

Launching into Learning
Longitudinal Study
2007 to 2014
Progress Report 2012

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Department of Education
Educational Performance Services



Tasmania
Explore the possibilities

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I Executive summary

This report is part of the ongoing longitudinal study of the *Launching into Learning* (LiL) program that began with an initial evaluation of the 2007 cohort. It concentrates on LiL in 2010 and the multi-year progression of the results since 2007. Starting with the next report the longer term impact of LiL will be evaluated through NAPLAN results as they become available for these LiL cohorts.

This most recent analysis continues to demonstrate that regular participation in LiL consistently and significantly improves educational outcomes across all main performance measures. The number of *LiL students* (those students who participated in LiL regularly¹) scoring below minimum standards on the Prep assessments (*Performance Indicators in Primary Schools – PIPS*) has been reduced for both reading and maths. In addition, the number of LiL students achieving all markers on *Kindergarten Development Check* (KDC) has increased compared to *non-LiL students*².

Differences in the socioeconomic backgrounds of LiL and non-LiL students raise calculated improvements by a small amount only. Simulations conducted for the previous report (*Progress Report 2011*) show that improvements are raised through this by around 2 percentage points for both reading and maths. However, students participating in LiL at less than 75% are included in the non-LiL group and this lowers the calculated improvements. The two effects counteract each other (see section 3.2) and the overall change is less than the around 2 percentage points.

Data collected for the 2012 Prep group shows that 1524 students from 114 Tasmanian government schools regularly attended LiL in 2010. The following results were derived for the 2010 LiL cohort:

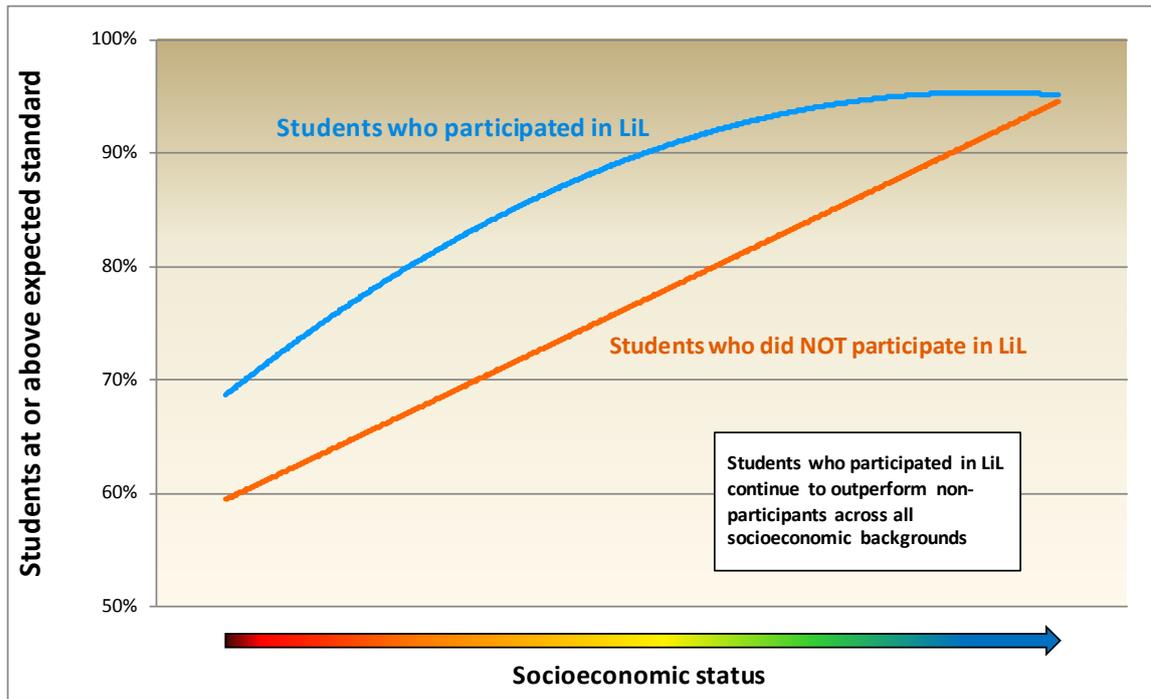
1. The percentage of LiL students below minimum standard in reading (10.0%) on PIPS first assessment was about half that of non-LiL students (19.6%), an improvement of 9.6 percentage points³.
2. The percentage of LiL students below minimum standard in maths (11.4%) on PIPS first assessment was about two thirds that of non-LiL students (17.8%), an improvement of 6.4 percentage points.
3. A greater proportion of LiL students performed at the highest level on PIPS first assessment (*at well above minimum standard*) than non-LiL students (10.7 and 8.7 percentage points more in reading and maths respectively).
4. The proportion of children who achieved all KDC second assessment developmental markers was 9.8 percentage points higher for LiL students when compared to non-LiL students (from 66.7% for non-LiL to 76.5% for LiL).
5. The biggest performance gains in meeting minimum standards on PIPS first assessment occurred for children from more disadvantaged socioeconomic backgrounds (the same occurred for previous LiL cohorts).
6. Follow up analyses for previous LiL groups, 2007, 2008 and 2009 LiL, show that the improvements in PIPS first assessment performance are consistently maintained into PIPS second assessment.
7. The patterns of improvement newly presented in this report strengthen all of the results as multiple data points support consistently across time and without exceptions the benefits of regular participation in LiL.
8. The observed improvements in performance for the LiL cohort are sustained when the results are disaggregated by gender and Aboriginality. This has occurred for all previous LiL cohorts.
9. On average, LiL students attended two more school days in Prep in 2012 than the non-LiL group (five and three days for the previous two LiL cohorts).
10. On average, children from higher socioeconomic backgrounds had greater regular participation rates in 2010 LiL than those from lower socioeconomic backgrounds.
11. Students from all socioeconomic backgrounds made significant gains in educational performance from regular participation in LiL.

¹ Regular participation is defined as attendance at 75% or more of available LiL sessions in the year.

² Prep 2012 children who attended schools that offered LiL in 2010 but did not participate in LiL regularly.

