



## **FINAL REPORT**

# **The Who is Learning What Study: Measuring Participant Gains in Contextualized & Academic Education Programs**

April, 2005

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# Executive Summary

There are two main objectives of the Who is Learning What Study: (1) To find out how much literacy knowledge is transferable from academic learning environments to workplace reading, writing and numeracy tasks; and how much literacy knowledge is transferable from workforce-focused programs to academic tasks; (2) to examine the relationship between scores and self-perception, attitudes and participation in activities in everyday life.

**Objective 1:** To meet the first objective, different groups were selected that received different types of programming. At each site participants were asked to write tests when they started in a program and again either before they completed the program or after about 20 weeks of instruction. We also collected demographic and work experience data through surveys.

We tested whether the gains made on the different tests were related to the type of programming received. We examined which participant characteristics may be affecting scores, gains and as a result the transfer pattern observed. Finally, we analyzed the relationship between attendance and score changes to see whether attendance may be contributing to the transfer pattern observed.

We found that:

1. There is evidence that learning from workforce-focused programming can be applied to academic tests; and that learning from academic-focused programming can be applied to workplace tests. The evidence is somewhat limited.
2. Gains were demonstrated on all assessments regardless of type of programming. Although the extent of the gains demonstrated may be considered limited, gains were demonstrated nonetheless.

**Objective 2:** To examine the relationship between literacy skills and self-perception, attitudes and participation in activities in everyday life, additional questions were added to the demographics survey. We compared the scores achieved to the responses on the Literacy in Everyday Life survey.

We found that:

1. There is a significant relationship between scores achieved on different tests and participants' self-perception of their ability to use a map and figure out discounts, sales tax and tips.
2. There is a significant relationship between scores and participation in activities in everyday life, specifically the frequency of reading newspapers.
3. There is no relationship between scores and the number of visits to the public library and participants' self-perception of their ability to read bills.

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# Introduction & Background

The purpose of this research is to contribute to the understanding of literacy transfer and the relationship between literacy skills and self-perception, attitudes and participation in activities in everyday life for adults in literacy programs.

*There are two main objectives of the Who is Learning What Study:*

- 1. To find out how much literacy knowledge is transferable from academic learning environments to workplace reading, writing and numeracy tasks; and how much literacy knowledge is transferable from workforce-focused programs to academic tasks.*
- 2. To examine the relationship between scores and self-perception, attitudes and participation in activities in everyday life.*

We expect that participation in an academic program should result in increases in academic test scores, and that learning that occurs in a workforce-focused program should result in increases in scores on workplace-focused literacy tests. The question is: To what extent is learning that occurs in one context transferred to the other? Further, it will also examine how (or if) these skills are related to self-perception, attitudes and participation in activities in everyday life.

This research contributes to knowledge in several inter-related areas. First, transfer is a central goal in education; any additional knowledge about transfer is critical to educators. Second, to examine transfer one must examine the outcomes of education programs. Since we need to revisit outcomes to ensure we are meeting the needs of the population, examining transfer also contributes to this important body of information. Finally, understanding the learners in our programs helps us meet their needs.

## Transfer of Learning

Transfer is an implied and seldom specified goal in education. Educators want their learners to apply the skills and knowledge they acquire in the classroom to activities outside of the classroom, whether at work, in another training program or in everyday life. Understanding transfer, and the contexts that encourage transfer can only aid program development.

*The Who is Learning What Study contributes to understanding transfer by examining the role of instruction type on the ability to complete tasks that are similar to and different from the type of instruction received.*

The following summaries of research provide some insight into the area of study.

Mikulecky, Albers and Peers (1994) reviewed the literature on transfer and found that literacy ability only transfers to a small degree. They theorized that only basic processes transfer (eye movement, letter-sound relationships and word recognition). They also reported on two studies in workplaces where gains were more notable for tasks more similar to the instruction that took place (Sticht, 1982 and Mikulecky & Llyod, 1992).

Pucell-Gates, Degener, Jacobson & Soler (2002) examined the impact of two dimensions of adult literacy instruction on adult literacy practices outside the classroom, the degree of materials authenticity and teacher-student collaboration. The results showed that learners were more likely to report changes to their literacy practices the lower their literacy level upon entry into the class, the longer the students were enrolled in the class and the more authentic the materials used in the class. However, the degree of teacher-student collaboration in selecting content and materials did not have an effect.

Besides examining the effect of literacy instruction on reading practices, Sheehan-Holt & Smith (2000) also studied the impact of literacy instruction on literacy proficiency. Their analyses used results from the National Adult Literacy Survey completed in 1992. Ten percent of the NALS sample (n=2399) participated in basic skills upgrading programs. They found that adults that participated in job-related basic skills (defined as training provided by an employer or union, a publicly sponsored education or training program, or a program offered by the military or prison) read more newspapers and work documents than participants in tutoring-type basic skills programs.

Sticht (1982) examines numerous studies reviewing military basic skills training. One of the findings was based on research evaluating the Functional Literacy (FLIT) Project. The FLIT project developed a job-oriented basic skills program. Pre and post-tests were administered to 700 participants. Two test batteries were administered, a standardized assessment and Job-Related Reading Task Test (JRRT). The results indicated that participants in the FLIT project made three times the improvement in job-related reading as in general reading, indicating that they were learning what was being taught. Students in the FLIT program also performed 3 times better than students in other programs on the JRRT, indicating that general literacy training does not have as much impact on job-related reading.

Mikulecky, Lloyd, Siemantel & Masker (1998) studied skills transfer from workplace classes to other contexts. They used a case study model to understand which elements - classroom instruction, learner predisposition and perceived literacy demands and opportunities - are related to transfer. The research revealed that instruction, a mixture of learner predispositions and learner perceived demands and opportunities influence literacy change and transfer beyond the classroom.

Taylor (2000) also examined the relationship between program features and transfer beyond the workplace classroom to identify the common types of transfer strategies employed by the different stakeholders involved in the training. This research suggests that transfer of learning is possible and is based on a complex

inter-relationship between the instructor, trainee and supervisor, and can be influenced before, during and after the training period.

In general, the research on transfer of learning focuses on testing the elements that encourage transfer. In various studies, transfer was demonstrated to some extent (e.g., Mikulecky et al., 1994; Purcell-Gates et al., 2002; Sheenhan-Holt & Smith, 2000; Mikulecky et al., 1998). Some research focuses on the level of processing (Mikulecky et al., 1994), the relationship between the type of instruction and the transfer situation (Mikulecky et al., 1994; Purcell-Gates et al., 2002; Sticht, 1982; and Sheenhan-Holt & Smith, 2000), and some on the role of those involved in training and their beliefs and attitudes (Mikulecky et al., 1998 and Taylor, 2000).

## Learning Outcomes

Exploring transfer of learning cannot occur without looking at the outcomes of programs. Since these outcomes need to be constantly re-visited to ensure that the needs of the population are being served, exploring transfer also contributes to this important body of knowledge. Zeigler (1996) provides a thorough discussion of the importance of results-based assessment in adult literacy programs. The research on the outcomes of adult education programs is extensive; the outcomes achieved, however, do not always meet one's expectations.

*The Who is Learning What Study will contribute to this knowledge because to answer the question about transfer we inevitably must also look at outcomes.*

In a large-scale study in England and Wales (Brooks, Davies, Ducke, Hutchison, Kendall & Wilkin, 2001) the researchers found that adults in dedicated mainstream basic skills programs made undramatic, but worthwhile gains in reading and writing. The gains in reading were small but statistically significant, as were the gains in writing though only in length of script and handwriting. They found that students who attended regularly (51-60 hours of instruction over about 20 weeks) made the largest gains.

In a recent paper by Bos, Scrivener, Snipes, Hamilton, Schwartz & Walter (2002) the analysis of impacts centres on welfare-to-work strategies. The report addresses the question of how Human Capital Development (HCD) programs, specifically adult education programs, affect the educational and economic outcomes of welfare recipients. The report finds that as students earned GEDs, increased their basic skills, or participated in postsecondary programs (after participating in an upgrading program), they appeared to have substantial employment, earning and self-sufficiency benefits; however, relatively few adult education participants received a GED, increased their basic skills, or entered postsecondary programs.

Sticht (1997) found that the type of instruction had a significant impact on outcomes. The results of this research indicated that the closer the fit between the adult student's reason for taking the course and the course itself, the more likely the students were to complete the course. Evidence also suggests that strongly

focused courses might help increase course completions. A 10-week program that offered electronics oriented ESL in the morning and vocational training in the afternoon produced more gains than did a conventional ESL program or a conventional electronics vocational program. This relationship held true when vocation vocabulary and general reading (as measured by the Adult Basic Learning Exam – ABLE) were tested.

The research on literacy outcomes does not relate only to changes in employment and earnings. Malicky & Norman (1996) examined changes in perception as reported by participants. The three-year study examined how adult literacy participants perceive changes to their lives as a result of attending adult literacy programs. The participants reported positive cognitive, psychological/affective and social changes within themselves particularly at the beginning of programs (for some, as their attendance continued, social and psychological/affective changes appeared to spiral downward). Many participants also reported increased confidence, self-esteem and independence.

Similarly, Bossort, Cottingham and Gardner (1994) carried out an exploratory qualitative research project to determine how literacy and adult basic education programs affect the lives of former students. They found the major impact was on self-esteem and self-confidence. It was long-term, powerful, and led many individuals to try new things and participate in new ways with their families and their communities.

Beder (1999) investigated the outcomes and impacts of adult literacy education in the United States through a qualitative assessment of those outcomes and impacts reported in 23 case studies. The studies showed various trends including: participants achieved gains in employment and income; learners perceive skills improvements but the test evidence available is insufficient to demonstrate this; and participation has a positive impact on self-image.

Research into outcomes is necessary, Zeigler (1996) examines why. We can examine outcomes such as, changes in employment or earnings (e.g., Bos et al., 2002; Beder, 1999), participants' perception of outcomes (e.g., Malicky & Norman, 1996; Bossort et al., 1994; Beder, 1999); and changes in literacy ability (e.g., Sheenan-Holt et al., 2000; Brooks et al., 2001; Beder, 1999; Sticht, 1997)). Interestingly, changes in literacy ability were not demonstrated as strongly as were other types of gains. Although the research into outcomes leaves many questions unanswered, one conclusion is clear; outcomes must be measured and evaluated if program effectiveness is to be improved. One of the reasons that measuring impacts and outcomes can be difficult is that outcomes are complex and are significantly affected by the personal characteristics of the learners.

## **Learner Characteristics**

Understanding the learners in our programs helps us meet their needs. As was mentioned when exploring the role of outcomes and impacts of instruction, the complexity of interpreting outcomes is at least partially due to the effect of learner characteristics on outcomes. Learners have different goals and will change as a

result of programming. Some of these changes are apparent when learners are interviewed (changes in self-perception), some can be measured (changes in ability as measured by tests), and some are due to the situation of the learner (changes in interaction with their children can only change for learners with children). Regardless, any additional knowledge about our learners, their attitudes, self-perception and participation in activities in everyday life can only aid our ability to address their needs.

To some extent, the relationship between literacy proficiency and participation in activities in everyday life has been explored by Purcell-Gates et al. (2002), Sheenhan-Holt & Smith (2000), Malicky & Norman (1996), Bossort et al., (1994) and Beder (1999) in the above-mentioned studies.

*The Who is Learning What Study aims to contribute to this body of knowledge by looking at the relationship between scores on different types of assessments and learners' self-perception, attitudes and participation.*

In general, an ongoing concern in education is whether the programming meets the clients' needs. As with many central issues, the question is difficult to answer as the variables are complex and change over time. Regardless, trying to address this concern is critical. Part of addressing this concern is looking at the outcomes of training programs and comparing those outcomes to program objectives. There are many different types of outcomes that programs try to achieve; some of the outcomes are easier to measure than others. One of the possible outcomes is the change in literacy abilities as measured by tests. Another outcome, one that is generally implied and not explicitly stated, is that the learning that occurs in the classroom be applied to tasks and activities outside the classroom, whether at work, in another training program or in everyday life. In other words, transfer of learning is also a central goal in education. The *Who is Learning What Study* will contribute to the research in:

- transfer of learning
- outcomes and
- participant scores in relation to self-perception, attitudes and participation in activities in everyday life.

# Project Methodology

1. To meet the first objective, the extent of learning transfer across type of programming, different groups were selected that received different types of programming. At each site participants were asked to write tests when they started in a program and again either before they completed the program or after about 20 weeks of instruction. We also collected demographic and work experience data through surveys on the participants at the different sites to compare participant characteristics across sites and so that we could determine if systemic differences were contributing to the transfer results we observed.
2. To examine the relationship between literacy skills and self-perception, attitudes and participation in activities in everyday life, additional questions were added to the demographics survey.

## Procedure

Participants at a number of different adult upgrading programs offering either workforce-focused or academic-focused instruction were asked to participate in the study. Each participant was asked to write assessments on two occasions. The first set of assessments was completed before the end of the first two weeks of instruction. The second set of assessments took place approximately 20 weeks later<sup>1</sup>.

