



# LITERACY IN BERMUDA

A Study of Adult Literacy and Life-Skills in Bermuda



Bermuda Government  
Department of Statistics  
March 2006



2003 Adult Literacy & Life-Skills Survey

## Literacy In Bermuda

A Study of Adult Literacy and Life-Skills in Bermuda



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## Foreword

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In order for a building to stand strong its foundation must be stronger. Similarly, the underpinning strength of a country stems directly from its foundation – a highly literate and skilled people who actively work together to encourage continuous learning for everyone.

“We’re All in This Together” hailed as the promotional theme for the conduct of the 2003 Adult Literacy & Life Skills Survey (ALL). This was very much evidenced in the results of the survey that showed direct relationships between literacy levels across the adult population of Bermuda and the varying social and economic conditions that shape individuals.

The launch of the 2003 ALL study represents a milestone in the history of administering household surveys in Bermuda. This was a first-time endeavour to measure the literacy levels of the adult population 16-65 years. It was indeed a learning experience for Bermuda to participate in an international initiative along with such large countries like Canada, Norway, Switzerland, Italy, the United States and the Mexican State of Nuevo Leon.

Mr. Cordell Riley, an independent consultant and former Research Statistician was hired to review the literacy results and write an analysis of the survey findings. The Department gratefully acknowledges the continued interest and level of commitment Mr. Riley displayed to ensure a timely delivery of this report. The analysis looks at literacy proficiency as it relates to employment, training, education level, health status, and involvement in community activities amongst the adult population in Bermuda.

Additionally, I am most thankful for the diligence and persistence shown by the interviewers who endured to the end to collect the data required. Also, appreciation is extended to the households that willingly gave a minimum of two hours of their time to provide the information. As a result, Bermuda was able to obtain the highest response rate of 82% compared to all other countries that participated.

Last but not least, I salute the staff of the Department of Statistics who willingly synergized to develop creative ideas and solutions when challenges arose during the conduct of the survey. In particular, the ALL study team which comprised Mr. Crispin Boney, Research Statistician, Mr. Desmond Trott, Census & Survey Officer, Mr. Victor Garcia and Ms. Marion Ezedinma, Survey Officers, Mr. Andrew Simpson, Statistical Officer I and Ms. Penny Grant, Survey Clerk. Special mention is noted of Ms. Kristine Davis and Ms. Jeanna-Dawn Trott who were hired as a temporary Survey Clerks and proved to be a valuable asset to the team. These Officers provided sterling technical support and functioned as the backbone to the overall success of the Survey.

Valerie Robinson-James  
Chief Statistician  
January 2006

## Highlights

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- Bermuda ranked third among the six reporting countries in the survey, with a combined literacy score of 278. In terms of ranking within the individual domains, Bermuda ranked first with Norway in prose literacy, second with Canada in document literacy and fourth in both numeracy and problem-solving.
- In Bermuda, persons between the ages of 26–35 had the highest level of literacy proficiency.
- Females out-performed males in problem solving (276 to 269) and prose (294 to 286).
- Males performed better than females in numeracy (276 to 264).
- Educational attainment is highly correlated with literacy proficiency.
- Persons born outside of Bermuda performed better across all skill sets than those born in Bermuda.
- There was no statistical difference between blacks and whites in skill sets with the exception of problem solving where whites performed better.
- Persons employed with a job had the highest literacy scores.
- Persons who earned \$100,000 or more generally, but not always, performed better than those who earned less.
- Persons who received training and education in the preceding 12 months of the survey performed significantly better than those who did not.
- Having a positive outlook on life was highly correlated with literacy scores.
- Persons who have a keen interest in reading had higher literacy scores across all skill sets.
- Respondents with computers and access to the internet at home performed at a higher level than those who did not.

### Persons ‘At Risk’

- The proportion of adults ‘at risk’ was 38% in prose literacy, 46% in document literacy and 54% in numeracy. The problem solving domain was not used to classify persons ‘at risk’ because of its greater complexity as a skill domain.
- Thirty-two per cent of the adults tested performed at Level 1 or 2 in prose, document and numeracy domains.
- One-third of black males aged 16–30 had poor literacy and life skills competence.
- Ninety-one per cent of all adults who had six or fewer years of schooling were classified as ‘at risk’.
- Persons who are ‘at risk’ were more likely to watch five hours or more of television each day, and were also more likely to report that they did not visit a library within the past year.
- As the level of education for the parents increased, the chance of the child being ‘at risk’ decreased across all domains.
- Persons ‘at risk’ were more likely to read the advice section of the newspaper and were less likely to read the financial section.

## Executive Summary

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The Adult Literacy and Life-Skills Survey (ALL) defined literacy as “having the ability to use printed and written information to function in society, to achieve one’s goals, and to develop one’s knowledge and potential.” The ALL study did not measure the absence of competence but rather the knowledge and skills of the adult population aged 16–65 years across a range of abilities. In other words, the 2003 ALL conceptualised proficiency along a continuum that denotes how well adults use information to function in society and the economy. Consequently, the results cannot be used to classify population groups as either ‘literate’ or ‘illiterate’.

The results of the ALL study are reported along four scales – two literacy scales (prose and document), a single numeracy scale, and a scale capturing problem solving proficiency – with each scale ranging from 0 to 500 points.

Using sophisticated methodology and a mathematical model, the adults who participated in the ALL study were assessed and grouped into one of five levels depending on their scores within the four scales. The following gives a brief summary of the characteristics of these levels.

### Levels 1 and 2 (At Risk Levels)

Persons placed in these groups have weak literacy skills and could only handle the basic tasks of everyday life. Individuals scoring at levels 1 and 2 were considered to be ‘at risk’ as they performed at a standard below what is required to adequately function in society.

Generally adults who performed at Levels 1 or 2 are considered in the “at risk” group. There are adults, however, who despite scoring below Level 3 may function effectively in their chosen professions. These adults may be vulnerable only in the context of job mobility or life situations that demand high literacy ability.

### Level 3 (Adequate Level)

This is the level of most people, where individuals can adequately cope with the task of everyday life and are able to take on new tasks.

### Levels 4 and 5 (Higher Order Levels)

Individuals in these groups have higher order information processing skills.

## Findings

- The percentage of adults in Bermuda who scored at level 3 and above was 62% prose literacy, 54% document literacy, 46% numeracy. The adequate level for problem solving was based on a higher range. Thirty per cent of adults aged 16 to 65 scored at an adequate level or above for problem solving. Individuals scoring at level 3 and above are capable of coping with rapidly changing skill demands of a knowledge-based economy and society. This group was considered to be well educated and their living environment literacy rich.
- The results of the ALL study confirm previously observed gender patterns. Men displayed an advantage in numeracy, while women performed better in prose literacy.

- With the exception of problem solving, there were no significant differences in performance between the black and white races.
- Persons born outside of Bermuda tended to score higher than their local-born counterparts.
- Adults aged 26–35 years out-performed all other age groups in the scales tested. Those adults aged 56–65 performed lower across all scales.
- Not at all surprising, the survey which tested more than 2,600 residents of Bermuda, confirmed a strong association between literacy skills and occupation type. People who worked in jobs that required a high level of skill (professionals, managers, administrators) tended to be highly educated and had high scores in all skill domains. In addition, the survey showed a clear link between high proficiency in prose literacy and education. As the education level for adults increased so did their scores on the prose literacy scale.
- The survey results showed a strong link between the annual income groups above \$43,000 and proficiency across all skill sets. As earnings increased, so did the proficiency scores for each income group. However, the relationship was less clear for adults earning less than \$43,000 annually. With the exception of problem solving, persons earning less than \$30,000 demonstrated stronger literary proficiency than those in the \$30,000 to \$43,000 income range.
- When analysed by physical, mental and social health the survey revealed a trend amongst those who participated in the survey. When good health was reported in all three of these areas, the scores tended to be higher in all skill sets. Conversely, when health was poor in one or more of these areas, scores tended to be lower.
- The 2003 ALL study found that adults who had access to computers and the internet had significantly higher literacy skills than those who did not have access. Also, those adults who used computers and had higher scores were far more likely to have higher incomes.
- Based on the criterion for being in the ‘at risk’ group, 32% of the adults tested performed at Level 1 or 2 in all three domains; prose, document and numeracy domains. This risk group comprised 52% male and 48% female. The problem solving domain was not used to classify persons ‘at risk’.
- In terms of employment status, the largest group of adults with poor literacy and life skills was unemployed.
- Those who belonged to the risk group had a lower frequency with regard to reading books in their spare time than other adults and were less active in community organisations.
- Fewer than 2% of adults failed the core exercise because of reading, writing, learning and languages difficulties. When applied to the total population, this represented about 540 persons who were considered to be ‘at risk’. About three-quarters (75%) of this sub-group were males, aged 46 years and over, half of whom had up to primary education. Over 50% of this group was skilled agricultural and trade workers. Those with language difficulties were mostly foreign-born.

## Chapter I

### Introduction to the Adult Literacy and Life-Skills Survey: Findings for Bermuda

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#### I. Introduction

##### I.1 Why the Adult Literacy and Life-Skills Survey?

In 1994, nine countries took part in the world’s first large-scale International Adult Literacy Survey (IALS) – a comparative assessment of adult literacy. Following the success of the IALS, there were several waves of subsequent literacy surveys conducted from 1995 to 1998 which saw the participation of 15 more countries worldwide.

The IALS study provided previously unavailable information on the distribution of adult literacy skills and gave insight into the cause of these skills for a number of countries. As such, the success of the IALS approach caused several governments to wonder if the methods used in IALS could be adapted to measure a broader array of skills on an international level. This led to a number of international meetings to explore this possibility and thus the foundation was laid for what is now known as the Adult Literacy and Life-Skills Survey (ALL).

In April 2000, at the World Education Forum held in Dakar, Senegal, 182 countries which included Bermuda made a commitment to the ‘Education for All’ movement to achieve a 50% improvement in adult literacy by the year 2015. It was in that same year, on 8 September which was deemed International Literacy Day, that the National Literacy Initiative for Bermuda was formally unveiled under the auspices of the Bermuda National Literacy Charitable Trust.

The Trust identified as its first objective the need to conduct a comprehensive review of adult literacy and life-skills – a first for Bermuda.

As a result, in early 2001, in partnership with Statistics Canada and other participating countries worldwide, Bermuda joined the international initiative and officially became involved in the literacy survey which was being steered by the Organisation for Economic Co-operation and Development (OECD).

##### I.2 What is Literacy Proficiency?

While most countries have rates of literacy published in world tables, prior to the work of the IALS study, there was little in the form of unifying international standards. Generally speaking, literacy was assumed to mean the ability to read – something that a person could or could not do. However, the society in which we live is complex and the mere ability to read may not be sufficient enough for a person to successfully deal with those complexities. For this reason, the ALL study, which was sponsored by the Paris-based OECD, focused on a definition of literacy that encompassed not only a person’s ability to read, but also their ability to function in society and maintain themselves economically. As a result, the following definition of literacy proficiency for the ALL study applies:

“The ability to understand and employ printed information in daily activities, at home, at work and in the community – to achieve one’s goals, and to develop one’s knowledge and potential.”

### 1.3 What are the literacy domains?

The literacy domains are the skills that were measured in the survey. In the ALL study, four skills were assessed – prose literacy, document literacy, numeracy, and problem solving. These skill sets are further defined below.

- *Prose literacy*: having the knowledge and skills needed to understand and use information from texts, including editorials, news stories, brochures and instruction manuals.
- *Document literacy*: having the knowledge and skills required to locate and use information contained in various formats, including job applications, payroll forms, transportation schedules, maps, tables and charts.
- *Numeracy*: having the knowledge and skills required to effectively manage the mathematical demands of diverse situations.
- *Problem solving*: involves goal-directed thinking and action in situations for which no ordinary procedure is available. The problem solver may have a well defined goal, but does not immediately know how to reach it. This represents a challenge. The understanding of the problem, and its step-by-step transformation, based on planning and reasoning, make up the process of problem solving.

### 1.4 How were the domains measured?

A sophisticated methodology was developed for the ALL study and applied to measure literacy proficiency for each skill on a scale ranging from 0 to 500 points. This was the same methodology employed by the IALS study. For ease of illustration, imagine the tasks in the assessment arranged along their respective scale, based on how difficult they may be for adults to complete and the level of proficiency needed to correctly finish each task. A mathematical model was used for estimating the probability that a person will respond correctly to a given task from a specified pool of tasks.

The scale value assigned to each item results from how representative samples of adults in participating countries perform on each item. The scale value is based on the theory that someone at a given point on the scale is equally proficient in all tasks at that point on the scale. In short, literacy ability in each domain was expressed by a score, defined as the point at which a person has an 80 per cent chance of successful performance among the set of tasks of varying difficulty included in the assessment.

Five levels of literacy that correspond to measured ranges of scores are used in the report for analytical purposes.

- *Level 1* indicates persons with very poor skills, where the individual may, for example, be unable to determine the correct dose of medicine to give a child from information printed on the package. (For the prose, document and numeracy domains, this score was 225 or less and for problem solving, 250 or less.)
- *Level 2* respondents can deal only with material that is simple, clearly laid out, and in which the tasks involved are not too complex. It denotes a weak level of skill, but more hidden than Level 1. It identifies people who can read, but test poorly. They may have developed coping skills to manage everyday literacy demands, but their low level of proficiency makes it difficult for them to face novel

demands, such as learning new job skills. (For the prose, document and numeracy domains, this score was 226–275 and for problem solving, 251–300.)

- *Level 3* is considered a suitable minimum for coping with the demands of everyday life and work in a complex, advanced society. It denotes roughly the skill level required for successful secondary school completion and college entry. Like higher levels, it requires the ability to integrate several sources of information and solve more complex problems. (For the prose, document and numeracy domains, this score was 276–325 and for problem solving, 301–350.)
- *Levels 4 and 5* describe respondents who demonstrate command of higher-order information processing skills. (For the prose, document and numeracy domains, this score was 326–500 and for problem solving, 351–500.)

Data were collected through the administering of up to three survey instruments. Respondents were first interviewed with a background questionnaire which asked about certain factors thought to influence a person's skill level, which in turn, would have a bearing on education, social and health performance. This questionnaire took about 45 minutes. After completion of this administered questionnaire, respondents were given a booklet of six basic tasks to complete. If they successfully completed four or more of these core questions, they were handed a more comprehensive booklet of tasks. The task booklets were randomly assigned to ensure good representation of all 170 tasks being tested. The assessment was not timed which allowed the respondent the opportunity to attempt every task in his or her booklet without feeling rushed.

### 1.5 Sample Size and Response Rate

The target population for Bermuda was residents aged 16 to 65 years. According to the 2000 Census of Population and Housing, this audience represented 43,274 persons, of which 21,017 were male and 22,257 were female. From this population, Bermuda was tasked with obtaining 4,000 completed responses. Persons in correctional facilities were also interviewed but these results were not included with the general population.

Obtaining 4,000 interviews during the course of the survey was challenging. To begin with, Bermuda had completed the field work for the 2000 Census just 12 months before the initial work for the ALL survey began. In March of 2003, the ALL survey commenced in full. One hundred interviews and 27 supervisors were recruited to obtain the 4,000 interviews. Each interviewer was to obtain 40 completed surveys over a 10-week period. However, getting residents to participate in a survey that lasted two hours or more was not only breaking new ground, but was likely to encounter a higher level of resistance compared to other surveys conducted. In the end, this turned out to be true and the survey was extended for several months.

However, during this extended data-gathering period, two major unexpected setbacks were encountered. Firstly, a general election was called in July 2003, with both political candidates and interviewers calling on some of the same households. This led to some householders rejecting the visits of the interviewers. Secondly, on 5 September 2003, the worst hurricane in Bermuda's recent history, Hurricane Fabian, struck the island causing millions of dollars in damage. Householders were, therefore, preoccupied with getting their lives back to normal.

By the end of September, when all interviewing ceased, 2,696<sup>1</sup> interviews were completed. Based on the

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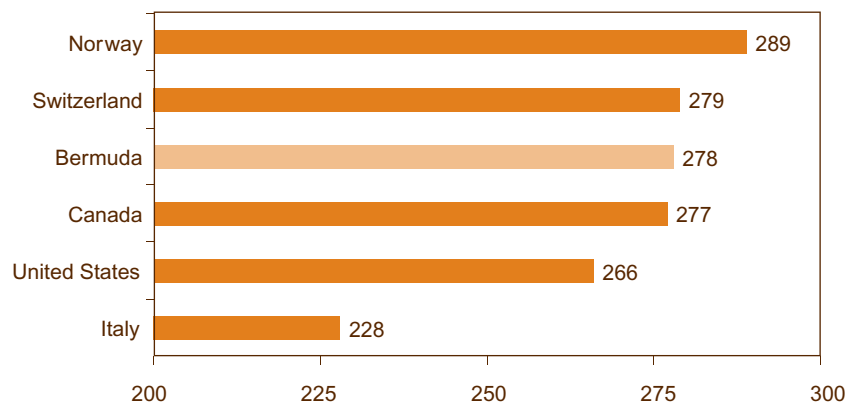
<sup>1</sup>By comparison, the United States completed 3,420 interviews and had a response rate of 66%

number of homes contacted (3,025) and those visited but for which no contact was made (304), the response rate for the survey was 82%, the highest of all the participating countries.

### 1.6 International Comparisons of Adult Literacy

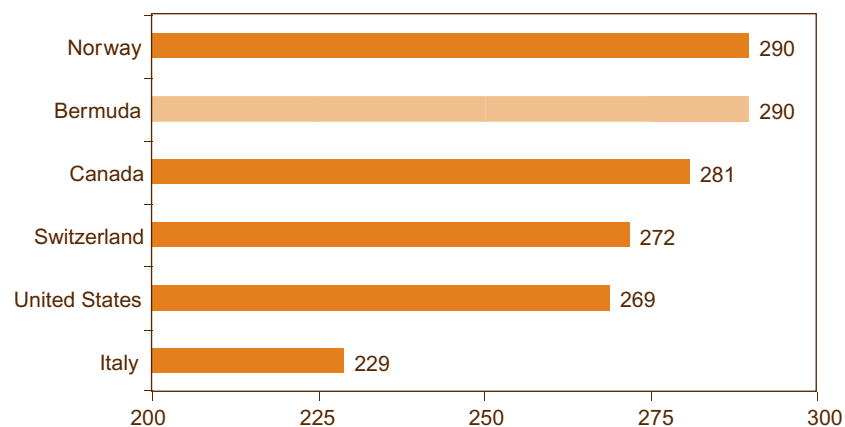
To compare countries generally<sup>2</sup>, scores from the four domains were averaged. Norway ranked top overall with an average score that was significantly higher than other countries. Switzerland, Bermuda, and Canada had overall scores that were statistically the same, but significantly higher when compared to the United States and Italy. The Tables that follow will compare the domains separately.

*Figure 1 Average of Prose, Document, Numeracy and Problem Solving Scores<sup>3</sup> by Country*



With regard to prose literacy, both Bermuda and Norway ranked highest and out-performed all other countries in the survey. Canada’s score was higher than the scores achieved by both Switzerland and the United States, while all countries did better than Italy.

*Figure 2 Prose Scores by Country*

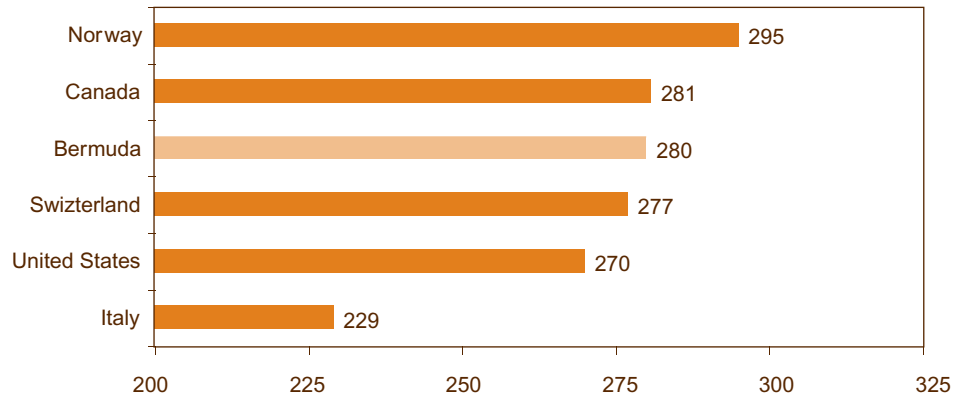


<sup>2</sup> Persons interested in reading the official report on all countries that participated in the ALL study can obtain a free copy at [www.oecd.org/dataoecd/44/7/34867438.pdf](http://www.oecd.org/dataoecd/44/7/34867438.pdf) (333 pages)

<sup>3</sup> The United States did not field the Problem Solving domain and thus its average is based on the remaining three domains.

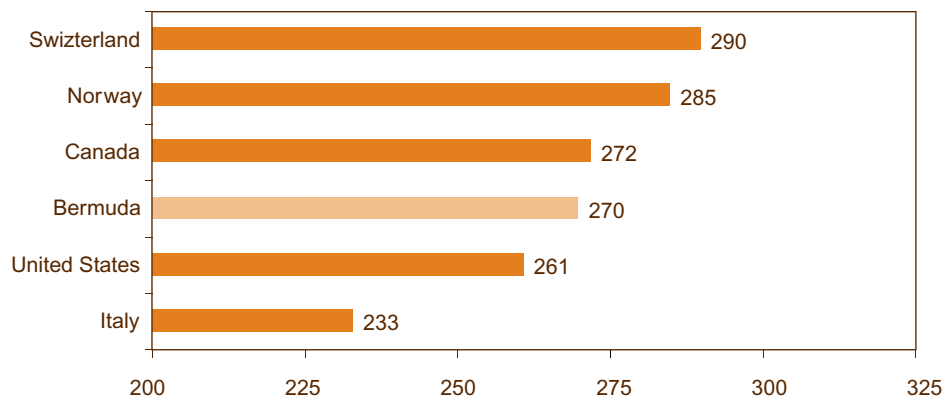
After Norway's top score, Bermuda's, Canada's and Switzerland's scores were essentially the same for document literacy. The United States' score, which followed, was higher than Italy's score, the lowest of all countries.

Figure 3 Document Scores by Country



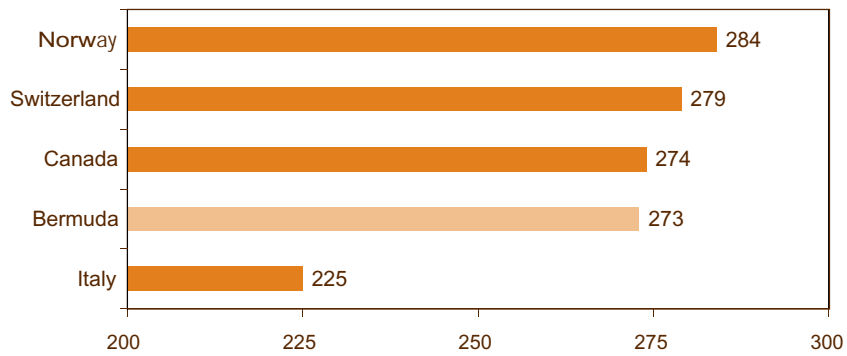
Bermuda ranked fourth in numeracy skills when compared with other participating countries. An average score of 270 points was achieved. Switzerland took the top place when it came to numeracy, scoring 290 points and out-performing all other countries. While Norway did better than the remaining countries, Canada's and Bermuda's scores were essentially the same. However, these two countries scored higher than both the United States and Italy, with the United States doing better than Italy (261 compared to 233).

Figure 4 Numeracy Scores by Country



For problem solving, Norway returned to the top of the table, again scoring better than the remaining countries. Switzerland was next, also significantly out-performing the remaining countries. Canada and Bermuda had similar scores which were significantly higher than Italy's. The United States did not administer the problem solving component of the survey.