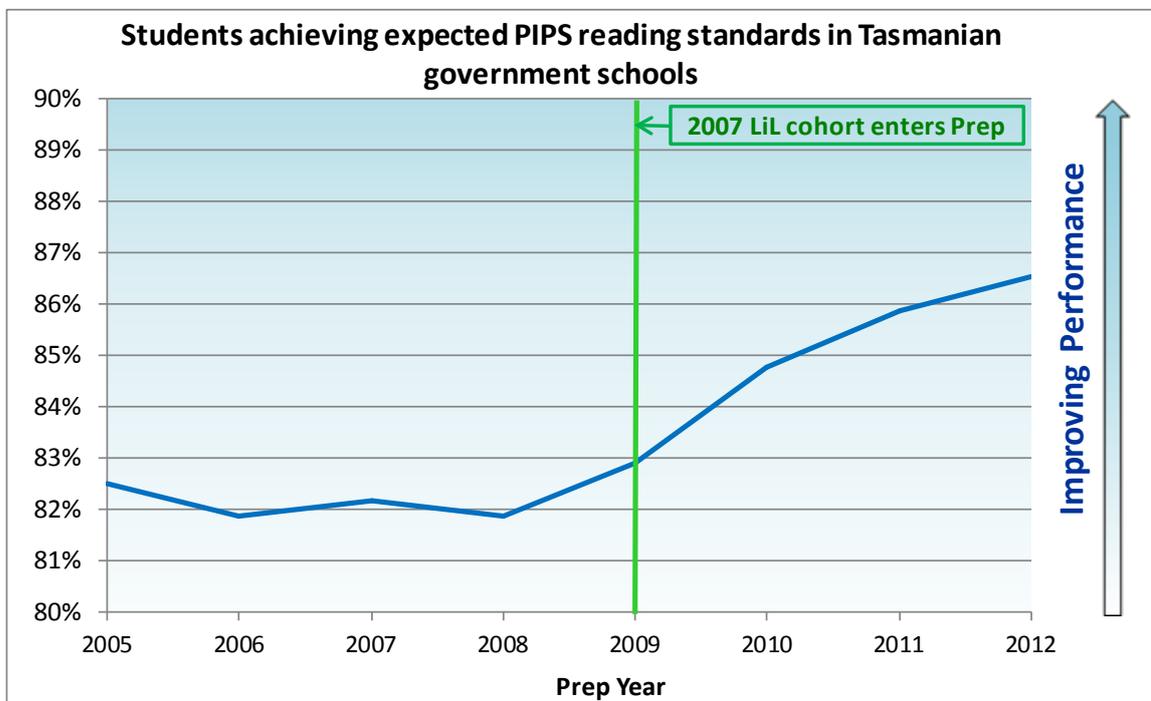
³ The size of improvement is calculated from full precision values. Number rounding may produce small apparent differences.

Figure I.1: Prep 2012 reading performance for the 2010 LiL cohort



Details: The graph shows the percentage of students who achieved 2012 PIPS first assessment scores at or above the expected standard. The results for children who participated in the 2010 LiL program are compared to those at the same schools who did not participate in LiL. Improvements in performance occur for children from all socioeconomic backgrounds.

Figure I.2: The correlation of improving performance and introduction of LiL programs



Details: The graph shows the percentage of students who achieved PIPS first assessment reading scores at or above the expected standard at government schools. The historical pattern of results is represented by a moving average line. Tasmania’s performance started improving around the time when the LiL programs were introduced. The results of PIPS maths assessment show a similar pattern.

2 Background

This report concentrates on the analysis of the 2010 LiL program. LiL programs between 2007 and 2009 were analysed previously as part of the *Launching into Learning Longitudinal Study 2007 to 2014* and yearly reports were produced. This report is the third in the current study.

PIPS assessments of early reading and maths skills are available for LiL students early and late in the Prep year. This is the second year after these students have last participated in LiL. These reports rely on the PIPS assessments as the first measures of literacy and numeracy performance and thus a yearly report is released about two years after LiL programs conclude for the year.

The analysis of LiL by EPS is an ongoing project and results from each year combine to enhance our understanding of the impacts this program has on children and their families.

In this report the accumulation of LiL results from several years has enabled, for the first time, an emphasis on the multi-year aspects of the *Launching into Learning Longitudinal Study 2007 to 2014*. The two key points from this emphasised multi-year analysis are that regular participation in LiL has consistently produced significant positive outcomes in all the years the program was delivered and that this consistency across time strengthens the reliability of the results above those from any single year. This aspect of the analysis will continue to grow in future reports.

This report is presented in a shorter version than previously produced, as the methodology of the analysis has been retained from past reports. This methodology and associated explanations can be referenced in these earlier reports.

In 2012 EPS started gathering daily LiL attendance data for all participating students. Detailed information on the content of LiL programs, funding and staffing is also collected. This is a much richer source of information on how LiL is delivered than existed previously. This data can enable a more detailed evaluation of the LiL program and how it is delivered. Hence the current report is being released in a condensed version because it occurs at a transition point in the analysis of LiL and still fully relies on previously developed analysis methods.

3 Results

3.1 Kindergarten Development Check

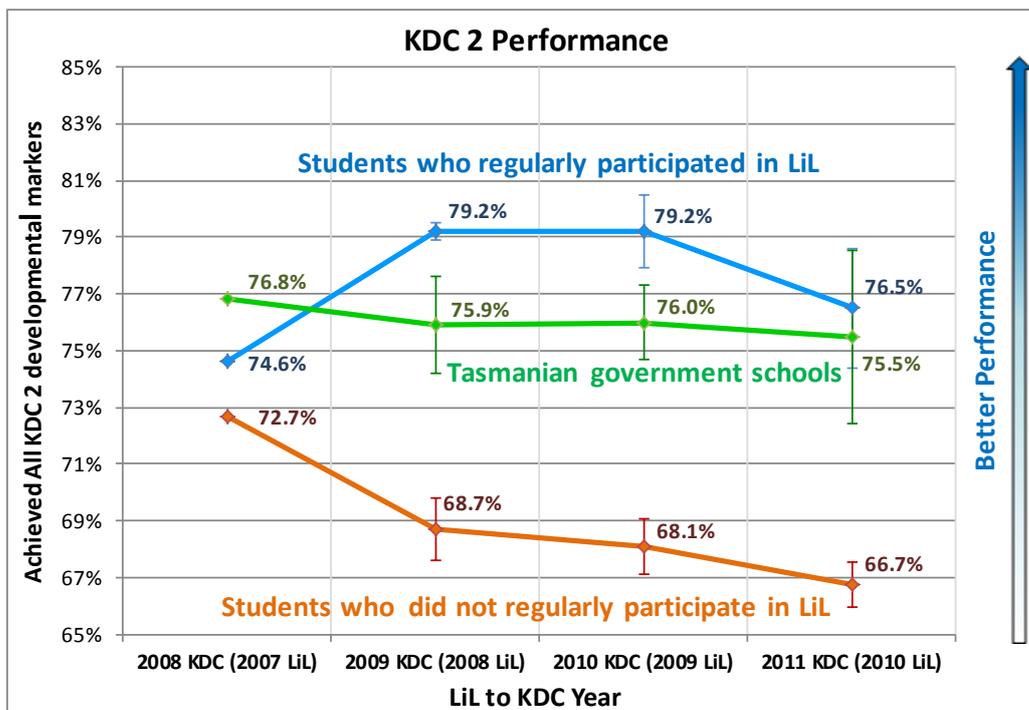
The KDC assessment evaluates Kindergarten students on a set of developmental markers twice in the year. This is the earliest post LiL assessment available for these children as part of a statewide group. It is a diagnostic tool for identifying potential problems in a child's development and measures performance across three main areas of *Thinking and Problem Solving*, *Literacy and Numeracy* and *Health and Wellbeing*. Not meeting even a single developmental marker out of 21 classifies a child as *At Risk*. The results of the KDC 2 collected late in the kindergarten year are used for this analysis. The KDC 1 assessment is not used because the KDC 2 results are regarded as more stable. *Students who did not regularly participate in LiL* are only those who attended schools where LiL was offered but did not regularly participate in LiL.

As observed for previous LiL cohorts, there were proportionally fewer children identified as *At Risk* in the 2010 LiL group compared to the non-LiL group (76.5% achieved all KDC markers compared to 66.7% of all children at LiL schools who did not regularly participate in LiL).