On each occasion, participants were asked to write both an academic assessment and a workplace-focused assessment, and complete a survey (at initial assessment they completed the Literacy in Everyday Life Survey and at the post assessment they completed the Work Experience Survey). The initial assessment scores were used as a baseline measure from which to determine the extent to which programming affects scores.

Assessments were administered by trained assessors at a number of testing sites in southern Ontario. Each assessor was provided with a testing standards and tracking package that ensured that the tests were administered consistently across the testing sites. At locations where the standards could not be met, the data has been discarded. The research design and assessment standards were developed under the guidance of Norman Rowen and Doug Hart of the Ontario Institute for Studies in Education.

During their first week at school, new learners in the literacy programs involved were told about the study and invited to participate. They were given the choice to refuse. If they chose to participate they were remunerated. Participants were paid both after they completed the initial set of tests, and after they completed the post

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<sup>1</sup> Assessments could not be administered after 20 weeks in all cases for a number of reasons. First of all, the duration of some of the programs involved was less than 20 weeks. Secondly, participants were not always available to write assessments after 20 weeks.

set of tests. The vast majority of learners that were invited to participate agreed. Depending on the frequency of intake at a given site, assessments continued on either a weekly or monthly basis at all test locations. Once assessments were administered, they were sent to a central location for collation, entry into SPSS, a statistics program for the social sciences, and filing. Once participants wrote a complete initial set of assessments, they were assigned an ID number to ensure the confidentiality of participants and programs.

## Assessment Instruments

A number of different instruments were used to collect the data. The Canadian Adult Achievement Test (CAAT) and the Writing Task were administered to assess academic skills, and the Test of Workplace Essential Skills (TOWES) and Communications and Math Employment Readiness Assessment (CAMERA) were used to measure workplace-focused skills. The two surveys, the Literacy in Everyday Life and Work Experience surveys, were developed specifically for the study and are included as an appendix to this report.

The **Canadian Adult Achievement Test (CAAT)** is a standardized academic assessment that measures an adult's current functional level in mathematics, reading, and language. There are 4 versions of the CAAT: A, B, C and D. Each varies in difficulty. The CAAT test battery is divided into different subtests that include measures of vocabulary, reading, spelling, number operations and problem solving. The questions in each of the subtests are almost entirely multiple-choice. The Reading Comprehension and Number Operations subtests are being used for the study. Each subtest has 25-50 test items depending on the level.

The CAAT was selected as the main academic assessment tool because of its demonstrated validity and reliability. The CAAT was designed specifically for Canadian adults, regardless of their previous school experience. CAAT results are scaled against grade levels. A widely accepted tool, the CAAT is used in many literacy programs as a placement tool and on-going assessment tool, in college programs as a gate-keeping tool, and by the Workplace Safety & Insurance Board (WSIB) as a tool to measure general aptitude. As well, because there are different levels of the CAAT, the assessment could be used in all of the programs to measure academic reading and numeracy skills.

All results for the CAAT are presented in grade level equivalencies.

**The Writing Task** is based on the expository writing prompts used to develop *The Revised Common Writing Assessment* by Norman Rowen and Neil Graham. The Writing Task is administered with a 45-minute time limit and is graded according to the rubric of *The Revised Common Writing Assessment*.

This assessment was selected because using an expository prompt gives an opportunity to assess the writer's vocabulary, grammar skills, comfort level in writing, as well as skill at organizing and developing ideas and using an appropriate and effective style. The grading rubric was selected because of its appropriateness for use in adult upgrading programs, and because of its demonstrated validity and

reliability with expository writing prompts. *The Revised Common Writing Assessment* has been used in many literacy programs throughout the province of Ontario since 2000.

Although the rubric in *The Revised Common Writing Assessment* has demonstrated inter-rater reliability, to further ensure scoring reliability, one trained grader was responsible for marking all of the writing samples. All writing samples were identified by a number, and participant and site names were withheld from the grader. To ensure that the grader was consistent, a random sample of writing tasks was re-scored by another trained assessor.

All results for the Writing Task are presented in levels (from 1 to 5)<sup>2</sup>.

The **Communications and Math Employment Readiness Assessment (CAMERA)** is a literacy assessment that is based primarily on workplace tasks. The test format is a combination of multiple choice, short answer, and writing tasks. Each task is contextualized around typical workplace tasks. Reading comprehension and numeracy problems are combined. Karen Geraci developed CAMERA in conjunction with Gail Stewart (a test developer at the Ontario Institute for Studies in Education). There are 4 versions of the assessment, a placement version that includes tasks at different levels, then 3 versions used primarily for diagnostic purposes for learners at different levels. The Placement version was used at both the pre and post-testing phase of the study. It has approximately 50 test items separated into 8 activities. CAMERA provides scores on 4 scales, document use, reading text, math and writing.

CAMERA was selected based on its validity and reliability as a diagnostic tool for adult literacy participants. Since the tasks contain a mixture of different skills (with reading, writing, document use and numeracy combined), it provides a good contrast to the academic assessment used. CAMERA is being used in various workforce programs and all in-house programs offered by the Preparatory Training Programs of Toronto. CAMERA is being used for many of the study participants because the majority of TOWES (see below for a description of the TOWES) tasks are at too high a level for participants with lower skills to register a score.

Once again, to ensure that the assessments are graded consistently, one trained grader was responsible for grading all assessments. To ensure consistency, the test developer graded a random sample of assessments graded during the first 5 months of the study. The results of this reliability test indicated that the grading was consistent and accurate.

All CAMERA scores are presented in percentages.

The **Test of Workplace Essential Skills (TOWES)** is designed to test some of the essential or basic skills people use at work. These skills include reading, using

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<sup>2</sup> These levels correspond to the Literacy and Basic Skills (LBS) levels used in the province of Ontario to describe the literacy competencies of adult education participants. There are 5 levels.

forms and documents, and solving problems that involve numbers. The questions are grouped into problem sets. Each problem set asks questions relating to a document that is taken from a work situation. The documents used in the test include forms, maps, and charts, as well as reading selections from service manuals and regulations. Questions are mostly short answer in format. Learners are given the recommended 2 hours to complete the assessment and there are approximately 75 test items separated into 20 problem sets. TOWES provides scores on 3 scales, reading text, document use and numeracy.

Based on the Essential Skills Profiles of different occupations, the TOWES test was developed by SkillPlan in British Columbia in conjunction with Bow Valley College in Alberta. There are several different versions of the TOWES. The TOWES Employment Readiness Test (NOC012) was used for the study.

The TOWES was selected because the tasks involve higher level skills than CAMERA tasks. Learners bound for college function at too high a level for results on the CAMERA assessment to be meaningful. The TOWES has been demonstrated to be a reliable and valid tool. Trained graders working for the test developers grade all TOWES, and a subset is re-graded to ensure reliability.

All TOWES scores are presented in percentages.

**The Literacy in Everyday Life Survey** was developed specifically for the study to collect demographic data about the participants and to provide a snapshot of the activities that participants engage in outside of school and work, as well as information about self-perception and attitudes. The survey is based on questions from the International Adult Literacy Survey (IALS).

**The Work Experience Survey** was developed to allow us to gain an understanding of the relationship between achievement on the assessments (particularly the contextualized assessments) and prior work experience. The survey includes questions about position, tasks, industry, location, and languages spoken at work.<sup>3</sup>

## Participants

The study participants began basic skills upgrading programs between September 2001 and February 2003. Participants started out at the full range of abilities<sup>4</sup>. All participating programs receive at least some funding from the Ministry of Training, Colleges and Universities' (MTCU) Skills Investment Branch. Sites were selected based on whether they were primarily academic-focused or workforce-focused. An attempt was made to obtain a diverse set of programs delivering each type of programming.

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<sup>3</sup> In the course of the study it became clear that only some of the data collected on the surveys should be analyzed. As will be evident in the results section, only a subset of the data collected was analyzed and compared to the scores to meet the second objective of the study.

<sup>4</sup> Literacy and Basic Skills (LBS) levels 1 to 5.

A number of sites agreed to participate in the study. In some cases the assessor was selected from staff at the site, in other cases an external assessor was assigned. Of the 11 sites that agreed to participate, 7 were able to meet the assessment standards and/or the time commitment. Only these 7 sites are being included in the results of the study. Of the 11 original sites, 6 sites offered workforce-focused instruction, and the remaining 5 offered academic-focused instruction. Of the 7 sites that are included in the analysis, 3 offer workforce-focused instruction and the other 4 offer academic-focused instruction. Since two programs offer the same programming at two sites, the analysis looks at 5 program groups (rather than 7 sites). The 2 workforce-oriented programs will be referred to as: Skills Contextualized (SC), Employment Contextualized (EC); the 3 academic-oriented programs will be referred to as Academic Site 1 (AS1), Academic Site 2 (AS2) and Academic Site 3 (AS3). The following is a brief summary of the sites included in the analysis:

**SC: Skills Contextualized** This program was delivered in the community of the participants. The focus of this program is employment specific skills training. Participants are taught procedures and the use of equipment and documents that they can then apply directly to their employment goal. All participants had the same employment goal and the program was designed specifically to provide upgrading on the skills needed to access employment in the field. In addition, within the context of the employment goal, reading, writing and numeracy upgrading are provided. Participants were in a small mixed level group. They attend the program full time, 25 hours per week. The program was 12 weeks long and had a fixed start and end date. Of the original group, 67% of the participants were available for the complete set of post-testing.

**EC: Employment Contextualized (2 sites)** The focus of this program is employment related reading, writing, numeracy and computers upgrading. The types of materials and activities that predominate in the classroom are employment related. For example, reading and writing tasks are centred on documents like memos and employee schedules. The program is full-time and operates on a continuous intake basis. Most participants receive 25 hours of instruction per week. Participants are placed in one of 4 class levels based on their reading and writing ability. On average, participants remain in the program for approximately 26 weeks. The average number of weeks between the start date and post testing for the group of participants who completed study participation is 24 weeks. Of the group of participants that wrote the initial set of assessments, 41% were available for post-testing. On average the number of hours of instruction between the start date and the last post-test date was 479 hours.

**AS1: Academic Site 1** The focus of this program is generalized reading, writing, numeracy and computer skills upgrading. A variety of materials are used in the classroom. The goals of the learners are both further education and employment; as such a combination of academic focused and workplace-oriented materials are used. The programming received by participants varies based on the individual. Approximately 25% of participants attend full-time (25 hours per week), and 75% attend for 15 hours per week. The program is continuous intake and the classes

are multi-level. Program length varies for each individual. The average number of weeks between the start date and post testing is 22 weeks. Of the participants that wrote initial assessments, 40% were available for post-testing. On average the number of hours of instruction between the start date and the last post-test date was 368 hours.

**AS2: Academic Site 2** The focus of this program is reading, writing, numeracy and computer skills upgrading for college preparation. Most participants have further education as a goal; the programming is focused, therefore, on academic preparation. The type of programming delivered varies according to individuals' needs. The program is split into communications (reading and writing), numeracy and computer skills. Participants usually attend all components at the beginning (per week full-time is 30 hours for the lower levels and 25 hours for the higher levels). Based on the completion of components and their progress, they switch to part-time attendance usually within a few months. Towards the end of their program, some participants attend approximately 1 day a week (5 hours). Participants are usually enrolled for 6 months to a year. The program operates on a continuous intake basis and participants are placed according to their communications and numeracy levels. The average number of weeks that elapsed between the start date and post testing was 28 weeks. Of the participants that wrote initial assessments, only 23% were available for post testing. This percentage is smaller than in the other groups because of the program's schedule.

**AS3: Academic Site 3** The focus of this program is GED preparation. The content of the GED subtests, and some test preparation skills are taught. All participants are employed full-time and attend 2.5 – 4 hours of instruction per week. All classes take place at the work site, and the employer and employee share the cost of the program. Participants are required to complete a significant amount of homework; as such, self-study plays a significant role in student success. Participants typically attend until they achieve their GED. Approximately 22 weeks elapsed between the start date and post testing. Of the participants that wrote initial assessments, only 43% were available for post-testing.

### T1: Summary of sites and instruments used:

	Workforce Programming		Academic Programming		
	SC	EC	AS1	AS2	AS3
Workplace Test	TOWES	CAMERA	CAMERA & TOWES	TOWES	TOWES
Academic Test	CAAT & Writing Task				
Surveys	Literacy in Everyday Life Survey & Work Experience Survey				

**T2: Summary of site characteristics:**

	Workforce Programming		Academic Programming		
	SC	EC	AS1	AS2	AS3
Goal	employment-specific	employment-general	employment and further education - general	further education – general	GED
Goal same or different for all participants	same	different	different	different	same
Program design	goal-specific: job	goal-path: employment	goal-path: general	goal-path: college	goal-specific: GED
Same or multi-level classes	multi-level	same	multi-level	same	multi-level
Hours per week	25	25	15 (75%) 25 (25%)	5 to 30	2.5 to 4 + self-study
Continuous intake or fixed start	fixed	continuous	continuous	continuous	fixed
Weeks per program	12	varies	varies	varies	varies
Average weeks attended between tests	12	24	22	28	22
Hours per program	300	varies	varies	varies	varies
Average hours attended between tests	N/A	479	368	N/A	N/A
Participants available for post-testing	67%	41%	40%	23%	43%

The following sites have not been included in the analysis because they were not able to meet the time commitment required, or they were not able to administer the assessments according to the assessment standards that had been provided. For the most part, the additional time commitment required by practitioners was not feasible given the program demands.