Figure 5 Problem Solving Scores by Country



By way of comparing the participating countries' overall ranking, it is worth looking at the United Nations Human Development Report 2005<sup>4</sup>. This report looks at countries' life expectancy at birth, adult literacy rate<sup>5</sup>, enrolment in schools and GDP per capita to produce a Human Development Index. It is of note that of the 177 countries in the study, Norway ranked number 1. Three other countries in the ALL study ranked in the top 10 (Canada 5, Switzerland 7, and the United States, 10). Italy ranked 18. While Bermuda was not included in the report, based on the indicators used, Bermuda would have most certainly placed in the top 10.

<sup>4</sup>For more information, go to [www.un.org](http://www.un.org) and search on the site for the Human Development Report.

<sup>5</sup>Since the UN did not have accurate literacy rates for many countries, the first 17 on the list were given a rate of 99%. Others were given a rate based on available data and through other sources.

## Chapter 2

### Literacy by Demographics in Bermuda

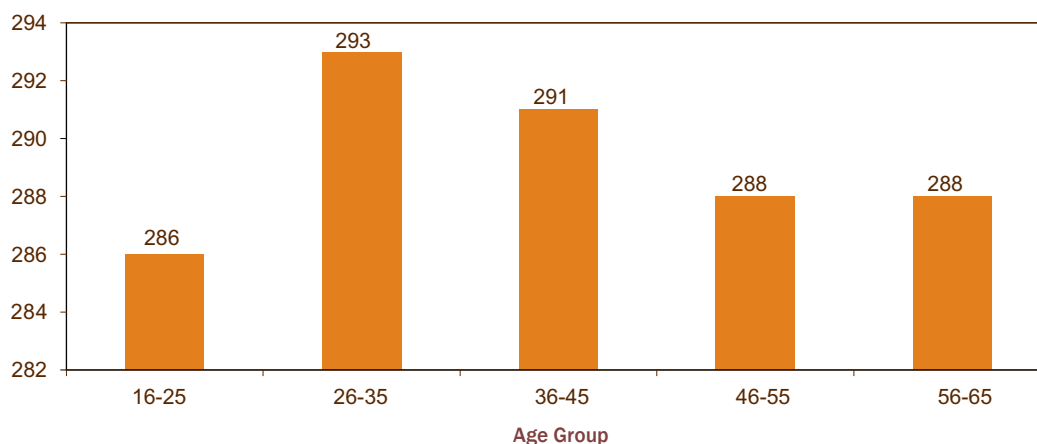
#### 2. Demographic characteristics and literacy proficiency

For the remainder of this report, literacy in Bermuda will be analysed across several areas. This chapter will look at literacy by demographic factors, the first of which is age.

##### 2.1 Age

Those between the ages of 26–35 years had the highest level of literacy proficiency than any of the other age groups in all the skill groups tested. Indeed, the scores for this age group were significantly higher, averaging 293 points. Therefore, the 36–45 year olds, on average, functioned at a level 3 literacy proficiency which deems them to be capable of coping with the demands of everyday life. However, this result has more meaning when analysed by educational level. According to the 2000 Census, nearly half (44%) of those between the ages of 26 and 35 had gone to college or obtained an advanced degree, a figure that is higher than any other age group. The 36–45 age group were runners up in prose, document and numeracy proficiency. With the exception of problem solving, adults aged 16–25 performed lowest across all skill groups. It is of note that for most skill sets, scores declined after the age of 35, primarily due to older person groups leaving school at an early age for economic reasons. (See Figure 6 below for Prose and the Appendix for details on the other skill groups.)

Figure 6 Prose Proficiency by Age Group

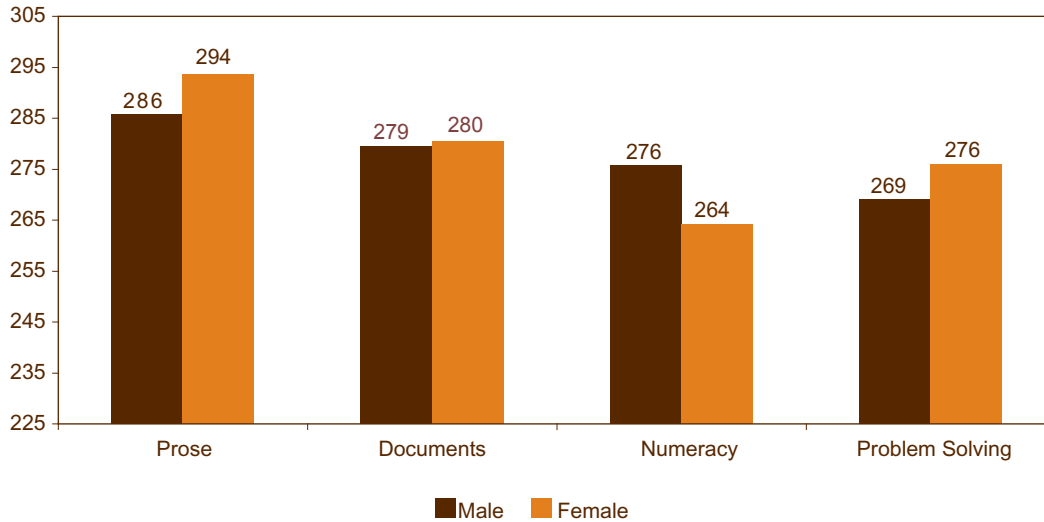


##### 2.2 Gender

In general, females out-performed males in problem solving and prose while males performed better than females in numeracy. The higher scores for females in problem solving are attributable partially to women preparing themselves to take on some of the more challenging jobs in the international business sector. Indeed, in this sector, while women account for 46.5% of all jobs, they hold 52.4% of all management and

professional jobs. In addition, the female labour force participation rate<sup>6</sup> in Bermuda increased from 76% in 1991 to 80% in 2000, one of the highest rates in the world. With regards to document literacy, however, the performance of both males and females was essentially the same.

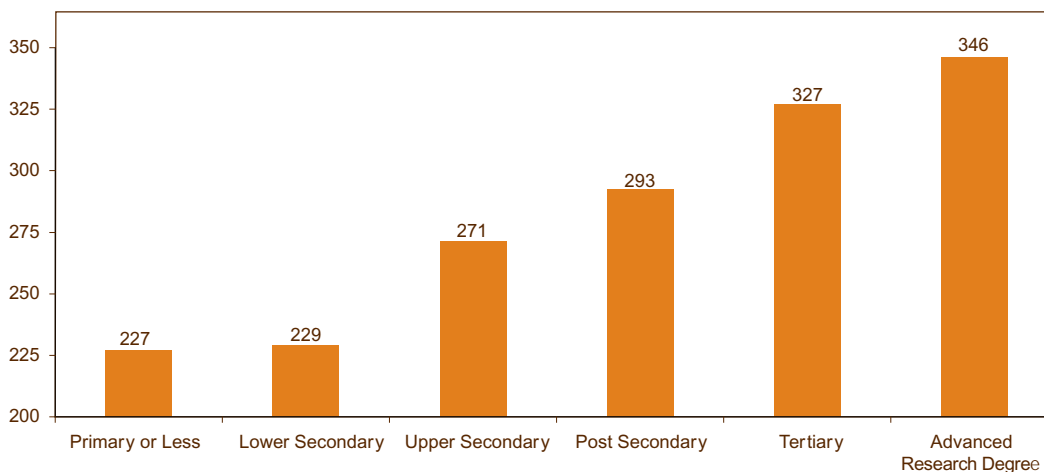
*Figure 7 Skill Proficiency by Gender*



### 2.3 Education

It is usually assumed that the higher the level of education a person has, the better they are able to function in society. The scores show that persons with an advanced research degree, such as a Master's or a Ph.D., out-performed all other educational groups across all skill sets, as did those in the tertiary (professional/technical group). Not at all surprising, those that had a primary school education or lower, did not out-perform any of the other educational groups. (See Figure 8 for prose literacy. The other skill domains can be found in the Appendix.)

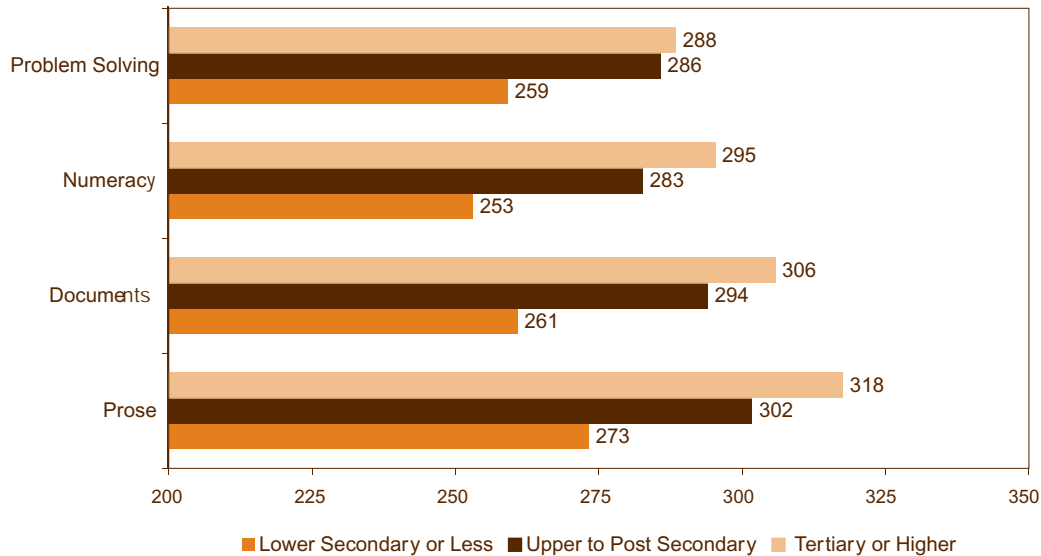
*Figure 8 Prose Proficiency by Educational Attainment*



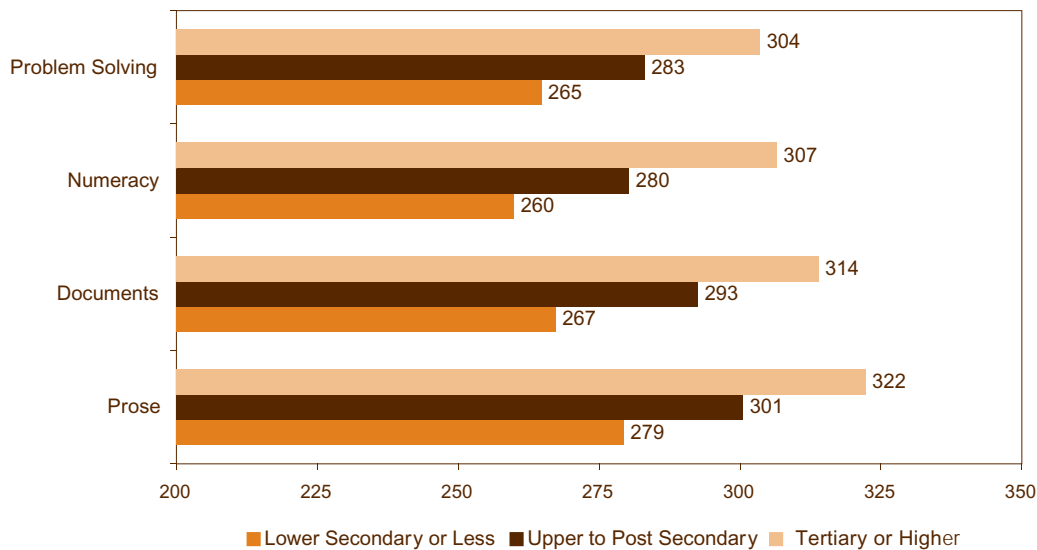
<sup>6</sup>The number of women working expressed as a ratio of the total number of women of working age.

Generally speaking, the higher the level of education obtained by the parents, the higher the literacy scores of the child. For mothers, the differences among educational levels were significant across all skill groups with the exception of problem solving. For the fathers of respondents, those who had a tertiary education or more performed better across all skill sets. In fact, scores were higher at each educational level across all skill sets. It can be deduced that either parents were better able to assist their children than those without the same level of academic qualification, or the child was motivated to achieve to emulate their parents. For more details, see Figures 9 and 10.

*Figure 9 Skill Proficiency by Mother's Educational Attainment*



*Figure 10 Skill Proficiency by Father's Educational Attainment*



## 2.4 Nativity

A comparison of literacy proficiency was made on the basis of whether the respondent was born in Bermuda or not. This is because some 28% (17,675) of all residents were born outside of Bermuda. Of this number, 5,534 or 31% have obtained Bermuda status. Thus, to test literacy skills of those born in Bermuda, and thus who were more likely to have received their earlier education on the island, will give a clearer picture of literacy skills for Bermudians. Based on this, and across all skill groups, those born outside of Bermuda scored better than those born in Bermuda.

However, it is of interest to note that the scores of those who were born outside of Bermuda only had minimal effect on Bermuda's overall score. While in the country ranking, and using the average scores of only those born on the island, Bermuda would have slipped one space to fourth behind Canada (see Figure 12). But in comparing scores by domain, Bermuda would have only changed places with Switzerland in document literacy – for the remaining skill sets its position would have remained unchanged.

*Figure 11 Skill Proficiency by Nativity*

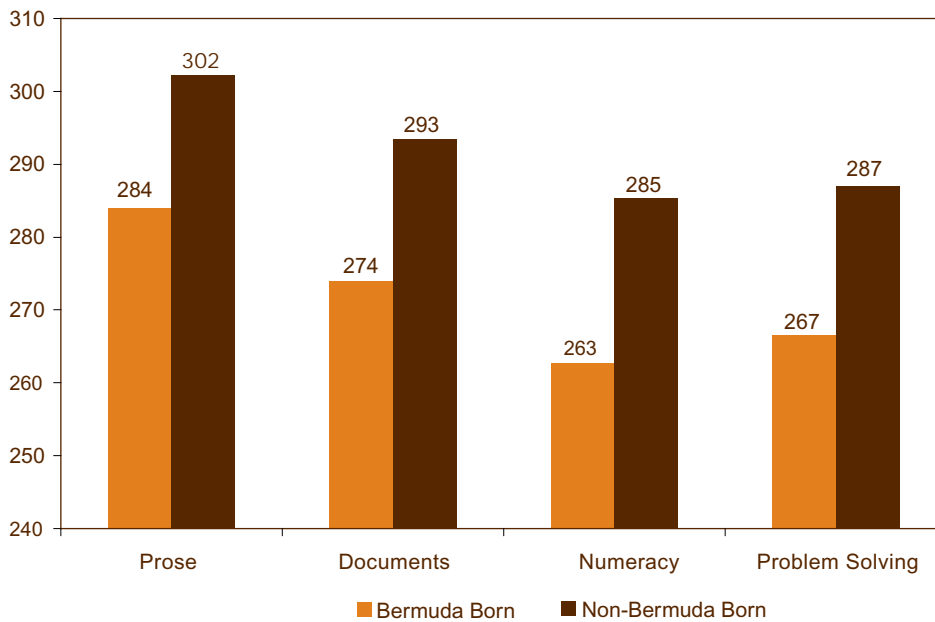
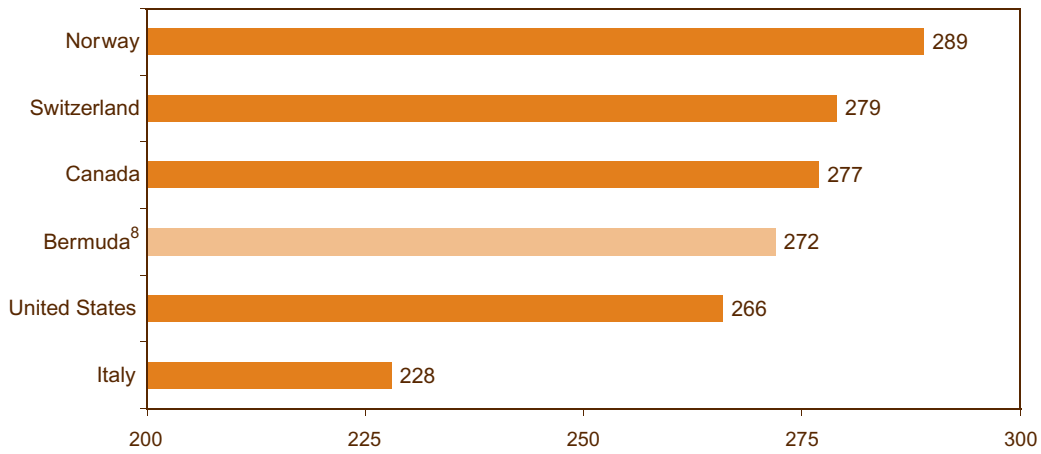


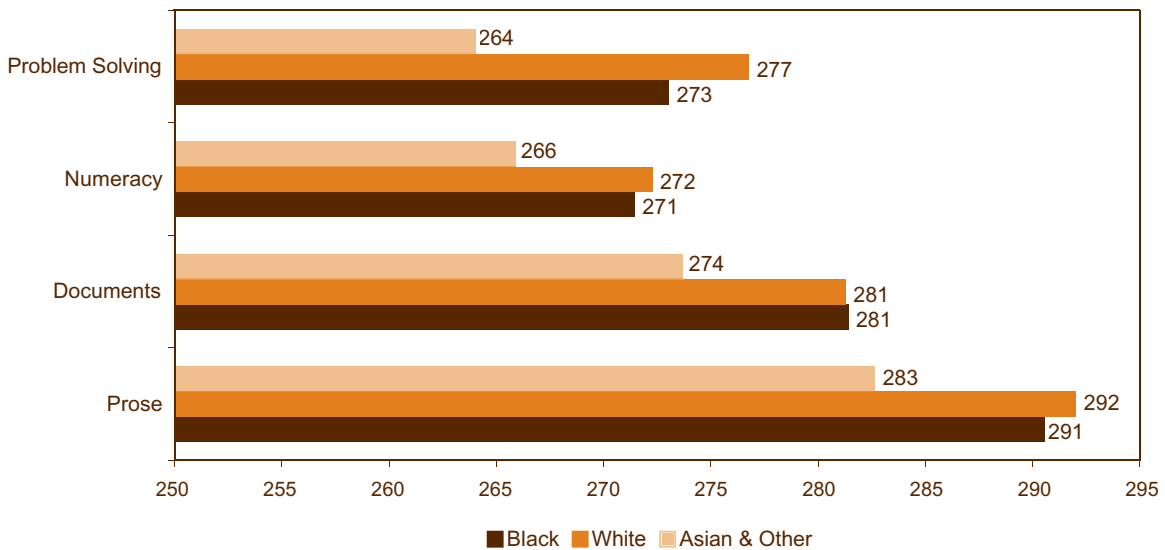
Figure 12 Average of Prose, Document, Numeracy and Problem Solving Scores<sup>7</sup> by Country

2.5 Race



Asians and persons of other races performed lower than blacks and whites across all skill groups. However, this is likely due to the fact that English would have been their second language and the survey was administered in English. There were no statistical differences, however, between the performance of blacks and whites across all skill groups with the exception of problem solving where whites scored higher at 277 points compared to the 273 achieved by blacks.

Figure 13 Skill Proficiency by Race



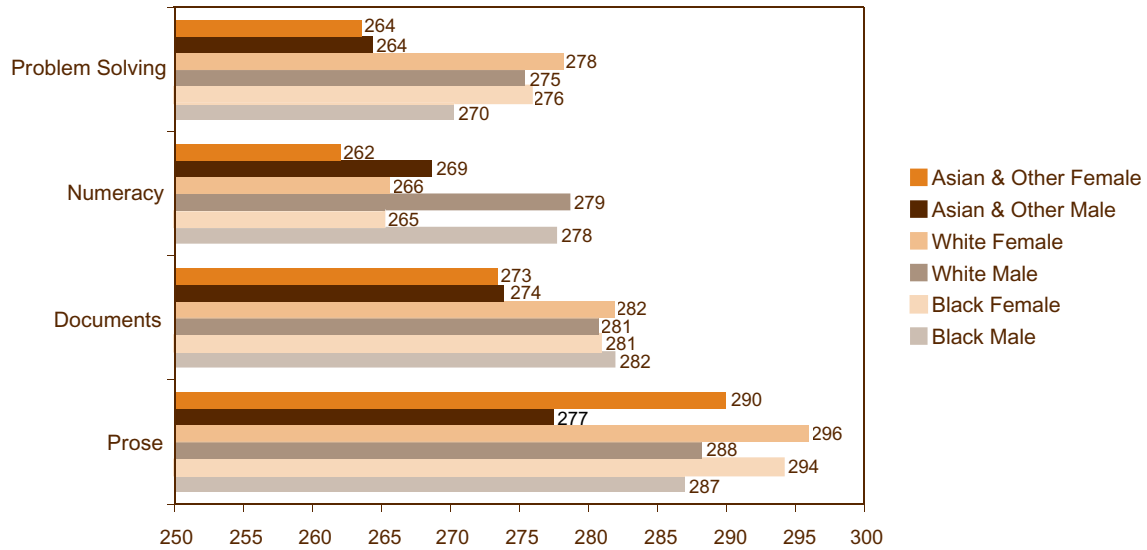
White males, white females, and black females significantly out-performed all other groups in problem solving. In fact, white females scored the highest proficiency level reaching 278 points. In numeracy, both black and white males dominated this domain scoring at a level 3 with 279 and 278 points, respectively. For document literacy, males and females of both races did significantly better than Asians and others. There

<sup>7</sup>The United States did not field the Problem Solving domain and thus its average is based on the remaining three domains.

<sup>8</sup> Represents average scores of persons born in Bermuda only.

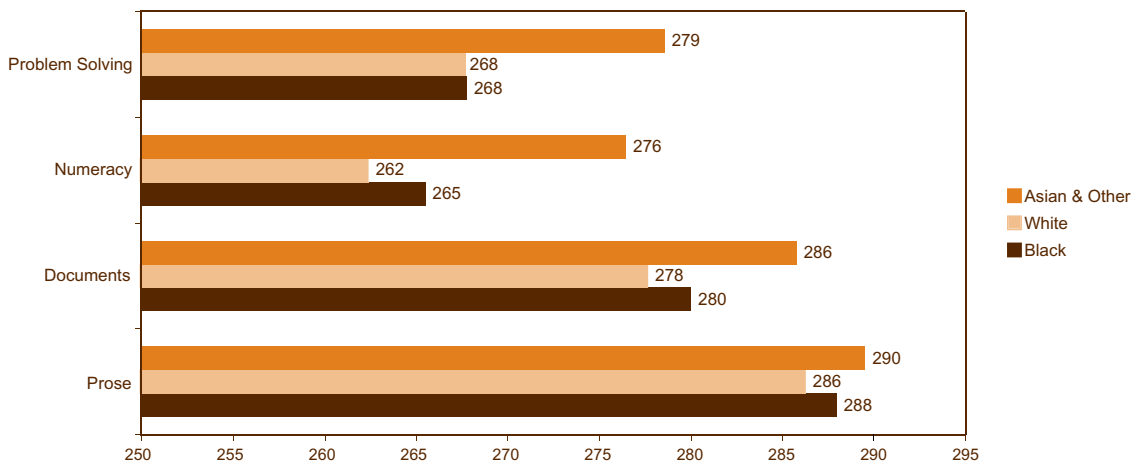
were, however, no significant differences between scores of blacks and whites of either gender for document literacy

Figure 14 Skill Proficiency by Race and Gender



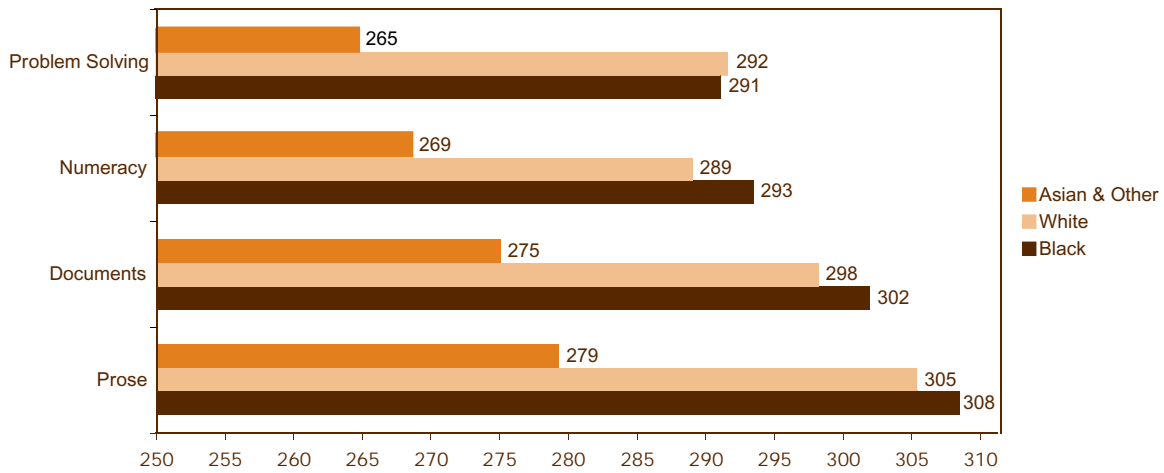
There was a noted difference in literacy proficiency for Asians in the younger 16–25 age group. With the exception of prose, Asians out-performed all other races in all skill group domains by a significant margin. This margin was considerably smaller for prose, where blacks and whites followed Asians closely with scores of 288 and 286, respectively.