Figure 1.3 shows that over the period 2009 to 2011, children who regularly participated in LiL, on average, outperformed their peers on the KDC 2 assessment (i.e. there were lower levels of *At Risk* students among the LiL group than the non-LiL group). The 2008 result showed a smaller improvement for LiL students as this reflected the first smaller LiL cohort entering Kindergarten.

The size of improvement in KDC 2 results when the LiL and non-LiL groups are compared remained consistent for 2009, 2010 and 2011 KDC 2 (improvements of 10.5, 11.1 and 9.8 percentage points respectively). In 2011 KDC 2 assessment the performance of LiL students moved closer to the performance of all Tasmanian government schools, partly explained by increase in the number of students regularly participating in LiL (from 1235 students in 2009 LiL to 1524 students in 2010 LiL). The overall trend of slightly decreasing KDC 2 performance for the three groups should be interpreted cautiously in view of the error bars and variability inherent in the KDC assessments.

Figure 1.3: The multi-year pattern of LiL students outperforming peers on KDC 2



Details: The graph compares the percentages of students at who achieved all of the KDC second assessment developmental markers at government schools. The total error bars in Figure 1.3 are equivalent to twice the percentage of students who attended Kindergarten but were not assessed on KDC 2. This error estimate represents a statistically highly unlikely worst case scenario and probably overestimates the uncertainty in the results.

3.2 Performance Indicators in Primary Schools

PIPS assesses reading and maths ability of students in Prep. There are two assessments in the Prep year; the first is early in the year (PIPS 1) and the second later in the year (PIPS 2). The analysis below is based on the first PIPS assessment. In general, children who have participated in LiL start Prep at the beginning of the second year after they stop attending LiL. Thus the results of these assessments occur well after participation in LiL and indicate whether the effects of the LiL program are maintained.

Children that regularly participated in LiL in 2010 outperformed children at the same schools that did not regularly participate (e.g. for Reading: LiL group – 90.0% at or above expected standard; non-LiL group 80.4% at or above expected standard).

Figure 1.4 and Figure 1.5 show that, on average, children who regularly participated in LiL outperformed their peers on average consistently between 2010 and 2012. *Students who did not regularly participate in LiL* are only those who attended schools where LiL was offered but did not regularly participate in LiL. *Students at or above expected standard* are those with results in the *Within expected* range of PIPS scores or better.

The results of the 2009 Prep LiL group are for the smaller cohort who attended LiL in 2007 when the LiL programs were newer. This is the only year when LiL students did not outperform the aggregated state in maths.

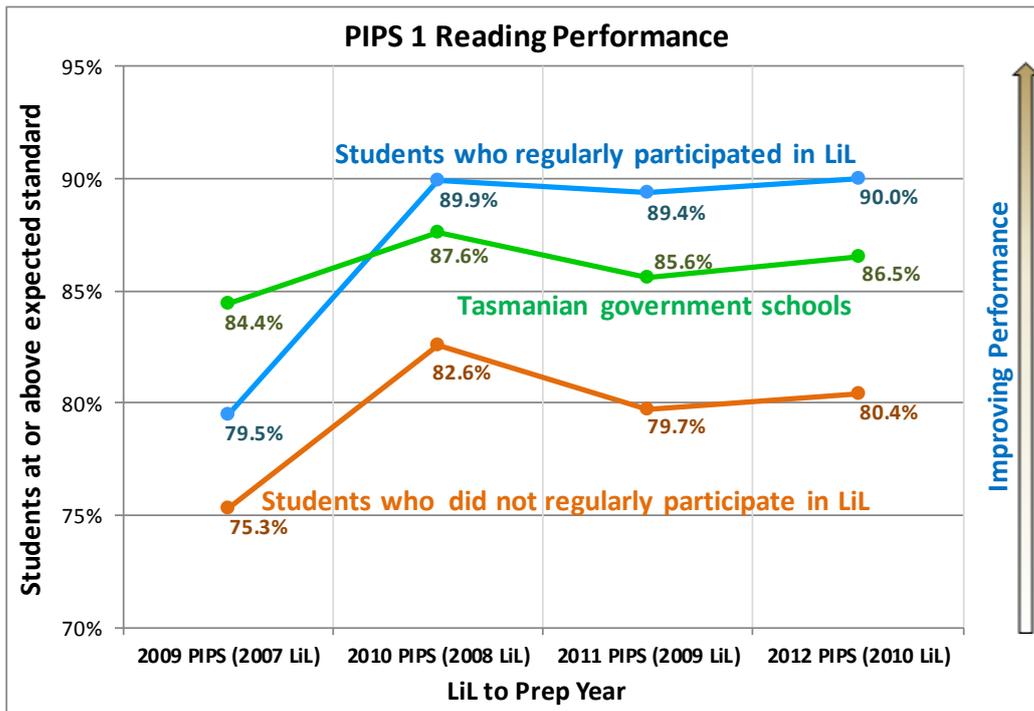
The statewide results are averaged for all students at all government schools whether they attended LiL or not. Thus the statewide results are raised by the inclusion of LiL students. The amounts by which LiL students would outperform a hypothetical Tasmania government school cohort where LiL did not exist is underestimated. This way of producing an average state result is chosen because it avoids the biases involved in trying to recreate a statewide result without the influence of LiL and avoids potential claims that improvements due to LiL are overestimated. Instead the resulting bias means that reported improvements are likely to be smaller than the real benefits.

Some of the children who are analysed as part of non-LiL students have attended LiL less than regularly. Partial participation in LiL may provide partial benefits and raise average performance of the *Students who did not regularly participate in LiL*, leading to an underestimate of improvements from regular participation in LiL.

Monte Carlo simulations conducted for the previous report (*Progress Report 2011*) show that the uneven distribution of socioeconomic backgrounds between LiL and non-LiL students raises the size of the calculated improvements in PIPS 1 results by 2.5 and 2.2 percentage points in reading and maths respectively. Figure 1.10 in section 3.4.1 shows that socioeconomic backgrounds by LiL participation in 2009 and 2010 are similar and the socioeconomic background biases will be similar as well. Thus the socioeconomic bias in the improvements is small for both years.

