore, students who read extensively out of class attained higher levels of proficiency than those with less after-school reading. Although the literature abounds with studies emphasizing the importance of the length and exposure to printed materials in English, we found no literature that examined the relative contributions of different literacy materials to literacy test performance.

Computer Literacy

Computer technology has ushered in a new era of mass media in students' learning (Wartella & Jennings, 2000). It is no longer reasonable to discuss students' academic development without mentioning the influence of computer use. Computer technology, which has become more accessible to students, has become a leading form of communication for them (Liu, Moore, Graham, & Lee, 2002). The increasing amount of time students spend on home computers raises questions of how computer use might influence their academic literary development (Subrahmanyam, Kraut, Greenfield, & Gross, 2000). Lee (1997) points out that e-mails provide students with communicative opportunities for collaborative learning and create a relatively non-threatening atmosphere for students to express, negotiate, and interpret meaning within a meaningful context, which in turn contributes positively to their writing achievement on tests. Pennington (2003) claims that students' involvement in computer-related literacy activities positively promotes their attitudes. Both the quantity and quality of their literacy activities via Internet may positive-

ly influence, for example, writing or reading for extended periods of time and forming better revising behaviours.

METHOD

The Ontario Secondary School Literacy Test (OSSLT) was developed by the Education Quality and Accountability Office (EQAO) in Ontario, Canada. All students in public and private secondary schools who are working toward an Ontario Secondary School Diploma must complete the OSSLT, or the Ontario Secondary School Literacy Course (OSSLC) – for those who have been eligible to write the OSSLT at least twice and have been unsuccessful at least once. Because of the large geographic size of Ontario and variability in physical structures (urban and rural locations), education is expected to meet the needs of a very diverse student population. Since its trial run in 2000, seven administrations of the OSSLT have occurred by the writing of this article (February 2002, October 2002, October 2003, October 2004, March 2006, March 2007, and March 2008). The data reported in this article are from the October 2003 OSSLT administration. Compared with the overall population of students who write the OSSLT, ESL/ELD students show a much lower passing rate. For example, in the 2003 test administration, the passing rates were 77 per cent for non-ESL/ELD students versus 42 per cent for ESL/ELD (EQAO, 2004) and the respective rates were 84 per cent versus 52 per cent on the 2007 administration (EQAO, 2007).

Since the 2004 administration, the format of the OSSLT has been changing, shortening the test and combining the reading and writing components. Hence, the 2003 test differs from the test currently in use, but the test constructs remain similar. The 2003 form of the OSSLT consisted of a reading and a writing component. The reading component had 12 short passages within three EQAO defined text types: *informational*[4] (50%), *graphic* (25%), and *narrative* (25%). The passages included fictional, non-fictional, and graphical texts (e.g., graphs, schedules), although the actual passages differed across administrations. In response to the passages, the students demonstrated their understanding and

[4] Facets of the OSSLT item formats, text types, skills, and strategies of reading and the four writing tasks are italicized in this article as they are defined by the EQAO.

comprehension using test items with three different formats: *multiple-choice* (MC; 40%), *constructed response* (CR; 35%), and *constructed response with explanations* (CRE; 25%). The CR items required a short answer and the CRE items required a written explanation, that is, the students had to justify or explain the thinking behind their answers. The test items also measured three reading skills: (a) *direct understanding*, (b) *indirect understanding*, and (c) *connections*, and four reading strategies: (a) *vocabulary*, (b) *syntax*, (c) *organization*, and (d) *graphical features*. The EQAO defined these skills and strategies, based on the learning expectations of the Ontario curriculum. The writing component consisted of four writing tasks: (a) a *summary*, (b) a series of *paragraphs expressing an opinion*, (c) a *news report*, and (d) an *information paragraph*. The purpose and audience for each task was provided (e.g., to report on an event for the readers of a newspaper). Students were also provided with guidelines regarding the length and methods to structure each writing sample.

The OSSLT is administered by each Ontario secondary school. The completed tests are sent to the EQAO where they are marked centrally by teachers who were trained as markers. The MC and CR items on the reading component are scored on a 2-point (0, 2) scale and the CRE items are scored using item-specific scoring rubrics on a 3-point scale (2 points for correct, 1 point for partly correct, or 0 for incorrect). Each of the four writing tasks is scored using a 4-point (1-4, but allocated 10, 20, 35 and 45 marks)[5] scoring scale having specific performance descriptors. A score of 0 is given for responses classified as "blank/illegible and irrelevant content/off-task." A score of 4 is given to the highest quality written responses.