**Workforce-focused Site A** The focus of this program is reading, writing and numeracy skills upgrading within the context of skills training. Participants attended the program full time and had the same employment goal. Part of the time was spent working on literacy upgrading within the context of the learners' employment goal, the remainder was spent on developing technical skills related to the goal. The program runs on a continuous intake basis and participants usually attended for 12 weeks.

**Workforce-focused Site B** The focus of this program is reading, writing and numeracy skills upgrading within the context of skills training. Participants attend the program full time. Over the course of learning occupational skills (all learners had the same employment goals), they develop reading, writing and numeracy skills. The program has a fixed start and end date and runs for approximately 18 weeks.

**Workforce-focused Site C** The focus of the program was reading, writing, numeracy and computer skills upgrading for injured workers training for re-entry into the workplace. The participants had specific employment goals and the instruction was geared at helping them develop the basic skills they need to enter and succeed in their new workplaces. The program was continuous intake and varied in length.

**Academic Site A** The focus of the program is reading, writing, numeracy and computer skills upgrading. Participants attended classes full-time and were separated into groups based on goals and levels. For example, participants that are working towards the GED are grouped together, while participants that had lower ESL skills are grouped together. The program runs on a continuous intake basis.

# Results

The results for the two main research questions will be presented separately. An interpretation of the results will be presented in the Interpretation & Conclusion section of the report.

To meet the first objective of the study, to find out how much literacy knowledge is transferable, we:

- A. tested whether the gains made on the different tests were related to the type of programming received
- B. examined which participant characteristics may be affecting scores, gains and as a result the transfer pattern observed, and
- C. analyzed the relationship between attendance and score changes to see whether attendance may be contributing to the transfer pattern observed.

To meet the second objective, to examine the relationship between scores and self-perception, attitudes and participation in activities in everyday life, we:

- D. compared the scores achieved to the responses on the Literacy in Everyday Life survey.

## Analysis A: Are gains made on the different tests related to the programming received?

To demonstrate transfer across programming type, we compared the gains on the workplace test to the gains on the academic test for participants in the different programs. Transfer would be demonstrated if the gains on one type of test were equivalent to the gains on the other type of test. Since the different assessments used measure and report scores in different ways, we could not compare the precise gains across test type. Instead, we examined the pattern of gains.

### T3: Pattern of gains by skill and program type<sup>5</sup>:

		Workforce programming	Academic Programming
Reading Skill	Workforce test	gain, gain <sup>6</sup>	gain, gain
	Academic test	gain	gain
Numeracy Skill	Workforce test	gain, gain	nil, gain
	Academic test	gain	gain
Writing Skill	Workforce test	gain	gain
	Academic test	gain	gain

<sup>5</sup> Document use scores were not compared because they were only measured by the workplace tests.

<sup>6</sup> Where a relationship is indicated twice (e.g., gain, gain), the first reference is to the CAMERA results and the second to the TOWES.

We found that on almost all of the assessments, participants in each type of programming made at least some gains. Only on the CAMERA Math subtest did the participants in academic programming not demonstrate any gains.

One can also look at transfer another way. If transfer did not occur, then the gains on the different tests would be different and based on the type of programming received. This is what we expected. For example, the average gain on the academic assessments is expected to be higher for participants in academic programming than the average gain for participants in the workforce programs.

#### **T4: Mean changes in scores by type of programming and tests<sup>7</sup>:**

		<b>Workforce programming</b>	<b>Academic Programming</b>
Workplace Test Scores	CAMERA Document use	8.3565	7.6882
	CAMERA Reading Text	13.1957	4.0647
	CAMERA Math	18.6594	.0000
	CAMERA Writing	13.2797	2.6176
	TOWES Reading Text	.6667	5.7436
	TOWES Document Use	12.3333	6.4615
	TOWES Numeracy	11.3333	5.5897
Academic Test Scores	CAAT Reading Comprehension	.5987	.7582
	CAAT Number Operations	.8434	1.0345
	Writing task	.06667	.05769

As can be seen by the comparison of mean gains on the different assessments, there appears to be a pattern. For most of the workplace tests, workforce programming participants achieve greater gains than academic programming participants. For most of the academic tests, academic programming participants achieve greater gains than workforce programming participants.

To examine the outcomes more objectively, we compared the mean gains on each of the tests across the dimension of type of programming using two similar statistical procedures, a one-way Analysis of Variance (ANOVA), and an Independent Samples T-Test. We used these tests to determine whether the differences between means can be attributed to the treatment; in this case, whether the differences in mean scores can be attributed to the type of programming received. The ANOVA and T-Test both revealed that only on the CAMERA Reading Text, Math and Writing subscales were the gains made in academic programs versus workforce programs different. This suggests that changes in scores between pre and post-test on the different assessments are not related to type of programming.

<sup>7</sup> The mean changes are reported in grade levels for the CAAT, levels (from 1-5) for the Writing Task and in percentages for the CAMERA and TOWES.

We also examined the average gain on the different assessments by program to see whether any programming groups demonstrated unusual gains. The participants in SC made relatively higher gains on the TOWES Document Use scale than any other group; participants in EC made relatively higher gains on the CAMERA Reading Text, Math and Writing scale; participants in AS3 made relatively higher gains on the TOWES Reading Text scale, the lowest, in fact negative, gains on the Writing Task scale and the highest, by 2.9 grade levels, on the CAAT Reading Comprehension scale.

### T5: Mean changes in scores by site and test:

		Workforce Programming		Academic Programming		
		SC	EC	AS1	AS2	AS3
Workplace Test Scores	CAMERA Document use	-	8.3565	7.6882	-	-
	CAMERA Reading Text	-	13.1957	4.0647	-	-
	CAMERA Math	-	18.6594	.0000	-	-
	CAMERA Writing	-	13.2797	2.6176	-	-
	TOWES Reading Text	.6667	-	4.2500	5.6471	10.0000
	TOWES Document Use	12.3333	-	3.2500	9.0000	7.8333
	TOWES Numeracy	11.3333	-	3.4375	6.3529	9.1667
Academic Test Scores	CAAT Reading Comprehension	.9167	.5714	.3000	.5588	3.7667
	CAAT Number Operations	1.3167	.8029	.9344	1.2529	.95000
	Writing task	.3333	.04348	.1935	-.0667	-.3333

Although not statistically tested, there does appear to be a pattern of gains within skills across test types. Specifically, AS3 made the most significant gains on the CAAT Reading Comprehension subtest and on the TOWES Reading Text subtest; SC made the highest gains on the CAAT Number Operations subtest and on the TOWES Numeracy subtest.

### Analysis B: Do participant characteristics affect scores, gains and as a result the transfer pattern observed?

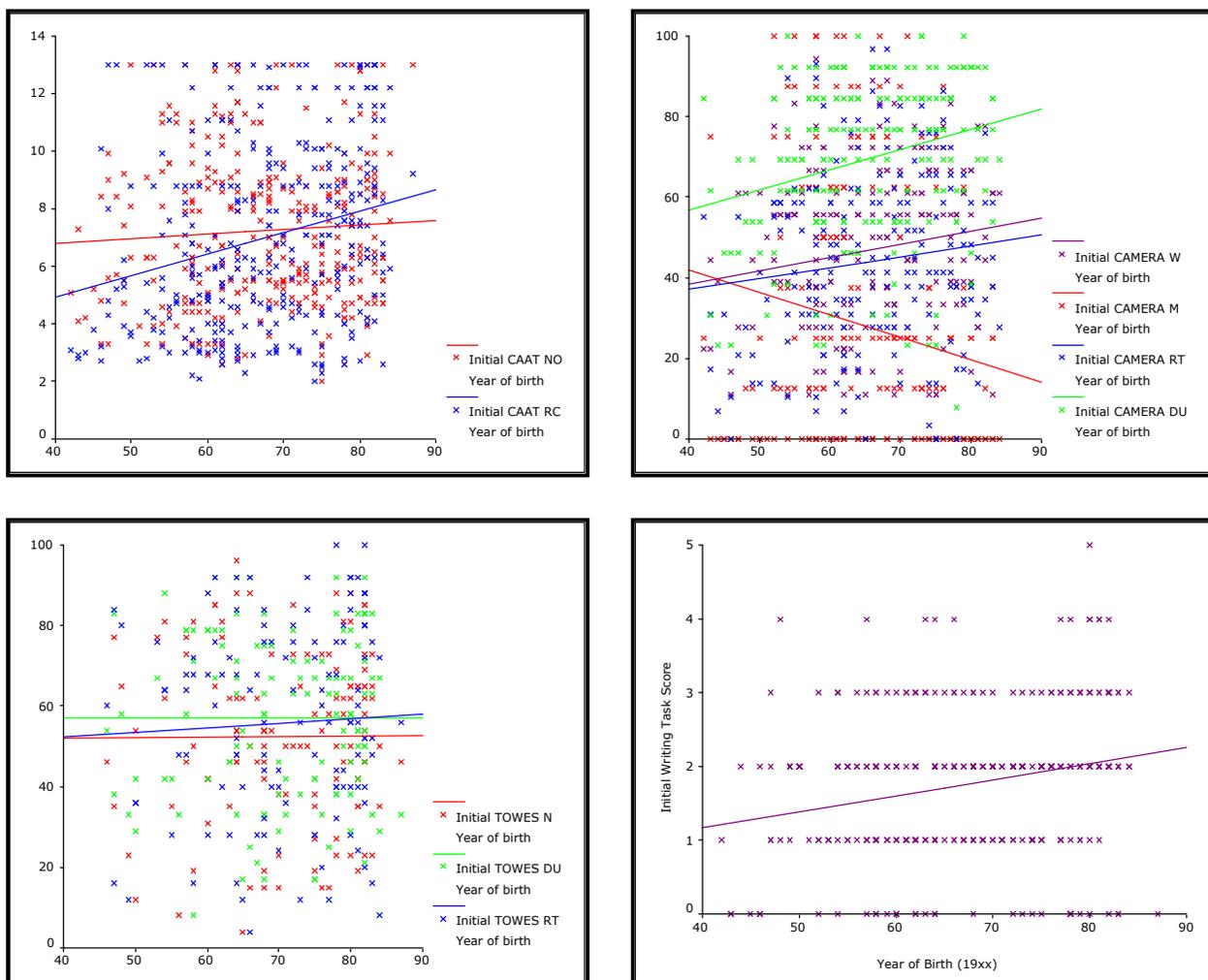
In general, the pattern of gains across programming groups and types was different than what we expected. As such, we wanted to explore this further by looking at whether other factors may be contributing to the scores observed. We looked at several participant characteristics: age, highest grade completed and first language because, as will be discussed in the next section of the report, the participant groups were compared along these dimensions. These analyses were carried out

using the full sample of data (not only data from participants that wrote pre and post tests) to attain greater statistical significance.<sup>8</sup>

**AGE**

According to the correlation analysis, age was very slightly positively related to scores on the CAAT Reading Comprehension subtest, the CAMERA Document Use subtest and the Writing Task and slightly negatively related to the CAMERA Math subtest. Therefore, younger participants achieve slightly higher scores on the CAAT Reading Comprehension subtest, the CAMERA Document Use subtest and the Writing Task; younger participants also achieve slightly lower scores on the CAMERA Math subtest. As can be seen by the spread of the data in the scatterplots below, these relationships are very weak.