Figure 15 Skill Proficiency by the 16–25 Age Group and Race



For the 26–35 age group, blacks and whites had scores that were essentially the same for problem solving. However, blacks did better than whites in numeracy, documents and prose literacy. In contrast, Asians and other races had scores that were consistently lower across all skill groups.

Figure 16 Skill Proficiency by the 26–35 Age Group and Race



In the 36–45 age group, all races performed generally the same for all skill sets with the exception of problem solving. Whites performed higher on problem solving than other races while blacks out-performed Asians and other races. In the 46–55 age group, both Asians and whites scored higher than blacks in problem solving. Asians out-performed blacks and whites in numeracy, while the scores of whites were higher than those of blacks. For document proficiency, Asians had a score that was statistically higher than blacks but essentially the same level when compared to whites. For prose, Asians held the top position and the score for whites was higher than that for blacks. In the highest age bracket, Asians performed statistically lower across all skill groups. Whites, on the other hand, had a numerical advantage over blacks in problem solving. (See figures 56–58 in the Appendix for full details.)

## Chapter 3

### Literacy and the Economy

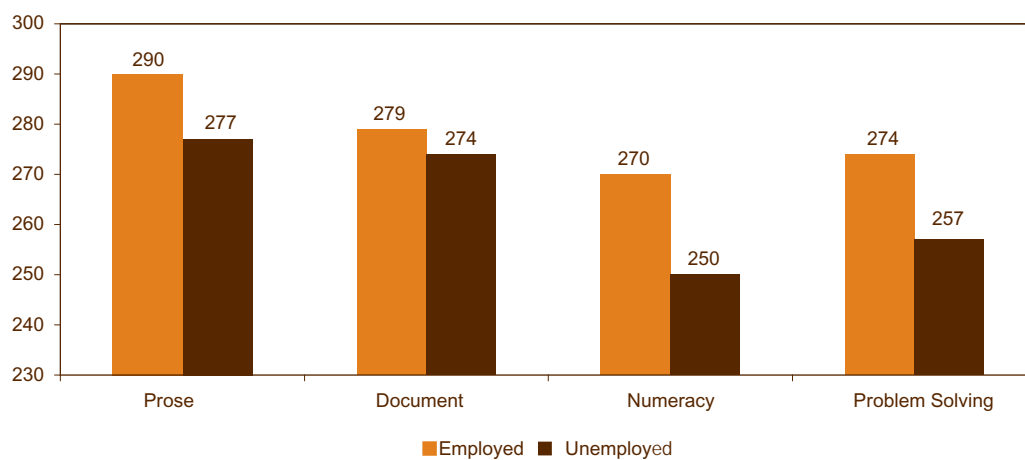
#### 3. Literacy proficiency and economic outcomes

This chapter looks at how literacy proficiency contributes to economic outcomes.

##### 3.1 Employment Status

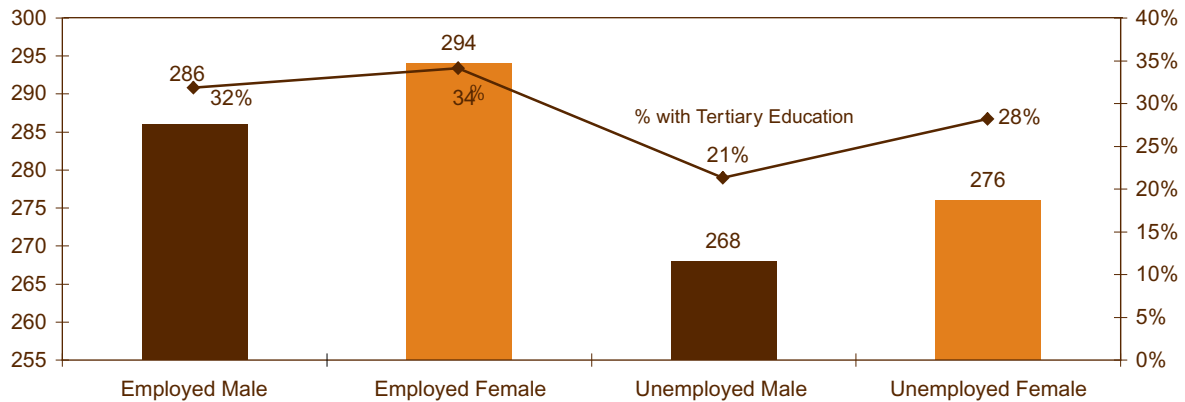
As expected, persons who were employed scored higher on all literacy skill sets than those who were unemployed. The widest gap in literacy proficiency was for the numeracy domain where those who were employed scored 20 points higher than those who were unemployed (270 compared to 250). For the remaining skill sets, the gap was narrower at 5 points for document, 13 points for prose and 17 points for problem solving.

*Figure 17 Literacy Proficiency by Employment Status*



The literacy proficiency for employed females was slightly higher than their male counterparts (294 compared to 286). For those males and females unemployed, there was similar difference between their literacy scores (268 compared to 276). The scores indicated a direct correlation between educational level and employment status. While 34% of females and 32% of males who were employed had tertiary level education (college or higher), just 28% of unemployed females and 21% of males had tertiary level education.

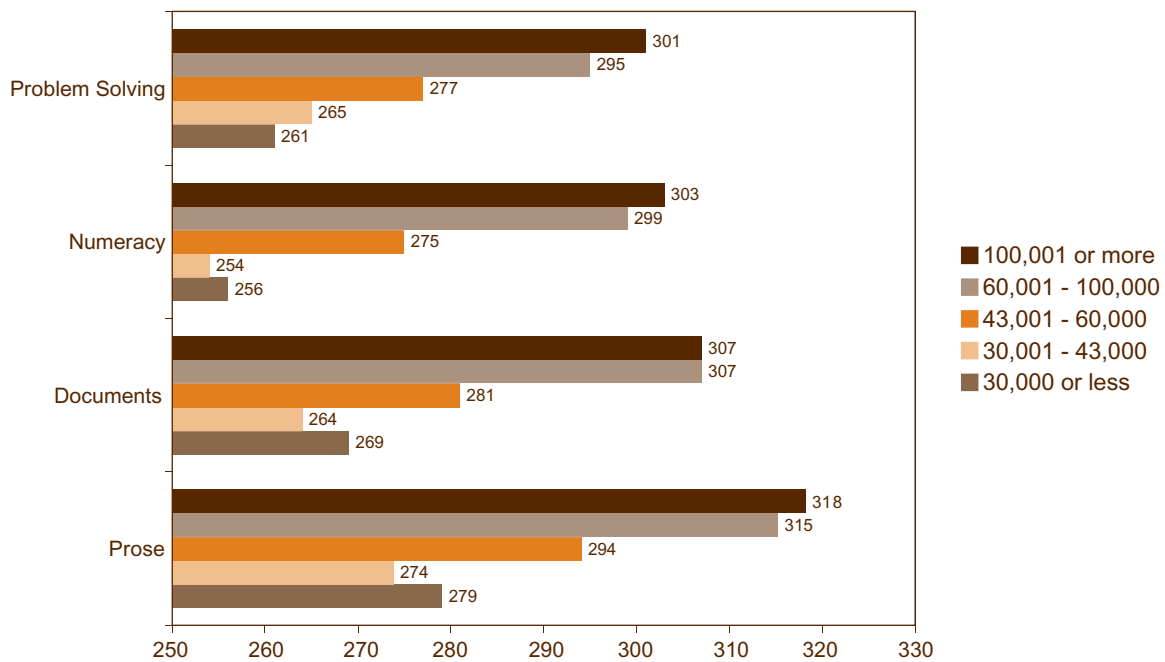
Figure 18 Mean Literacy Score by Employment Status and Sex, and Per cent with Tertiary Education



### 3.2 Income

The literacy proficiency for those earning more than \$100,000 per year was higher than all income groups for each of the literacy domains with the exception of documents. The highest wage earners performed at the same level as the \$60,001 to \$100,000 income group in document literacy scoring 307 points. Notably, those earning \$30,000 or less per year did better than persons earning \$30,001 to \$43,000 in numeracy, documents and prose skills. This could be attributable in part to new entrants in the workforce who would be university graduates and have not climbed the corporate ladder of higher earnings.

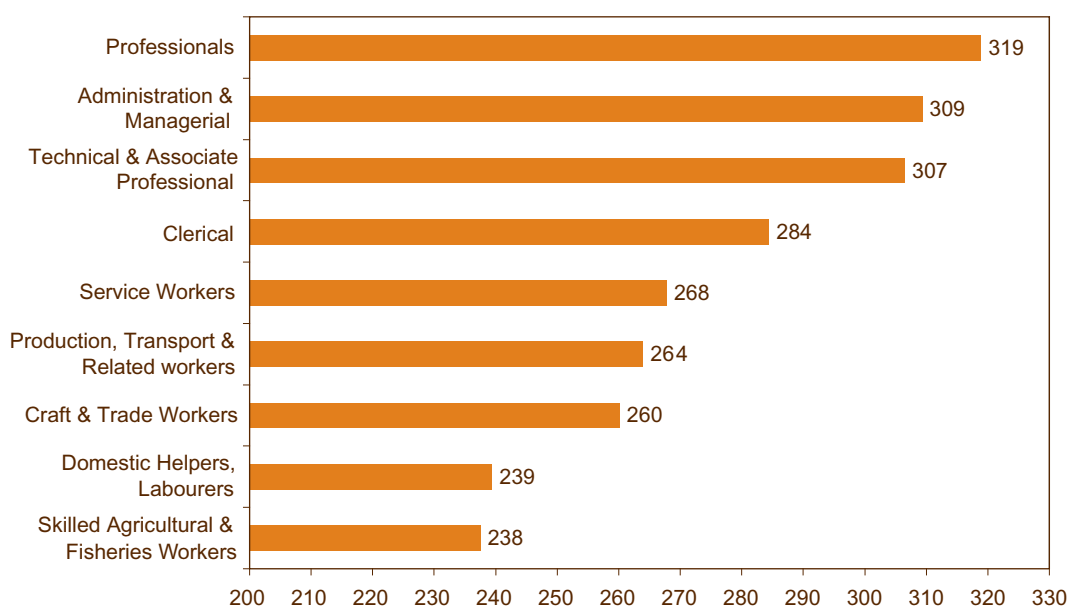
Figure 19 Skill Proficiency by Income Groups



### 3.3 Occupational Group

Persons employed in professional, administrative and managerial, and technical jobs comprised the top three performers across all skill sets. In particular, for prose literacy, professional personnel scored 319 points, persons holding administrative and managerial positions scored 309 points while those employed in technical related occupations followed closely behind reaching 307 points. This reflects a level 3 proficiency performance indicating that these job holders have the ability to cope with the complex demands of the work environment. In contrast, skilled agricultural and fisheries workers performed lower than all other occupational groups. However, these workers would be primarily older male workers whose education may not have exceeded primary level. (See Figure 20 for prose proficiency by occupation group)

Figure 20 Prose Proficiency by Occupational Groups

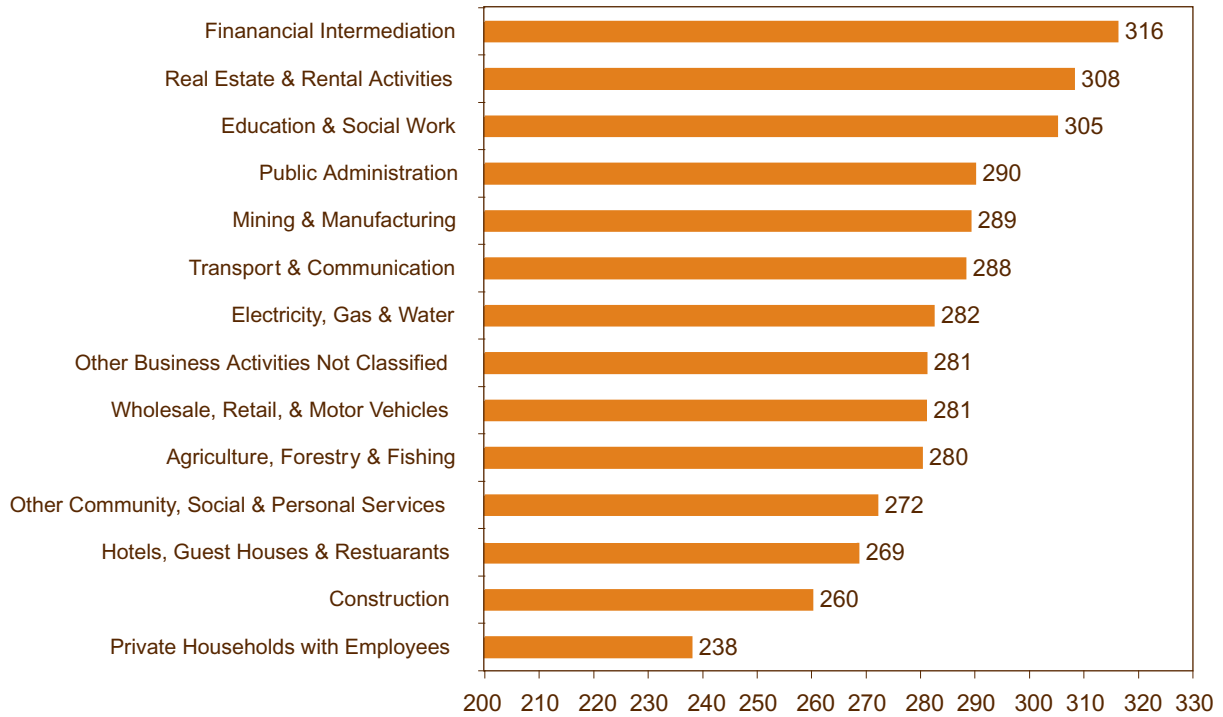


### 3.4 Industrial Classification

While there was great variation in the scores achieved by workers in the various industrial sectors, the positions of the industries by skill level did not vary much. Industries occupying the top three spots across all skill groups were Financial Intermediation<sup>8</sup>, Real Estate and Rental Activities, and Education and Social Work. At the other end of the spectrum, persons working in Hotels and Restaurants, Construction, and in Private Households did not do as well. Their scores ranged from 269 to 238 points which aligns with proficiency level 2 for prose literacy. This means that it may be difficult for some persons in their positions to shift and learn new job skills if needed. Those working in Private Households performed significantly lower than workers in other industry categories. (See Figure 21 for prose proficiency by industrial classification). See figures 59–64 in the Appendix for additional figures showing skill domains by industry.

<sup>8</sup>For ease of comparing Bermuda's scores with those of other countries, industries were classified according to international standards. While Bermuda would have included a separate category for International Business, persons who worked in such industries were largely included in Financial Intermediation for the purposes of the ALL study.

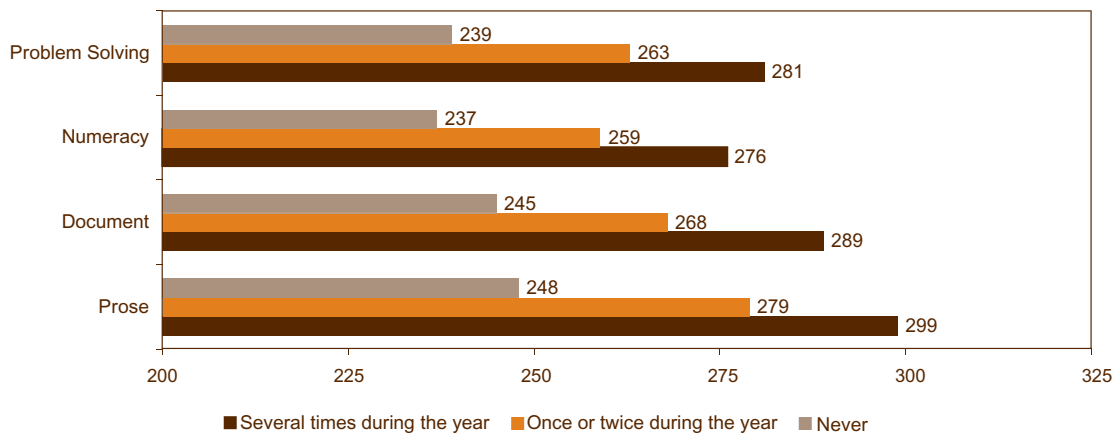
Figure 21 Prose Proficiency by Industrial Classification



### 3.5 Training and Education in the Last Year

Figure 22 illustrates a strong relationship between participation in training and literacy proficiency. Persons who had engaged in some form of training or education in the 12 months preceding the ALL survey outperformed those who did not in each of the skill sets. The gaps in proficiency levels are fairly wide which suggests, although does not prove conclusively, that training and education have an immediate, positive impact on literacy outcomes.

Figure 22 Received Training and Education in the Last Year



## Chapter 4

### Literacy and Social Outcomes

#### 4. Literacy proficiency and social interaction

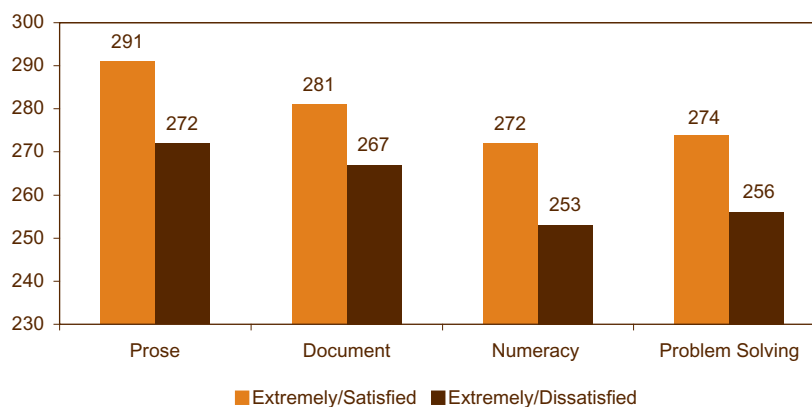
This chapter looks at literacy proficiency and its relationship to health, civic life, reading, and the use of information technology.

##### 4.1 Health Status

Health care professionals have long known, and research has collaborated, that there is a relationship between years of schooling and positive health outcomes (Rudd, Kirsch and Yamamoto 2004). Further research has also shown that persons with lower health knowledge have a lower health status, have a higher usage of healthcare facilities, and thus are more likely to contribute to higher healthcare costs (Weiss 2005). These and other data have led researchers to believe that literacy may well be a contributing factor as to why there are great disparities particularly in the level of healthcare persons receive in some countries, such as in the United States. In addition, it is also known among healthcare professionals that having a positive outlook on life is highly related to good health.

In Figure 23, persons who were either extremely satisfied or satisfied about their lives out-performed those who were dissatisfied or extremely dissatisfied across all four measures of literacy. The gap in scores for each literacy domain indicates that one's ability is greatly enhanced if they have a more positive outlook on life. The highest mean score was recorded for prose (291).

Figure 23 *Level of Satisfaction with Life*



In the international ALL study, Bermuda residents were more inclined than any other participating nation, to rate their health as good or better (77%), compared to 71% for Switzerland and 70% for both Norway and Canada. (See Figure 24 for full details on health ratings by country.)

Figure 24 Per cent of Adults Rating Their Health as Good or Better by Country

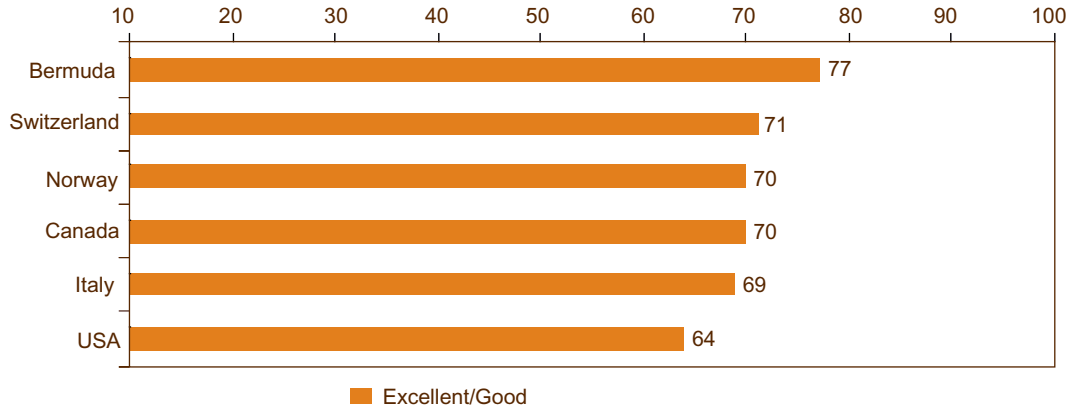
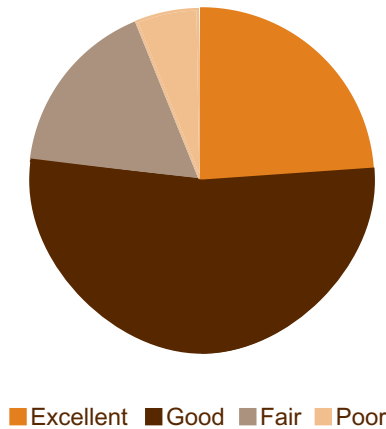


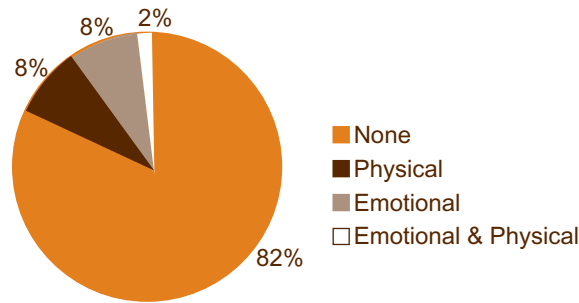
Figure 25 shows the general response categories to the health questions for the ALL survey. Almost one-quarter (24%) of the respondents classified themselves as having excellent health, while just over half (53%) felt that they were in good health. Thus when combined, nearly 8 in 10 (77 %) felt that they were generally in fine health.