At the same time as the OSSLT administration, students complete a questionnaire, designed by the EQAO that is composed of four major parts: after-school reading activities, after-school writing activities, home computer use, and home language background. The data are measured on either a dichotomous or an ordinal scale (see Appendix A).

[5] A Level 1-4 system is used in all Ontario student report cards for school academic achievement.

Research Questions

This study examined the relationship between students' after-school reading, writing, and computer activities and their OSSLT performance. In particular, we were interested in potential differences that could be attributed to students' characteristics, for example, ESL/ELD status and OSSLT performance. Consequently, we studied four groups of students, L1 students (non-ESL/ELD) who passed and failed the 2003 OSSLT and L2 (ESL/ELD) students who passed and failed the 2003 OSSLT. We therefore termed the four groups as non-ESL/ELD pass, non-ESL/ELD fail, ESL/ELD pass, and ESL/ELD fail students. The study addressed three research questions:

1. How did the four groups of students perform on the different facets/formats of reading and the different writing tasks of the OSSLT?
2. What were the responses from the four groups of students to the EQAO questionnaire regarding after-school reading and writing activities?
3. What were the relationships between the four groups of students' after-school reading and writing activities and their test performance on the OSSLT?

Datasets

Three datasets containing student performance results on the October 2003 OSSLT administration and their responses to the EQAO questionnaire were obtained from the EQAO. The first contained a sample of non-ESL/ELD students who passed both components of the OSSLT (n = 5,000), the second had a sample of non-ESL/ELD students who failed both components of the OSSLT (n = 5,000), and the third dataset was the population of ESL/ELD students who completed the OSSLT (n = 4,311). We subsequently formed four groups of students from these three datasets. In separating the ESL/ELD students, the ESL/ELD pass group contained those students who successfully completed both the reading and writing components; the ESL/ELD fail group included those who failed both components. The cut score was 125 out of 200 marks for reading, and 100 out of 180 marks for writing. This procedure resulted in a sample of 1,720 students in the ESL/ELD pass group, and 1,261 in the

ESL/ELD fail group. We then combined the data from the four groups of students to form a new overall dataset distinguishing the four groups. In addition, students' responses to the EQAO questionnaire were linked to their test performance.

Data Analyses

Data were analyzed in three stages to answer the three research questions. First, we compared the four groups on total reading test scores and on reading sub-scores based on item formats, text types, and skills and strategies. We examined group comparisons on the writing tasks both at the task and total score level. Descriptive statistics included means and standard deviations. We conducted analysis of variance (ANOVA) procedures of the reading sub-scores to determine significant performance differences among the four groups. Where we found significant differences, we conducted post hoc procedures using Tamhane's method. Because of the number of similar ANOVA analyses, we set α to .01 to reduce the potential for Type I error. Chi-square tests were performed to compare the writing task performance among the four groups.

Second, we calculated descriptive statistics for the EQAO questionnaire items for the four groups. Specifically, these items examined after-school reading and writing activities, reading hours per week, writing hours per week, and weekly home computer use. In the case of computer use, we conducted analyses to determine group differences in the owning of a home computer and also to determine group differences in computer use among students who did own a computer.

Third, we explored relationships between after-school literacy activities and reading and writing performance using multiple regression. We considered the non-ESL/ELD pass group as the reference group, and employed a stepwise method to create a predictive model for this particular group. Two steps were involved in conducting the multiple regressions for the other three groups. First, based on the significant variables obtained from the reference group, we entered the same set of variables in the same order of importance for each of the other groups. Next, using the stepwise method, we added all non-significant variables from the reference model to the new models. The purpose of this design was to compare the predictive model among the four groups. This procedure

also enabled the identification of any unique variable(s) that were not significant in the reference group but were significant in other groups.

RESULTS

We present the results of this study in three sections, corresponding to the three research questions. First, the average students' test scores for each group are compared. Second, the students' questionnaire responses are presented. Third, the predictive variables from the after-school literacy activities on test performance are identified and compared across groups.

Test Performance

Table 1 provides the comparisons of the total reading scores and the reading sub-scores based on item formats, text types, skills, and strategies. The first vertical panel contains the results for the non-ESL/ELD groups, and the second vertical panel contains the results for the ESL/ELD groups. Descriptive statistics provide the overall distributions of total reading scores and reading sub-scores and illustrate the relative performance differences among the four groups.