**G1: Year of Birth in relation to initial test scores on the CAAT, CAMERA, TOWES and Writing Task:**

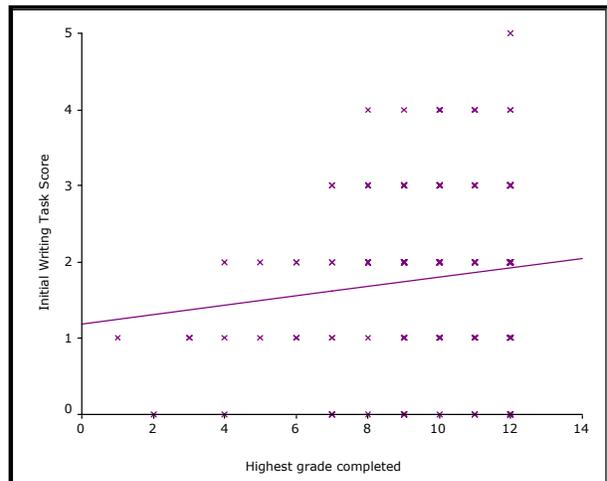
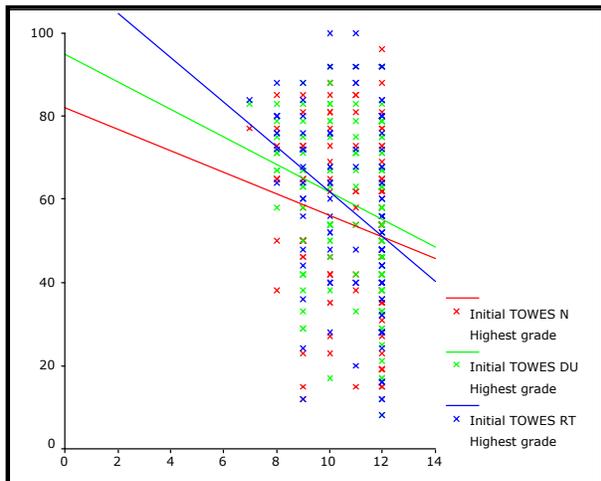
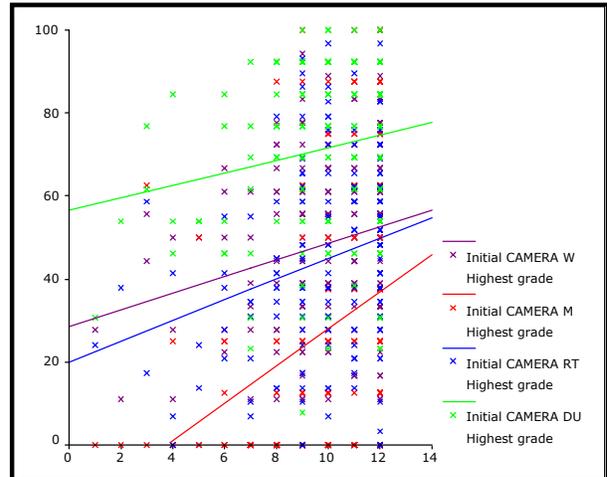
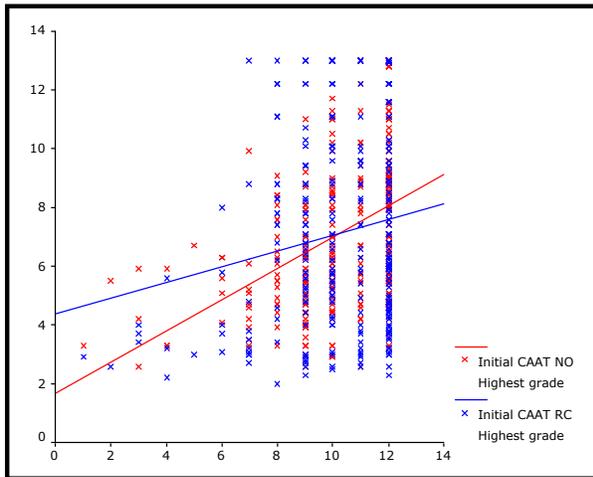


<sup>8</sup> The relationships for the continuous variables (age and highest grade completed) were analyzed using co-relation analyses. Since most of the data was not distributed along a normal curve, a nonparametric test was used:

**HIGHEST GRADE COMPLETED**

Highest grade completed is slightly positively related to some scores. This relationship is strongest, on the CAAT Number Operations subtest and the CAMERA Reading Text and Math subtest. In the data, highest grade completed is slightly negatively related to the TOWES. Once again, as can be seen through the spread of the data in the scatterplots, these relationships are not strong (although for the CAAT Number Operations and CAMERA Math subtests they are stronger than the relationship between age and scores).

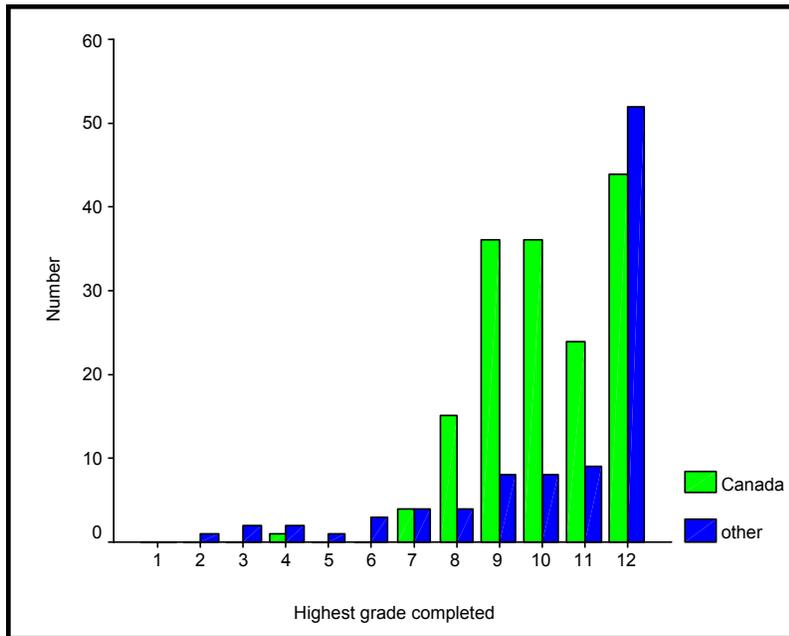
**G2: Highest Grade Completed in relation to initial test scores on the CAAT, CAMERA, TOWES and Writing Task:**



We also asked where the participants completed their highest level of education to see whether there was a pattern.

Spearman's rho. The relationships for the categorical variable (first language) were analyzed using a one-way ANOVA. The relationships are also exemplified through the graphs provided.

**G3: Number of Participants by Highest Grade Completed and Country of Highest Grade Completed:**



We found that there was a proportionately higher number of participants who indicated that they had completed grade 12 outside of Canada. Because of this we also analyzed whether the relationship between scores and highest grade completed would be different for participants who were educated in Canada. We found that the pattern was, for the most part, the same although weaker. For this subset of participants, participants with higher levels of education achieved only

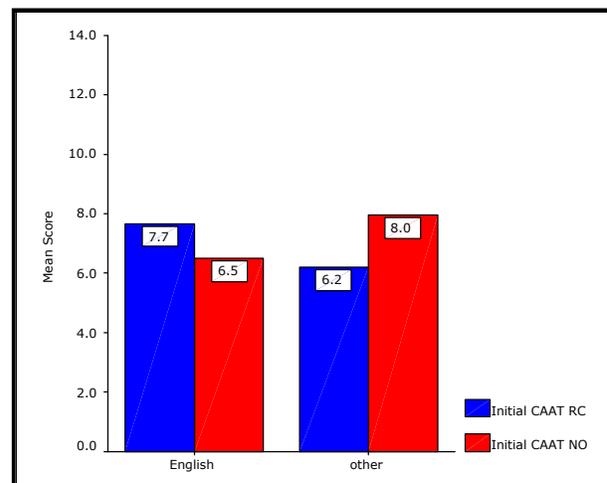
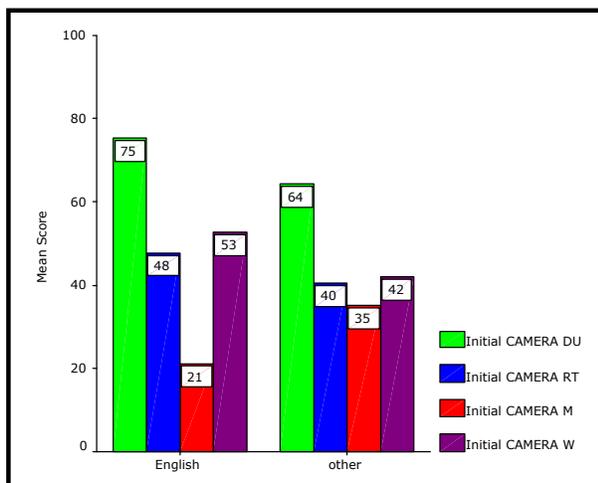
slightly higher test scores on the CAAT Number Operations and CAMERA Math subtest and slightly lower scores on the TOWES than those with lower levels of education.

Since the relationships between age, highest grade completed and scores was not very strong, and for many scores not significant, we did not carry out additional analyses to see whether these factors contribute to the transfer pattern observed.

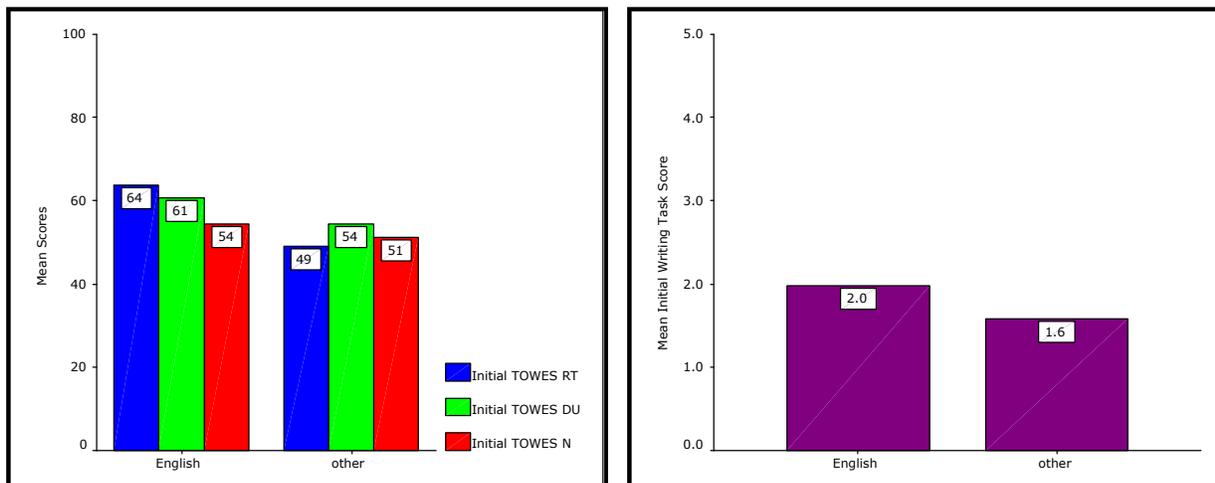
**FIRST LANGUAGE**

On the other hand, first language significantly affects scores achieved.

**G4: First Language in relation to initial test scores on the CAAT, CAMERA, TOWES and Writing Task:**



#### G4: First Language in relation to initial test scores on the CAAT, CAMERA, TOWES and Writing Task (cont'd):



Participants who speak English as a first language achieve higher scores on the CAAT Reading Comprehension subtest, the CAMERA Reading Text, Document Use and Writing subtests, all TOWES subtests and on the Writing Task; conversely, participants who speak a language other than English as their first language achieve higher scores on the CAAT Number Operations subtest, and the CAMERA Math subtest. According to the one-way ANOVAs, the differences between the means of the participants whose first language is English, versus the means of the participants whose first language is not, is significant for most subtests, except the TOWES Document Use and Numeracy Subtests.

Although we asked the first language of participants, the participants in the study were literacy learners, not English-as-a-Second Language learners. All programs were located in jurisdictions where ESL programming was available, but program administrators clearly felt that these participants were suitable for literacy programming. Since the tests we used were not designed for learners without native-like language proficiency, it's not surprising these participants do not do as well in some cases.

Given that first language is significantly related to scores, we decided to carry out the same transfer test while removing the affect of first language by only analyzing scores from participants whose first language is English. The analysis of changes in scores by type of programming was carried out with this subset of participants. Once again, if transfer did not occur, then the gains on the different tests would be different and based on the type of programming received.

The Independent Samples T-Test and the one-way ANOVA carried out indicated that there were only differences between the gains on the CAMERA Reading Text, Math and Writing subscales between participants in workforce programming and participants in academic programming<sup>9</sup>. The pattern of results was the same for