Figure 25 Per cent of Adults in Each Health Group, Bermuda



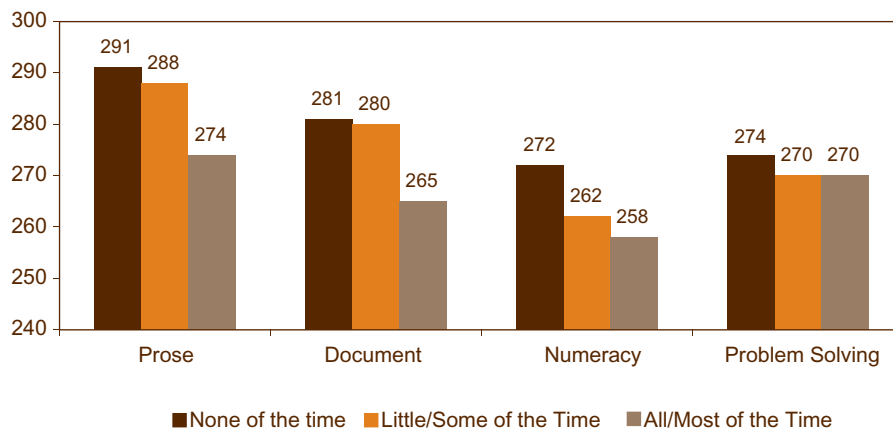
Persons in the ALL survey were asked if they were limited in working in any way. The rationale for this question is that while persons may be in generally good health, they may be limited in some way from working, for instance due to an amputation of a limb. Bermuda fared on top for countries whose population had no work-related limitations, at 82%. The average for all countries in the study was 76%. The figure for Bermuda is indeed consistent with the 82% who stated that they had no health condition in the 2000 Census of Population and Housing. Figure 26 below shows the full results for work limitations.

Figure 26 Type of Work Limitation



Persons who suffer from either physical or emotional health problems on a prolonged basis tend to do less well in life than those who do not. In the ALL study, this view was confirmed. Residents who stated that they suffered from emotional or physical health problems ‘a little’ or ‘none of the time,’ did much better on all literacy scales than did those who suffered from similar health problems ‘all’ or ‘most of the time.’ The largest gap in scores was recorded in document literacy at 24 points (283 for those who suffered little or none of the time to 259 for those who nearly always suffer from such health problems.) Those with no health problems and those who suffered mildly scored the highest on prose literacy (291 compared to 272 for frequent sufferers.) Frequent sufferers performed the lowest on numeracy (256 compared to 272 for low sufferers.)

Figure 27 Literacy Scores and the Degree to Which Persons Suffer from Emotional or Health Problems



#### 4.2 Civic Participation

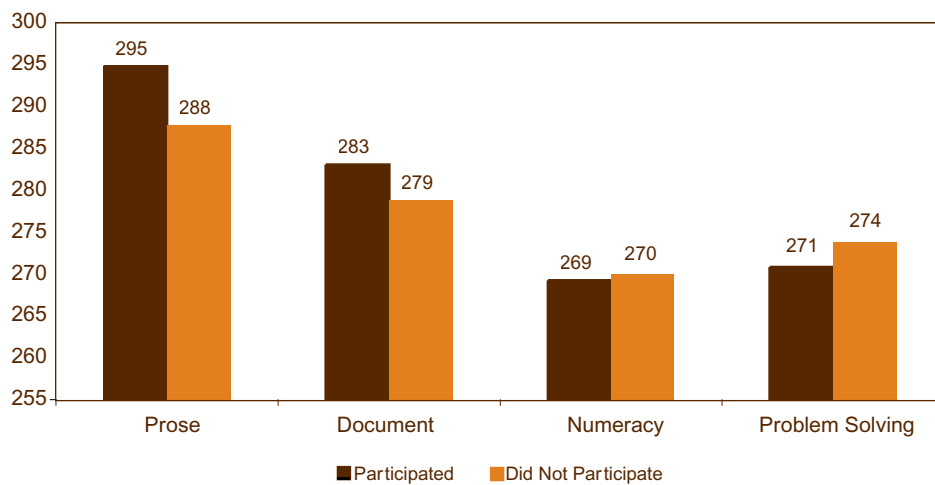
A part of living a well-rounded life involves positive interaction with others. Indeed psychologists have shown, and motivational speakers reinforce that to be really fulfilled in life, people need to be involved in a cause that is much greater than themselves. In the ALL survey, this ‘larger than life’ effect was captured by asking persons if they were involved in various civic activities.

Twelve areas were explored in the ALL study. They were as follows: participating in

1. A political organisation
2. Sports or recreation
3. Cultural or educational activities
4. A service club
5. A school or community group
6. Group worship
7. Other groups or organisations
8. Volunteering as a fundraiser
9. Volunteering as a coach, teacher or counsellor
10. Volunteering to collect food or goods for charity
11. Any other volunteering activity
12. On a board as an unpaid member

In general, literacy scores were higher for the persons who were involved in a civic activity. However, one exception was in religious participation. For this activity, those who stated that they were a part of group worship had scores that were only marginally better and, in some cases, lower than those who did not participate in group worship. For instance in prose and document literacy, persons who were a part of group worship had scores that were somewhat better than non worshipers (295 compared to 288, and 283 and 279, respectively). However for numeracy and problem solving, non worshipers had scores that were comparable to those of worshipers (269 compared to 270, and 271 compared to 274 respectively).

Figure 28 Literacy Scores and Participation in Group Worship



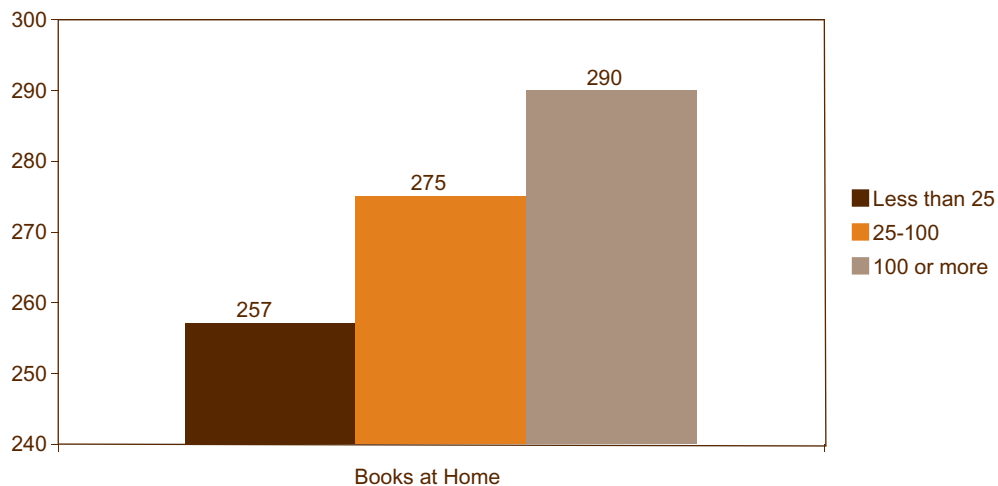
#### 4.3 Reading Activities

While it might be stating the obvious, persons who read more tend to do much better in school and perform better at work. This fact is well known among educators, including those in Bermuda, and a number of schools encourage reading outside of the classroom with a formal programme, such as the 'I Love to Read'

programme at Purvis Primary School. At that school, children, if they are able to read, are encouraged to read at least 25 minutes each day. If they are too young to read, parents are encouraged to read to them. The minutes are tabulated and recorded monthly. In the few years that the programme has been in place, these primary school students have collectively read more than one million minutes.

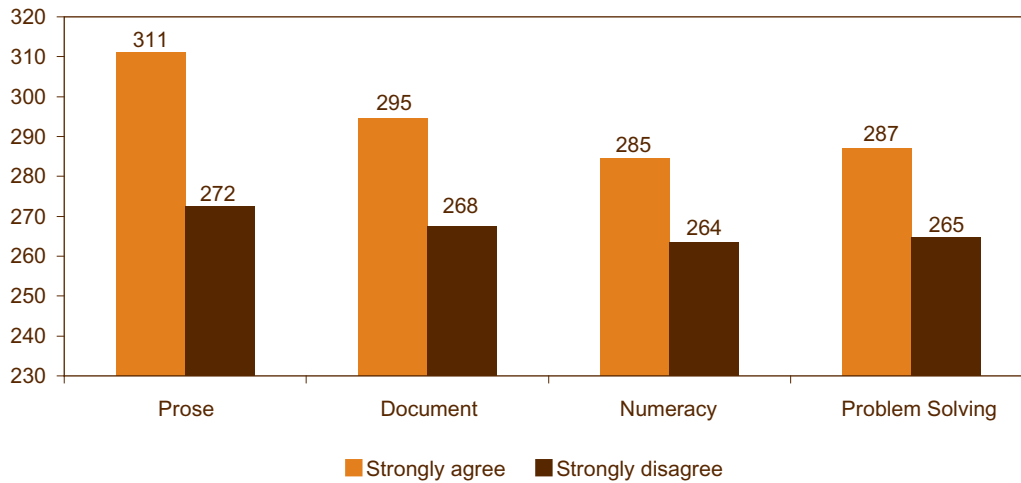
In the ALL survey, reading activities were captured through a variety of questions. In this document, we shall look at some of the main ones. There is an old adage that charity begins at home. Applying this to reading, it likewise should begin at home. In order to read at home, it generally follows, there must be books. In the survey, respondents were asked the number of books they had at home. Using the combined score for all literacy measures, it was found that the more books a person had at home, the higher their literacy score. For persons who had more than 100 books at home their average score was 290 compared to 257 for those who had less than 25 books at home (see Figure 29).

*Figure 29 Combined Literacy Score and Number of Books at Home*



Of course, having books at home is one way of encouraging reading but how interested is a person in reading? Persons who strongly agreed that reading is a favourite activity, out-performed those who strongly disagreed with the statement. Not at all surprising, those who strongly agreed with the statement scored the highest in prose literacy, which measures ability to read passages, than those who strongly disagreed – 311 compared to 272, a gap of 39 points. For document, numeracy and problem solving, the margins were also wide (see Figure 30 below).

Figure 30 Literacy Scores and Reading as a Favourite Activity



An interest in reading is generally maintained by visiting places where books can be found. In the ALL study, persons were asked the frequency of visits to such places as the public library and bookstores. Across all four literacy scales, persons who never visited these places performed much lower than those who did. And those who visited several times a year out-performed those who visited just once or twice a year. For instance in prose, persons who visited the library at least several times a year out-performed those who never visited the library (309 compared to 273, a gap of 36 points). The gaps in literacy levels were even wider for persons that visited bookstores. For prose literacy there was a difference of 51 points (299 compared to 248). (see Figures 31 and 32).

Figure 31 Literacy Scores and Visits to the Public Library

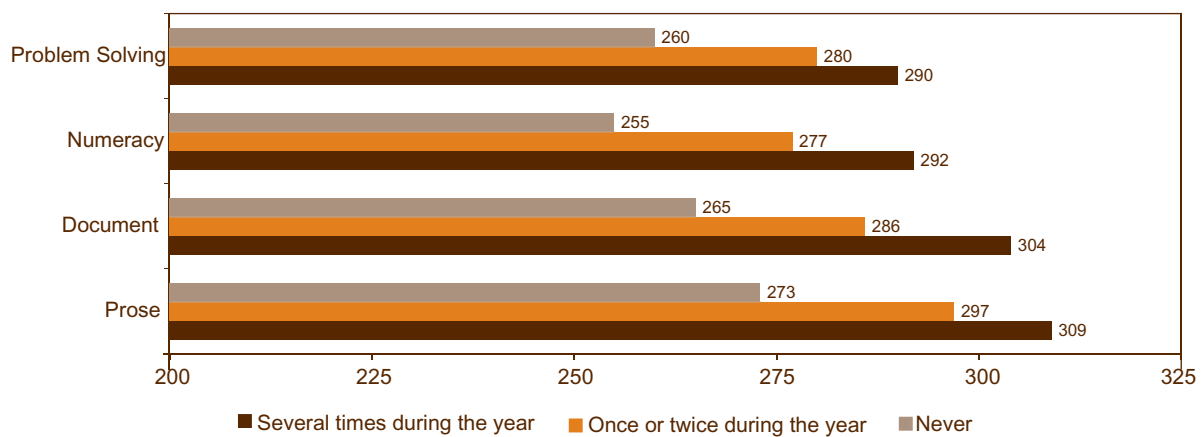
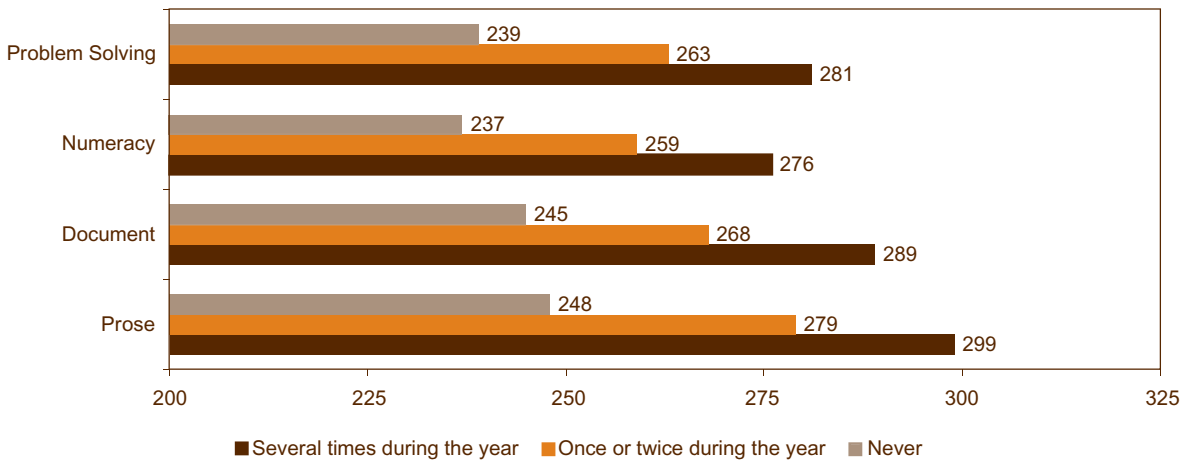


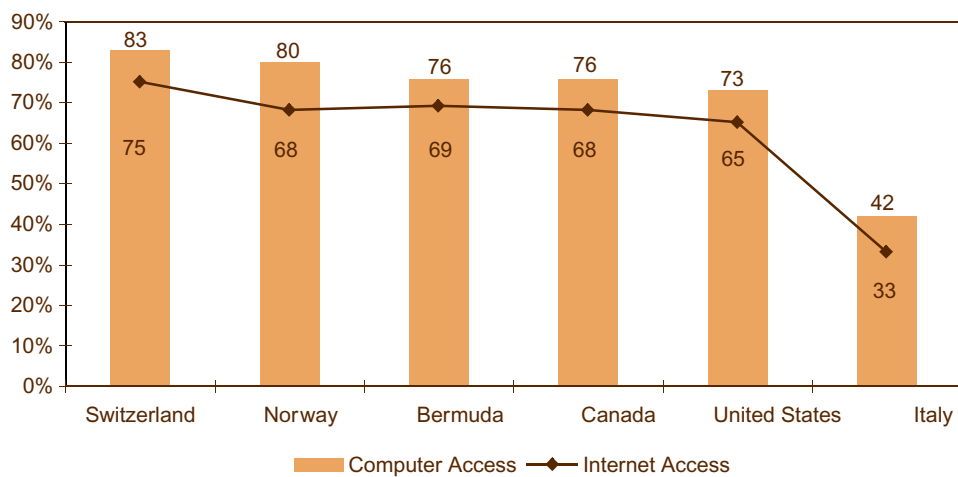
Figure 32 Literacy Scores and Visits to a Bookstore



#### 4.4 Use of Information Communication Technology (ICT)

This section looks at literacy levels and the respondents’ ability to use information communication technology and their familiarity with it. Today, much of technological communication is conducted through a computer with internet access. Persons who do not have access to communication technology or who are unfamiliar with it are at a serious disadvantage since its use is now a part of daily life. Among the countries in the survey, with the exception of Italy, the level of computers at home and access to the internet was quite high with more than 7 in 10 respondents having computers at home and more than 6 in 10 having access to the internet. Switzerland led the way with 83% of persons reporting having a computer at home and 75% with internet access. Bermuda, although third on the list with computer penetration (76%), actually has the second highest internet access rate (69%). For Italy, the corresponding figures were 42% and 33%, respectively. Figure 33 shows the results for all participating countries.

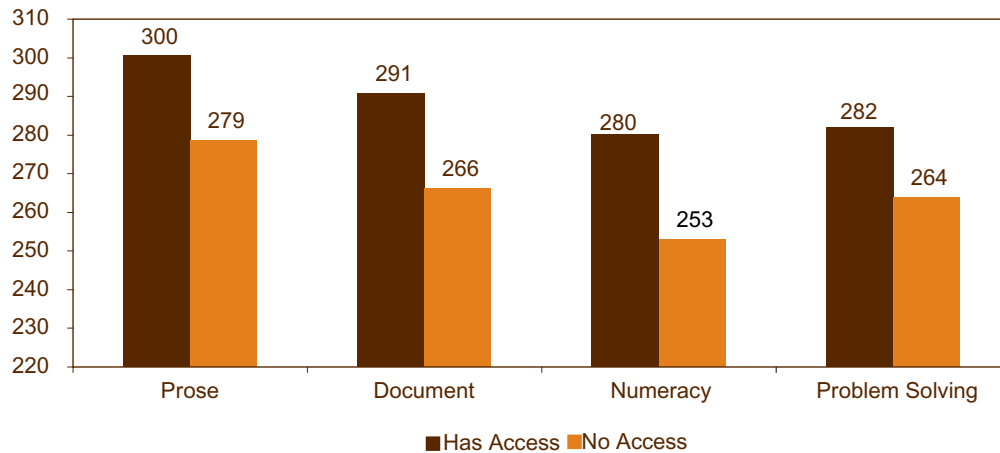
Figure 33 Level of Computer and Internet Access at Home



#### 4.4.1 The Importance of Information Communication Technology

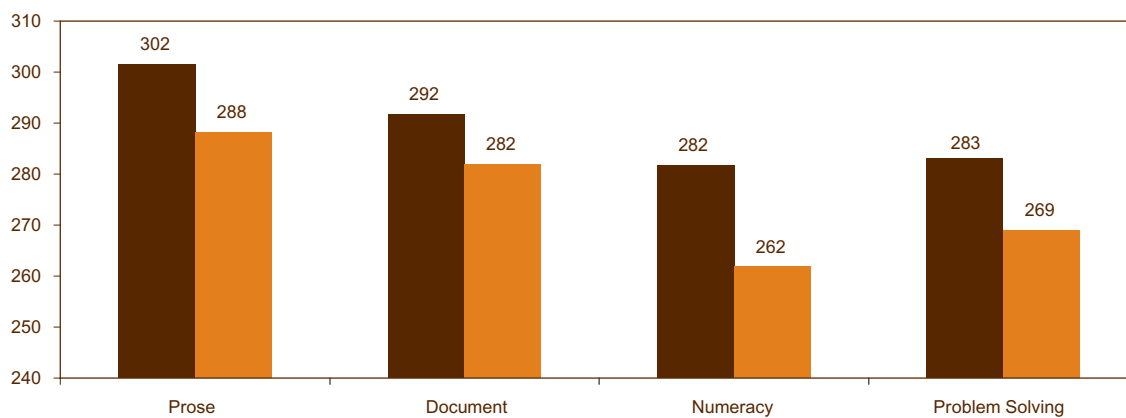
Figures 34 and 35 show that for all literacy skills tested, scores were much higher if persons had a computer and internet access at home. For access to computers, the widest gap was 27 points for numeracy literacy (280 compared to 253).

Figure 34 Literacy Scores and Access to a Computer at Home



Persons with access to the internet scored much higher in numeracy than those who did not have access (282 compared to 262, a gap of 20 points.) Those who had internet access scored the highest in prose (302 compared to 288, a 14-point gap). Navigating the internet and using e-mail requires certain skills and these skills are enhanced when information technology is used on a regular basis.

Figure 35 Literacy Scores and Access to the Internet at Home



#### 4.4.2 Information Communication Technology and Employment

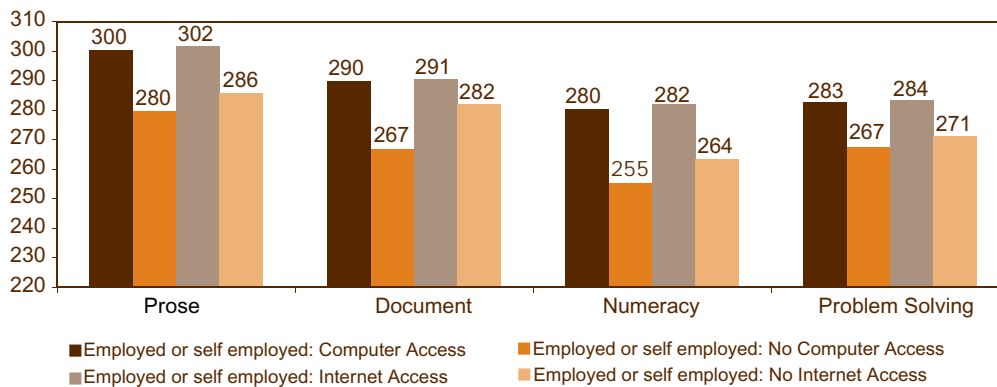
In general, persons who are employed and have computers in their homes scored the highest in the literacy domains tested. However, their scores were not that much higher than students who had access to computers at home. There were some differences between these two groups with regards to having internet access in the home. For working adults, a lack of internet access at home did not put them at a serious disadvantage for

prose and document. Prose and document literacy scores for computer access but not internet access were essentially the same (300 and 302 for prose and 290 and 291 for document literacy.) However, for numeracy and problem solving, a lack of internet access was a disadvantage (282 versus 264 for numeracy and 284 and 271 for problem solving.) (See Figure 36.)

For the unemployed, while there were significant differences across all literacy skill sets between those who had computers at home and those who did not, having access to the internet had only negligible effect on their literacy scores. This suggests that unemployed persons may not be as proficient in their use of information technology compared to employed persons. These findings were similar for retired persons where having internet access did not greatly improve their scores. (See additional Figures in the Appendix).

On the other hand, the literacy scores for students were enhanced if they had access to the internet at home. This suggests that students, due to homework assignments and communicating with other students and friends, have a greater need for, and thus usage of, the internet at home (see additional Figures in the Appendix).

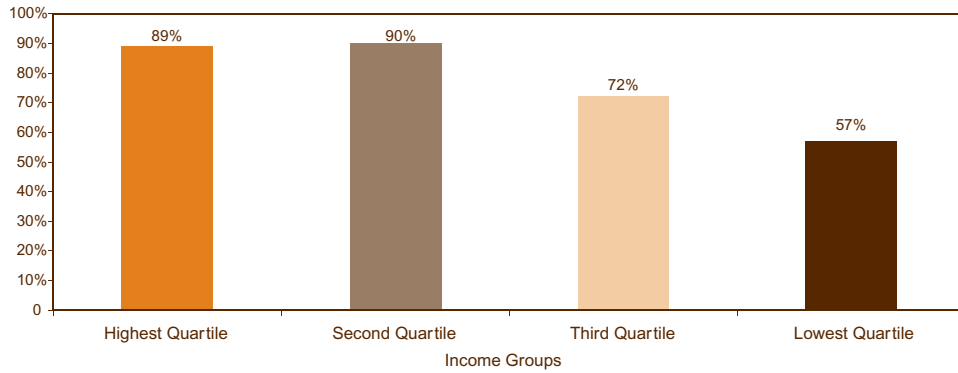
*Figure 36 Literacy Scores and Employment Status by Access to a Computer and the Internet*



#### 4.4.3 Information Communication Technology and Income

As previously indicated, computer penetration in Bermuda homes is quite high. It is not at all surprising that the top two income groups had the highest computer penetration rates 89% and 90%, respectively. The highest income quartile does not have the highest penetration rate, and may be indicative of this group having reached the saturation point and those who do not have computers are likely not interested in them since cost would not be a barrier to owning one. For the third highest quartile, 7 in 10 persons (72%) have computers at home, and with the lowest quartile, the rate is nearly 6 in 10 (57%). These high rates may suggest that computers are truly a part of modern life and can no longer be considered a luxury.