In terms of item format, the analyses demonstrate that both ESL/ELD and non-ESL/ELD students perform relatively better on the multiple-choice (MC) test items; while the constructed response with explanations (CRE) was the most difficult item format for all four groups. For example, the non-ESL/ELD pass group achieved an average score of 80.8 per cent on the MC items, 80.7 per cent on the CR items, and 73.1 per cent on the CRE items. The ESL/ELD pass group averaged 73.4 per cent, 75.7 per cent, and 68.4 per cent on each set of sub-scores. In contrast, the non-ESL/ELD fail group obtained an average of 52 per cent, 46.8 per cent, 39.9 per cent, and the ESL/ELD fail group obtained an average of 46.4 per cent, 38.3 per cent, and 32.5 per cent on these sub-scores. The standard deviations in the scores demonstrate that the ESL/ELD fail group had the most varied scores, followed by the non-ESL/ELD fail group. The two pass groups had relatively smaller variations in group score.

Table 1
Percentage Scores for Reading Item Formats, Text Types, Skills and Strategies

	Non-ESL/ELD				ESL/ELD			
	Pass		Fail		Pass		Fail	
	%	SD	%	SD	%	SD	%	SD
Reading Item Format:								
Multiple choice (MC)	80.8	9.3	52.0	11.5	73.4	9.0	46.4	11.5
Constructed Responses (CR)	80.7	9.3	46.8	13.8	75.7	8.6	38.3	15.6
CR with Explanations (CRE)	73.1	10.9	39.9	14.0	68.4	10.4	32.5	15.3
Reading Skills:								
Understanding directly stated ideas	81.9	9.7	51.2	12.0	76.7	8.3	48.2	13.0
Understanding indirectly stated ideas	79.7	8.7	48.3	12.3	73.5	8.8	39.6	13.0
Making connections	73.6	10.7	40.2	13.5	67.5	10.5	31.2	14.5
Reading Text Types:								
Informational	77.2	10.0	42.2	11.9	70.4	9.3	36.1	12.0
Graphic	82.7	9.4	52.5	14.2	80.2	8.9	47.6	15.9
Narrative	77.9	9.4	50.0	13.5	70.7	9.4	39.8	14.2
Reading Strategies:								
Vocabulary	76.2	14.9	37.3	15.0	59.4	15.5	27.7	13.2
Syntax	72.5	13.0	37.6	14.7	65.2	13.0	31.2	14.2
Organization	75.9	12.2	40.7	13.6	71.0	12.2	36.1	13.8
Graphic features	82.8	10.8	54.1	17.6	82.6	10.6	49.7	19.3
Total scores	**157.6**	**16.1**	**94.3**	**21.8**	**145.9**	**14.5**	**80.2**	**24.0**

Note: Percentage score= mean /subtotal score*100
Percentage SD= SD of the mean/subtotal score*100

Similar performance differences were found among the four groups on the reading constructs of text types, skills, and strategies. The *information* text type, the *making connections* skill, and the *syntax* strategy were the most difficult for the non-ESL/ELD pass group. These patterns for text type and reading skills were consistent across groups. In contrast, *vocabulary* appeared to be the most difficult strategy for the other three groups. Overall, the results highlight notable similarities and differences between ESL/ELD and non-ESL/ELD groups.

We performed ANOVA analyses of the reading sub-scores on the reading constructs. Homogeneity of variances was first tested using the Levene's statistics. The significant Levene's statistics for all the reading sub-scores indicated unequal variances across groups. Hence, multiple comparisons were completed using Tamhane's procedure. The non-ESL/ELD and the ESL/ELD pass groups were not statistically different only in *graphic features* ($p > .01$). All other sub-scores comparisons among the four-groups were statistically different.

We also compared writing task performance among the four groups of students. Table 2 contains the proportion of students who obtained each score point and mean scores on the four writing tasks. Not surprisingly, larger proportions of students in the two fail groups obtained lower scores (0, 1, or 2) than those in the pass groups, especially scores of zero or two. The ESL/ELD pass group had the highest proportion of students obtaining a score of three, but had proportionately fewer scores of four than the non-ESL/ELD pass group. With the exception of the *summary* writing task, the rank order of the mean writing scores were non-ESL/ELD pass, ESL/ELD pass, non-ESL/ELD fail, and ESL/ELD fail. Unexpectedly, the ESL/ELD pass group outperformed the non-ESL/ELD pass group and the ESL/ELD fail group outperformed the non-ESL/ELD fail group on the *summary* writing task. Chi-Square tests identified significant differences across the four groups on all the writing tasks ($p < .01$).