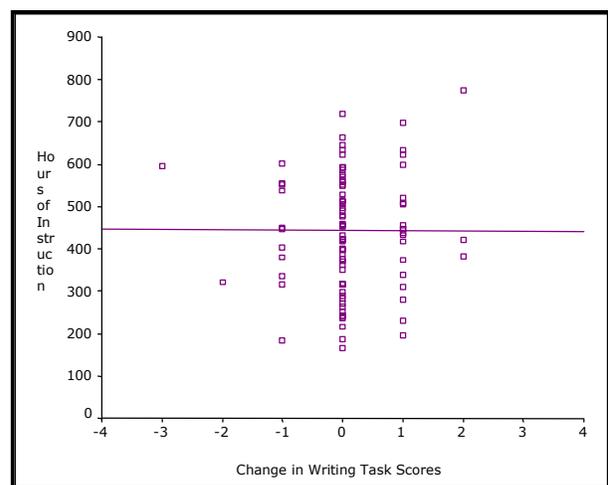
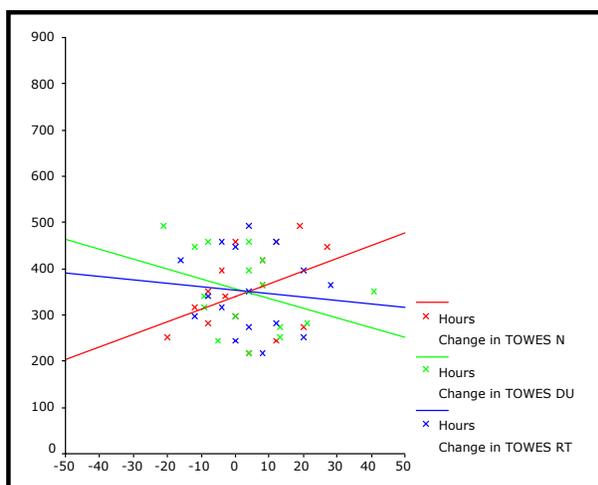
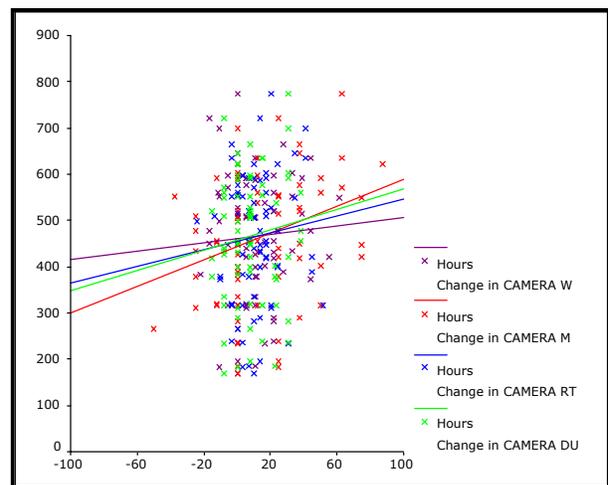
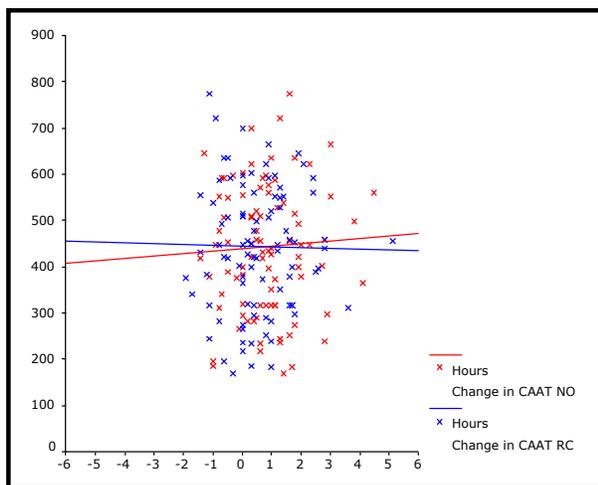
<sup>9</sup> Only CAAT, CAMERA and Writing Test data could be compared for this subgroup.

this subgroup of participants as it was for the full group that wrote pre and post tests, with less of a difference in CAMERA scores. Therefore, even if only participants whose first language is English is included in the analysis, participants in workforce programming do not make significantly higher gains on workplace-focused tests than do participants in academic programming; and participants in academic programming do not make significantly higher gains on the academic tests than do participants in workforce programming.

**Analysis C: Is there a relationship between attendance and score changes that could account for the transfer pattern observed?**

In addition to participant characteristics, we also looked at whether attendance was related to gains<sup>10</sup>.

**G5: Hours of Instruction in relation to changes in test scores on the CAAT, CAMERA, TOWES and Writing Task:**



<sup>10</sup> Attendance was only obtained for 93 participants all from either AS1 and EC.

The pattern of results revealed that only for the CAMERA Math scores were the scores slightly positively and significantly related to the number of hours of instruction between the start date and the last post-test date. The TOWES Document Use scores were slightly negatively related, though not significantly so. As well, the TOWES Numeracy subtest scores were slightly positively related, but not significantly. Therefore, since attendance is only minimally related to scores, its likely effect on transfer must be minimal, if at all.

In response to the first objective of the study the results showed that:

1. Gains were demonstrated at all of the test sites, and there was no significant relationship between the type of programming received and the gains made on the different assessments for the whole group and for the subsets we tested.
2. Some sites demonstrated greater gains than the average, specifically SC and AS3.
3. First language is related to scores, but removed does not change the transfer pattern observed.
4. Attendance does not appear to be related to the gains demonstrated.

### **Analysis D: Is there a relationship between scores and self-perception, attitudes and participation in activities in everyday life?**

To address the second objective, initial test scores were compared against responses on the survey. The full sample of participants was grouped together for this analysis to ensure that the results are more generalizable. Since the survey was administered at pre-test, the test data collected at pre-test could be used (n=350 for most comparisons).

As will be evident, only some of the survey questions were compared to the scores. We selected the survey items that participants had the least trouble interpreting and the items that were most clearly related to the literacy skills assessed. One of the analyses we had planned, but didn't carry out, was the effect of work experience on the workplace assessment. Since only a small proportion of the sample had never worked, (8% of the participants that completed the survey) we determined the numbers would be too small to be meaningful.

**T6: Summary of relationships between survey responses (self-perception, attitudes and participation in activities in everyday life):**

	Reading		Numeracy			Document Use		
	CAAT Reading	CAMERA Reading	TOWES Reading	CAAT Number Operations	CAMERA Math	TOWES Numeracy	CAMERA Doc Use	TOWES Doc Use
Number of visits to the library in a year	no	no	no	-	-	-	-	-
Frequency of newspaper reading	yes	slight	slight	-	-	-	-	-
Frequency of television guide reading	no	no	yes	-	-	-	-	-
I am good with numbers and calculations	-	-	-	yes	yes	no	-	-
I like to read in my free time	no	slight	no	-	-	-	-	-
Difficulty reading bills	-	-	-	-	-	-	no	no
Difficulty filling out forms	-	-	-	-	-	-	yes	no
Difficulty using a map	-	-	-	-	-	-	yes	yes
Difficulty figuring out discounts, sales tax and tips	-	-	-	yes	yes	yes	-	-
Participation in community activities	no	no	slight	-	-	-	-	-
Volunteering in community activities	no	no	slight	-	-	-	-	-

According to the one-way ANOVAs, test scores were different based on the responses to only some of the questions. In the table where 'yes' is indicated, there was a significant relationship between different responses and scores; where the table indicates 'slight' there was only a very slight relationship.

There was a relationship between scores and participants' responses to the following survey items:

- The frequency of newspaper reading.
- The frequency of reading the television guide.
- Whether they felt they were good with numbers and calculations.
- Whether they like to read in their free time.
- Whether they have difficulty filling out forms.
- Whether they have difficulty using a map.
- Whether they have difficulty figuring out discounts, sales tax and tips.
- Whether they participate in community activities
- Whether they volunteer in any community activities

There was no relationship between scores and participants' responses to the following survey items:

- The number of visits to the public library in a year
- Whether they have difficulty reading bills.

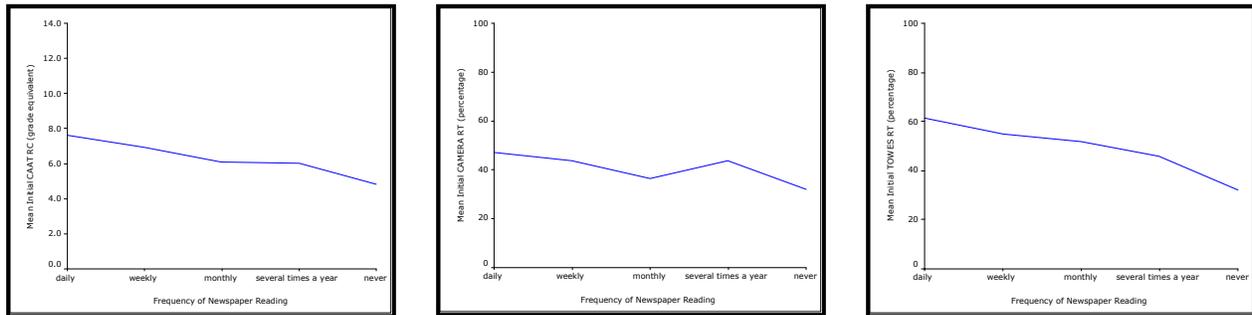
The relationship being the most significant across tests for:

- The frequency of newspaper reading.
- Whether they have difficulty using a map.
- Whether they have difficulty figuring out discounts, sales tax and tips.

**RELATIONSHIP A: READING SCORES AND THE FREQUENCY OF NEWSPAPER READING**

As reading scores increase on the different assessments, participants tend to read newspapers more regularly.

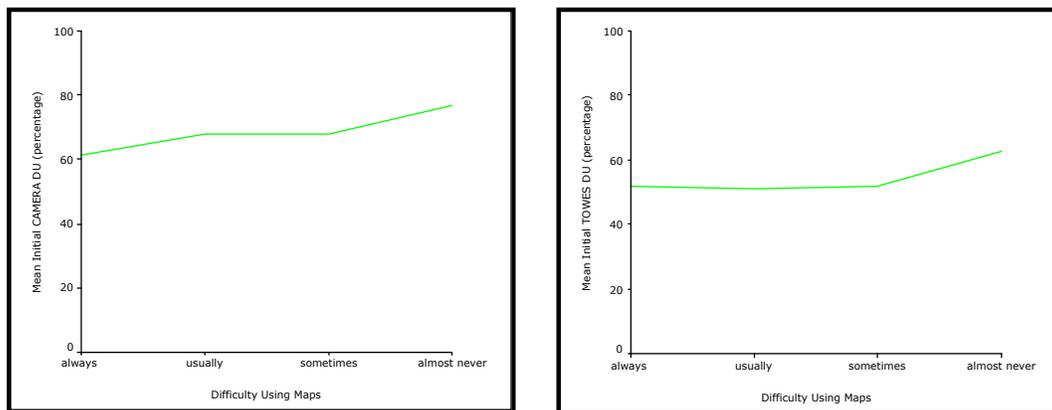
**G6: Frequency of Newspaper Reading in relation to reading scores on the CAAT, CAMERA and TOWES:**



**RELATIONSHIP B: DOCUMENT USE SCORES AND WHETHER PARTICIPANTS REPORTED DIFFICULTY USING A MAP**

As document use scores increase on the different assessments, participants tend to report less difficulty using a map.

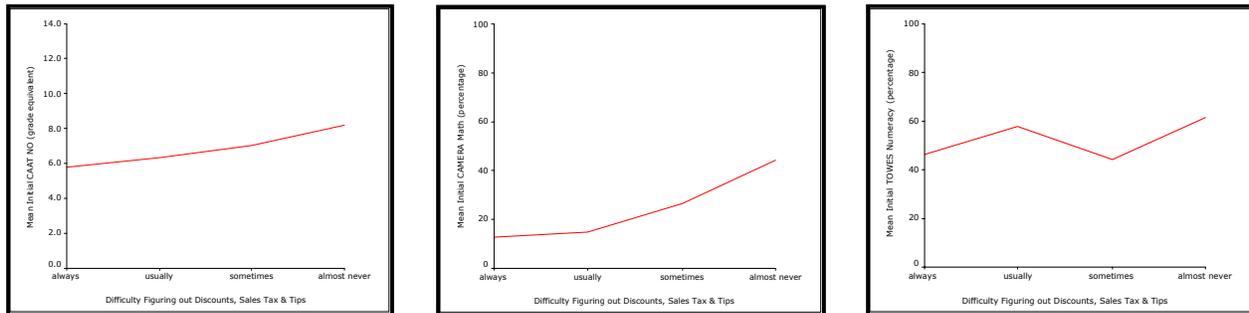
**G7: Self-perception of Difficulty Using a Map in relation to document use scores on the CAMERA and TOWES:**



### RELATIONSHIP C: NUMERACY SCORES AND WHETHER PARTICIPANTS REPORTED DIFFICULTY FIGURING OUT DISCOUNTS, SALES TAX AND TIPS

As numeracy scores increase on the different assessments, participants tend to report less difficulty figuring out discounts, sales tax and tips.

### G8: Self-perception of Difficulty Figuring out Discounts, Sales Tax and Tips in relation to numeracy scores on the CAAT, CAMERA and TOWES:



In general, in response to the second objective of the study, we found that:

1. There is a significant relationship between scores achieved on different tests and participants' self-perception of their ability to use a map and figure out discounts, sales tax and tips.
2. There is a significant relationship between scores and participation in activities in everyday life, specifically, the frequency of reading newspapers.
3. There is no relationship between scores and the number of visits to the public library and participants' self-perception of their ability to read bills.
4. For the remainder of the items analyzed the pattern of relationships is inconclusive.

# Assumptions, Limitations & Challenges

## Assumptions

There were several assumptions that underlie the work carried out: that there is a distinction between workforce-focused instruction and academic-focused instruction; that the instruments could measure learning; and that the measuring tools measure different skills.

The workforce-focused versus academic-focused programming distinction is the starting point of this work. Workforce-focused instruction is sometimes called integrated or workplace-contextualized. Mikulecky (1982)<sup>11</sup> found that there are significant differences between reading at school and reading at work. Martin (1997) describes the distinction between type of programming by comparing program attributes. The purpose and goals of academic programming are to teach generalized knowledge and skills that are transferable in a wide variety of contexts. Integrated programming teaches situation-specific knowledge and skills that are applicable to a particular contextual situation, for example, a particular job. An example of contextualized programming is Functional Context Education (FCE). Reboy & Smith (1991) describe it as teaching reading and numeracy within a vocational context, making the instruction as meaningful as possible to learners by teaching relevant behaviours in relevant contexts. As was noted in the methodology section, the programs selected to represent these categories met the criteria, despite the fact that programming characteristics of the two models are not entirely independent. For example, reading is taught in both types of programs. As well, as the data was analyzed, the goals of the participants at the different programs further exemplified the distinction between the groups.