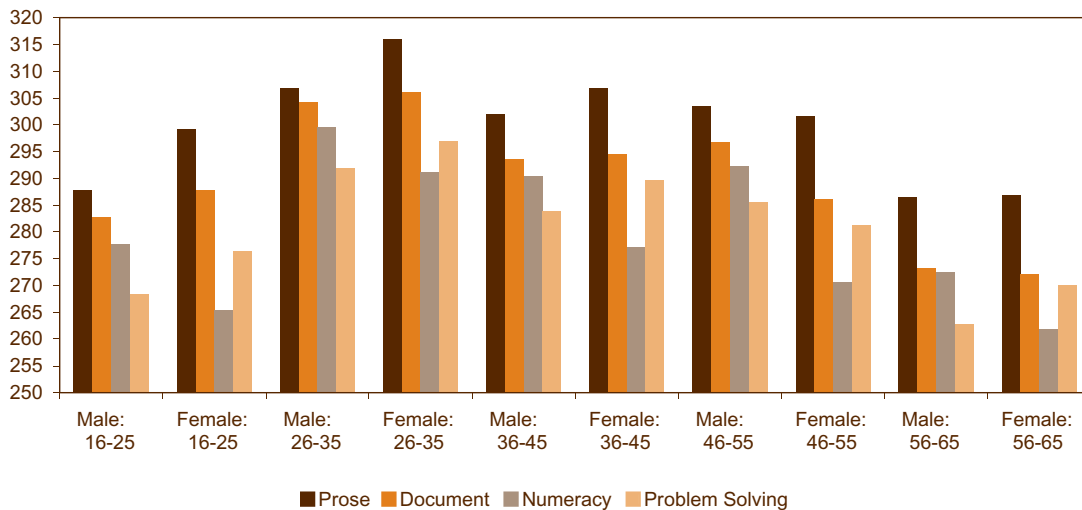
Figure 37 Level of Computer Penetration by Income Groups



#### 4.4.4 Information Communication Technology by Age and Gender

As observed, females tended to do better than males in prose literacy, and this was no different when a computer was in the home. However, for older respondents, those between 46 and 55 and those between 56 and 65, females did not perform appreciably higher than males. This may result from persons in these age groups having reached a saturation point in the workplace for use of computers. Females also did better than males in problem solving across all age groups with the exception of the 46–55 age group. In fact, males in this age group out-performed females across all literacy domains. Across other age groups, results between males and females were not noticeably different. (See Figure 38.) For internet access, across all age groups and literacy skill sets, results were similar to those for computer access (see Figures 76–79 in the Appendix).

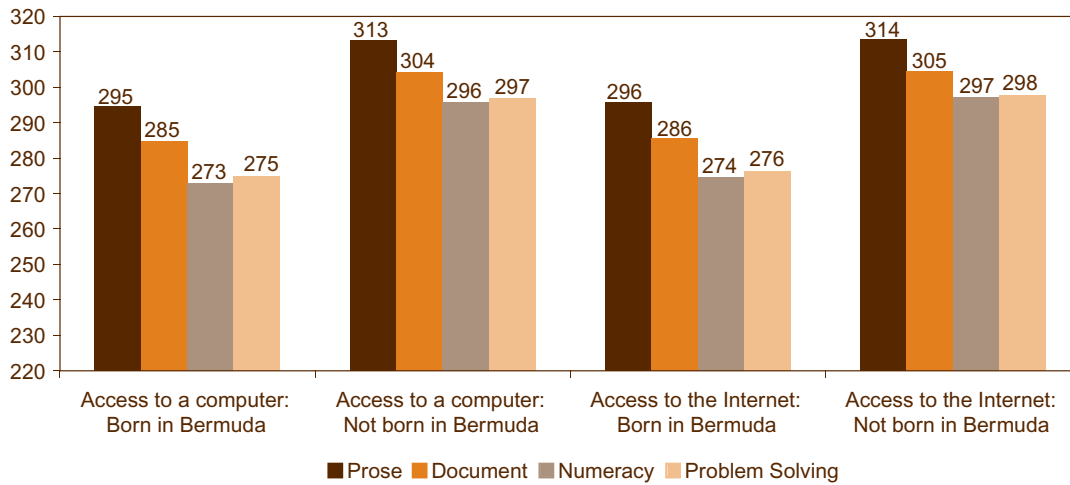
Figure 38 Literacy Scores by Selected Age Group and Gender, and Access to a Computer at Home



#### 4.4.5 Information Communication Technology and Nativity

Persons born outside of Bermuda out-performed those born in Bermuda across all literacy domains irrespective of whether they had access to a computer or the internet in their homes. It should be noted that foreign born persons would have been exposed to educational services outside of Bermuda. (See Figure 39)

Figure 39 Literacy Scores by Birthplace and Access to a Computer/Internet



## Chapter 5

### Literacy and Persons 'At Risk'

#### 5. Literacy proficiency and the characteristics of persons at risk.

This chapter looks at literacy proficiency and the characteristics of persons who performed below level 3.

##### 5.1 Who is 'at risk?'

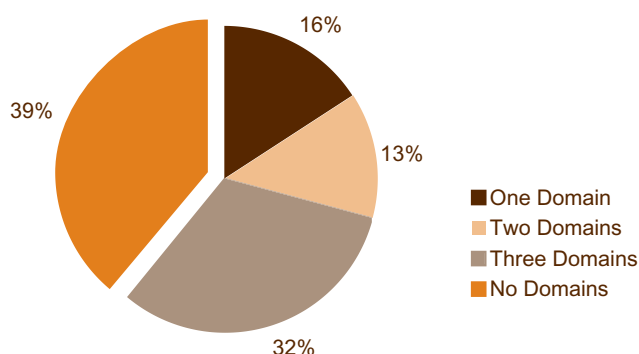
The ALL study defined those who are at risk as scoring at Levels 1 or 2 in prose literacy, document literacy or numeracy. Problem solving was not included because of its greater complexity as a skill domain and its 'at risk' level will be determined later by the organising committee of the ALL study. For convenience, the definitions of Levels 1 and 2 are repeated below.

Level 1 indicates persons with very poor skills, where the individual may, for example, be unable to determine the correct amount of medicine to give a child from information printed on the package. (For the prose, document and numeracy domains, this score was 225 or less.)

Level 2 respondents can deal only with material that is simple, clearly laid out, and in which the tasks involved are not too complex. It denotes a weak level of skill, but more hidden than Level 1. It identifies people who can read, but test poorly. They may have developed coping skills to manage everyday literacy demands, but their low level of proficiency makes it difficult for them to face novel demands, such as learning new job skills. (For the prose, document and numeracy domains, this score was 226 to 275.)

Generally adults who performed at Levels 1 or 2 are considered in the "at risk" group. There are adults, however, who despite scoring below Level 3 may function effectively in their chosen professions. These adults may be vulnerable only in the context of job mobility or life situations that demand high literacy ability. The international study reported that in participating countries, there were substantial numbers of the adult population that were at risk. For instance in Italy, the number of adults aged 16 to 65 below level 3 in all three domains were estimated to be as high as 69.5% and in the United States 43.3%. In Bermuda, 32% of the adult population were 'at risk' in all three domains. Sixteen per cent of the Bermuda population was 'at risk' in one domain, and 13% in two domains. Figure 40 provides an illustration of these data.

Figure 40 Per cent of Adults 'Below Level 3 by Number of Domains



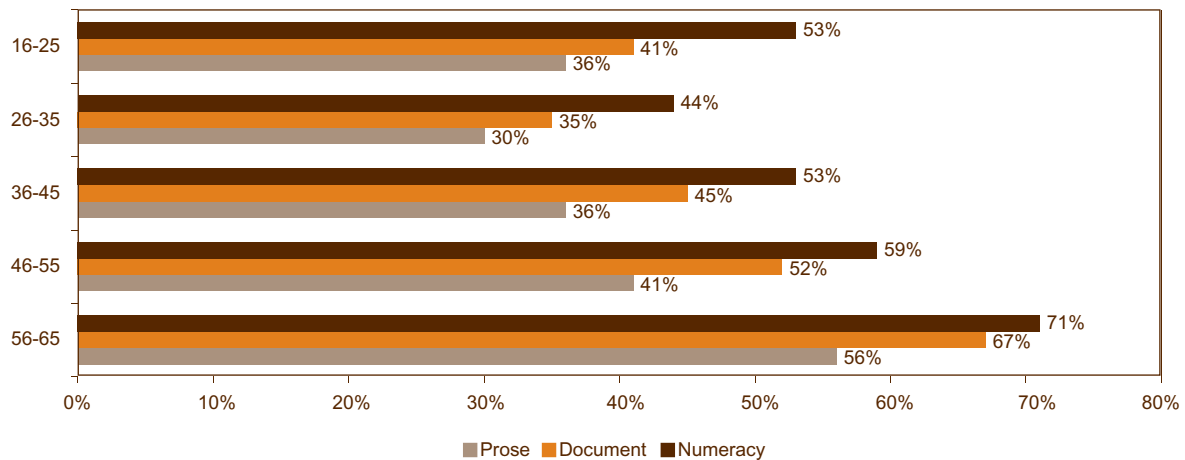
## 5.2 Characteristics of the 'At Risk' Group

In this section, we will look at various characteristics that identify in more detail the 'at risk' group. A better understanding of this group will assist in developing correctional as well as preventative measures.

### 5.2.1 Age Groups

Among age groups, more than 7 in 10 persons aged 56–65 were at risk in numeracy. This group represents primarily those persons who at a young age may have had to leave school prior to finishing, to assist their parents with household expenses. Also in this group will be persons who may not have had access to educational opportunities due to the social climate of that era. To some extent, persons in the 46–55 age group will have had similar experiences to the 56–65 age group that would have placed them at risk. However, persons aged between 16 and 25 would have had easier access to educational opportunities and would not have had an opportunity to voluntarily leave the educational system due to legal constraints.

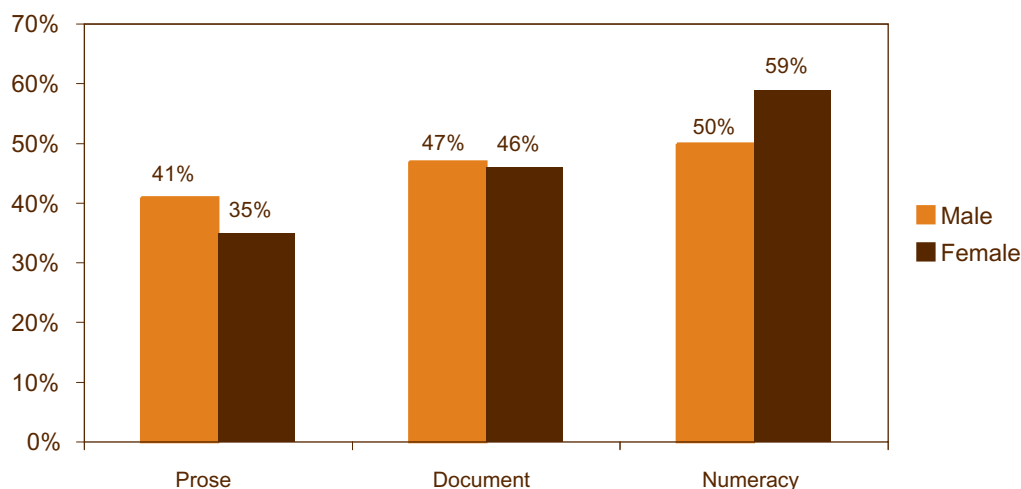
*Figure 41 Per cent of Adults Below Level 3 by Age Group and Literacy Domain*



### 5.2.2 Gender

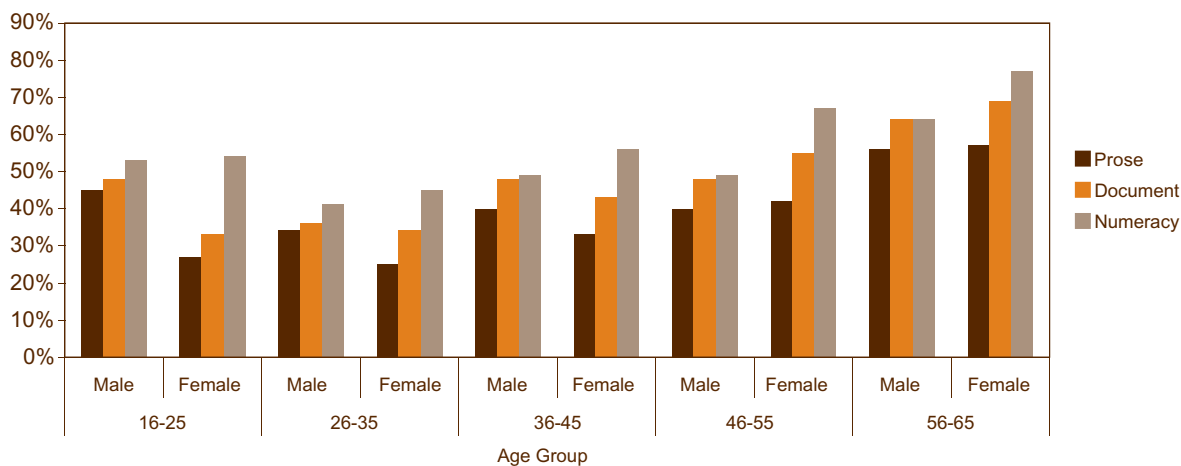
Figure 42 shows the percentage of males and females who were classified as 'at risk' in the various domains. Males were more likely than females to be at risk for prose and document literacy. Though a high proportion of each gender performed below the adequate level for numeracy, females were more likely to be at risk in this domain.

Figure 42 Per cent of Adults Below Level 3 by Domain and Gender



An analysis by sex and age group provides a more detailed view of those at risk. In the 16–25 age group, males were more likely than females to be at risk in prose and document literacy, though a moderate percentage of each sex were at risk in numeracy. Lower proportions of the 26–35 age group were at risk across all literacy domains. However, the proportion of persons at risk increased incrementally for each age group up to the 56–65 age cohort, where high proportions of each sex were classified as ‘at risk’ in the literacy domains.

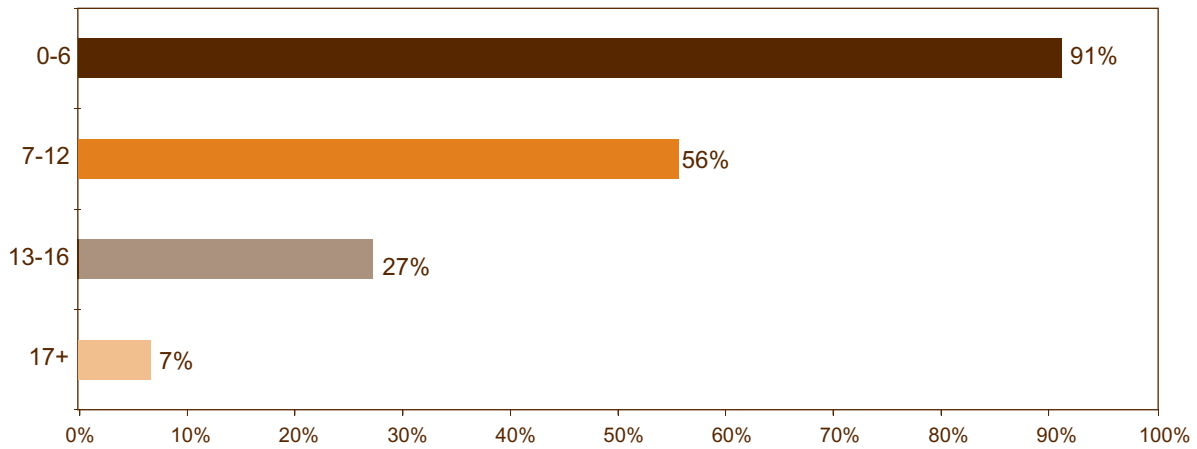
Figure 43 Per cent of Adults Below Level 3 by Domain, Gender and Age Group



### 5.2.3 Years of Schooling

The more years of schooling a person had, the less they were exposed to being at risk. For persons who had six or fewer years of schooling, nearly all of them (91%) were classified as ‘at risk’ in all three literacy domains. More than half (56%) of persons who had been to school for seven to 12 years achieved scores in all three domains that were below the adequate level. At the other end of the scale, persons who had 17 years or more schooling only had a 7% chance of being at risk.

Figure 44 Per cent of Adults Below Level 3 in All Three Domains by Years of Schooling



#### 5.2.4 Race

Blacks are more likely to be at risk than white and others (52% versus 48%). While the results appear to be significant at first glance, in reality the breakdown resembles the racial breakdown observed from the 2000 Census data (54% for blacks and 46% for white and others). Thus, the results are in proportion to the population as a whole.

Figure 45 Per cent of Adults Below Level 3 in All Three Domains by Race

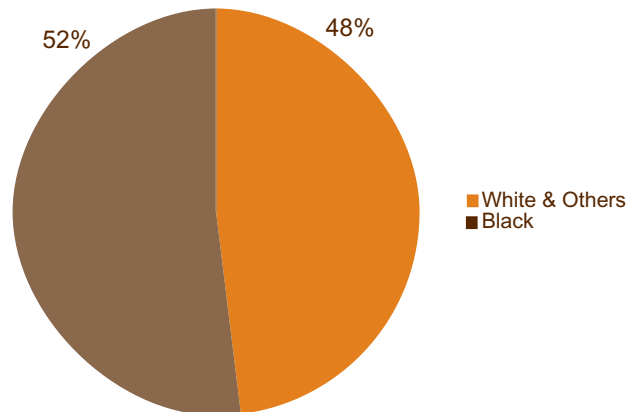


Table 1 gives a breakdown of the adults who were classified as ‘at risk’ in all skill domains. For prose, document and numeracy black males were most likely to be at risk. Thirty-four per cent of black males 16–30 were categorised ‘at risk’ compared to 15% for white males.

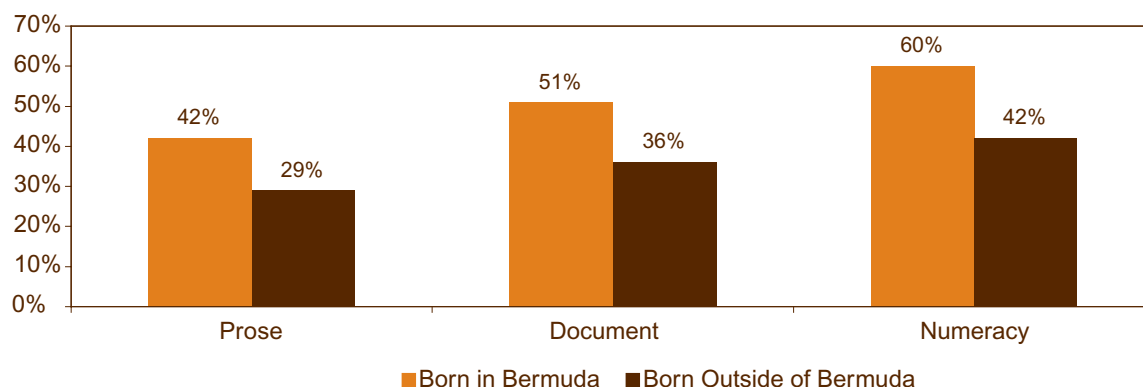
Table 1 Per cent of Adults Below Level 3 in All Domains by Age Group, Race and Sex

Age Groups	Males			Females		
	Black	White	Asian/Other	Black	White	Asian/Other
16–30	34%	15%	1%	26%	18%	6%
31–45	27%	24%	2%	20%	22%	5%
46–65	21%	20%	2%	32%	21%	5%

### 5.2.5 Place of Birth

Persons born in Bermuda had a higher likelihood of being at risk across all literacy domains compared to persons born abroad. The proportion of local-born persons scoring below the adequate level on prose was 13 percentage points higher than their foreign-born counterparts. The disparity for document literacy was greater as just over a third of foreign-born persons were classified as ‘at risk’ compared to half of the local-born population. The widest gap was seen in the numeracy domain, where 18 percentage points separate local- and foreign-born persons. The numeracy domain also saw the highest proportion of each nativity being at risk.

Figure 46 Per cent of Adults Below Level 3 by Domain and Place of Birth



### 5.2.6 Parental Education Level

The parents of persons classified as ‘at risk’ were more likely to have not completed a secondary education. It was observed that as a parent’s education level increased, the chance of the child being ‘at risk’ decreased across all literacy domains. This was the case for both the mother and father of the respondent. (See figures 47a and 47b). In prose literacy, 50% of mothers and 45% of fathers, dropped out of high school or left at an earlier level of schooling. As was mentioned previously, older persons in this group may have been forced to leave primary or high school due to economic reasons. Another 3 in 10 parents (29% of mothers and 30% of fathers), reached the upper levels of a secondary school education or attended a non-college, post secondary education school. In prose, just 16% of the fathers and 19% of the mothers of those at risk had a college or advanced degree. This result is in line with studies that show a relationship between achievement of the child and the level of education of the parent.

Figure 47a Per cent of Adults Below Level 3 by Domain and Father's Education

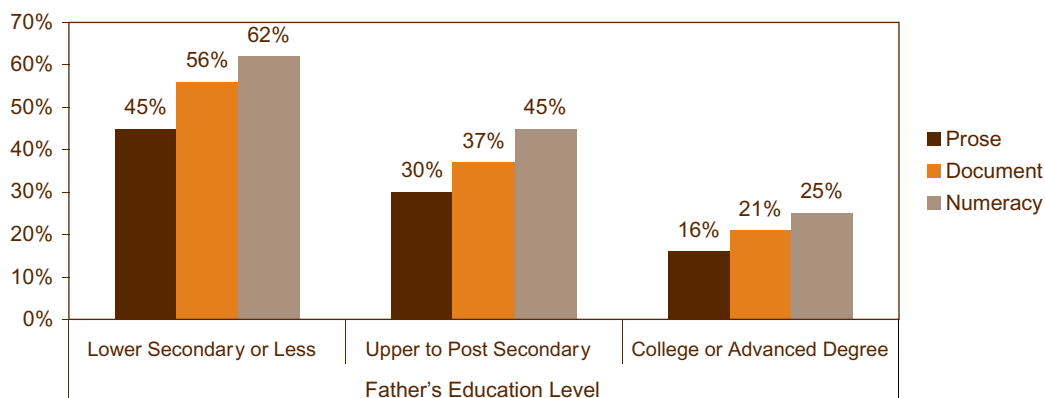
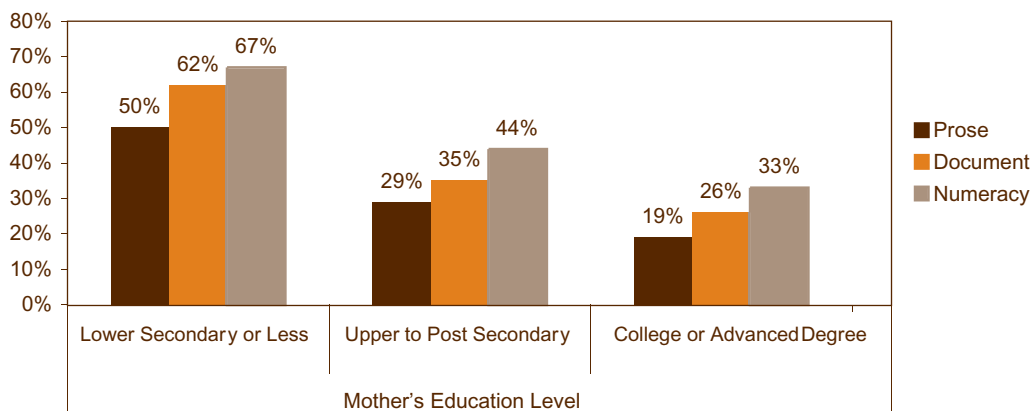


Figure 47b Per cent of Adults Below Level 3 by Domain and Mother's Education



### 5.2.7 Labour Market Status

Thirty-three per cent of unemployed persons were deemed to be 'at risk' in all three domains. No doubt their low level of literacy skills contributes to their state of unemployment. As a result, the level of jobs that they will eventually find, and the income that they will receive, is likely to be entry level. Forty-three per cent of retired persons are at risk. As mentioned earlier, social and economic factors such as family financial commitments may have caused some of these individuals to leave school and enter the workplace without formerly completing their education. Just over 3 in 10 of those employed (32%) and students (20%) are at risk on all three literacy domains. For students, they have not as yet completed their education and thus by the end of their studies, their literacy level should improve.