Table 2
Distribution of Students' Performance on the Writing Tasks

Writing task	Non-ESL/ELD (%)		ESL/ELD (%)		**Writing task**	Non-ESL/ELD (%)		ESL/ELD (%)	
	Pass	Fail	Pass	Fail		Pass	Fail	Pass	Fail
Summary					**News report**				
0 points *	2.1	44.0	.6	29.1	0 point	2.6	43.1	2.8	57.4
1 point	5.1	21.7	3.6	17.6	1 point	0	.2	.1	.4
2 points	22.1	23.2	22.3	30.2	2 points	6.6	34.3	14.7	34.5
3 points	55.3	10.8	58.5	21.6	3 points	64.7	21.8	65.8	7.4
4 points	15.5	.3	15.0	1.4	4 points	26.1	.6	16.7	.3
Mean	**31.2**	**10.7**	**32.0**	**16.0**	**Mean**	**35.7**	**14.8**	**33.5**	**9.7**
Paragraphs expressing an opinion					**Information paragraph**				
0 point	.1	11.2	.1	17.0	0 point	.2	21.3	.3	25.5
1 point	.4	22.2	.5	21.6	1 point	3.3	18.4	4.0	20.6
2 points	4.6	36.9	5.7	35.1	2 points	27.6	47.7	29.6	44.8
3 points	58.6	28.5	65.7	25.8	3 points	52.0	12.2	54.2	9.0
4 points	36.3	1.2	28.0	.5	4 points	16.9	.5	11.9	.2
Mean	**37.8**	**20.1**	**36.8**	**18.4**	**Mean**	**31.7**	**15.9**	**30.6**	**14.2**

Note 1: 0 points are awarded for Blank/Illegible or Irrelevant Content or if the response is 'Off- task'.

Note 2: scores for each task is weighted according to the following weighting scheme: 0 is converted to 0, 1 point is converted to 10 points, 2 points is converted to 20 points, 3 points is converted to 35 points, and 4 points is converted to 45 points.

Questionnaire Responses

The students' responses to the EQAO questionnaire items are summarized in Table 3. The first horizontal panel of the table contains the results of the dichotomous after-school literacy items related to types of reading in English. Not surprisingly, the two pass groups reported a greater likelihood to engage in reading activities than the two fail groups. The most common reading type was *reading on the Internet* for three of the groups (82.3% for the non-ESL/ELD pass group, 76.3% for the ESL/ELD pass group, 58.8% for the ESL/ELD fail group). For the non-ESL/ELD fail group, *magazine reading* was most commonly reported (63.7%) with *reading on the Internet* being second (57.6%). The next two frequently reported reading types for the two pass groups were *reading magazines* and *novels* (76.2% and 61.5% for the non-ESL/ELD pass group, 51.8% and 59.8% for the ESL/ELD pass group). *Reading on the Internet* was followed by *poetry* for the non-ESL/ELD fail group, while *reading magazines* and *newspapers* were the next most common for the ESL/ELD fail group. *Manuals* and *religious* reading were the least reported types for all four groups.

Apart from the most reported and least reported reading types, the non-ESL/ELD fail group reported proportionately less reading of *newspapers* (35.4%) than the ESL/ELD fail group (41.4%). Both the ESL/ELD pass and ESL/ELD fail groups had higher proportions of reading *religious* materials (14.8%, 14.3%) than both non-ESL/ELD groups (13.4%, 10.1%), an intriguing result worth further exploration.

Students were also asked by the questionnaire to identify the English language reading materials they possessed at home. The majority of the students in the two pass groups reported that they owned all four types listed in the questionnaire. The possession rates for these materials were much lower in the two fail groups.

The third horizontal panel of Table 3 contains the items related to writing in English. Other than *writing e-mails*, which the majority of students from all four groups reported that they did the most, the other forms of after-school writing, for example, *writing notes*, *songs*, or *stories*, were less commonly conducted across groups. These frequencies indicate that students were more likely to be involved in reading activities as opposed to writing activities after school, regardless of their group.

Table 3
Descriptive Statistics of After-school Literacy Activities

Questionnaire items	Non-ESL/ELD (%)		ESL/ELD (%)	
	Pass	Fail	Pass	Fail
Types of reading in English after school most weeks				
Non-fiction	24.8	20.4	20.9	16.3
Comics	34.0	30.9	28.8	24.0
Internet	82.3	57.6	76.3	58.8
Letters	30.3	29.9	25.1	28.0
Magazines	76.2	63.7	51.8	48.9
Manuals	22.8	14.5	18.8	8.6
Newspapers	46.8	35.4	43.2	41.4
Novels	61.5	33.6	59.8	40.0
Poetry	42.6	35.9	31.8	28.5
Religious	13.4	10.1	14.8	14.3
English-language reading materials at home				
Dictionaries	92.4	64.5	85.8	61.1
Books	93.8	71.5	80.0	65.0
Newspapers	87.3	61.1	66.3	45.3
Magazines	88.7	70.9	55.8	47.4
Types of writing in English after school most weeks				
E-mail	91.0	75.1	85.9	71.2
Letters	36.2	31.5	31.0	32.5
Notes	35.0	24.8	30.9	24.7
Songs	31.3	34.3	20.6	25.1
Stories	18.5	15.4	14.7	19.7
Work-related	35.9	27.1	38.5	28.4