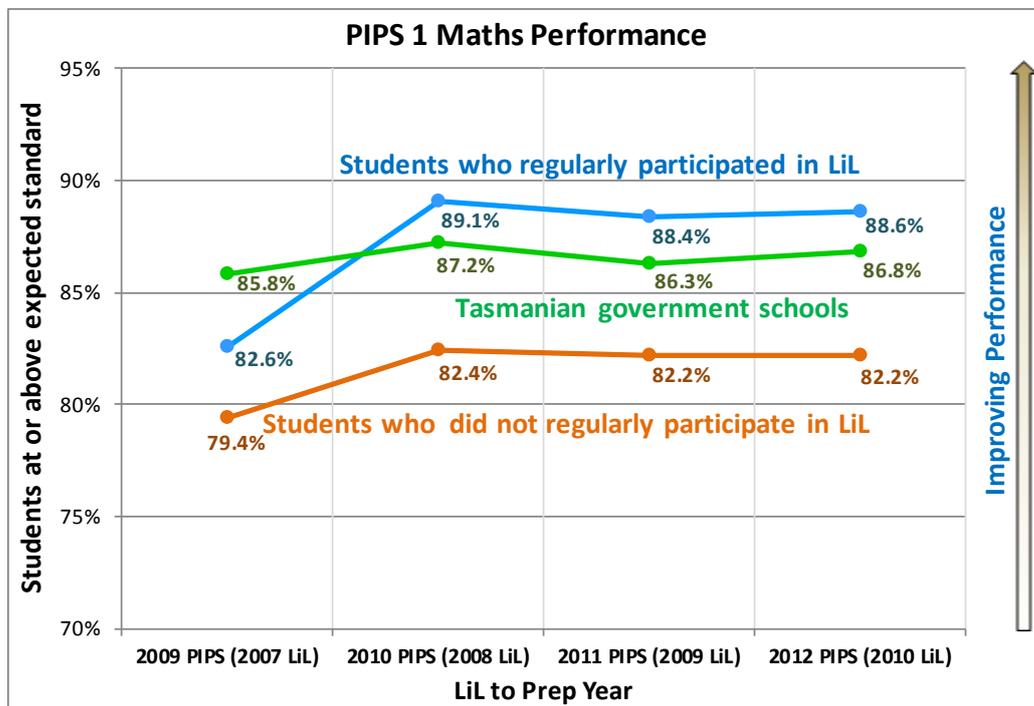
It should also be noted that counteracting factors will cause underestimates in the size of the calculated improvements: students participating in LiL at less than 75% are included in the non-LiL group and this will reduce the apparent gap between LiL and non-LiL students and thus reduce the derived improvements; the same benefits of partial participation are not included in the improvement figures.

Figure I.4: The multi-year pattern of LiL students outperforming peers on PIPS reading



Details: The graph compares the percentage of students with results at or above the expected standard for the first PIPS reading assessment at government schools.

Figure I.5: The multi-year pattern of LiL students outperforming peers on PIPS maths



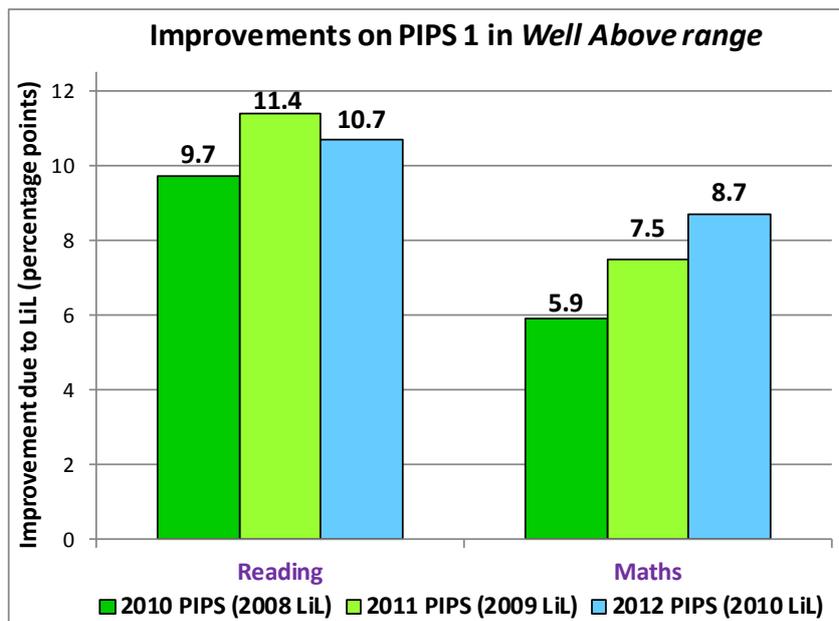
Details: The graph compares the percentages of students with results at or above the expected standard for the first PIPS maths assessment at government schools.

3.2.1 Improvements in PIPS Well Above range

Students who do very well in the PIPS assessments perform in the *Well Above range* of PIPS scores. Improvements complementary to meeting minimum standards have been observed as increases in the proportion of these top performing students. This demonstrates that regular participation in LiL also helps more students to perform at the highest levels. Thus LiL improves educational outcomes beyond just meeting minimum standards.

Figure 1.6 presents these improvements as percentage point increases in students performing in the *Well Above range* on PIPS 1. The differences are calculated between LiL and non-LiL students at LiL schools only and aggregated for all socioeconomic backgrounds. A full description of benefits gained from regular participation in LiL will benefit by including this measure.

Figure 1.6: Performance in Well Above range of PIPS first assessment



Details: The graph shows increases in the proportion of students performing at the highest level on PIPS 1 after regularly participating in LiL during the year prior to Kindergarten.

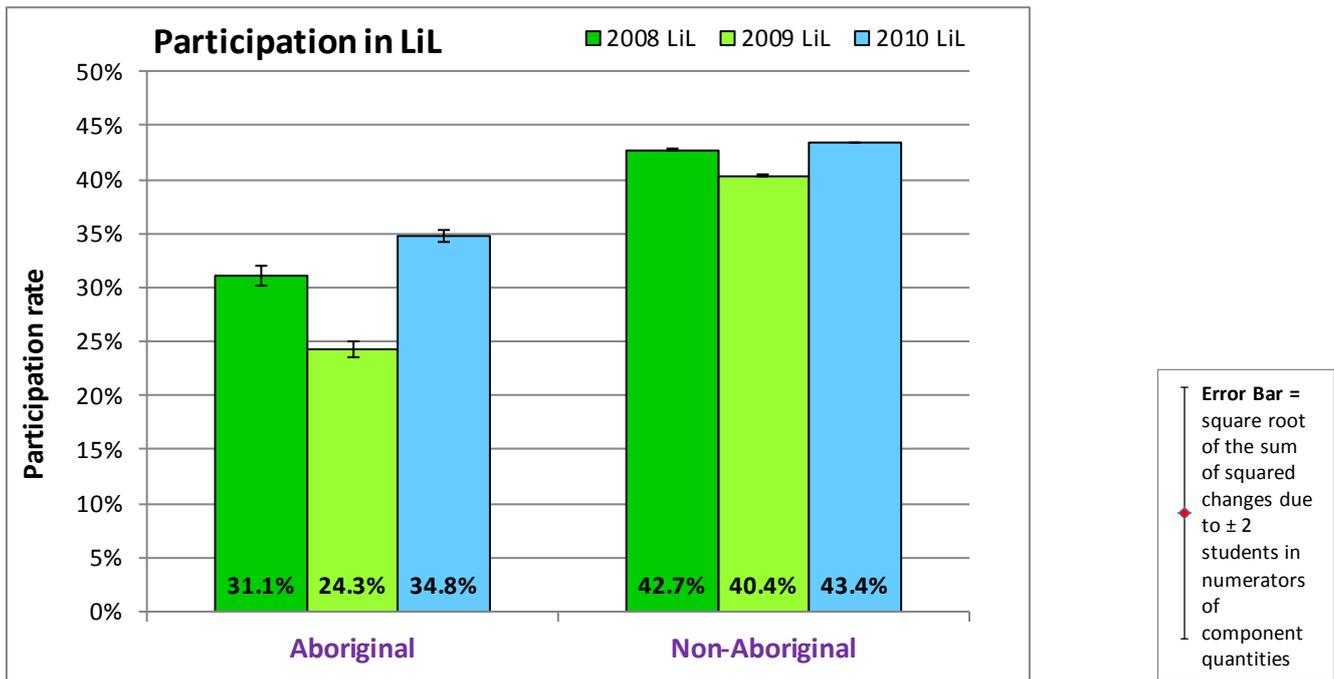
3.3 LiL and Aboriginal students

3.3.1 LiL Participation for Aboriginal students

The rates of regular participation in LiL for Aboriginal students were compared to those of non-Aboriginal students. This participation rate for Aboriginal students varies more from year to year than for non-Aboriginal students. The amount of variation is likely due to the relatively smaller counts of Aboriginal students. The regular participation rate in LiL for Aboriginal students is consistently lower than for non-Aboriginal students.

