

Appendix F:

Comparison of learning gains

To evaluate the impact of the initiative on student achievement, we compared the learning gains of tutored students who had median prior scores ('typical tutored students') with those of non-tutored students who had similar prior scores.

By comparing tutored and non-tutored students who had similar prior scores, we could isolate and analyse the impact of the initiative on students' learning growth.

While this approach is distinct from the methodology outlined in Appendix E, it confirmed our conclusions from using that method.

Prior-score matched analysis

Comparison between tutored and non-tutored students at the same baseline

As stated in section 1, students who received tutoring generally did not show a higher learning gain than similar students who did not receive tutoring.

Figure F1 shows the learning gains of tutored and non-tutored students at same baselines in reading. Figure F2 shows the gains in maths.

The reading learning gains of non-tutored students were higher than those of tutored students for all year levels from year 3 to year 9.

The maths learning gains of non-tutored students were higher than those of tutored students for all year levels from year 3 to year 10.

Interpreting the tables in Appendix F

The baseline scores for each year level are the median scores achieved by tutored students.

Here we use the learning gains for year 3 in reading, as shown in Figure F1. For example:

A typical tutored student achieved 96.0 at the end of 2022 (their baseline score).

If a tutored and non-tutored student both achieved 96.0 at the end of 2022, a typical tutored student would gain 7.1 by the end of 2023. But their non-tutored peer would gain 7.4.

Figure F1: Learning gains in reading of tutored and non-tutored students with the same baselines

Year level	Baseline score	Gain of tutored students	Gain of non-tutored students
Year 3	96.0	7.1	7.4
Year 4	108.0	4.0	4.7
Year 5	117.0	1.3	1.9
Year 6	121.5	1.8	2.3
Year 7	124.6	-1.3	0.3
Year 8	124.7	-0.1	0.9
Year 9	128.0	-0.4	0.5
Year 10	131.9	0.2	0.1

Source: VAGO, using department data.

Figure F2: Learning gains in maths of tutored and non-tutored students with the same baselines

Year level	Baseline score	Gain of tutored students	Gain of non-tutored students
Year 3	103.1	4.7	6.6
Year 4	110.0	4.1	5.0
Year 5	116.9	3.2	4.4
Year 6	120.9	3.4	4.0
Year 7	123.1	1.3	2.2
Year 8	125.3	1.3	2.0
Year 9	129.0	0.7	1.5
Year 10	132.3	0.9	1.3

Source: VAGO, using department data.

Baseline comparison for disadvantaged students

As stated in Section 1, we found that disadvantaged students who received tutoring did not have greater learning growth than disadvantaged students who did not receive tutoring.

Figure F3 and F4 provide detailed breakdown of the learning gain comparisons between tutored and non-tutored disadvantaged students in all year levels in reading and maths, respectively. Again, we made comparison between tutored and non-tutored students who had the same baseline scores at the end of 2022.

As shown in Figure F3, in the reading subject, learning gains of non-tutored disadvantaged students are higher than those of tutored disadvantaged students in all year levels from year 3 except for year 6 and year 10.

The maths learning gains of non-tutored students were also higher than those of tutored students, but for all year levels from year 3 to year 10, except year 7, as shown in Figure F4.

Figure F3: Learning gains in reading of tutored and non-tutored students at same baselines: disadvantaged students

Year level	Baseline score	Gain of tutored students	Gain of non-tutored students
Year 3	92.5	7.0	7.1
Year 4	102.5	5.2	5.3
Year 5	112.9	1.3	1.7
Year 6	117.5	2.1	2.1
Year 7	122.4	-2.1	-0.9
Year 8	121.3	-0.5	0.8
Year 9	125.1	-0.5	0.4
Year 10	128.0	0.7	0.3

Source: VAGO, using department data.

Figure F4: Learning gains in maths of tutored and non-tutored students at same baselines: disadvantaged students

Year level	Baseline score	Gain of tutored students	Gain of non-tutored students
Year 3	99.9	3.8	5.5
Year 4	107.1	3.6	4.4
Year 5	113.4	2.7	3.5
Year 6	117.0	3.5	3.8
Year 7	121.6	0.7	0.7
Year 8	121.6	1.0	1.8
Year 9	125.9	-0.4	1.1
Year 10	128.9	0.6	1.1

Source: VAGO, using department data.

Unmatched means analysis

Comparison between tutored and non-tutored students without considering baseline scores

The department used unmatched means analysis in its evaluation of the initiative. This method does not consider students' baseline scores.

Figures F5 and F6 show the mean learning gains of tutored and non-tutored students in reading and maths, respectively.

Why VAGO did not rely on unmatched analysis

We did not rely on this type of analysis because we consider that it is not a fair comparison between tutored and non-tutored students and it does not show whether or not tutoring was effective.

Unlike matched analysis, unmatched analysis does not account for difference between tutored and non-tutored cohorts. This is important because:

- students with lower prior scores generally have higher learning gains than students with higher prior scores due to random effects known as regression to the mean
- tutored students generally have lower prior scores than non-tutored students, as tutored students are not an unbiased selection of students.

As a result of this, differences in learning gain between tutored and non-tutored students may be due to the different cohorts, rather than the tutoring itself.

Tutored students having higher unmatched mean learning gain than non-tutored students does not mean the tutoring was effective.

Figure F5: Unmatched mean learning gains in reading of tutored and non-tutored students*

Year level	Gain of tutored students	Gain of non-tutored students
Year 3	10.5*	9.2*
Year 4	8.2*	6.6*
Year 5	5.0*	3.6*
Year 6	4.3*	3.7*
Year 7	0.6*	0.9*
Year 8	2.0*	1.7*
Year 9	1.3*	1.3*
Year 10	2.2*	1.2*

Note: *VAGO does not consider this to be a reliable indicator of the initiative's effectiveness.
Source: VAGO, using department data.

Figure F6: Unmatched mean learning gains in maths of tutored and non-tutored students*

Year level	Gain of tutored students	Gain of non-tutored students
Year 3	7.5*	7.5*
Year 4	6.5*	6.0*
Year 5	5.1*	5.1*
Year 6	5.2*	5.1*
Year 7	2.1*	2.6*
Year 8	2.9*	2.8*
Year 9	1.6*	1.8*
Year 10	2.1*	2.1*

Note: *VAGO does not consider this to be a reliable indicator of the initiative's effectiveness.
Source: VAGO, using department data.