We calculated frequencies of reading and writing hours per week in English after school and identified group differences. These hours excluded homework time. Among the two pass groups, a large proportion of students reported spending more than three hours reading (40% for the non-ESL/ELD pass group, 34.4% for the ESL/ELD pass group). In comparison, fewer students in the fail groups reported this level of reading: 15.1 per cent for the non-ESL/ELD fail group, and 20 per cent for the ESL/ELD fail group. In terms of writing, 29.2 per cent of the non-ESL/ELD pass group and 23.3 per cent of the ESL/ELD pass group reported spending more than three hours of weekly writing. A smaller percentage of the fail groups reported this amount of time writing (18.6% for non-ESL/ELD fail group, 18.5% for ESL/ELD fail group).

The examination of computer use highlights that the two pass groups also reported having higher proportions of computer possession at home than the two fail groups (98% non-ESL/ELD pass, 89.8% non-ESL/ELD fail, 97.3% ESL/ELD pass, and 90.2% ESL/ELD fail). Students in all four groups who had computers at home reported frequent use for school work. Both the ESL/ELD pass and the ESL/ELD fail groups had higher percentages than the non-ESL/ELD groups in the two categories of frequent computer use (once or twice a week, or almost every day). The pass groups reported that they read on the Internet and wrote e-mails frequently: 83.2 per cent and 92 per cent for the non-ESL/ELD pass group; 78.6 per cent and 88.1 per cent for the ESL/ELD pass group. The fail groups made less use of the computer for these purposes, although more than half of these students engaged in these computer activities (ranging from 61.6% to 80.9%). In addition, the two fail groups were less likely to use computers even if they had computers at home.

After-School Literacy Activities and Test Performance

Table 4 contains those after-school literacy activities that predicted students' reading and writing scores on the OSSLT. The non-ESL/ELD pass group was the reference group, and eight variables were significant predictors of reading scores for this group: (a) *reading hours per week*, (b) *reading novels*, (c) *having a dictionary*, (d) *writing songs*, (e) *reading on the Internet*, (f) *reading letters*, (g) *home computer use*, and (h) *having books*. *Writing songs* and *reading letters* were negative predictors, suggesting that after

accounting for the other variables, increasing amounts of these two activities were associated with lower reading scores. Seven variables were significant predictors of the writing scores: (a) *reading novels,* (b) *home computer use,* (c) *reading hours per week,* (d) *reading on the Internet,* (e) *writing songs,* (f) *reading the newspaper,* and (g) *having dictionaries*, with *writing songs* being a negative predictor. The variances explained by these variables were small: 14 per cent for reading, and 6 per cent for writing. Although small, these values were larger than those found for the other three groups in which the accounted variance was 10 per cent or less for reading and less than 5 per cent for writing. Any unique variable(s) that were not significant in the non-ESL/ELD pass group, but were significant in other groups, are indicated in bold in Table 4. For the non-ESL/ELD fail group, *writing songs* and *home computer use* were not significant (p>.01). The other six variables were significant, along with *writing stories, reading religious materials,* and *having magazines*. For the non-ESL/ELD fail group, *writing stories* and *reading religious materials* were negative predictors in the presence of the other variables. In the writing model for the non-ESL/ELD fail group, the only significant predictors were *home computer use*, *reading on the Internet,* and *having a dictionary* along with the additional variable, having *English books at home*. *Reading letters, home computer use,* and *having English books* were not significant predictors of reading performance for the ESL/ELD pass group. In addition to the five remaining significant predictors, *reading manuals* and *writing letters* were also significant predictors of their reading scores. The only significant predictor of writing scores was the number of *reading hours/week*. Few variables were significant predictors of reading and writing for the ESL/ELD fail group. Both *reading novels* and *having a dictionary* positively predicted reading and writing. No other significant predictors of reading or writing were found after accounting for these two variables.

Based on the results, the predictors of reading and writing scores appear to vary for these different groups of students. Significant predictors for the non-ESL/ELD pass group were not necessarily predictive of performance for the other groups. Further, the variances explained by the significant variables in both reading and writing were small, decreasing from the non-ESL/ELD pass group to the non-ESL/ELD fail group, the ESL/ELD pass group and the ESL/ELD fail group.