The participation rates shown in Figure 1.7 are calculated when these students attended Kindergarten at the time of the LiL participation survey. This approach keeps the counts closer in time to when LiL programs were delivered than using the later PIPS data and this reduces drift in group membership.

Figure 1.7: Participation in LiL disaggregated by Aboriginal status



Details: The graph shows differences between Aboriginal and non-Aboriginal children in the rates of regular participation in LiL between 2008 and 2010. The error bars in this diagram indicate the scale of changes in the calculated percentages that would occur from small changes in the membership of the groups. In this graph the numerator used to derive the error bars is the relevant count of LiL students. This method of estimating error bars is mainly a measure of noise in the data associated with relatively small student counts.

3.3.2 Improvements observed in PIPS for Aboriginal Students

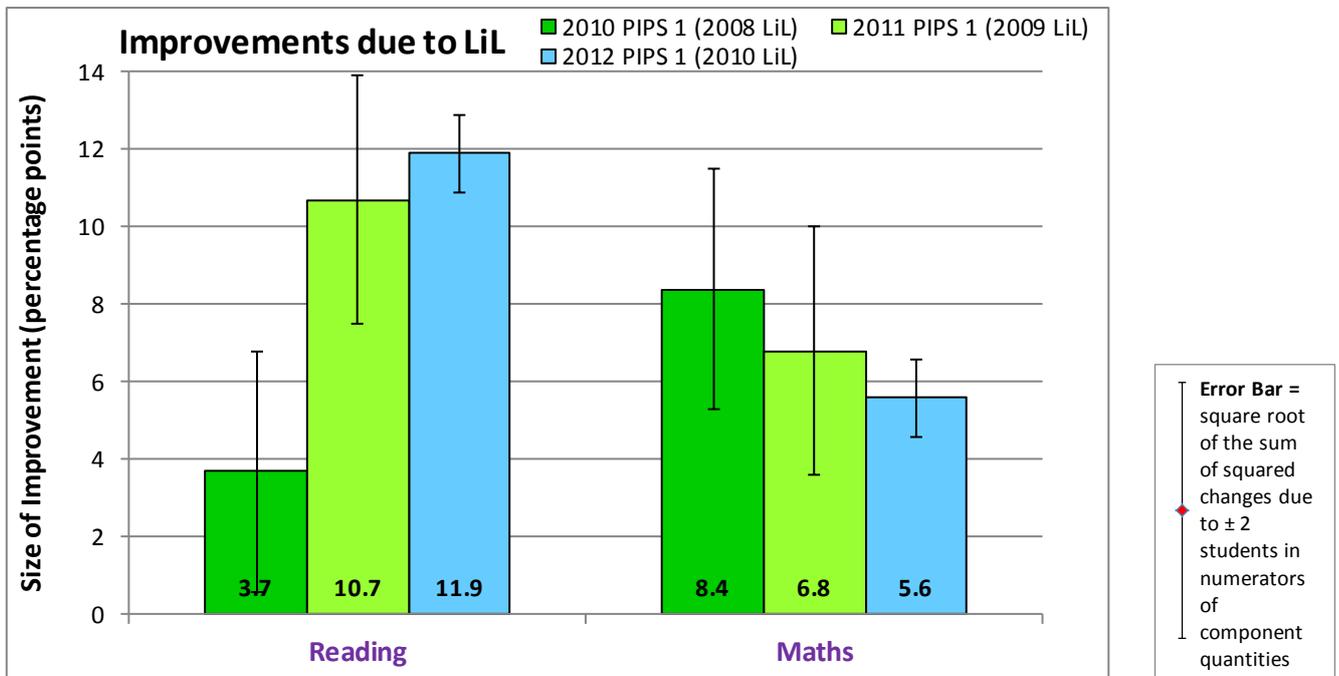
The benefits of regular participation in LiL for Aboriginal students were analysed with the same methods as for all students. The students were disaggregated by their Aboriginal status and differences in performance were compared within each group for LiL and non-LiL students.

The results from analysis of PIPS reading and maths show that Aboriginal students benefit significantly from regular participation in LiL. The sizes of average improvements Aboriginal students obtain are similar to those for non-Aboriginal students.

Figure 1.8 shows improvements in performance defined as the percentage point increase in students meeting minimum standards (scoring above the *Below range* of PIPS scores). The error bars are large relative to the improvements because the counts of Aboriginal students are relatively small and the movement of a couple of students into or out of *Below range* makes a proportionally large difference. The error bars in this diagram are provided to indicate the scale of changes that would occur from small shifts in the membership of the groups (as indicated in the side error bar graph).

It should be noted that the apparent decrease in maths improvements is most likely an artefact due to data noise caused by relatively low counts of Aboriginal students. The three maths improvements have values that agree within the error bars.

Figure 1.8: LiL improvements for Aboriginal students



Details: The graph shows the improvements in PIPS I performance between 2010 and 2012 gained by Aboriginal students from regular participation in LiL.

Table I.1: Students in the *Below range* 2012 PIPS I scores disaggregated by Aboriginality

		2010 LiL students	2010 Non-LiL students	Improvement in meeting minimum standards
Aboriginal	Reading	16.1% (124)	28.0% (225)	+11.9
	Maths	20.2% (124)	25.8% (225)	+5.6
Non-Aboriginal	Reading	9.4% (1288)	18.5% (1591)	+9.1
	Maths	10.5% (1288)	16.7% (1591)	+6.2

Details: The percentages of 2012 PIPS I scores in the *Below range* at the 2010 LiL schools disaggregated by regular LiL participation and Aboriginality. These improvements are percentage point increases in students meeting minimum PIPS I standards after regularly participating in LiL during the year prior to Kindergarten. The green bracketed numbers are counts of students with PIPS I results in all performance ranges and are the denominator for the percentages.

Table I.2: Students in the *Well Above range* 2012 PIPS I scores disaggregated by Aboriginality

		2010 LiL students	2010 Non-LiL students	Improvement in <i>Well Above range</i>
Aboriginal	Reading	16.9% (124)	7.6% (225)	+9.3
	Maths	12.9% (124)	7.6% (225)	+5.3
Non-Aboriginal	Reading	26.7% (1288)	16.2% (1591)	+10.5
	Maths	24.2% (1288)	15.5% (1591)	+8.7

Details: The percentages of 2012 PIPS I scores in the *Well Above range* at the 2010 LiL schools disaggregated by regular LiL participation and Aboriginality. These improvements are percentage point increases in students performing at the highest level on PIPS I after regularly participating in LiL during the year prior to Kindergarten. This measure shows that regular participation in LiL not only helps Aboriginal students to meet minimum PIPS standards but also makes them more likely to perform at the highest level.

