



## Improvement with Skoolbo

Improving educational outcomes is at the core of everything we do at Skoolbo. It is our reason for being and we are nothing short of obsessed by it. Skoolbo may look and feel like a game, however every component has an underlying rationale of maximising student improvement.

We've been analysing more than 100 million answers that Australian students have made on Skoolbo over the six months since launch. In particular we've collected evidence of student improvement across the system.

### Student Improvement

To determine improvement for an individual concept we consider the early performance of a student (average score of the first two games) and compare it to their maximum performance (best score over time). There are more than 60,000 activities on Skoolbo and the questions are different every time, so the children have to learn and understand the skills as opposed to memorise answers. Here's what we have seen:

- 312,506 instances of Reading and Maths Skills improving by more than 10%
- 123,527 instances of Reading and Maths Skills improving by more than 50%
- 68,774 instances of Reading and Maths Skills improving by more than 100%

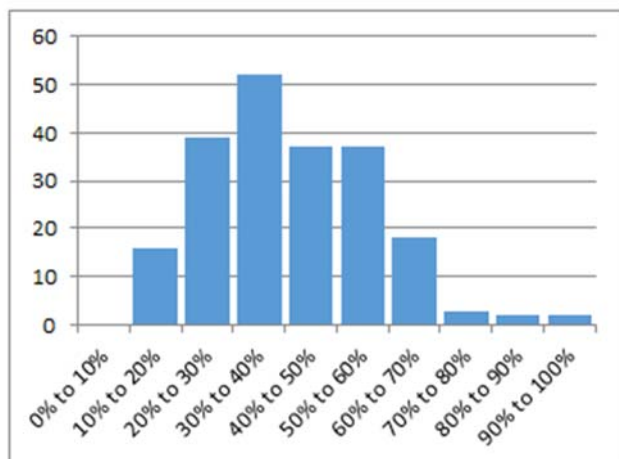
### Improvement by Concept

There are over two hundred literacy and numeracy concepts within Skoolbo. For this analysis we looked at the improvement shown by all students after they had completed twenty minutes on a particular learning task. We found that the average improvement across all tasks was 41.3%.

25 of the tasks had an average improvement in excess of 60% and the minimum level of improvement within any task was 13.2%.

### Average Improvement After 20 Minutes = 41.3%

Improvement Band	Quantity of Learning Activities
0% to 10%	0
10% to 20%	16
20% to 30%	39
30% to 40%	52
40% to 50%	37
50% to 60%	37
60% to 70%	18
70% to 80%	3
80% to 90%	2
90% to 100%	2