Figure 48 Per cent of Adults Below Level 3 in All Three Domains by Employment Status

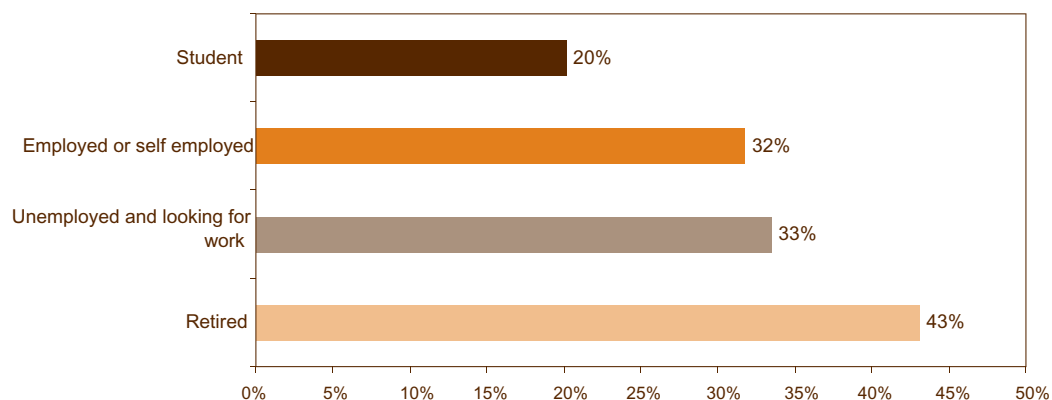


Table 2 reveals that those at risk are not confined to blue collar workers or those holding entry level positions. Indeed, those at risk can be found at the managerial and professional levels as well. And while any worker at risk is cause for concern, those at the managerial and professional level pose special challenges. As these individuals are likely to be in supervisory positions, they may be managing persons with skill levels that are higher than their own, a potential cause of tension in the workplace.

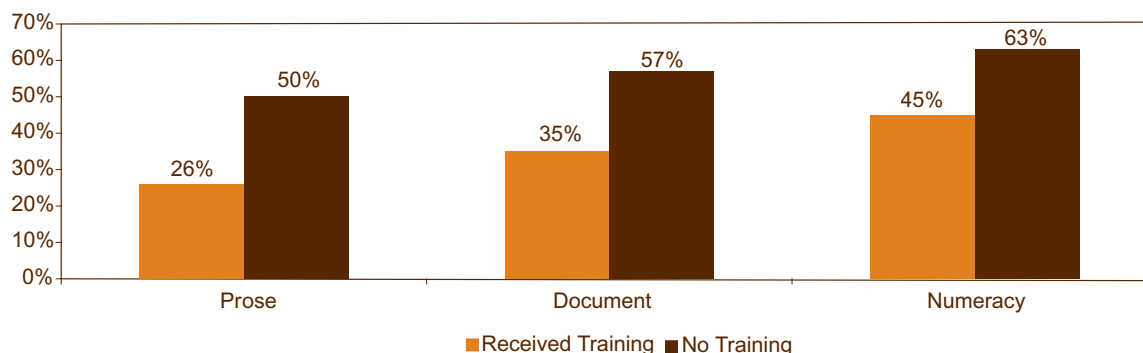
Table 2 Mean Score of Adults Below Level 3 by Domain and Job Category

	<b>Managers, Professionals and Administrators</b>	<b>Clerical and Sales Workers</b>	<b>Skilled Agricultural &amp; Trades Workers</b>	<b>Plant and Machine Operators &amp; Assemblers</b>	<b>Elementary Occupation</b>
Prose	242	235	224	228	213
Document	233	223	220	224	203
Numeracy	226	217	219	222	194

### 5.2.8 Participation in Adult Education

As revealed in section 3.5, there is a direct correlation between training and education and literacy scores. The likelihood of being at risk was decreased when persons were engaged in training or education in the past year before the survey. On the prose literacy scale, 50% of adults who were at risk received no training during the past year. The percentage climbed to 57% for adults at risk on the document literacy scale and 63% in numeracy. This evidence supports a conclusion made in section 3.5, where persons can improve their literacy skills by engaging in ongoing learning.

Figure 49 Per cent of Adult Below Level 3 by Domains and Received Training/Education in the Past Year



### 5.3 Those 'At Risk' and Everyday Activities

There were a number of everyday activities probed in the ALL survey. However, for ease of discussion, we shall look at just two of them – watching television and the use of a library (either in person or by a computer) outside of work and school. Generally, as the hours spent watching television increased, the proportion of persons at risk across the literacy domains increased also. (See Table 3)

Table 3 Per cent of Adult Below Level 3 by Domains and Time Spent Watching Television

	Prose	Document	Numeracy
1 hour or less per day	32%	41%	44%
Over 1 hour to 2 hours per day	31%	39%	45%
More than 2 hours but less than 5	43%	51%	61%
5 or more hours per day	59%	62%	77%

Another trend was observed with visits to the library. As visits to the library increased, the proportion of persons falling in the level 1 and 2 decreased across all literacy domains. Thus, those that have the highest skills continue to enhance them by going to the library and perhaps watching less television, while those at risk continue to engage in activities that keep them at risk.

Table 4 Per cent of Adults Below Level 3 by Domain and Frequency of Visits to the Library Outside of School/Work

	Prose	Document	Numeracy
Several times during the year	24%	29%	38%
Once or twice during the year	34%	43%	49%
Never	50%	57%	65%

#### 5.4 Those 'at risk' and reading at work

A basic activity at work is reading the newspaper, either as a requirement of a person's job or for pleasure. In the ALL study, respondents were asked about the sections of the newspaper that they read. There were of course, some differences by skill level. Persons not at risk were more inclined to read about finance and stocks, book and movie reviews and international news. Conversely, those at risk were more likely to read advice columns and about fashion, food and health. These results are likely to be highly correlated with education, as persons with higher educational levels are more likely to have a higher income, permitting investing, read more and have travelled more widely, thus having an interest in international news.

Persons that have to use information on a regular basis are less likely to be at risk. Only 3 in 10 persons who read and use information at least once a week (30%) are likely to be at risk. However, nearly 7 in 10 persons (67%) who never use information at work are at risk and almost 5 in 10 who use information rarely (45%) are at risk. It is likely that persons who are able to read and make use of information seek out jobs where they can use these skills, whereas persons who do not have these skills seek out jobs that do not require them. Thus the gap in literacy skills between those at risk and those not at risk is maintained.

*Table 5 Per cent of Adults Below Level 3 in All Three Domains by Frequency of Reading and Use of Information*

<b>Read or Use Information</b>	<b>Below Level 3</b>
At least once a week	30%
Less than once a week	32%
Rarely	45%
Never	67%

## Chapter 6

### Conclusion

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#### 6. What do the results of the survey mean for Bermuda?

Bermuda has undertaken this major study on literacy levels and now has benchmark data with which to compare with other countries. In comparison to other nations, persons in Bermuda did as well as or better than other countries, even when persons born outside of Bermuda are factored out. However, the importance of this study lays not so much in comparing Bermuda to other countries, but in how the results are used to improve literacy levels, particularly among those classified as ‘at risk’.

#### Salient Findings

- 1) Amongst the adult population in Bermuda, it was found that those between the ages of 26 and 35 years performed well across most skill domains. Of this age group, 44% had attended college, the highest percentage for any age group in the study. This finding correlates positively with other educational indicators. For instance, literacy scores increased as educational attainment increased; the higher the parents’ level of education, the higher the literacy scores of the child; persons who were exposed to training and education in the past year also had higher literacy scores. It is clear that education is a life-long function and those who continuously develop their knowledge also increase their literacy skills. As a result, persons are far better equipped to deal with life’s complexities and therefore are more likely to reach pre-set goals.
- 2) The study also found that not only persons who upgraded their skills did well across literacy domains, but also persons who found a cause in which they could believe, from assisting a charity, to being a member of a service club.
- 3) A review of the results by gender showed that females scored better than males in problem solving. With females expected to outnumber males in the workforce in Bermuda by 2010, it is likely that more women will rise to the top of industry as their skills improve. Males held their ground in numeracy and will likely to continue to dominate jobs which require that skill.
- 4) An analysis by race indicated that each of Bermuda’s two dominant races (blacks and whites) performed essentially the same, with the exception of problem solving where whites had a slight advantage. Indeed, when analysed by age and race, there were areas where blacks out-performed whites.
- 5) Persons who stated they had a positive outlook on life and feel in good health performed well on the literacy scales. Presumably, these individuals would have engaged in healthy activities, which studies show have a positive effect on a persons well being. There is a direct relationship between health and education. Persons who are in good health and have a positive outlook on life are more inclined to reach their goals, educational and otherwise. With rising healthcare costs, extolling the benefits of healthy living will have numerous benefits to society.
- 6) The use of information technology at home had a positive effect on literacy scores achieved by persons. However in some cases, having access to the internet had negligible effect. The penetration level for

home computer access is relatively high in Bermuda. Therefore, as the cost of technology declines and more recycling occurs due to upgrading, eventually all homes that want computer access will be in a position to acquire it. The cost of internet access is also going down and therefore the penetration level for homes is likely to increase. In addition, recent efforts by Government to introduce an internet access in public places programme means that internet access is now available to the public at large.

#### Persons 'At Risk'

The ALL study found that there were large proportions of persons 'at risk' in all countries participating in the study. In Bermuda, this proportion was 38% in prose literacy, 46% in document literacy and 54% in numeracy. As mentioned earlier, some persons in this group may not have completed their formal education due to varying social and economic reasons. Though these individuals are heading toward retirement, there are still benefits to reap in raising the skills of seniors. First of all, seniors are living longer and many work beyond retirement age. Increasing their skill levels would raise their worth in the market place and increase their earning potential at the same time. In addition, older workers tend to have a mature work ethic and thus could be positive role models in the work place.

While analysing the younger age groups, it was discovered that a high proportion of black males aged 16 to 25 were classified as 'at risk'. A further investigation of the skills of this group will be conducted.

Results from the ALL survey confirmed that there is a correlation between education and literacy skills. Nearly all those who had six or less years of schooling were at risk and less than one in 10 of those who had 17 or more years of schooling. Also not surprising was the fact that educated parents were likely to produce offspring who achieved high education levels. However, training and continuing education also increased a person's skill level. Thus, it is worth repeating that life-long learning must continue to be encouraged.

With regard to everyday activities, persons 'at risk' tend to engage in behaviours that keep them at risk. The survey revealed that they watched far more television and read less and they were less likely to have been trained or have upgraded their skills in the past year. While the Government and helping institutions can provide that assistance, the challenge with dealing with those at risk is that some do not see themselves as being at risk. They tend to hold jobs and generally function in society. As long as they are not required to learn new tasks, or do not lose their jobs through unfortunate circumstances, such as a business closure, they will remain undetected.

#### Summary

The ALL study has shown that Bermuda compares favourably to other nations in the literacy skill domains. It has also shown that those who are not at risk continue to improve their skills while those who are continue to place themselves at risk. While women scored well, it is males, particularly young black males, who are mostly at risk. Persons born outside of Bermuda performed better than those born on the island. This result would have been surprising only if the reverse was true since foreign-born residents mostly comprise work permit holders who fill skilled jobs where the expertise is not available locally.

Perhaps the most significant finding in the study was that there was little, if any difference, between the literacy skills of blacks and whites. This is significant because there are wide gaps between the positions of employment in the workplace, and thus income, between these races.