The assumption that the different instruments can measure learning is also central to the work being carried out. Since the tools used were demonstrated valid and reliable measures of literacy skills, we assumed that we could re-administer them to measure learning. Except for the Writing Task, we used the same form pre and post-test. Therefore, the comparability of the forms was not an issue. With the Writing Task, an alternative form was administered at post-test to eliminate the potential effect of re-writing a response to an expository writing prompt. Since the two forms were based on the alternative forms developed while creating *The Revised Common Writing Assessment*, they were deemed to be equivalent.

The final assumption was that the measurement tools were measuring different things. The academic tests, the CAAT and the Writing Task, measure academic literacy skills; the workplace tests, the CAMERA and the TOWES, measure workplace-focused literacy skills. Although this assumption was not tested, based

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<sup>11</sup> Reported in Fownes and Evetts (2001).

on the work that had been carried out to develop the instruments, it was assumed to be true. Combined, the CAAT and Writing Task test discrete skills – reading, numeracy and writing. Whereas the CAMERA and TOWES test the skills in an integrated fashion, combined they test reading, document use, numeracy and writing. For example, numeracy is not tested independently of the document use where it is situated.

## Limitations

Before the results are interpreted, there are several limitations that will be described in turn:

- A. participants are not randomly assigned to receive one type of instruction versus the other,
- B. number of participants and programs,
- C. workplace test breakdown and
- D. differences between participants at different sites.

### **LIMITATION A: PARTICIPANTS ARE NOT RANDOMLY ASSIGNED TO RECEIVE ONE TYPE OF INSTRUCTION VERSUS THE OTHER**

Since participants are not randomly assigned to receive one type of instruction versus the other, the conclusions drawn can only be co-relational, not causal. This limitation is a common one in research in education and will form part of the basis for drawing conclusions.

### **LIMITATION B: NUMBER OF PARTICIPANTS AND PROGRAMS**

#### **T7: Number of participants in workforce programming:**

<b>Programming Group</b>	<b>Total number of participants</b>	<b>Number that completed pre and post tests</b>
Skills Contextualized (SC)	9	6
Employment Contextualized (EC)	170	70
<b>TOTAL</b>	<b>179</b>	<b>76</b>

#### **T8: Number of participants in academic programming:**

<b>Programming Group</b>	<b>Total number of participants</b>	<b>Number that completed pre and post tests</b>
Academic Site 1 (AS1)	82	33
Academic Site 2 (AS2)	75	17
Academic Site 3 (AS3)	14	6
<b>TOTAL</b>	<b>171</b>	<b>56</b>

Overall, data from 350 participants could be used to answer the research questions. As outlined in the methodology section of the report, some data needed to be discarded for various reasons. Although data from 350 participants could be used, only data from participants who wrote both pre and post tests could be included to answer the question about transfer, limiting the number to 132 cases. These numbers were broken down further by type of programming, workforce-focused and academic-focused. Of a total of 179 learners who participated in the study from workforce programs, only data from 76 could be included to answer the question about transfer. Of the 171 learners who participated from academic-focused programs, only data from 56 could be included to answer the question about transfer.

Further, only data from 2 groups offering workforce-focused programming could be used for the study. Of those, most of the participants came from one programming group (EC). On the other hand, 3 different academic-focused programming groups participated in the study. The bulk of the data came from two programs, one of which had very high attrition.

Although the extent of the data available to answer the question of transfer is somewhat limited, the full data set could be used to answer the second research question – the relationship between scores and self-perception, attitudes and participation in activities in everyday life.

In general, the number of participants overall was quite high. The number of cases that could be used to answer the first research question was limited because of attrition and because several of the sites invited to participate were unable to carry out the requirements of the work. The number of cases available to answer the second research question was the full sample. This limits the generalizability of the conclusions about transfer, but not the generalizability of the conclusions related to the second research question.

As well, a limited amount of analysis was carried out to compare participants in the study to those that chose not to participate or were unavailable on initial testing dates. The analysis comparing all EC learners that started between October 1<sup>st</sup>, 2001 and January 31<sup>st</sup>, 2003 revealed that participants in the study and the full group of learners in the program were very similar on the dimension of highest grade completed.

**T9: Percent of study participants and all program participants by highest grade completed:**

	<b>Participants (n=142)</b>	<b>All Learners (n=313)</b>
Up to grade 8	19.7%	21.4%
Grades 9, 10, 11	41.5%	42.8%
Grade 12	38.7%	35.8%

**LIMITATION C: WORKPLACE TEST BREAKDOWN**

Although the CAAT and Writing Task were administered to everyone, no one workplace-focused test could be used with all of the participants (the TOWES would be too high for some and the CAMERA too low for others), therefore the number of participants for which scores could be compared on workplace tasks was even smaller.

**T10: Workplace test breakdown in workforce programming:**

	Number of TOWES		Number of CAMERAs	
	At initial	Pre and post	At initial	Pre and post
Skills Contextualized (SC)	9	6	-	-
Employment Contextualized (EC)	-	-	166	69
<b>TOTAL</b>	<b>9</b>	<b>6</b>	<b>166</b>	<b>69</b>

**T11: Workplace test breakdown in academic programming:**

	# of TOWES		# of CAMERAs	
	At initial	Pre and post	At initial	Pre and post
Academic Site 1 (AS1)	34	16	46	17
Academic Site 2 (AS2)	71	17	-	-
Academic Site 3 (AS3)	14	6	-	-
<b>TOTAL</b>	<b>119</b>	<b>39</b>	<b>46</b>	<b>17</b>

As it stands, for the CAMERA, the test of transfer compared the average gains made in EC to the average gains made in AS1. Only one program represents the whole programming group in both cases; therefore, the results obtained may simply be due to unique factors present at the two sites and not to the type of programming.

As well, for the TOWES, the test of transfer compared the average gains from only one workforce-focused program to 3 academic-focused programs. The workforce program was also a very small group.

Once again, this limits the generalizability of the conclusions about transfer. For the results to be more statistically significant additional workforce-focused programs would have been required to write the TOWES and CAMERA and further academic sites would have been required to write the CAMERA. Throughout the study attempts were made to obtain additional partners that met the criteria, and who could dedicate the time to carry out the assessments. Unfortunately, success in this regard was limited.

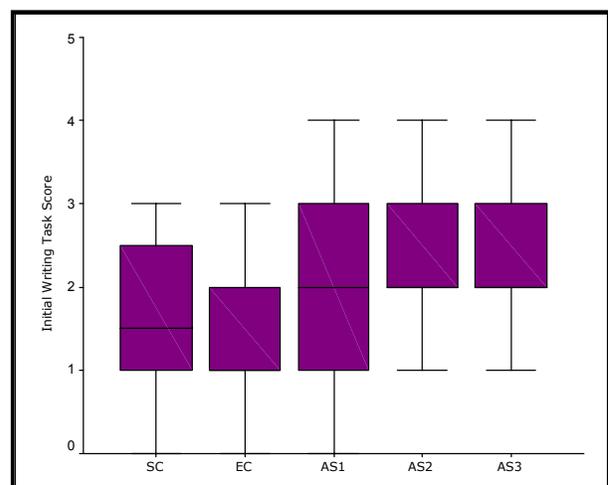
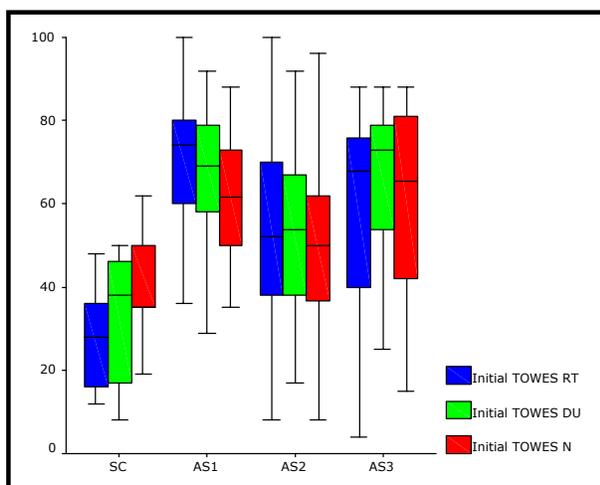
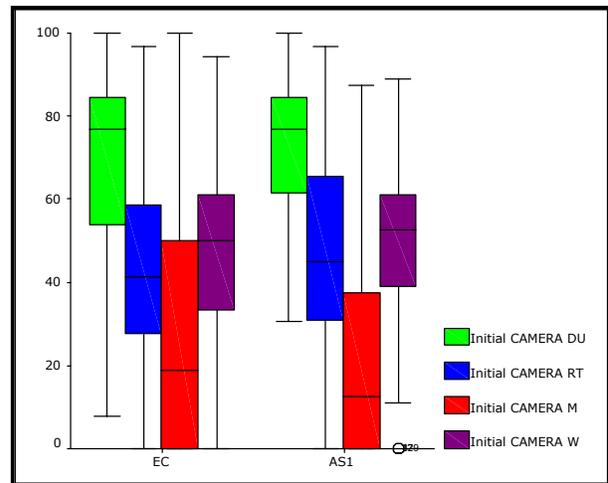
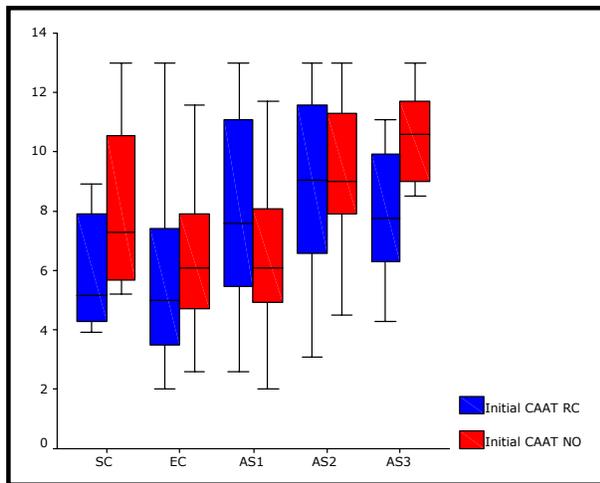
**LIMITATION D: DIFFERENCES BETWEEN PARTICIPANTS AT DIFFERENT SITES**

We also found differences between participants at the different sites.

**T12: Participant characteristics summary:**

	Percentage whose first language is English	Mean highest grade completed	Mean year of Birth
SC	11%	11.67	67.11
EC	46%	9.98	64.93
<b>TOTAL Workforce</b>	<b>45%</b>	<b>10.05</b>	<b>65.04</b>
AS1	81%	9.37	69.42
AS2	43%	11.35	72.97
AS3	21%	10.91	65.79
<b>TOTAL Academic</b>	<b>59%</b>	<b>10.34</b>	<b>70.72</b>

**G9: Initial site test scores on the CAAT, CAMERA, TOWES and Writing Task:**



The differences across sites were the most notable in 2 areas: the percentage of participants whose first language is English; and the initial test scores achieved on the different tests. Participants in the different programs started off at different levels of proficiency.

These differences, once again, limit the generalizability of the conclusions that can be drawn. Specifically, the more similar participants are in the workforce programs to the participants in the academic programs, the more likely the results obtained are due to the type of programming received. In this case, the results obtained about transfer may be coloured by the differences between the participants at the different sites. As the data was being analyzed to answer the question about transfer, the effect of first language, highest grade completed and age were also tested to see whether there was any relationship between scores and these variables. Of particular interest was the effect of first language as there was a significant difference between the groups on this characteristic.

Another way in which the participants in the different programs differ is through their goals after the program ends.

### **T13: Percentage of participants at the different sites and their goals after program completion:**

	<b>Employment</b>	<b>Further Education</b>	<b>Both</b>	<b>Missing</b>
SC	75.0	12.0	12.0	-
EC	50.0	29.0	19.1	1.9
<b>TOTAL workforce</b>	<b>51.2</b>	<b>28.2</b>	<b>18.8</b>	<b>1.8</b>
AS1	22.8	45.6	30.4	1.3
AS2	4.1	78.4	14.9	2.7
AS3	15.4	76.9	7.7	-
<b>TOTAL academic</b>	<b>13.9</b>	<b>62.7</b>	<b>21.7</b>	<b>1.8</b>

The goals of the participants at the different sites reflect the nature of the programming focus in the different programs, supporting the belief that the programs do differ along the dimension being studied. This difference was not seen as a barrier to generalizability as it was an expected difference.

## **Challenges**

In addition to the limitations of the data to answer the questions posed by the research study, the principle challenge will be described before any conclusions are drawn: attrition.

A significant amount of research has been undertaken that examines adult literacy program participation (e.g., Long & Middleton, 2001), drop out rates and ways of obtaining information to assist in the retention of learners (e.g., Jonik, 2002 and Roussy, 2001). Attrition is not a new or unusual problem in longitudinal studies. Carrying out longitudinal studies in programs that tend to have some challenges with learner retention exacerbates this problem.