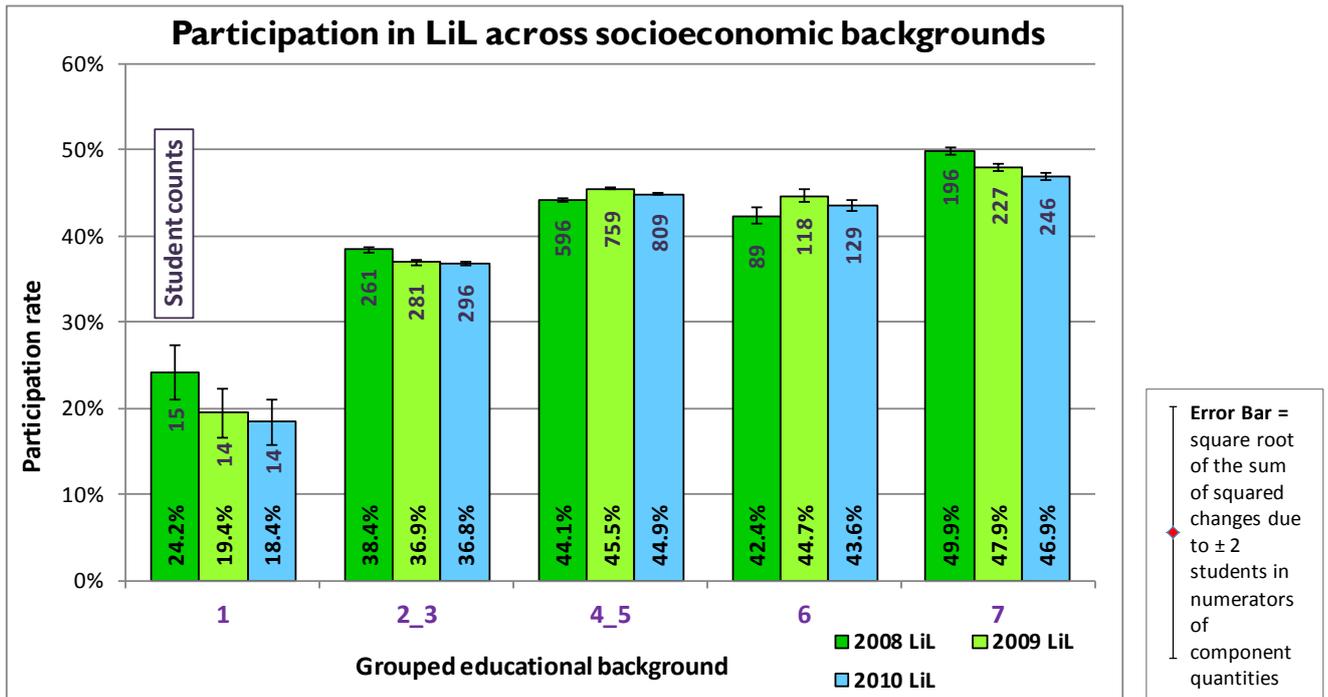
3.4 LiL and Socioeconomic Background

3.4.1 LiL Participation by Socioeconomic Background

Rates of regular participation in LiL vary significantly for children from different socioeconomic backgrounds. Children from socioeconomically disadvantaged backgrounds gain significant improvements in their educational performance from regular participation in LiL. However, proportionally fewer of these children attend LiL regularly. Increasing participation in LiL for these children would improve their average educational outcomes.

Figure 1.9 shows rates of regular participation in LiL by socioeconomic background.

Figure 1.9: The influence of socioeconomic background on LiL participation rate



Details: The graph shows how socioeconomic background of children affected the rates of regular participation in LiL between 2008 and 2010. The significance of differences in the heights of the columns should be determined by comparing the sizes of these error bars. In this graph the numerator used to derive the error bars is the relevant count of LiL students.

Table 1.3: Explanations of the Socioeconomic Education Indicator codes

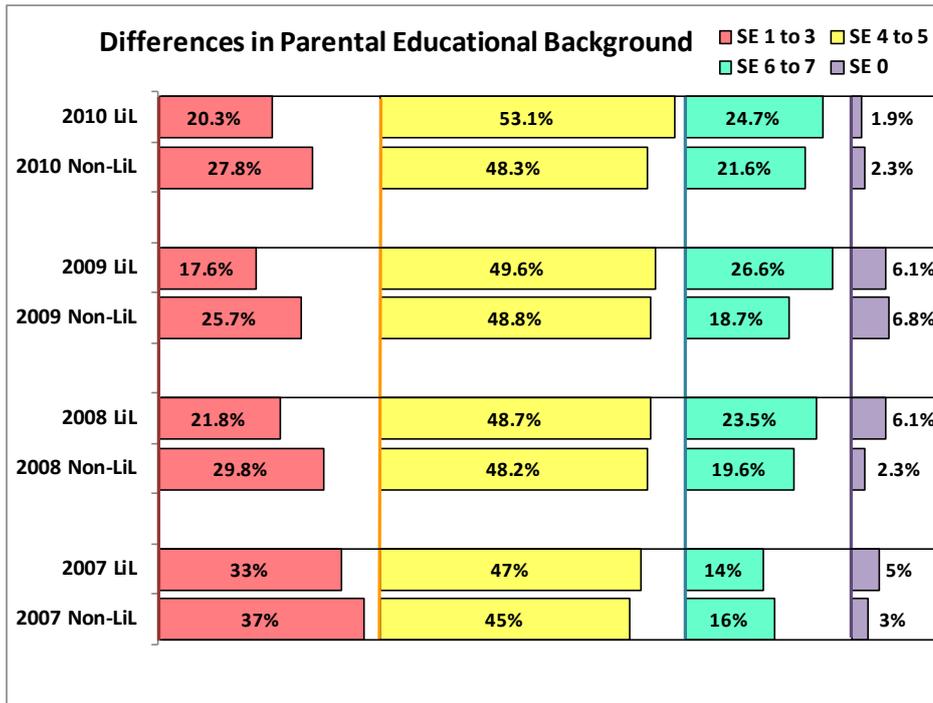
Education Indicator	Description
0	Not stated/Unknown
1	Year 9 or equivalent or below
2	Year 10 or equivalent
3	Year 11 or equivalent
4	Year 12 or equivalent
5	Certificate I to IV (including Trade certificate)
6	Advanced Diploma/Diploma
7	Bachelor degree or above

Details: This table gives parental education background codes from the *Data Implementation Manual* produced by MCEETYA Performance Measurement and Reporting Taskforce.

The composition of socioeconomic backgrounds for students regularly attending LiL has changed from 2007 LiL to 2010 LiL. The proportion of children with socioeconomic backgrounds from 1 to 3 has reduced as the size of the LiL program grew. The corresponding proportions for the non-LiL students are a control to show that the changes are due to changes in the composition of socioeconomic backgrounds and are not due to just changes in participation rates.

Figure 1.10 puts participation rates varying with socioeconomic background in the context of the proportion of students that they affect. For example, the rates of regular participation in LiL are lower for socioeconomic backgrounds 1 to 3, but the numbers of students with those backgrounds are relatively small. The socioeconomic backgrounds are grouped to remove data noise due to smaller counts of children. The purple parts of the bars represent the fractions of students for whom the parental educational background was not given or is unknown.

Figure 1.10: Socioeconomic background of students disaggregated by LiL participation



Details: The graph shows the relative sizes of socioeconomic background groups for children who regularly participated in LiL and those who did not.