## Appendix

### Additional Figures

Figure 50 Document Proficiency by Age Group

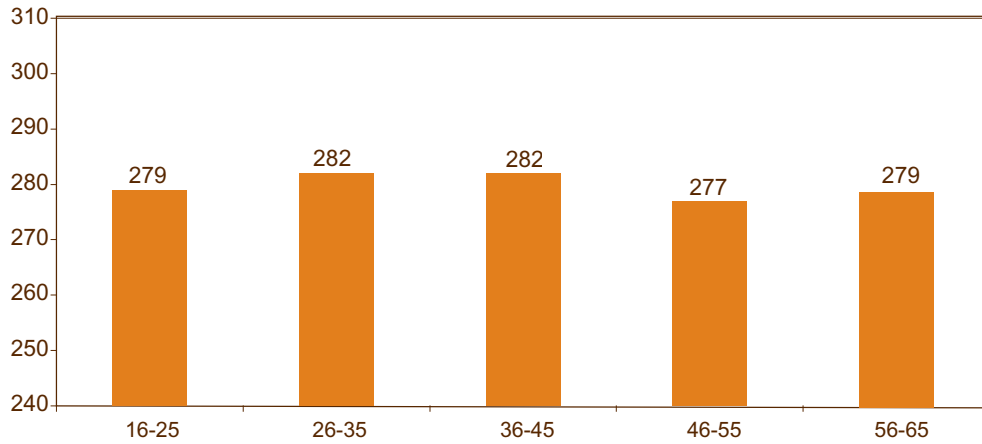


Figure 51 Numeracy Proficiency by Age Group

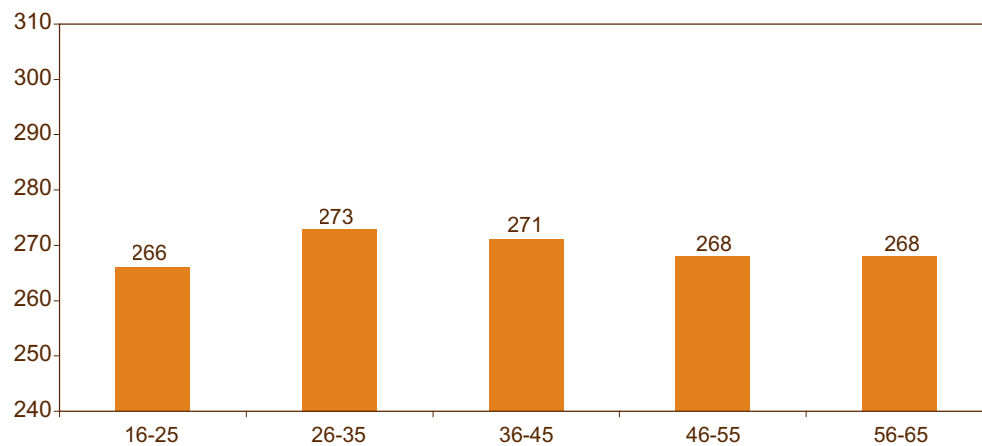


Figure 52 Problem Solving Proficiency by Age Group

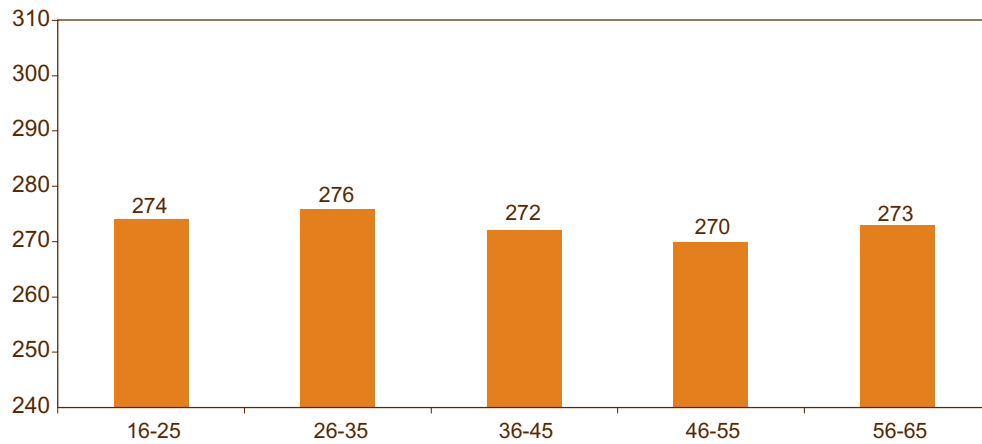


Figure 53 Document Proficiency by Educational Attainment

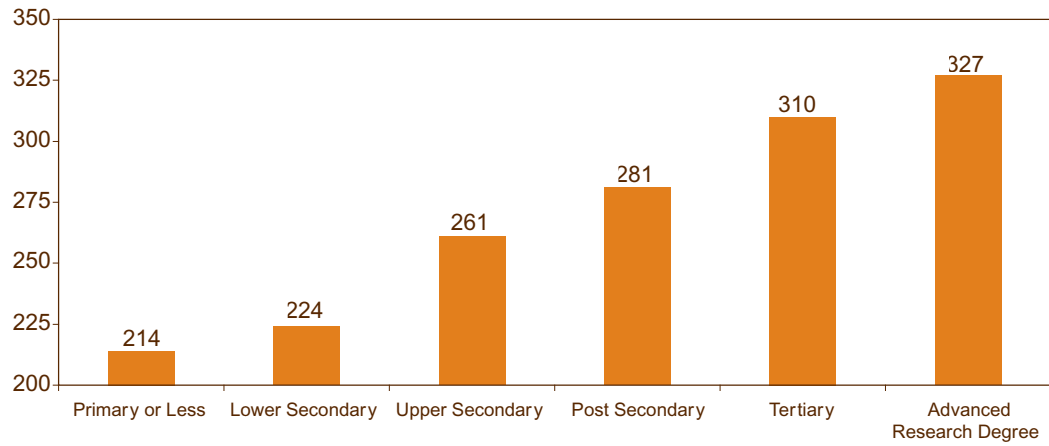


Figure 54 Numeracy Proficiency by Educational Attainment

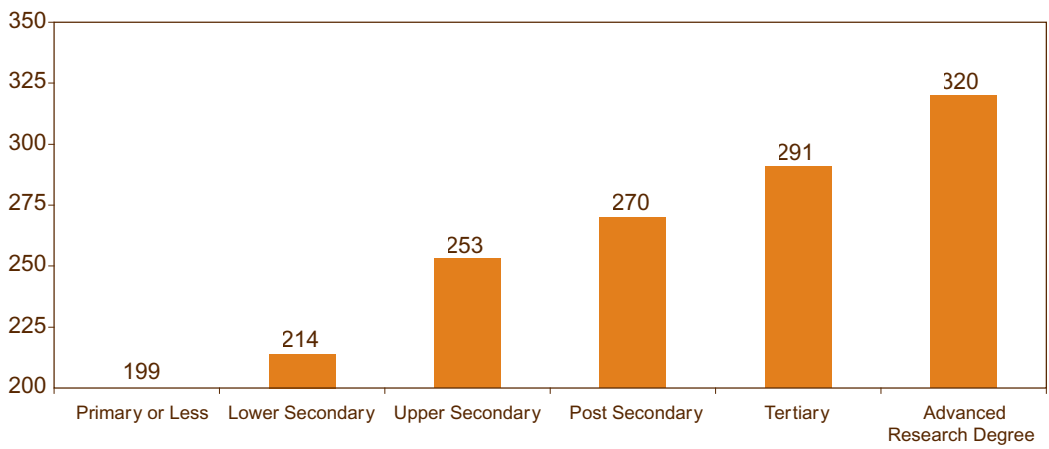


Figure 55 Problem Solving Proficiency by Educational Attainment

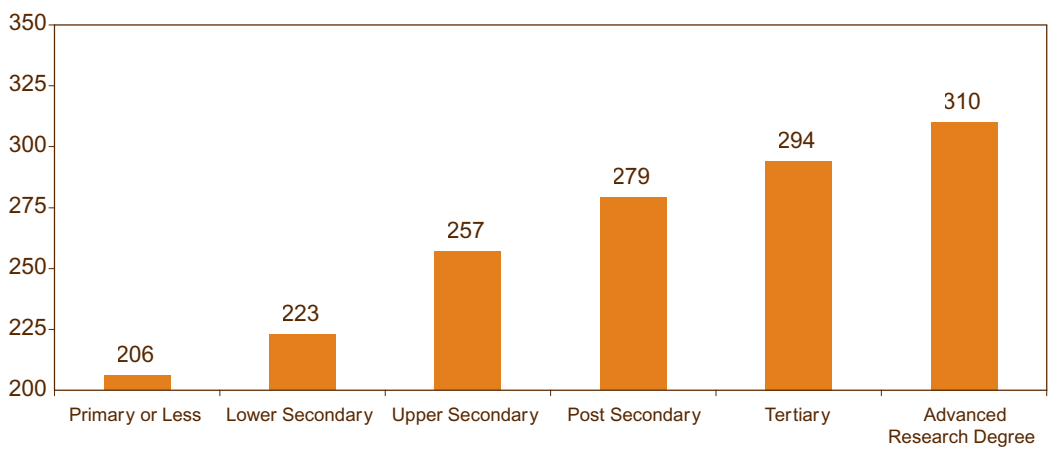


Figure 56 Skill Proficiency by the 36 – 45 Age Group and Race

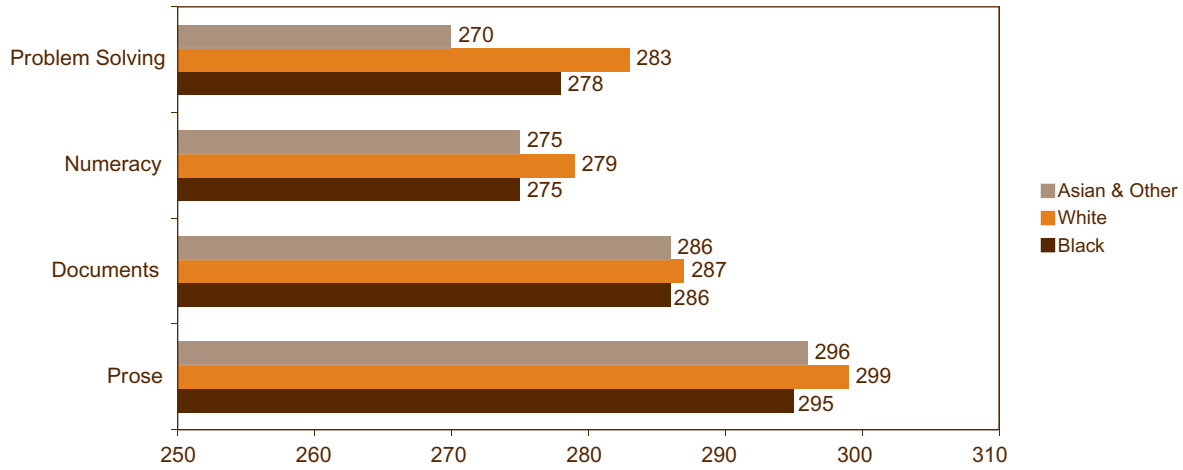


Figure 57 Skill Proficiency by the 46 – 55 Age Group and Race

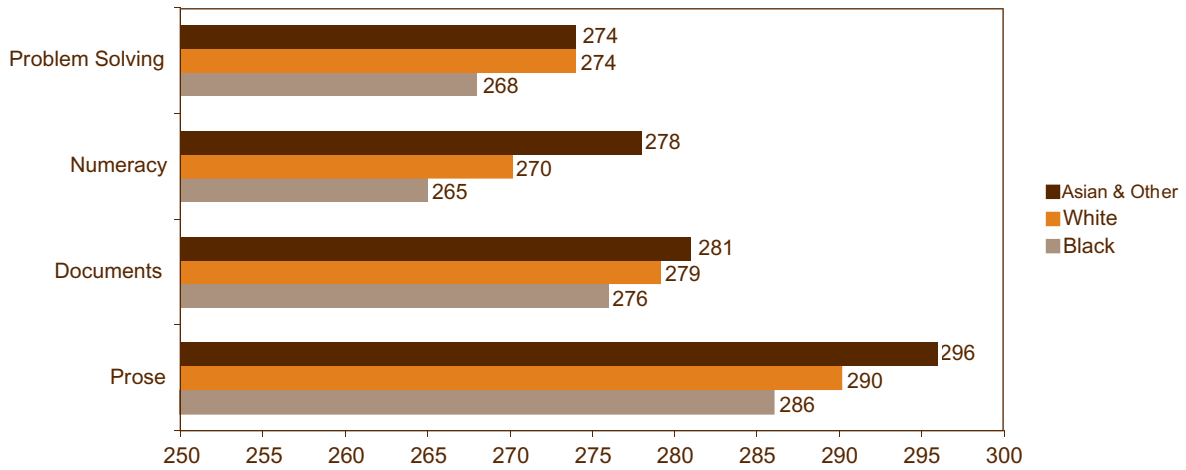


Figure 58 Skill Proficiency by the 56 – 65 Age Group and Race

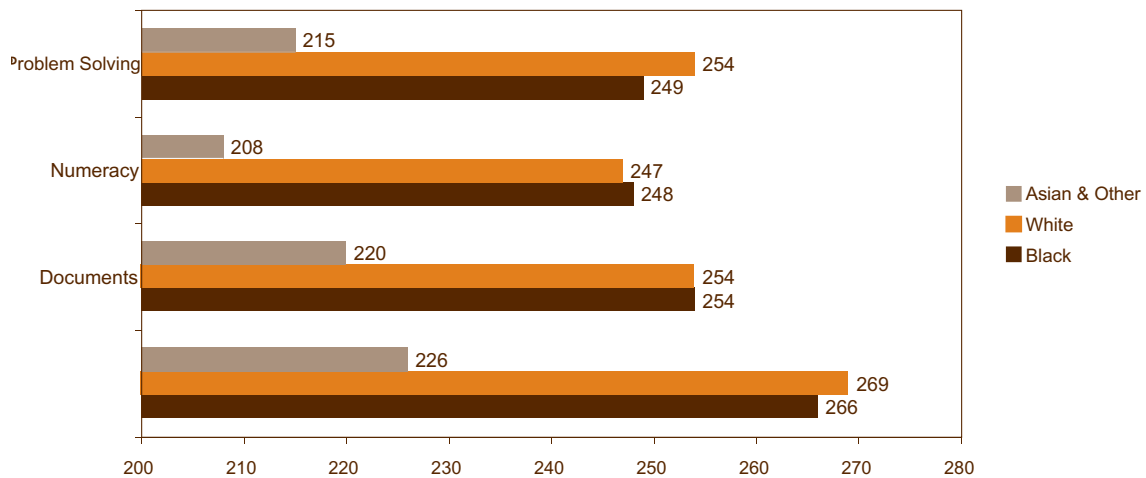


Figure 59 Document Proficiency by Occupational Group

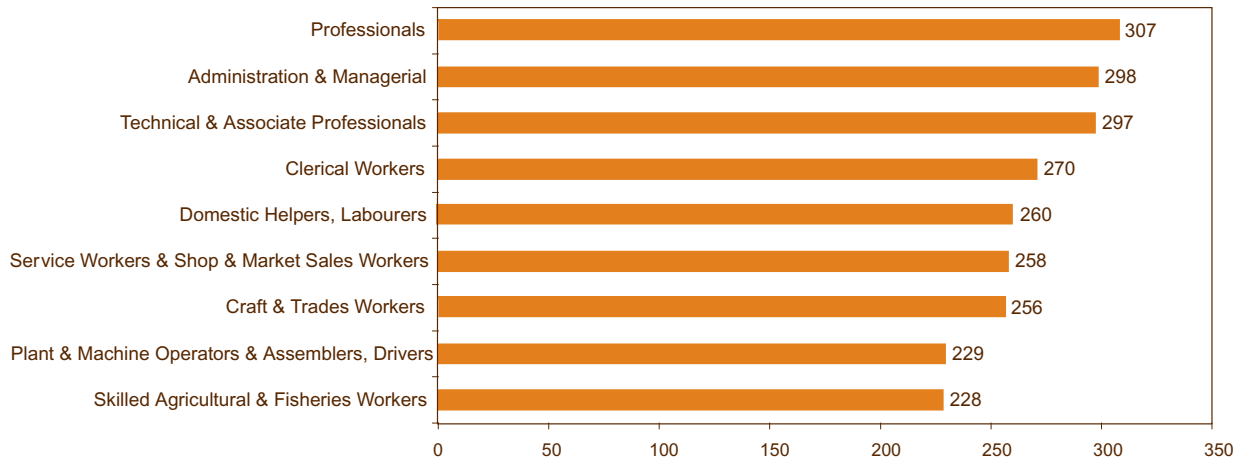


Figure 60 Numeracy Proficiency by Occupational Group

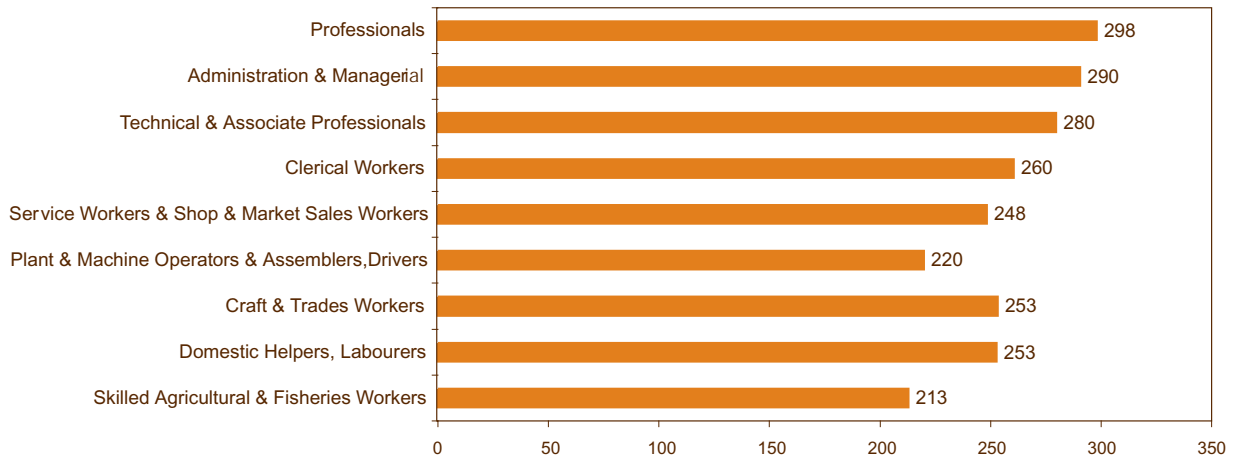


Figure 61 Problem Solving Proficiency by Occupational Group

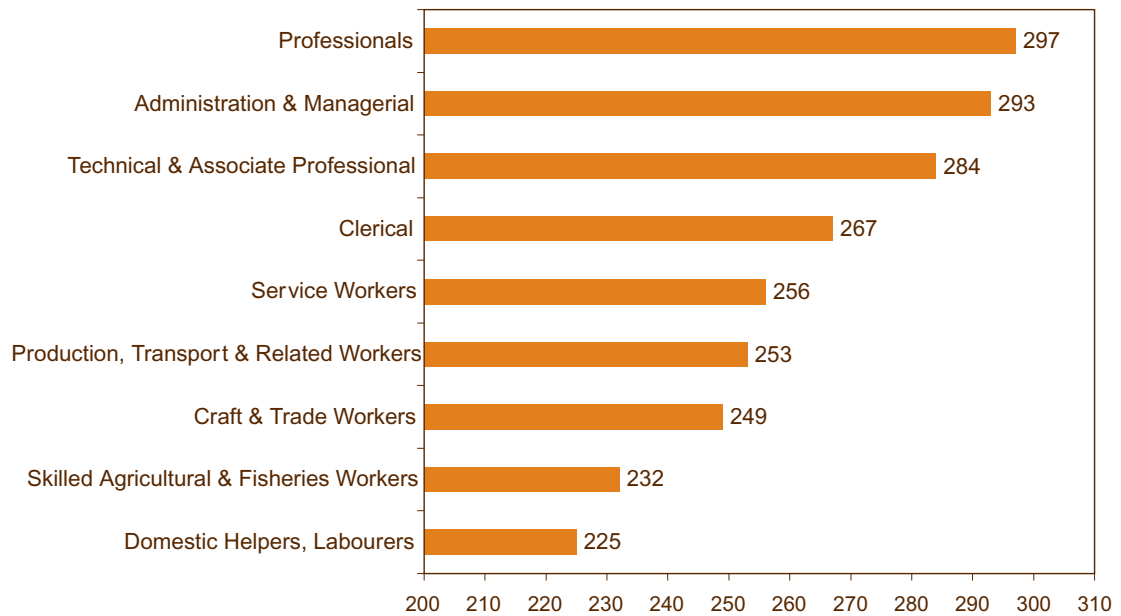


Figure 62 Document Proficiency by Industrial Classification

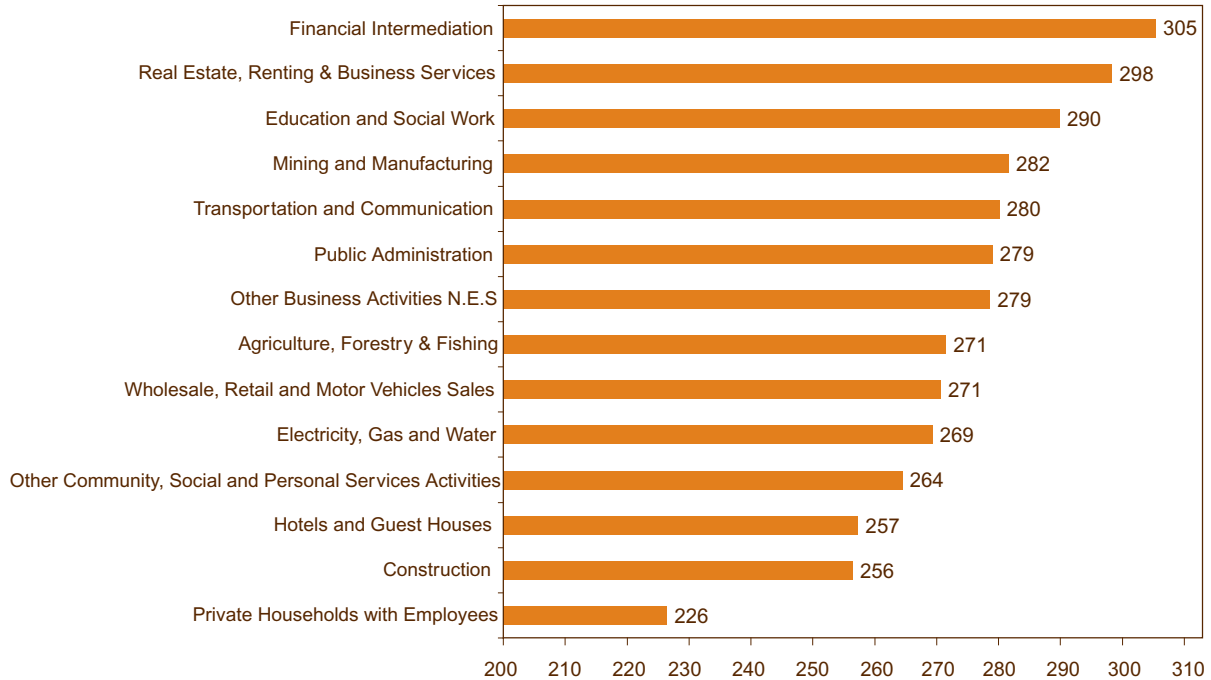


Figure 63 Numeracy Proficiency by Industrial Classification

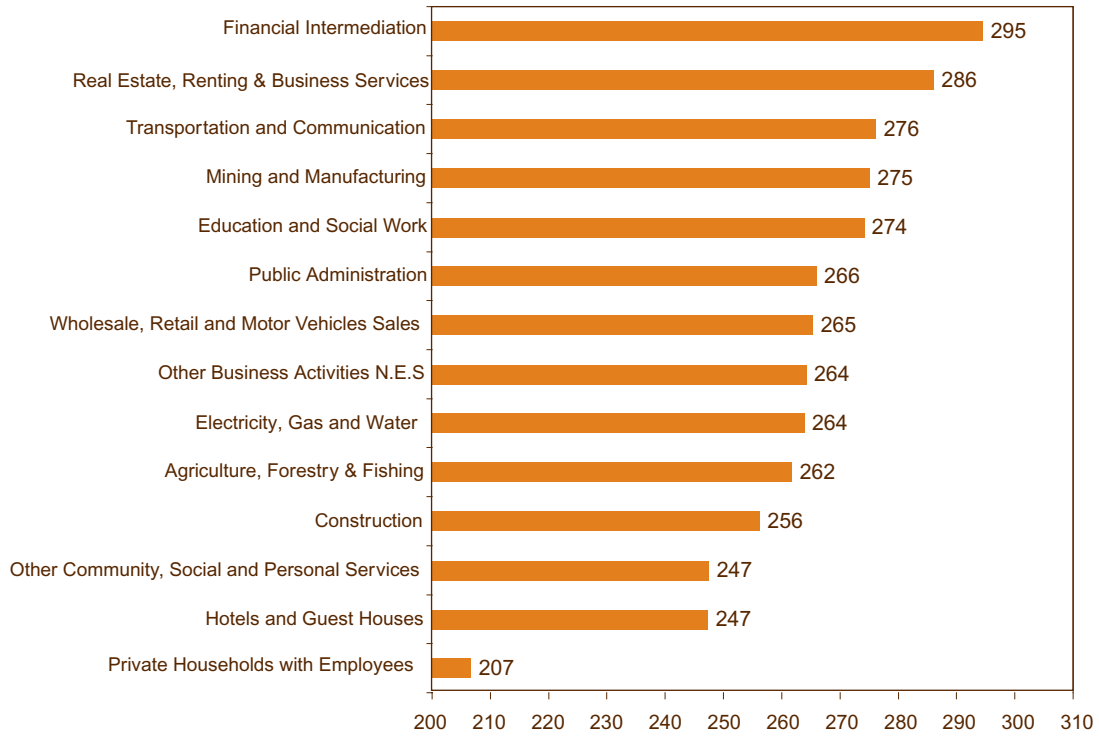


Figure 64 Problem Solving Proficiency by Industrial Classification

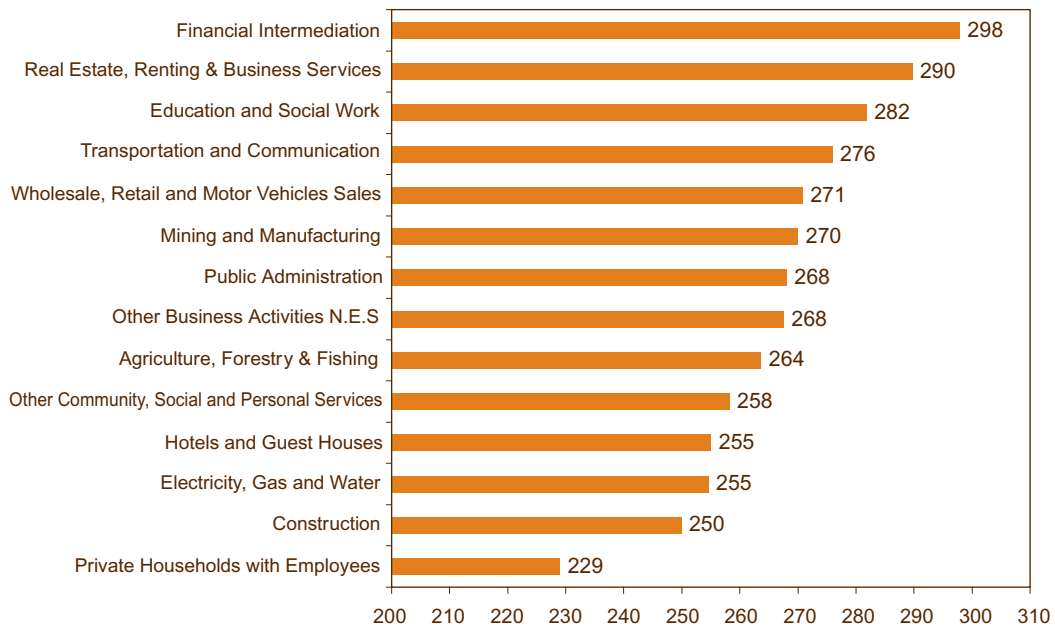


Figure 65 Literacy Scores and Participation in a Political Organization

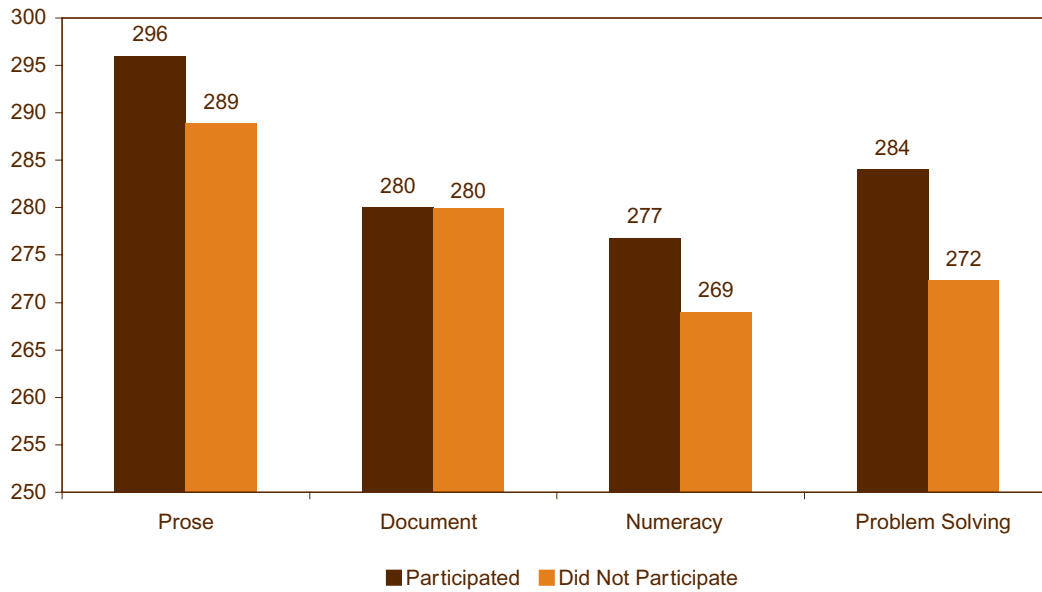


Figure 66 Literacy Scores and Participation in Sports/Recreation

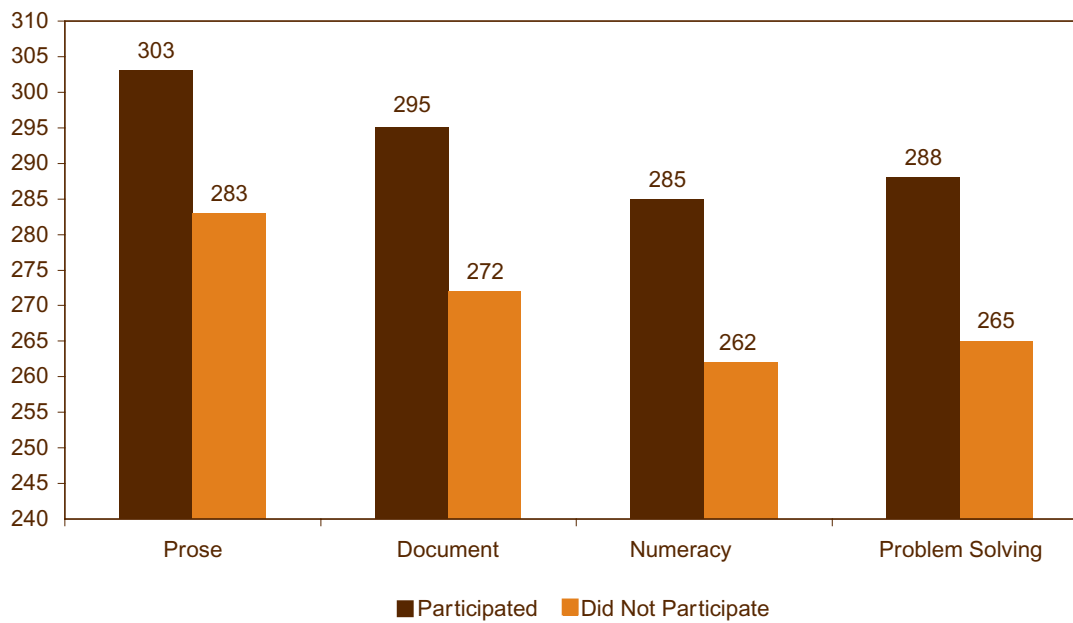


Figure 67 Literacy Scores and Participation in Cultural/Educational Activities

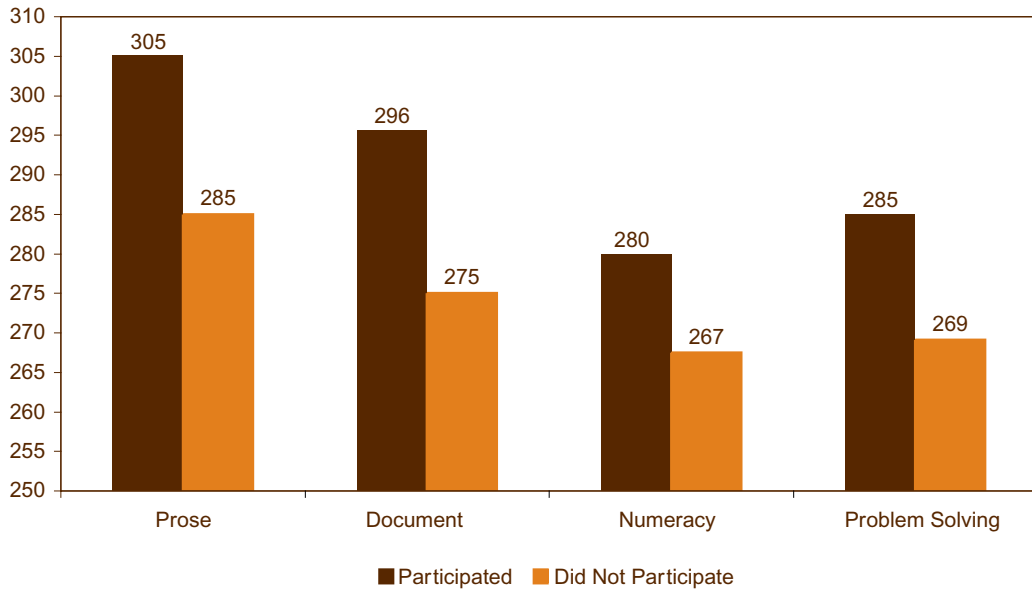


Figure 68 Literacy Scores and Participation in a Service Club

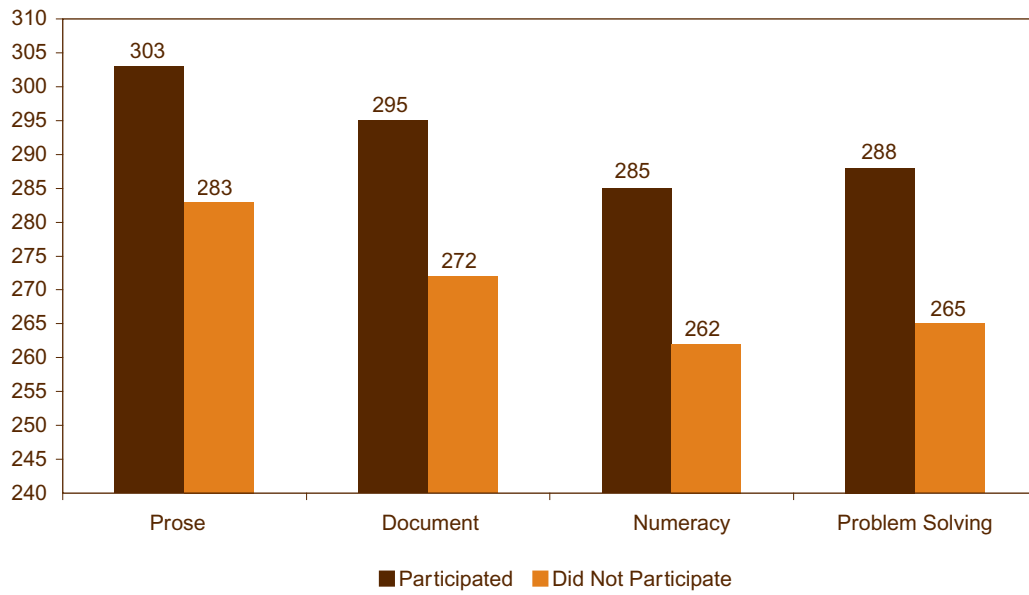


Figure 69 Literacy Scores and Participation in a School/Community Group

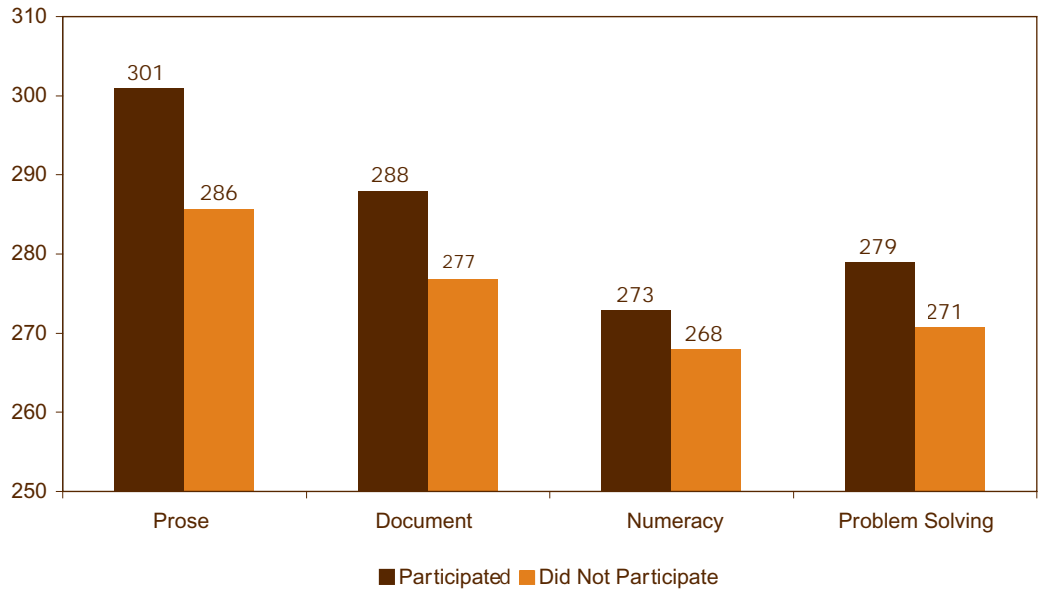


Figure 70 Literacy Scores and Participation in Other Groups

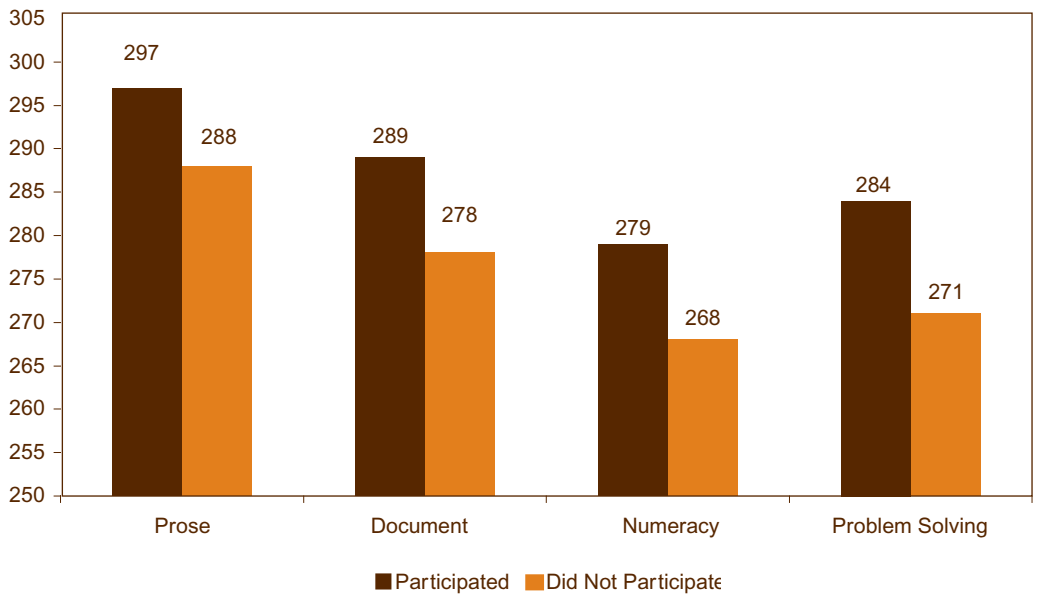


Figure 71 Literacy Scores and Volunteering as a Fundraiser

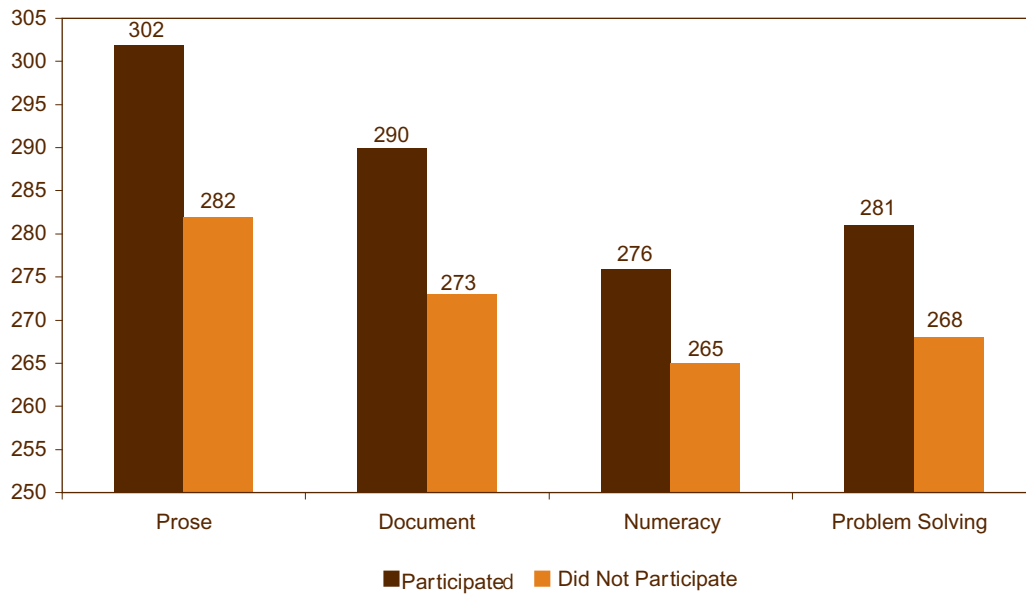


Figure 72 Literacy Scores and Serving as an Unpaid Board Member

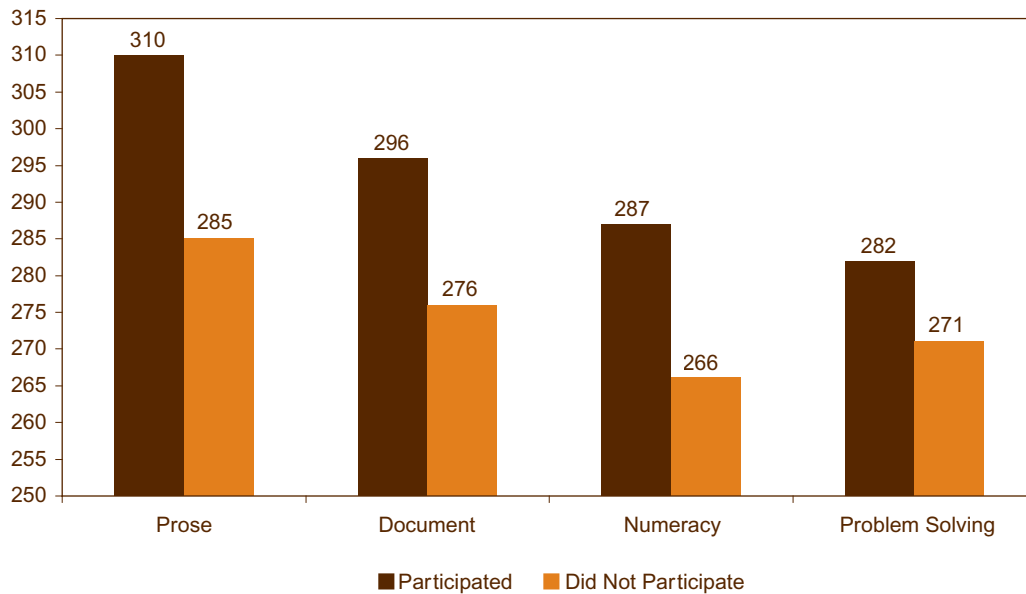


Figure 73 Literacy Scores and Volunteering to Coach/Teach/Counsel

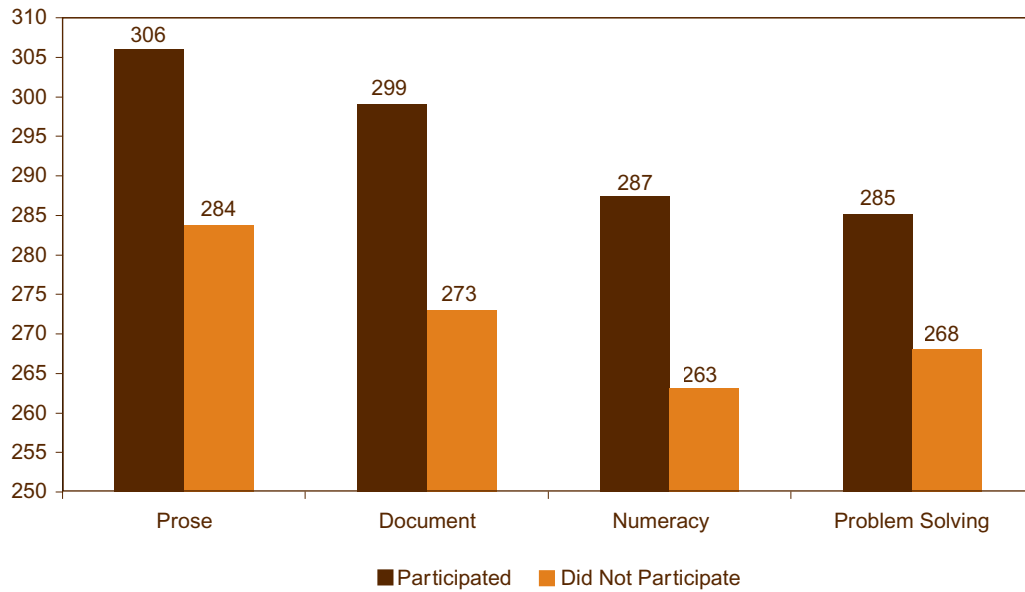


Figure 74 Literacy Scores and Volunteering to Collect Food/Goods for Charity

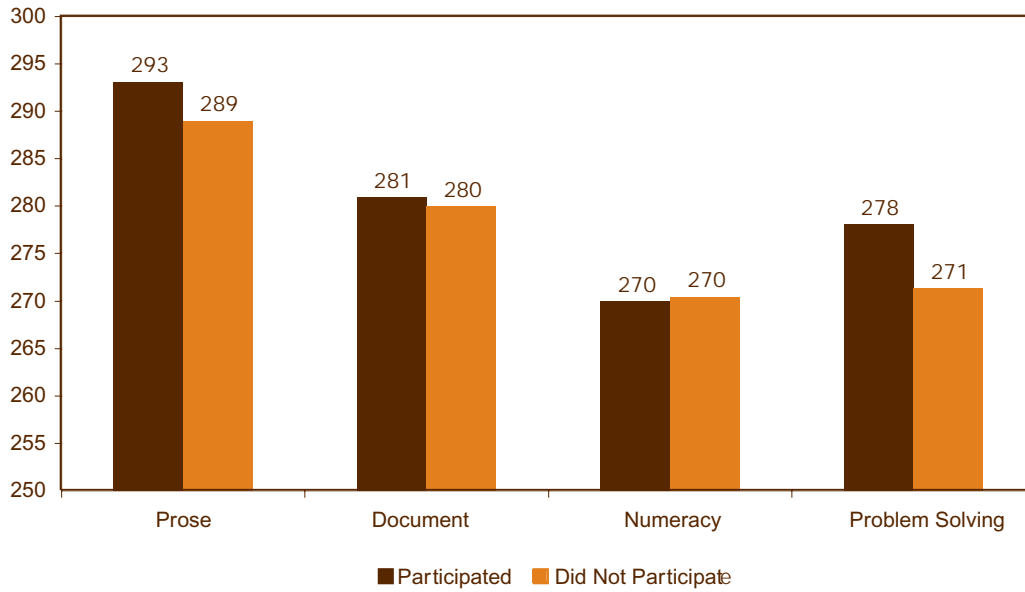


Figure 75 Literacy Scores and Volunteering for Any Other Activity

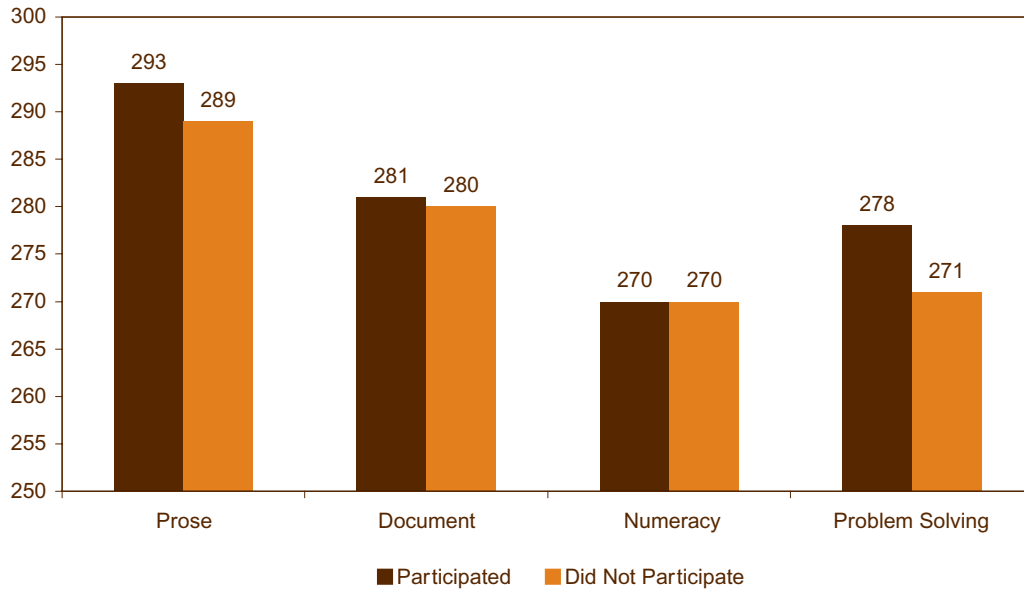


Figure 76 Literacy Scores for Unemployed and Access to Computer/Internet at Home

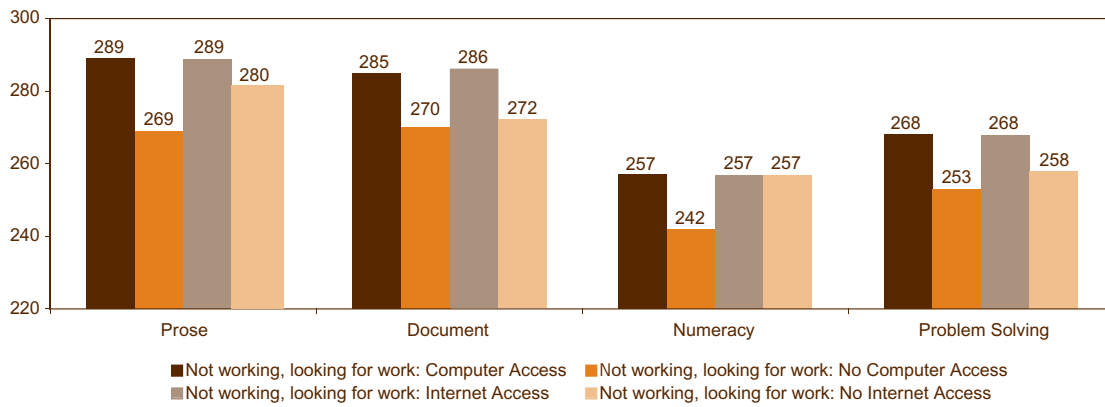


Figure 77 Literacy Scores for Retired Persons and Access to Computer/Internet at Home

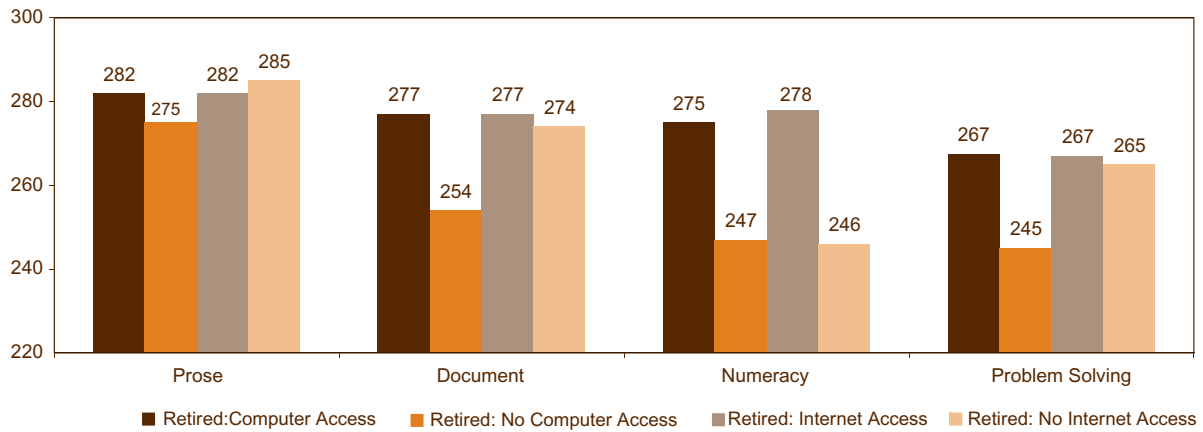