The attrition observed in this study was high. Of the 350 participants that participated, only data from 132 cases (38%) included post-tests as well as initial tests. Brooks, Davies, Ducke, Hutchison, Kendall & Wilkin (2001), maintained a 57% retention rate. Even that rate was not considered very high. For this study the high attrition was due to a number of factors. First of all, many participants leave before their program ends. Secondly, among participants that are still officially enrolled, attendance is inconsistent. Thirdly, at some programs, attendance is part-time for some and full-time for others. Finally, arranging to have participants write tests for two half days is difficult given all of the other factors and given the fact that the assessors were not available to carry out assessments full-time.

That said, the subset that wrote both pre and post-tests were compared to the whole group of participants to see whether attrition further limits the generalizability of the conclusions that can be drawn.

#### **T14: Participant summary with subset characteristics:**

		<b>Plans after the program ends</b>	<b>First language English (%)</b>	<b>Mean highest grade completed</b>	<b>Mean year of Birth (19xx)</b>
Workforce	Full Sample	51.2% employment 28.2% further education 18.8% both 1.8% missing	45%	10.05	65.04
	Subgroup	50.0% employment 31.9% further education 16.7% both 1.4% missing	37%	10.16	62.32
Academic	Full Sample	13.9% employment 62.7% further education 21.7% both 1.8% missing	59%	10.34	70.72
	Subgroup	25.0% employment 53.6% further education 17.9% both 3.6% missing	64%	10.04	70.12

There are some differences between the full set of participants and the subset that completed pre and post-tests. Specifically, the plans of the participants after the program ends in academic-focused programming are somewhat different for the full sample than for the subset. Regardless, at least half the participants in workforce programming have employment as their main goal and half of the participants in academic programming have further education as their goal. Another difference is the percentage of the participants whose first language is English. In workplace

programming the percent of participants whose first language is English decreased; conversely, in academic programming the percent of participants whose first language is English increased. This variable was explored further as the analyses of the data were carried out. These differences between the full set of participants and the subset only limit generalizability minimally, but suggest that the sample from which the data used to test transfer does not represent all participants entirely.

The subset of participants were, however, somewhat different in terms of achievement. As is indicated below, in some cases the average scores for the full sample were higher than the average scores for the subset that completed all testing; in other cases, the scores for the full sample were lower than the scores of the subset sample. However, there are only a few instances where the difference exceeds 5% or .4 grade levels.

**T15: Mean initial test scores for full sample versus subset that completed both initial and post tests:**

		Workplace Programming		Academic Programming	
		Full Sample	Subgroup	Full Sample	Subgroup
Workplace Tests	CAMERA Document Use	68.895	65.097	74.900	68.193
	CAMERA Reading Text	43.373	41.323	46.765	49.187
	CAMERA Math	29.443	33.877	21.429	20.833
	CAMERA Writing	47.261	43.567	49.878	47.400
	TOWES Reading Text	27.56	22.00	58.55	66.26
	TOWES Document Use	33.00	25.83	59.41	63.26
	TOWES Numeracy	36.89	30.17	53.99	58.97
Academic Tests	CAAT Reading Comprehension	5.740	5.121	8.322	8.374
	CAAT Number Operations	6.481	6.608	7.937	8.237
	Writing task	1.41	1.29	2.17	2.13

Therefore, the results observed in the subset regarding transfer can be generalized to the full set of participants at each location with only a small degree of caution.

# Interpretation & Conclusion

A number of patterns were observed through the analysis of the data. Each will be discussed with consideration given to the limitations inherent in the study.

*There are two main objectives of the Who is Learning What Study:*

- 1. To find out how much literacy knowledge is transferable from academic learning environments to workplace reading, writing and numeracy tasks; and how much literacy knowledge is transferable from workforce-focused programs to academic tasks.*
- 2. To examine the relationship between scores and self-perception, attitudes and participation in activities in everyday life.*

## Objective 1

The analysis of the data collected to answer the first research question indicates that learning does transfer across programming type to the different assessments. The analyses revealed that regardless of the type of programming received, participants made similar gains on the different assessments. This is contrary to what we expected, that gains on the different tools would vary according to the type of programming received. For example, we expected that participants in academic programming would show significant gains on the academic test and not necessarily on the workplace test.

The only assessment where gains were different for the two programming groups was on the CAMERA. To explain this we considered another factor that might have affected the scores on this tool and not the others, the exposure of the EC learners to diagnostic CAMERAs in the course of their program<sup>12</sup>. As was discussed, EC was the only workforce site included in the comparison of gains on the CAMERA. We looked at the relationship between exposures to the diagnostic CAMERAs that contained tasks similar to the placement tasks and the gains demonstrated on the tasks in the study. The analysis revealed that increased exposure results in higher scores on some of the tasks. Since only EC participants wrote diagnostic CAMERAs in the course of their programming, the gains made by EC participants would be expected to be higher on the CAMERA as a result of exposure to diagnostic CAMERAs regardless of the type of programming received. This difference between the academic programming group and the workforce programming group (EC) may account for the difference in gains demonstrated when transfer was tested.

At some of the sites there also appears to be more direct evidence of transfer. Specifically, AS3 demonstrated the highest gains on the CAAT Reading Comprehension subtest and on the TOWES Reading Text subtest. As well, SC made the highest gains on the CAAT Number Operations subtest and on the TOWES Numeracy subtest. This suggests that the basic skills learning that occurs in the

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<sup>12</sup> For the study the placement version of the CAMERA was used.

programs can be demonstrated on tests using materials similar to those used in the classroom and materials different from those used in the classroom.

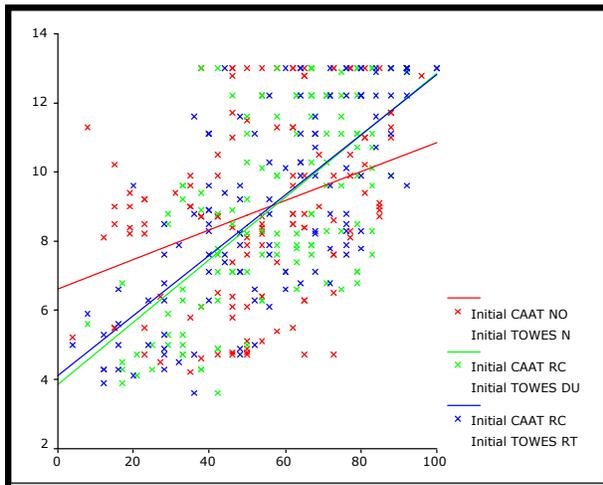
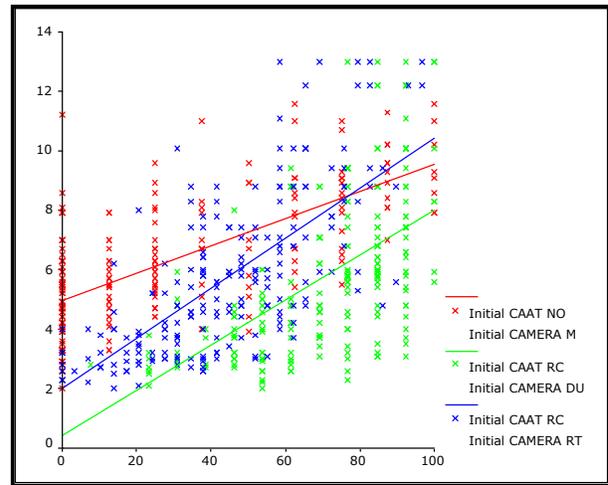
We looked at the factors that may be contributing to the transfer pattern observed. We found that age, highest grade completed and number of hours of instruction between start date and last post-test were only moderately related to the scores the participants achieved. This is in line with what Zeigler (1996), in her review of the NEAEP, found: increased hours of instruction are not sufficient to ensure skill development. On the other hand, first language was significantly related to the scores. As such, we analyzed the transfer pattern for participants whose first language is English to see whether removal of this variable that affects scores would change the resulting transfer pattern. We found that it did not. Regardless of whether only participants whose first language is English are included in the analysis or whether all study participants are included in the analysis, there are minimal differences between the gains made on the assessments regardless of which type of programming was received.

Although it seems that learning does transfer, the limitations of the research make this conclusion tenuous. As was discussed in the limitations section of the report, the generalizability of these conclusions is limited because of the number of participants and sites involved, the differences between the participants at the different sites and the differences between the full sample of participants and the subgroup available to write all assessments. As well, the results of this study are different from those obtained in other research studies regarding transfer of learning (e.g., Mikulecky et al., 1994 and Sticht, 1992; Zeigler, 1996).

Further, there are several alternative explanations for the pattern observed: the programs do not differ significantly, the academic-focused programs are not significantly different from the workforce-focused programs; or the assessments do not test entirely independent skills. Although it is possible that the academic-focused programs in the study were not that different from workforce-focused programming, this alternative is not that likely. As the research carried out by Martin (1997) shows, programming split along these dimensions is very different in terms of the materials used and the way the instruction takes place. As well, the differences in the primary goals of the learners in the groups showed that over half of the participants in workforce programming have employment as their main goal after upgrading, and over half of the participants in academic programming have further education as their main goal after upgrading.

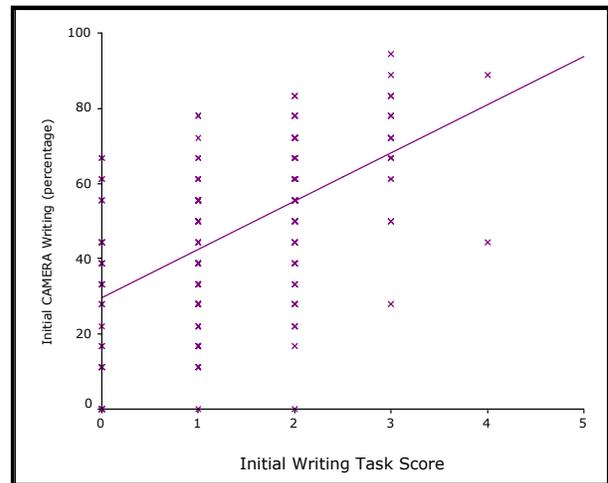
There is however, the possibility that the assessments do not measure entirely independent skills. This second interpretation is quite possible, and would not be surprising. All of the tests, after all, test literacy and numeracy skills. Although reading for work is different than reading for school, and applying numeracy skills to de-contextualized numeracy problems is different from using numeracy to complete a task (such as completing an order form), the skills applied are still reading skills and still numeracy skills. One would expect an interaction between these skills. This possibility was tested by comparing the scores on the academic tests to the scores on the workplace tests to see how they relate.

**G10: Relationships between subtests across the workplace-academic distinction - CAAT to CAMERA:**



**G11: Relationships between subtests across the workplace-academic distinction - CAAT to TOWES:**

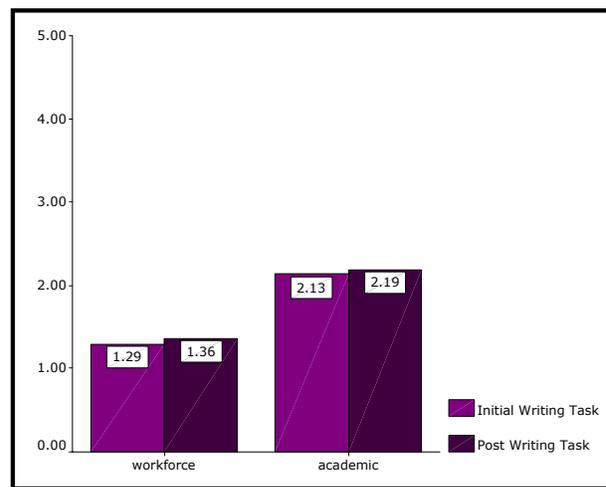
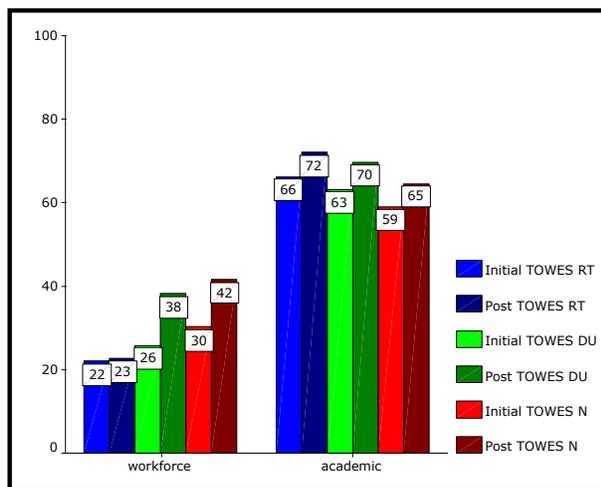
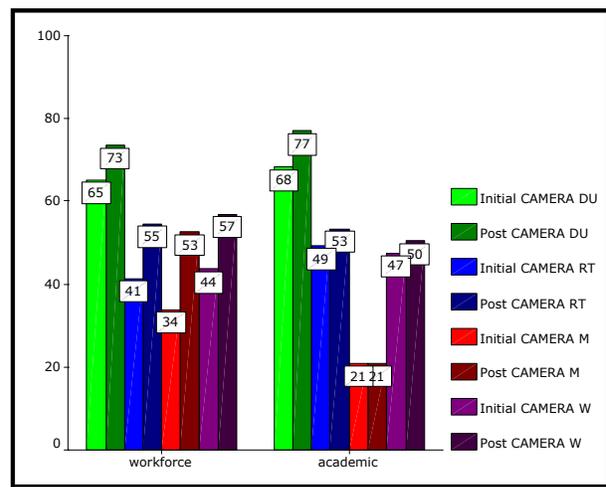
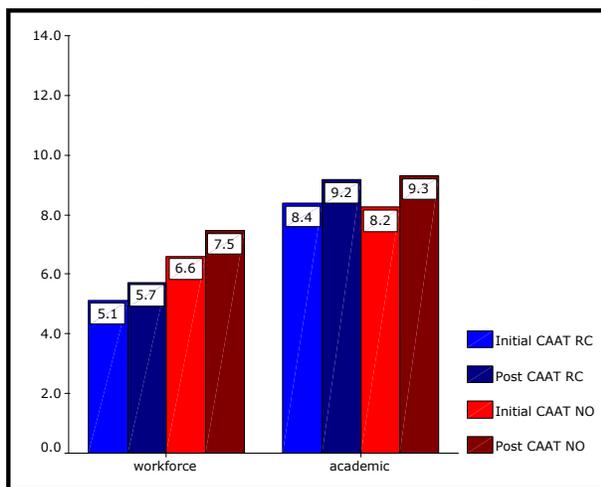
**G12: Relationships between subtests across the workplace-academic distinction - CAMERA to Writing Task:**