3.4.2 Improvements observed in PIPS by socioeconomic background

The amounts of improvements in PIPS literacy and maths performance obtained from regular participation in LiL vary with the socioeconomic background of students. Accordingly the 2012 LiL and non-LiL groups were subdivided by socioeconomic background and differences in performance compared. In order to increase student counts within these subdivisions some of the socioeconomic backgrounds were aggregated where similarities in outcomes made this reasonable.

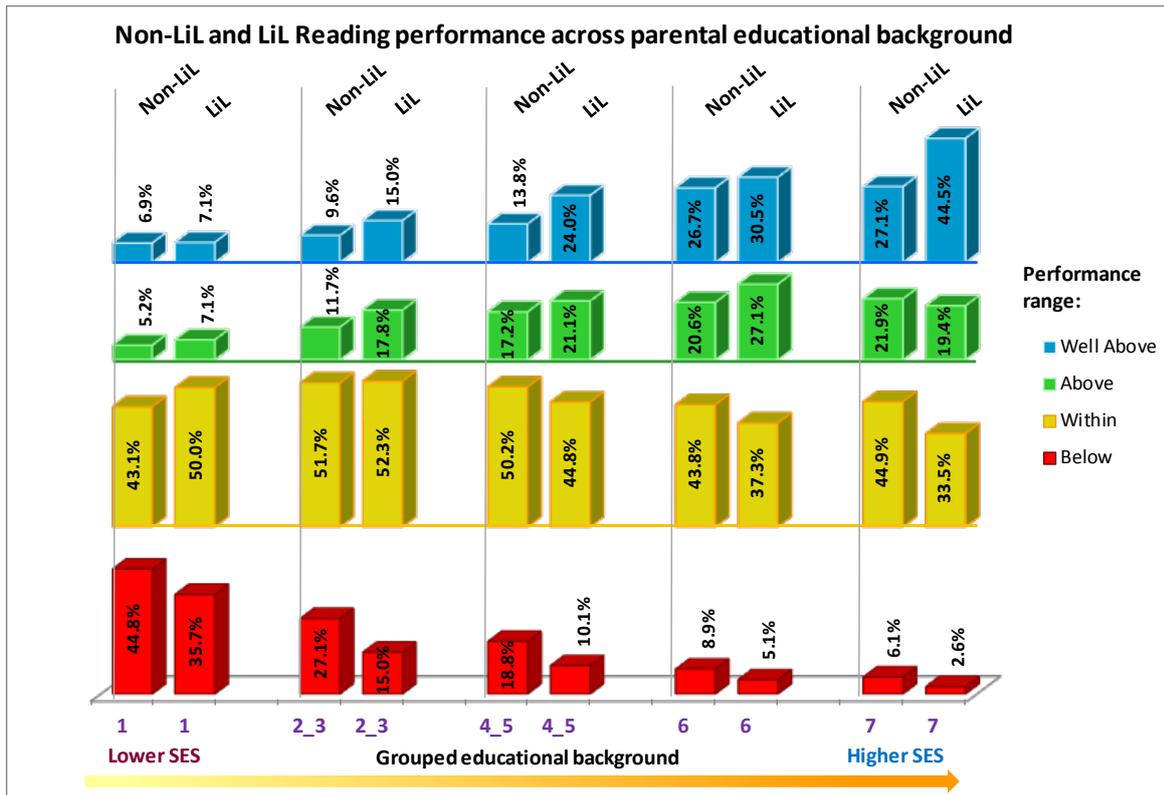
Students who regularly participated in LiL outperform their peers at the same schools across all socioeconomic backgrounds in meeting minimum standards and in the proportion of those performing above average.

Both graphs in Figure 1.11 show for each educational background a smaller percentage of students in *Below range* in the LiL than in non-LiL. This is an improvement in performance represented by a reduction in the proportion of those below minimum standard.

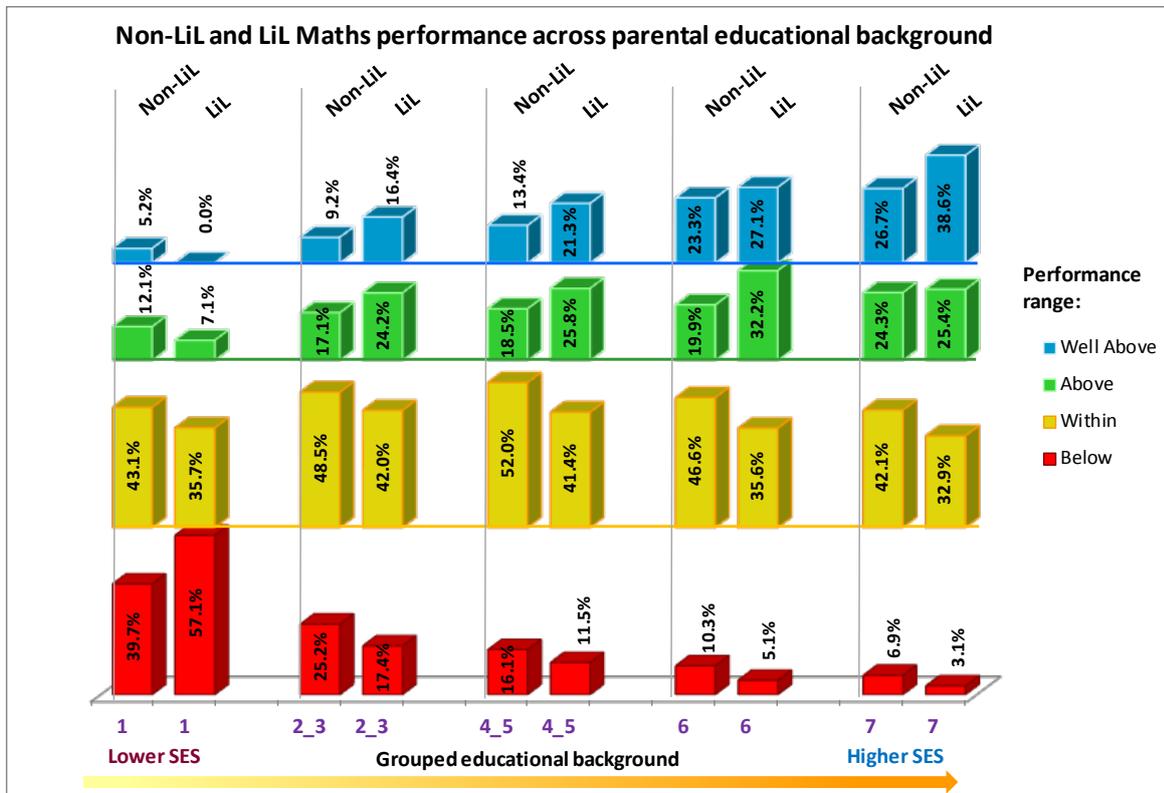
Both *Above* and *Well Above range* represent students performing above average. In a reverse to the way improvements are recognised for the *Below range*, a higher percentage of students in the LiL than in non-LiL group in either the *Well Above range* (or both the above average ranges combined) is an improvement represented by an increase in the proportion of above average students.

Due to relatively low counts of students with family educational background of '1', percentages in the corresponding columns contain large uncertainties but were left ungrouped because of consistent differences with the next higher group.