Figure 78 Literacy Scores for Students and Access to Computer/Internet at Home

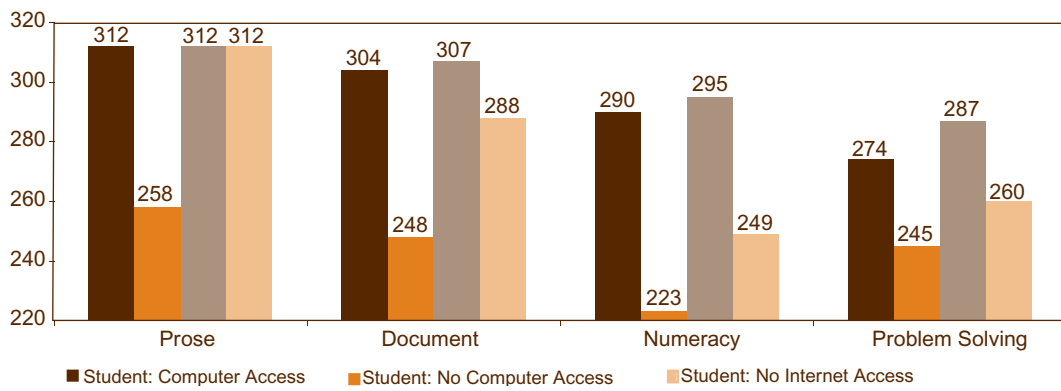
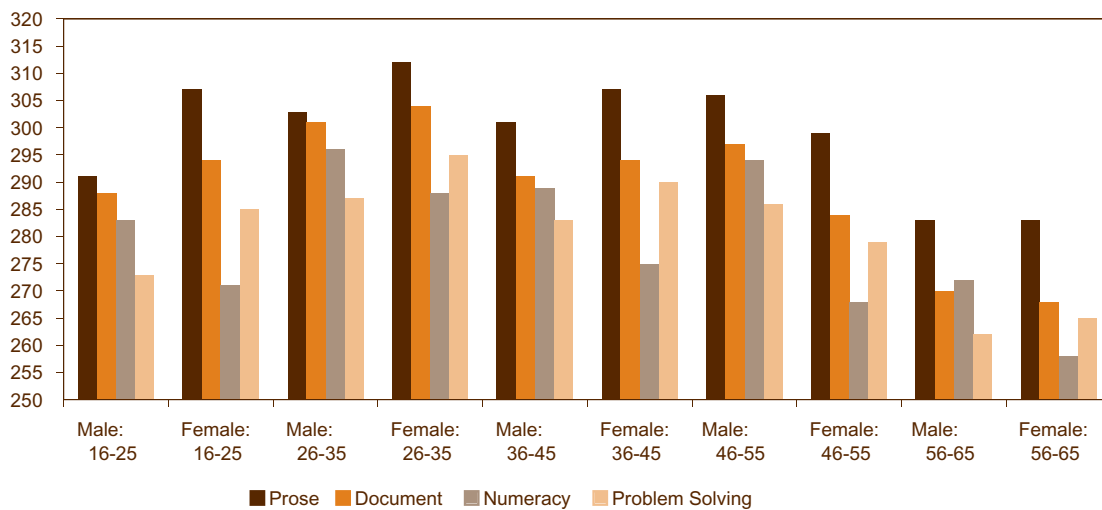


Figure 79 Literacy Scores for Age and Gender and Access to the Internet at Home



## Glossary of Terms

<b>At risk population</b>	This population represents persons who scored less than 275 in the prose, document or numeracy skill sets. These persons lacked the skills to fully function in a knowledge-based society although may have enough to handle basic tasks. Learning a new task would prove difficult for them.
<b>Civic participation</b>	Civic organisations are those that generally help to improve the lives of people. The study looked at participation in these organisations and their relationship to literacy skills.
<b>Document literacy</b>	Having the knowledge and skills required to locate and use information contained in various formats, including job applications, payroll forms, transportation schedules, maps, tables and charts.
<b>Economic outcomes</b>	The ability to produce wealth.
<b>Information communication technology</b>	The ability to use telecommunications services such as the internet and e-mail.
<b>Literacy domains</b>	The skill sets that were tested in the study prose, document, numeracy and problem solving.
<b>Literacy levels</b>	In the study there were five levels. <ul style="list-style-type: none"><li>• Levels 1 and 2 had weak literacy skills and could only handle basic tasks of everyday life.</li><li>• At Level 3, the level of most people, individuals can adequately cope with the tasks of everyday life and were able to take on new tasks.</li><li>• At Levels 4 and 5, persons have higher order information processing skills.</li></ul>
<b>Literacy proficiency</b>	The level at which persons functioned in the skill sets.
<b>Numeracy</b>	Having the knowledge and skills required to effectively manage the mathematical demands of diverse situations.
<b>Problem solving</b>	Involves goal-directed thinking and action in situations for which no ordinary procedure is available. The problem solver may have a well-defined goal, but does not immediately know how to reach it. This represents a challenge. The understanding of the problem and its step-by-step transformation based on planning and reasoning make up the process of problem solving.
<b>Prose literacy</b>	Having the knowledge and skills needed to understand and use information from texts, including editorials, news stories, brochures and instruction manuals.
<b>Response rate</b>	The number of eligible households visited in relation to the number of households that responded to the survey. In this survey the response rate was 82%, the highest of all participating countries.
<b>Skill proficiencies</b>	This is the same as literacy proficiency and the terms are used throughout the document.
<b>Social outcomes</b>	The ability to relate to other persons.
<b>Target population</b>	The persons who the survey was designed for. In this survey, the target population was those aged 16 to 65.