Table 4
Multiple Regression Results

Reading	β	t	Sig.	R^2	Writing	β	t	Sig.	R^2
Non-ESL/ELD Pass				.14					.06
Hrs Reading/week	.22	15.71	.00		Reading Novels	.11	7.42	.00	
Reading Novels	.15	10.33	.00		Home Computer Use	.11	7.71	.00	
Having a dictionary	.09	5.98	.00		Hrs Reading/week	.08	5.26	.00	
Writing Songs	-.08	-5.78	.00		Reading Internet	.06	4.16	.00	
Reading Internet	.08	5.91	.00		Writing Songs	-.06	-4.30	.00	
Reading Letters	-.08	-6.12	.00		Reading Newspapers	.05	3.57	.00	
Home Computer Use	.06	4.46	.00		Having a dictionary	.050	3.48	.00	
Having books	.06	3.83	.00						
Non-ESL/ELD Fail				.10					.03
Hrs Reading/week	.05	3.63	.00		Reading Novels	.01	.32	.75	
Reading Novels	.05	3.09	.00		Home Computer Use	.10	6.80	.00	
Having a Dictionary	.19	12.53	.00		Hrs Reading/week	-.02	-1.06	.29	
Writing songs	.01	.76	.45		Reading Internet	.05	3.58	.00	
Reading Internet	.07	4.78	.00		Writing Songs	-.00	-.09	.93	
Reading Letters	-.07	-4.92	.00		Reading Newspapers	.01	.73	.47	
Home Computer Use	.04	2.42	.02		Having a Dictionary	.07	4.28	.00	
Having books	.06	3.98	.00		**Having Books**	.06	3.66	.00	
Writing Stories	-.10	-6.71	.00						
Having Magazines	.10	6.58	.00						
Reading Religious	-.06	-3.84	.00						

ESL/ELD Pass				.08					.03
Hrs Reading/week	.13	5.13	.00		Reading Novels	.066	2.63	.01	
Reading Novels	.11	4.27	.00		Home Computer Use	.062	2.53	.01	
Having a Dictionary	.07	2.99	.00		Hrs Reading/week	.097	3.87	.00	
Writing songs	-.07	-2.97	.00		Reading Internet	.043	1.75	.08	
Reading Internet	.09	3.62	.00		Writing Songs	-	-1.91	.06	
Reading Letters	-.03	-.98	.33		Reading Newspapers	-	-.45	.66	
Home Computer Use	-.01	-.27	.79		Having a Dictionary	.040	1.62	.11	
Having books	.05	1.96	.05						
Reading manuals	.09	3.83	.00						
Writing letters	-.10	-3.67	.00						
ESL/ELD Fail				.07					.02
Hrs Reading/week	.02	.77	.44		Reading Novels	.087	2.902	.00	
Reading Novels	.11	3.50	.00		Home Computer Use	.042	1.417	.16	
Having a Dictionary	.11	3.79	.00		Hours Reading Per	-	-1.168	.24	
Writing songs	-.02	-.58	.56		Reading Internet	.023	.752	.45	
Reading Internet	.09	2.86	.00		Writing Songs	.013	.437	.66	
Reading Letters	-.06	-1.99	.05		Reading Newspapers	-	-.336	.74	
Home Computer Use	.07	2.43	.02		Having a Dictionary	.092	2.985	.00	
Having books	.03	1.09	.28						

DISCUSSION

Test Performance

Overall, the reading performance of these groups of students exhibited the following patterns. Not surprisingly, the performance of the ESL/ELD pass group was significantly lower than the non-ESL/ELD pass group and the ESL/ELD fail group had significantly lower performance than the non-ESL/ELD fail group in the reading constructs (text types, reading skills, and strategies) and across test formats (see Table 1 and ANOVA results). This result suggests the OSSLT is more difficult for second language students compared with their first language counterparts. However, the relative performance pattern was similar for all four groups: if one group achieved a relatively higher score on one facet of the test, the other three groups were also likely to have relatively higher scores on this facet. In this sense, there was consistency in test performance across the four groups of students.

Looking at the differences more closely, the largest difference between the two pass groups was the reading strategy associated with *vocabulary*. With respect to the two fail groups, the *narrative* type of reading distinguished the groups the most, followed by the strategy associated with *vocabulary*. Hence ESL/ELD students did relatively poorer using vocabulary as compared to their non-ESL/ELD counterparts, suggesting the OSSLT is largely an English language proficiency test, i.e. a test primarily determines the level of English language, for ESL/ELD students. ESL/ ELD students need to develop more in-depth vocabulary to be able to perform better on the OSSLT. In addition, the relatively large difference in successfully comprehending narrative text type between the two fail groups suggests that ESL/ELD students also need to read more nar-rative types of materials, in a sense, more word-intensive texts.