Figure I.11: Improvements in 2012 PIPS I performance due to 2010 LiL



Details: The graphs show changes in outcomes due to regular participation in LiL across all PIPS performance ranges disaggregated by socioeconomic background. The PIPS performance ranges are ordered by outcomes from the lowest in *Below* range to the highest in *Well Above* range.



3.5 Sustainability of Improvements due to LiL

This part of the analysis addresses the sustainability of improvements that regular participation in LiL produces. PIPS assessments are given twice in the same year and have been used in this report as a measure of how the improvements are maintained. The first assessment occurs at the beginning and second towards the end of the Prep year.

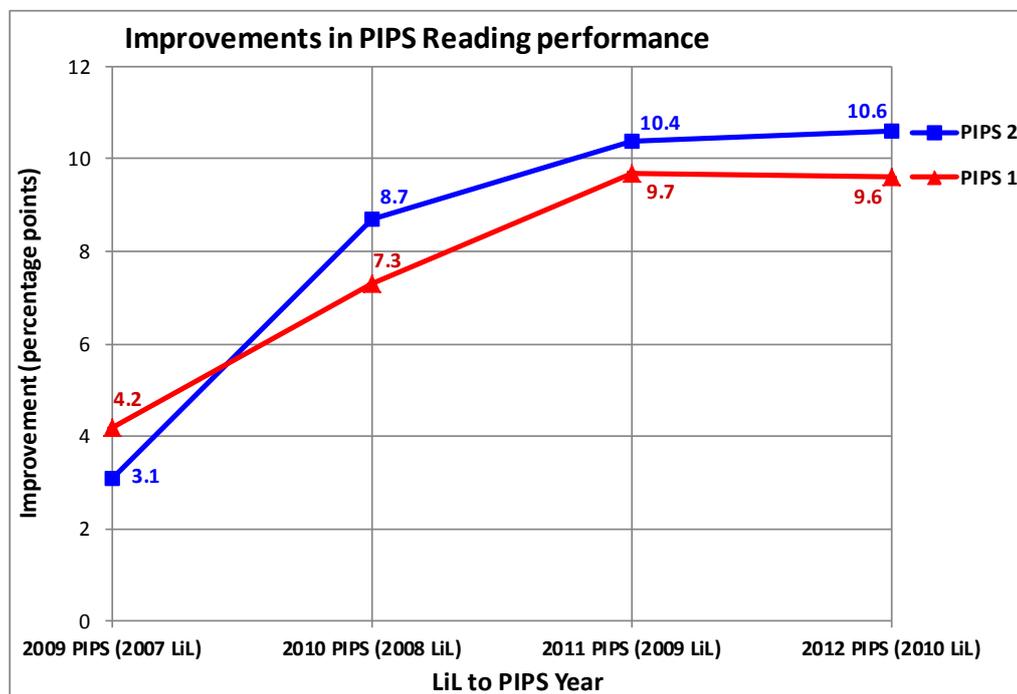
Figure I.12 and Figure I.13 show that improvements in PIPS Reading and Maths performance are sustained over the Prep year for all recent LiL cohorts. The 2007 LiL cohort who completed PIPS assessment in 2009 was relatively small and LiL programs were newer at the time. Since PIPS 2 improvements from regular LiL participation are consistently greater than PIPS 1 improvements, the benefits gained grow over the Prep year. This growth suggests that LiL children are learning at a faster rate and leaving their non-LiL peers increasingly farther behind.

It should also be considered that the PIPS assessments occur in the second year after participation in LiL stops and yet the improvements in performance clearly appear. This shows that regular participation in LiL benefits children through Kindergarten into Prep; the benefits are maintained over a period of at least two years.

The influence of Kindergarten applies to both the LiL and non-LiL groups and thus does not account for improvements disaggregated by LiL participation.

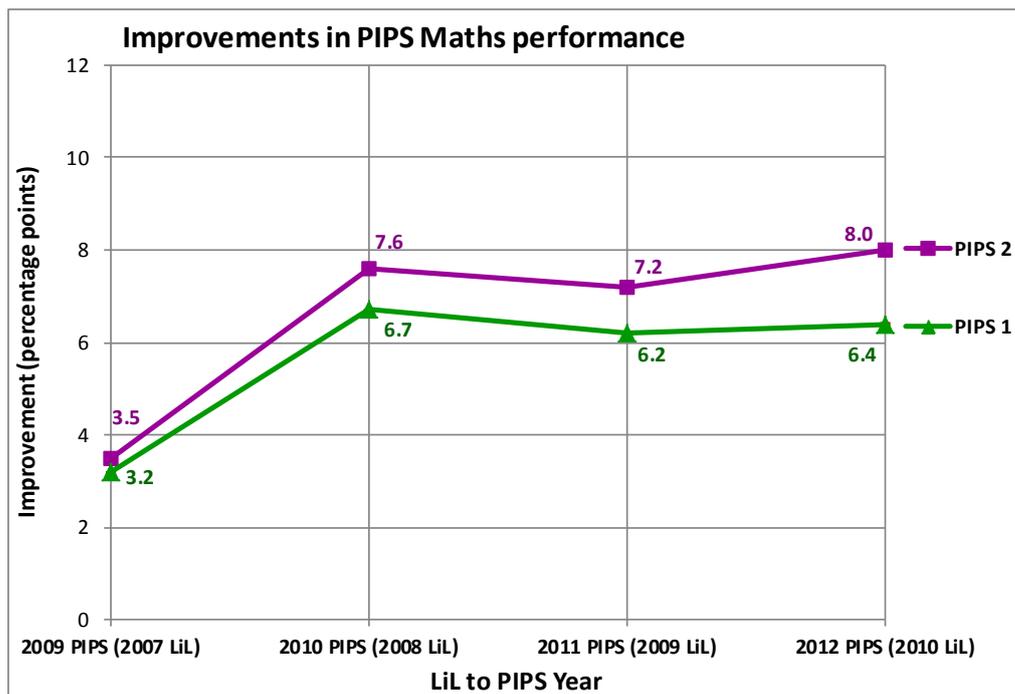
The 2013 NAPLAN results will be used to provide more answers to this question when they become available for the 2008 LiL cohort (the children who were assessed on PIPS in 2010). The 2008 LiL cohort is the first large cohort (comparable in size to those in the following years) that participated in LiL after the programs were well established.

Figure I.12: Improvements in the proportion of students at or above the expected range of reading scores in PIPS 1 and PIPS 2, 2009 – 2012



Details: The graphs show improvements in PIPS reading first and second assessments between 2009 and 2012 matching LiL cohorts between 2007 and 2010 respectively.

Figure I.13: Improvements in the proportion of students at or above the expected range of maths scores in PIPS 1 and PIPS 2, 2009 – 2012



Details: The graphs show improvements in PIPS maths first and second assessments between 2009 and 2012 matching LiL cohorts between 2007 and 2010 respectively.

4 Conclusions

The *Launching into Learning Longitudinal Study 2007 to 2014* has established that regular participation in LiL gives children a significant boost in general development, reading and maths performance. These improvements are maintained after participation in LiL ceases, with LiL children showing improved results through Kindergarten and at least till the end of Prep. These benefits occur irrespective of gender, socioeconomic background or Aboriginal status.

The accumulated multi-year data emphasises that LiL programs have consistently delivered improvements in educational outcomes in every year after they were established.

The department continues to collect more detailed LiL data to aid in further evaluation and to optimise program delivery.