## Average improvement per concept:

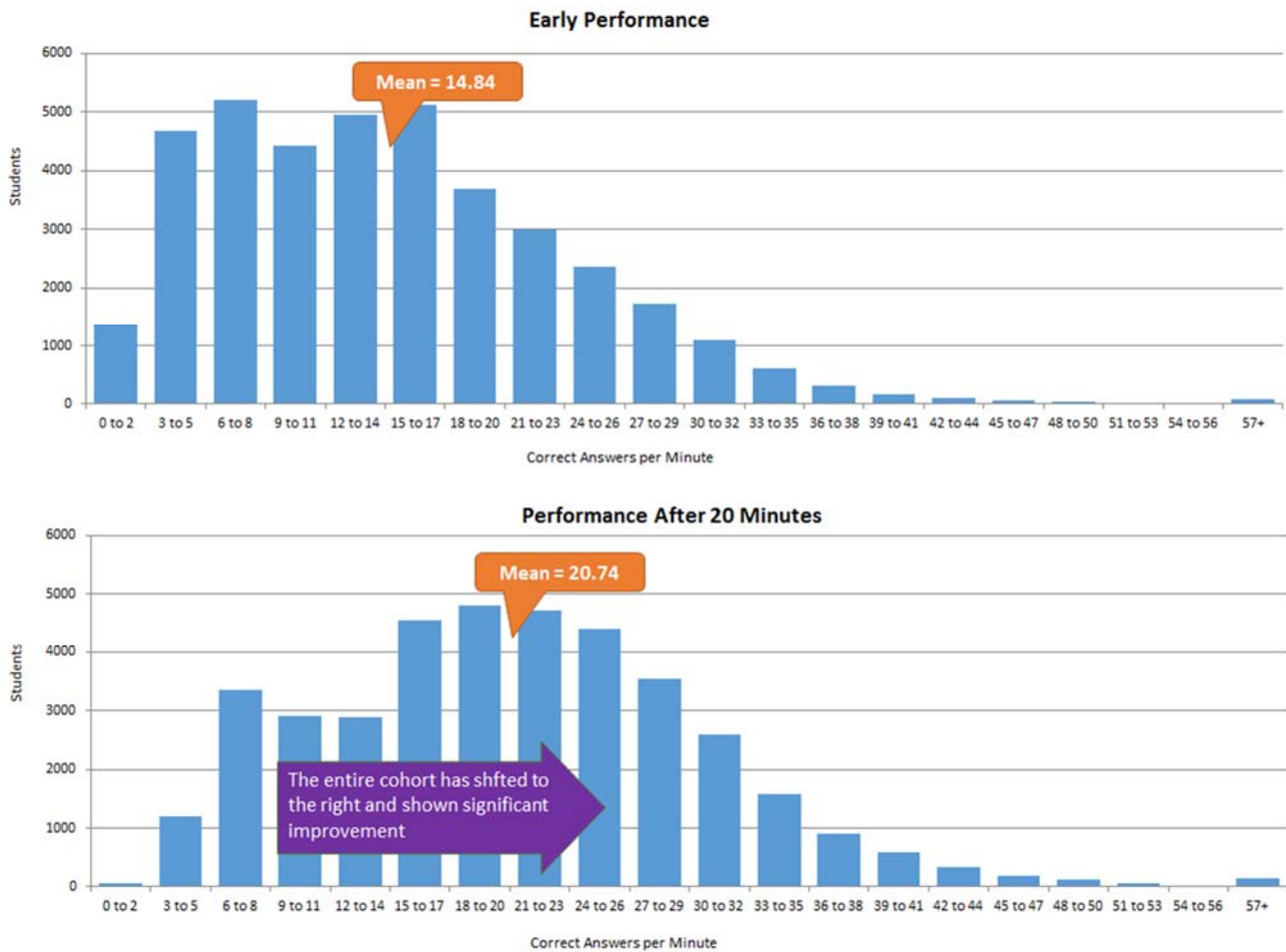
Literacy Activity	Avg. improvement after 20 min	Literacy Activity	Avg. improvement after 20 min	Literacy Activity	Avg. improvement after 20 min
Letter Introduction (s, a, t, p)	56.3%	Sound Introduction (ee, igh, oa)	30.0%	Fluency 6	18.3%
Sound Introduction (s, a, t, p)	51.3%	Sound Introduction (oo, ar, or)	26.3%	Sentence Construction 1	60.9%
Letter Introduction (n, i, m, d)	37.1%	Word Families 1	19.5%	Definitions 3	27.5%
Blending 1	36.6%	Sound Introduction (ur, ow, oi)	40.2%	Spelling 4	54.8%
Sound Introduction (d, i, m, n)	36.9%	Sound Introduction (ear, air, ure)	34.5%	Definitions 4	33.2%
Word Introduction 1	25.6%	Word Families 2	25.3%	Spelling 5	79.1%
Letter Introduction (g, o, c, k)	27.4%	Blending Onsets and Rimes 1	26.6%	Verb Tenses 2	53.5%
Sound Introduction (g, k)	39.0%	Alphabet - Missing Letter	55.0%	Fluency 7	15.3%
Letter Introduction (e, u, r)	28.2%	Blending Onsets and Rimes 2	33.1%	Vocabulary - Similar Words 2	24.4%
Blending 2	35.6%	High Frequency Words 2	22.7%	Sentence Construction 2	77.0%
Sound Introduction (e, r, u)	37.5%	High Frequency Words 3	13.2%	Alphabetical Order	64.9%
Word Introduction 2	26.6%	Fluency 1	23.9%	Sentence Construction 3	55.9%
Letter Introduction (h, b, f, l)	27.2%	Fluency 2	33.0%	Fluency 8	16.8%
Blending 3	39.3%	Spelling 1	38.5%	Fluency 9	17.3%
Sound Introduction (h, b, f, l)	32.0%	Fluency 3	37.0%	Spelling 6	52.4%
Word Introduction 3	28.0%	Fluency 4	24.6%	Definitions 5	26.4%
Letter Introduction (j, v, w, x)	26.8%	Vocabulary 5	16.2%	Spelling 7	52.1%
Sound Introduction (j, v, w, x)	24.9%	Spelling 2	54.0%	Vocabulary - Opposites 2	21.5%
Letter Introduction (y, z, q)	36.9%	Definitions 1	42.7%	Sentence Construction 4	96.8%
Word Introduction 4	26.3%	Vocabulary - Similar Words 1	54.9%	Spelling 8	60.0%
Sound Introduction (y, z, qu)	36.2%	Spelling 3	60.5%	Verb Tenses 3	51.8%
Blending 4	31.2%	Definitions 2	30.4%	Spelling 9	68.1%
High Frequency Words 1	14.9%	Vocabulary - Opposites 1	37.3%	Nouns, Verbs and Adjectives	69.5%
Sound Introduction (ch, sh, th)	54.2%	Verb Tenses 1	53.3%	Gramatically Correct	63.0%
Isolating and pronouncing sounds	34.5%	Fluency 5	20.2%	Spelling Corrections	44.9%
Sound Introduction (ng, ai)	55.8%				