Examining the writing performance patterns, the majority of the students' writing had obtained a score of three for both pass groups. In fact, more ESL/ELD pass students fell into this category than students in the non-ESL/ELD group, albeit this was largely due to the larger proportion of non-ESL/ELD students who obtained a score of four. Students in the two fail groups were much more likely to obtain a score of zero on their

writing tasks. The largest relative performance difference between the two pass groups was in the *news report* task. In addition, the *summary* writing scores had different rank orders across the four groups as compared with the other three writing tasks. For the *summary* writing task, the ESL/ELD pass group outperformed the non-ESL/ELD pass group, and the ESL/ELD fail group outperformed the non-ESL/ELD fail group. This result is unexpected but suggests ESL/ELD students have had comparably more success developing their *summary* writing skills. However, it is hard to interpret the reasons behind this result within the scope of this study.

After-School Literacy Activities

Inconsistent patterns exist in the after-school reading activities of these groups of students. Students in the two fail groups generally reported much less engagement in after-school reading. The ESL/ELD students who passed the OSSLT reported higher engagement in reading than the two groups of students who failed the OSSLT but less reading than the non-ESL/ELD students who passed the OSSLT. Students in the two non-ESL/ELD groups were most likely to read *on the Internet, magazines*, and *novels*, although the relative order differed between the two groups. Students in the ESL/ELD groups were most likely to read *on the Internet, magazines,* and *newspapers*, in the same order of preference. Thus novels, which consist of mostly narrative text types and with more word-intensive vocabulary, were a relatively less common form of English language reading for ESL/ELD students. And this difference appears to be reflected in their OSSLT vocabulary related performance. *Dictionaries* and *books* were the most commonly found reading materials in the homes of students. The two groups who passed the OSSLT were more likely to have reading materials at home with the non-ESL/ELD pass group being the most likely group to have these materials at home – indicating a potential relationship between possessing reading materials and higher OSSLT reading performance.

In terms of writing activities, *e-mail* was consistently the most frequently reported activity that all groups of students did in English after school. This finding supports the idea that computer technology has become increasingly more accessible to students (Liu et al., 2002), and stu-

dents are spending an increasing amount of time on computers during their leisure time (Subrahmanyam et al., 2000).

Students who successfully completed the OSSLT spent a greater amount of their after-school time on reading and writing. Again the successful non-ESL/ELD students reported the greatest amount of after-school reading and writing. Although ESL/ELD students were less engaged in reading and writing in English, it is not clear whether and how much after-school literacy activities these students completed in their first language.

Relationship Between Test Performance and After-School Literacy Activities

The regression results indicate the set of after-school literacy activities and materials account for a relatively small proportion of the variance in students' reading and writing scores on the OSSLT. Further, the accounted variance is even smaller for second language and failing subgroups as compared with the main population of non-ESL/ELD students who passed the OSSLT. Different predictors of after-school activities were associated with reading and writing OSSLT performance among the four groups. Eight literacy variables significantly predicted OSSLT reading performance and seven literacy variables predicted writing performance in the non-ESL/ELD pass group, albeit to a lesser extent. The results for the ESL/ELD pass group were slightly different for reading, with only five of the same eight variables predicting reading along with two others, *reading manuals* and *writing letters*. There were even fewer shared predictor variables for the two fail groups relative to the non-ESL/ELD pass group. These results highlight the relatively small albeit complex relationships among after-school literacy activities and students' test performance on the OSSLT. Further, this result indicates that other intervening factors likely influence students' test performance, including students' home language patterns and parents' income and their educational levels. Although data limitations prevented the inclusion of such factors in the current study, future research will endeavour to include these and other factors together to further our examination of the complex relationships and contributions to students' test performance.

CONCLUSION

Considering language acquisition and development is a social cognitive process, it seems crucial to integrate the social and cognitive dimensions to enhance researchers' understandings of language development (Lewis & Carpendale, 2004). Dewey (1938) argued that people learn from social experiences, whether positive or negative, and the accumulated experiences, in one way or another, influence or interact with potential future experiences. Our study of various factors and their relationship with students' test performance on the OSSLT has illustrated the complex picture of such connections among different groups of students.