We found that the scores on the different tests were related. All of the relationships were significant, but some were more strongly related than others. The CAAT Reading Comprehension subtest scores were positively related to the CAMERA Document Use, Reading Text and TOWES Document Use and Reading Text scores. The CAAT Number Operations subtest scores were positively related to the CAMERA Math scores and only moderately to the TOWES Numeracy scores. Finally, the CAMERA Writing score was positively related to the Writing Task score. These patterns indicate that the tests do not necessarily measure entirely independent skills. It should be noted that the positive relationships, although significant, are not perfect. In general, as scores increase on one assessment, they also increase on the other. This is not always true as can be seen by the spread of the data in the scatterplots.

Since transfer can only be demonstrated by examining the pattern of gains, we needed to look at the gains made on the assessments as well.

**G13: Mean Initial and Post-test scores by Programming Type for the CAAT, CAMERA, TOWES and Writing Task:**



As can be seen, and as was discussed, participants made gains on the different assessments regardless of the type of programming they received. The gains they demonstrated, however, were somewhat limited. For example, writing, according to the writing task, only improved minimally. There were a few sites that demonstrated significant gains, SC and AS3 (see Table 4). Both of these programs had small groups and offered focused programming. Zeigler (1996) reports one of the NEAEP findings was that targeted programs are motivating and may decrease the amount of time it takes to improve skills. It should be noted that the AS3 program also included test-taking skills as the focus was on GED preparation. This component may have had a positive effect on the scores as well. The limited gains observed throughout this data are not unlike the results of other research into program outcomes (e.g., Sheenan-Holt et al., 2000; Brooks et al., 2001; Bos et al., 2002; Beder, 1999).

Although participants did not show significant progress on the assessments used, this does not mean that programming was ineffective. Some questions to consider in discussing this issue are: How much are participant scores in adult upgrading programs expected to increase after 20 weeks of programming? Are there other ways in which programming success may be demonstrated?

Although there is no definitive answer for the first question, it is worth considering in relation to each of the programs to determine whether the programming was effective.

In regards to the second question, as was discussed in the background of the report, there are numerous outcomes that can be tested when evaluating the effectiveness of programming. Gains on assessments is only one variable that can be tested, other outcomes such as changes in self-esteem have been demonstrated to be positively affected by participation in adult literacy programming (e.g., Malicky & Norman, 1996; Bossort et al., 1994; Beder, 1999). Measuring gains after participation in adult literacy programming should take a more holistic view of impacts when evaluating program effectiveness. Zeigler (1996) reports that good results-based evaluations include measurements of objectives like changes in beliefs or attitudes as well as measurement of literacy gains.

## **Objective 1: Conclusions**

1. There is evidence that learning from workforce-focused programming can be applied to academic tests; and that learning from academic-focused programming can be applied to workplace tests. The evidence is somewhat limited.
2. Gains were demonstrated on all assessments regardless of type of programming. Although the extent of the gains demonstrated may be considered limited, gains were demonstrated nonetheless.

## Objective 2

The data collected to answer the second question revealed that there is a relationship between the scores achieved and participants' self-perception, attitudes and participation in activities in everyday life. Through the study, only a few relationships were found to be significant. That said, it still lends some support to the idea that participants have a good sense of where their skills and abilities lie, and more importantly, that achievement on tests is not entirely unrelated to the lives of learners.

Since the number of cases used to answer the second research question was significantly higher and not split into programming groups, these results can be generalized. As well, since the sample of participants that participated in the study is similar to the participants in the literacy programs in general (at least at EC), then these results can be generalized beyond the actual participants in the research.

This information can be used by educators to develop programming that suits participants' perception of their skills and abilities. Participants that see how their learning is related to their lives are more likely to be motivated. Having additional information about how outcomes that are easily measured, such as test scores, relate to the lives of learners outside the classroom can help educators better address their needs.

## Objective 2: Conclusions

1. There is a significant relationship between scores achieved on different tests and participants' self-perception of their ability to use a map and figure out discounts, sales tax and tips.
2. There is a significant relationship between scores and participation in activities in everyday life, specifically the frequency of reading newspapers.
3. There is no relationship between scores and the number of visits to the public library and participants' self-perception of their ability to read bills.

*Overall the study contributes to the understanding of transfer as can be measured by tests. It also contributes to the understanding of the relationship between gains and type of programming. Further, it contributes to the research into test scores in relation to participant self-perception, attitudes and participation in activities in everyday life. Questioning and examining program features, measuring and evaluating outcomes and learning about the learners in our classes will undoubtedly help us develop better, more effective, programming.*

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# Appendix A

Literacy in Everyday Life Survey

Name: \_\_\_\_\_

Phone Number: (\_\_\_\_) \_\_\_\_\_

Gender:  Male  Female Year of Birth: \_\_\_\_\_

What are your plans after you finish this program:  Employment  Further education  
 Other (specify): \_\_\_\_\_

**What is the highest grade level you completed?**

Grade: \_\_\_\_ →  In Canada  
 Other (specify): \_\_\_\_\_

**Did you have any training after high school?**

No  Yes → College  Attended  Graduated  
University  Attended  Graduated  
Private business or technical school  Attended  Graduated  
Apprenticeship program  Attended  Graduated

**Were you born in Canada?**

Yes  No → Where were you born? \_\_\_\_\_  
How old were you when you immigrated? \_\_\_\_\_

Is your first language English?  Yes  No → What is it? \_\_\_\_\_

Approximately, what was your income last year: \$ \_\_\_\_\_

**Which of the following are part of your household (check all that apply):**

Spouse/partner  Children under 18 years old → How many? \_\_\_\_\_  
 Parents  Other relatives, for example grandparents  
 Anyone else (specify): \_\_\_\_\_

Most of the time, can you find a quiet space to study when you need to?  Yes  No

---

**1. Do you have a television at home?**

No  Yes

↓  
a. Which types of shows do you watch regularly (check all that apply):  
 comedy series  documentaries  dramas  game shows  movies  
 news and current affairs  soap operas  sports  talk shows

b. How much time do you usually spend each day watching television or videos?  
 less than 1 hour  1-2 hours each day  3-5 hours each day  more than 5 hours

↓

**2. Do you have any school age children?**

No  Yes

a. How often do you:

	Daily	Weekly	Monthly	Several times a year	Never
a) read to your child/children?	<input type="checkbox"/>				
b) talk to your child's teacher(s)?	<input type="checkbox"/>				
c) volunteer at your child's school?	<input type="checkbox"/>				
d) volunteer for your child's sports or recreation team?	<input type="checkbox"/>				
e) attend meetings at the school?	<input type="checkbox"/>				
f) help with your child's homework?	<input type="checkbox"/>				

**3. Over the past 12 months, how many times have you visited a public library for yourself, or with your children?**

never  1-3 times  4-8 times  9-12 times  more than 12 times

a. What do you do at the public library (check all that apply):

- attend programs for families
- borrow books for your children
- borrow books for yourself
- use computers/internet
- use reference materials (car buying guides, encyclopedias etc...)

**4. Do you have a computer at home?**

No  Yes

Can you email or use the Internet at home?  Yes  No

Is there somewhere else you can get access to a computer most days (other than work or school), if you needed to?  Yes  No

Where? \_\_\_\_\_

**5. Outside of school and work, how often do you use a computer for:**

	Daily	Weekly	Monthly	Several times a year	Never
a) games	<input type="checkbox"/>				
b) email	<input type="checkbox"/>				
c) Internet	<input type="checkbox"/>				
d) other things like writing letters or keeping budgets	<input type="checkbox"/>				

**6. During the last 12 months, how often have you done the following outside of school and work:**

	Daily	Weekly	Monthly	Several times a year	Never
a) read newspapers	<input type="checkbox"/>				
b) read magazines	<input type="checkbox"/>				
c) read advertising "flyers" for supermarkets or other retail outlets	<input type="checkbox"/>				
d) read a book, like a novel or biography, all the way through	<input type="checkbox"/>				
e) followed a recipe in a cookbook	<input type="checkbox"/>				
f) read the instructions on a product label	<input type="checkbox"/>				
g) read story books to your children	<input type="checkbox"/>				
h) read the television guide	<input type="checkbox"/>				

**7. Which newspapers do you read regularly (check all of the ones that apply)?**

- Globe & Mail                       Metro Today                       National Post                       Toronto Star  
 Toronto Sun                       Cultural newspaper                       Other (specify): \_\_\_\_\_

**8. Please tell me whether you strongly agree, agree, disagree, or strongly disagree with the following statements about yourself:**

	Strongly agree	Agree	Disagree	Strongly disagree
a) I am good with numbers and calculations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) If I am dissatisfied with something I bought, I return it or complain.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) I like to read in my free time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) I ask for help when writing letters or e-mail.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) I talk a lot in meetings, asking questions or sharing ideas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) I set budgets for myself or my family.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) I can follow written instructions when assembling furniture, toys etc...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**9. How often, if at all, do you find it difficult to:**

	Always difficult	Usually difficult	Sometimes difficult	Almost never difficult
a) read instructions on prescriptions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) read bills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) figure out discounts, sales tax, or tips	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) write notes to keep track of information or appointments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) fill out forms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) use a map to figure out how to get to a new place	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**10.I regularly participate in (check all that apply):**

- a church or other religious group                       a cultural or hobby group (for example: a theatre group)  
 a neighbourhood group (for example: tenants association)                       a political organization  
 a school group (for example: home and school)                       a sports team  
 other (specify): \_\_\_\_\_

**11.I regularly volunteer my time to help out with (check all that apply):**

- a church or other religious group                       a cultural or hobby group (for example: a theatre group)  
 a neighbourhood group (for example: tenants association)                       a political organization  
 a school group (for example: home and school)                       a sports team  
 other (specify): \_\_\_\_\_

# Appendix B

## Work Experience Survey

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**A. If you have never worked, please check off this box**

**B. If you are currently working, please answer the following questions:**

1. Where do you work?  
 bus, taxi or trucking company     construction site     electrician/plumber etc...     factory  
 hospital/nursing home     office     retail store     school     warehouse  
 other (Please specify): \_\_\_\_\_
2. What is your job? (Please be specific, for example, taxi driver, laborer in a warehouse, cafeteria worker in a hospital)  
Your job \_\_\_\_\_
3. Do you work full-time or part-time (less than 30 hours a week)?     full-time     part-time
4. How long have you been with this company or organization?  
 less than a year     1-2 years     3-4 years     5 or more years
5. What language do you usually speak with your co-workers?  
 English     Other (please specify): \_\_\_\_\_
6. What language do you usually speak with your supervisor?  
 English     Other (please specify): \_\_\_\_\_
7. During the past 16 months, how many months were you working full-time?  
 Less than 1 month     1-5 months     6-12 months     more than 13 months

**C. If you are NOT working, but have worked before, please answer the following questions about your last job:**

1. Where did you work?  
 bus, taxi or trucking company     construction site     electrician/plumber etc...     factory  
 hospital/nursing home     office     retail store     school     warehouse  
 other (Please specify): \_\_\_\_\_
2. What was your job? (Please be specific, for example, taxi driver, laborer in a warehouse, cafeteria worker in a hospital)  
Your job \_\_\_\_\_
3. Did you work full-time or part-time (less than 30 hours a week)?     full-time     part-time
4. How long had you been with this company or organization?  
 less than a year     1-2 years     3-4 years     5 or more years
5. What language did you usually speak with your co-workers?  
 English     Other (please specify): \_\_\_\_\_
6. What language did you usually speak with your supervisor?  
 English     Other (please specify): \_\_\_\_\_
7. During the past 16 months, how many months were you working full-time?  
 Less than 1 month     1-5 months     6-12 months     more than 13 months