Numeracy Activity	Avg. improvement after 20 min	Numeracy Activity	Avg. improvement after 20 min	Numeracy Activity	Avg. improvement after 20 min
Number Recognition - 0 to 10	47.7%	Ten Times Tables - Missing	32.2%	Nine Times Tables Introduction	43.9%
Bigger Number - Single Digit	35.9%	Two Times Tables Introduction	54.8%	Arithmetic 2	48.0%
Number Ordering to 10 (After)	44.7%	Two Digit - One Digit Without Trade	29.9%	Eight Times Tables - Missing	65.4%
Smaller Number - Single Digit	38.1%	Subtraction less than 20 - Missing	50.5%	Nine Times Tables	29.1%
Number Ordering to 10 (Before)	55.0%	Two Times Tables	50.6%	Nine Times Tables - Missing	34.5%
Number Recognition - 0 to 20	19.5%	Divide by Ten	27.0%	Divide by Eight	41.4%
Addition to 6	44.7%	Five Times Tables Introduction	57.5%	Arithmetic 3	67.7%
Addition to 6 - Missing	54.4%	Subtracting Multiple of Ten	36.6%	Times Tables 3	29.4%
Number Recognition - 11 to 100	18.7%	Two Times Tables - Missing	61.7%	Divide by Nine	21.4%
Number Ordering to 30 (After)	45.4%	Five Times Tables	49.7%	Twelve Times Tables Introduction	38.2%
Addition to 10	41.5%	Numbers in Words	32.3%	Mixed Mentals 2	22.3%
Bigger Number - Two Digit	34.3%	Halve	27.6%	Arithmetic 4	63.3%
Number Ordering to 30 (Before)	46.1%	Two Digit - One Digit With Trade	41.2%	Time 2	39.4%
Addition to 10 - Missing	52.5%	Five Times Tables - Missing	52.4%	Division 3	64.7%
Number Ordering to 100 (After)	40.5%	Eleven Times Tables Introduction	25.9%	Twelve Times Tables	27.7%
Subtraction less than 6	61.0%	Divide by Two	35.1%	Twelve Times Tables - Missing	39.8%
Smaller Number - Two Digit	33.6%	Times Tables 1	26.5%	Arithmetic 5	33.3%
Number Pattern - Increasing 1	44.6%	Eleven Times Tables	19.9%	Seven Times Tables Introduction	33.9%
Number Ordering to 100 (Before)	40.4%	Four Times Tables Introduction	54.9%	Divide by Twelve	89.9%
Number Pattern - Decreasing 1	56.1%	Eleven Times Tables - Missing	30.4%	Number Pattern - Decreasing 4	63.4%
Subtraction less than 6 - Missing	65.5%	Divide by Five	57.4%	Seven Times Tables	50.5%
Addition to 20	29.7%	Four Times Tables	73.1%	Seven Times Tables - Missing	33.6%
Bigger Number - Three Digit	35.2%	Time 1	52.4%	Arithmetic 6	55.8%
Subtraction less than 10	44.8%	Three Times Tables Introduction	49.3%	Times Tables 4	25.2%
Smaller Number - Three Digit	38.6%	Division 1	41.6%	Divide by Seven	24.4%
Number Pattern - Increasing 2	66.1%	Four Times Tables - Missing	69.0%	Division 4	24.8%
Adding Multiple of Ten	47.1%	Three Times Tables	35.1%	Mixed Mentals 3	14.2%
Number Recognition - Three Digit	20.8%	Divide by Eleven	19.3%	Mixed Mentals 4	43.4%
Number Pattern - Decreasing 2	58.9%	Three Times Tables - Missing	44.4%	Division 5	17.9%
Arithmetic 1	48.4%	Addition and Subtraction 2	31.2%	Order of Operations	50.4%
Two Digit + One Digit Without Carry	37.4%	Divide by Four	51.3%	Average	85.0%
Addition to 20 - Missing	37.6%	Times Tables 2	30.5%	Decimal Ordering	50.8%
Double	27.7%	Six Times Tables Introduction	45.0%	Division 6	31.7%
Addition and Subtraction 1	25.7%	Mixed Mentals 1	19.0%	Arithmetic 7	40.8%
Number Pattern - Increasing 3	43.3%	Divide by Three	33.3%	Percentage	46.8%
Left and Right	30.6%	Six Times Tables	31.0%	Time Mentals	48.4%
Subtraction less than 10 - Missing	50.8%	Number Pattern - Increasing 4	35.6%	Fractions	47.2%
Ten Times Tables Introduction	27.2%	Eight Times Tables Introduction	54.6%	Division 7	58.4%
Subtraction less than 20	42.7%	Six Times Tables - Missing	43.3%	Powers	98.5%
Two Digit + One Digit With Carry	29.5%	Division 2	35.1%	Prime Numbers	59.0%
Ten Times Tables	16.1%	Eight Times Tables	45.2%	Arithmetic 8	36.7%
Number Pattern - Decreasing 3	43.1%	Divide by Six	51.1%	Decimal Multiplication	68.2%