Overall, ESL/ELD students who pass the OSSLT received lower scores than non-ESL/ELD students who passed the test and ESL/ELD students who failed the test obtained lower scores than non-ESL/ELD students who also failed the test. Nevertheless, the relatively consistent score patterns across the groups of students suggest that this particular literacy test did not have inherent structural imbalances while assessing the literacy skills of a diverse population. In contrast, the less consistent findings in the contribution of after-school reading and writing activities to students' test performance illustrate the differences in literacy and language development for these four different groups. Perhaps, targeted and differentiated literacy instruction with varying focuses is required in high schools for L1 and L2 students. As an example, focused reading instruction for second language students could use more word-intensive narrative texts along with in-depth vocabulary development. This observation is supported by this study but also by other studies (Cheng, et al., 2007, Qian & Schedl, 2004, Tarone & Bigelow, 2005). It should be noted that categories of participants are limited by the data we obtained from EQAO. In particular, the ESL/ELD group has highly heterogeneous characteristics (Cumming, Hart, Corson, Labrie, & Cummins, 1993) and worthwhile to study further, and using other more naturalistic methods.

Despite the complexity of the relationships, there is an overall pattern on the OSSLT between after-school reading and writing activities and students' test performance. The more reading and writing activities these students did and the more reading materials these students owned, the higher their literacy test performance on the test. And the more frequently the students used computers at home for school work, the high-

er their test performance. This conclusion partially addresses the issue posed by Subrahmanyam et al. (2000) regarding the increasing amount of time students are spending on computers at home and how such technology makes a difference in literary learning.

ACKNOWLEDGEMENT

The authors acknowledge the support from the Social Sciences and Humanities Research Council (SSHRC) of Canada, and from the Education Quality and Accountability Office (EQAO) in Ontario for releasing the October 2003 OSSLT data and questionnaire data for this study.

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APPENDIX A

EQAO Student Questionnaire

MAY-19-2005 16:07 EQAO 4163256622 P.06

Ontario Secondary School Literacy Test, October 2003

EQAO Education Quality and Accountability Office

Student Questionnaire

This questionnaire should take less than five minutes. We need to know about your background, so we can see how students with different experiences do on the test. Your responses will remain completely anonymous. All the questionnaire responses will be summarized and reported at the school, board and provincial levels.

Read each question carefully. Fill in the circle that best describes your response. Make sure the circle is entirely filled in. If no answer seems exactly right, fill in the circle with the response closest to what you want to say. If you wish to change one of your answers, put an X through the incorrect answer and fill in the appropriate circle as shown below.

● Final answer ✖ Incorrect answer

Reading

1. Indicate the types of materials you read in English outside school most weeks *(fill in **all** circles that apply)*.
   - ○ Non-fiction books, e.g., biographies
   - ○ Comics
   - ○ Web sites, e-mail, chat messages
   - ○ Letters
   - ○ Magazines
   - ○ Manuals, instructions
   - ○ Newspapers
   - ○ Novels, fiction, short stories
   - ○ Poetry, song lyrics
   - ○ Religious or spiritual writings
2. Indicate the number of hours a week you read materials written in English, not including your homework, outside school *(fill in **one** circle only)*.
   - ○ one hour or less
   - ○ more than one hour and less than three hours
   - ○ more than three hours and less than five hours
   - ○ five hours or more
3. Indicate what English-language materials you have at home *(fill in **all** circles that apply)*.
   - ○ Dictionaries, encyclopedias (print or electronic)
   - ○ Books
   - ○ Newspapers
   - ○ Magazines

Writing

4. Indicate the types of writing you do in English outside school most weeks *(fill in **all** circles that apply)*.
   - ○ E-mail messages, chat-room conversations
   - ○ Letters, journals, diaries
   - ○ Notes, directions, instructions
   - ○ Song lyrics, poems
   - ○ Stories, fiction
   - ○ Work-related writing
5. Indicate the number of hours a week you write in English, not including your homework, outside school *(fill in **one** circle only)*.
   - ○ one hour or less
   - ○ more than one hour and less than three hours
   - ○ more than three hours and less than five hours
   - ○ five hours or more

Home Computer Use

6. Indicate how often you use a computer at home for school work *(fill in **one** circle only)*.
   - ○ I don't have a computer at home.
   - ○ I **never or hardly ever** use the computer for school work.
   - ○ I use the computer **once or twice a month** for school work.
   - ○ I use the computer **once or twice a week** for school work.
   - ○ I use the computer **almost every day** for school work.

Language

7. a) Is English the first language you learned at home?
   - ○ Yes
   - ○ No

   b) What languages do you speak at home *(fill in **one** circle only)*?
   - ○ Only or mostly English
   - ○ Another language (or languages) as often as English
   - ○ Only or mostly another language (or other languages)

Thank you for completing this questionnaire. Please return it to the teacher administering the test.