## Improvement Across Entire Group

The core purpose of Skoolbo is to ensure every child acquires the foundational skills in literacy and numeracy and hence of particular interest to us is the impact Skoolbo has on children who are encountering difficulties.

We examined the improvement breakdown amongst various ability groupings. The graphs below indicate a shifting to the right of the entire group of students. Through this analysis, we are seeing students across all ability levels showing significant improvement.



Breaking the figures down further we found that 66% of students' early performance was in the Low or Moderate range (17 or less correct answers per minute) while after 20 learning minutes only 38.3% of students remained in this category.

	Early Performance	Performance After 20 Mins
Low Scoring - 8 or less	28.9%	11.8%
Moderate Scoring - 9 to 17	37.1%	26.5%
Fluent Scoring - 18 to 23	17.1%	24.4%
High Scoring - 24 and above	16.9%	37.2%

### Skoolbo Curriculum Selection Algorithm

The Skoolbo Curriculum Selection Algorithm is designed to give every child the optimal curriculum regardless of his or her actual age. It starts by pre-testing the child in both literacy and numeracy and then continues to reassess after each game. An optimal blend of new content, not yet mastered content, and revision content is served to each child. Literacy and numeracy content decisions are made separately and it's common for us to see children with skills advanced in one over the other.



We have analysed the data to see how children are progressing through the system. In particular: are they being presented with increasingly complex skills?

After six months on Skoolbo:

- 47.5% of students\* are receiving numeracy content which is more than 1 grade level above where they commenced
- 71.2% of students\* are receiving literacy content which is more than 1 grade level above where they commenced

This means that 47.5%\* of students have made double or more expected numeracy gains and 71.2% of students have made double or more expected literacy gains. Students are also achieving success with the more complex curriculum with the overall accuracy level across the system being 88%.

We are delighted with the level of progress being demonstrated by students on Skoolbo.

Best wishes,  
Shane Hill (Skoolbo Founder)