



LINGOKIDS

LEARNING VIA LINGOKIDS LESSONS IMPACT REPORT

Study of Lingokids Learning with
Young Children in a UK Primary School



University of
Lancashire

Key Impact Statements

1

Literacy gains in excess of 50%



Literacy

2

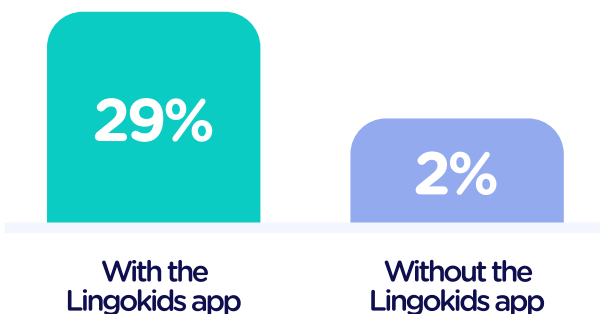
Numeracy gains of over 10%



Numeracy

3

The learning with the Lingokids app showed a 29% gain when compared with learning without it at 2% gain.



3

Children using Lingokids achieved learning gains nearly 15x greater than those learning without the app in the same timeframe.





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Executive Summary

25 children aged 4 and 5 years old in a UK primary school engaged with two Lingokids lessons on multiple days over a three-week period. Their learning, engagement and fun were captured, and results show that learning occurred with the app in both literacy and numeracy. Literacy saw gains in excess of 50%, numeracy saw gains of over 10% and overall, the learning with Lingokids showed a 29% gain when compared with learning without it at 2% gain.

Engagement remained high and children had fun.

INTRODUCTION

Whilst playful learning is known to be engaging and known to be fun, measuring the effectiveness of such learning is fraught with difficulties and this is exacerbated when the learners are young children with limited writing skills. Playful learning typically reinforces or introduces concepts in game like scenarios without explicitly 'explaining' the underlying knowledge; this constructivist approach is favoured with young children as they learn early letter sounds, simple number bonds, colours, shapes and the like. In many countries around the world, early learning has its own curriculum, e.g. in the UK the Early Years Foundation stage (EYFS), in France the Programme d'enseignement de l'école maternelle and in Turkey the Okul Öncesi Eğitim Program. These programs have several aspects in common; a focus on communication and language, literacy and mathematics as well as personal development around health, exercise and care of emotions.

The Lingokids suite incorporates aspects of these curricula in its pre-school offering; an earlier study compared learning with the Lingokids app to learning by worksheets and by PowerPoint and employed creative methods to assess the core learning; in the present study we focus on curricula material to explore learning in literacy and mathematics with children aged 3 and 4.

DESIGN

We designed a within subjects, longitudinal study with three testing points and two topic areas. Children performed a pre-test in both literacy and numeracy and then began to work through either the literacy OR the numeracy content.

They then completed a second pair of tests (mid) before switching to the other subject area. At the end we tested the children again on both topic areas (after).

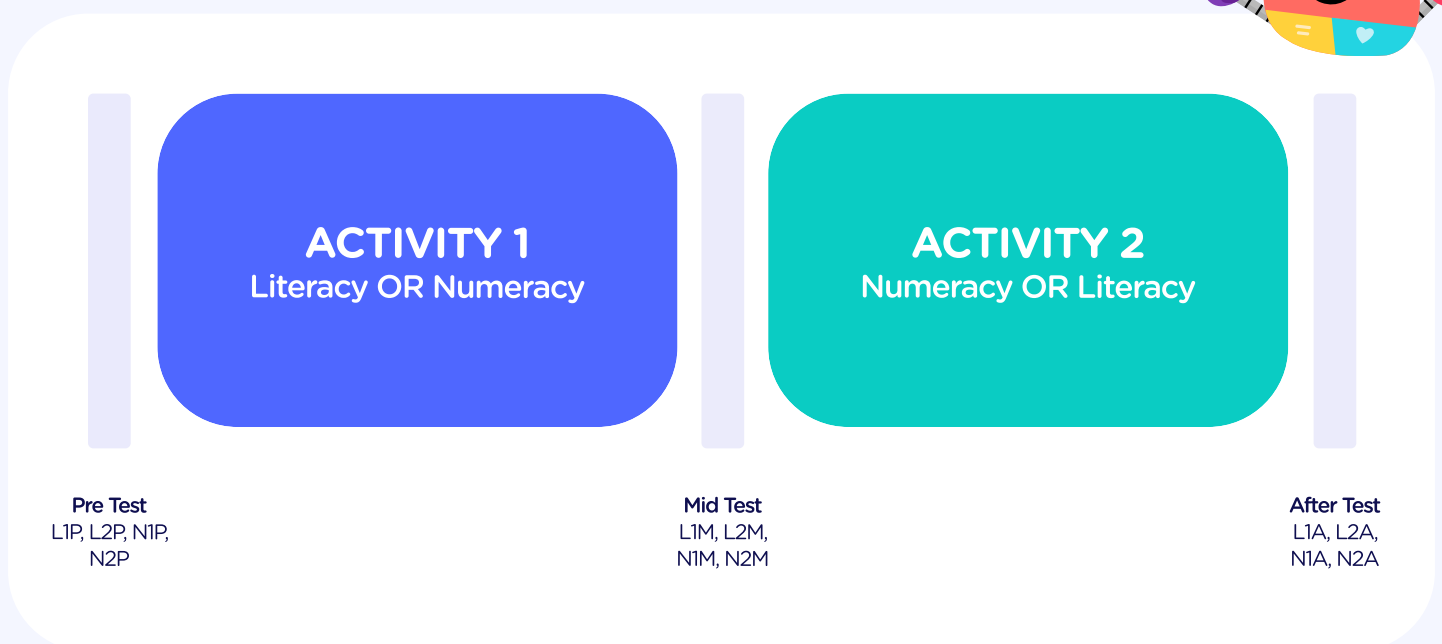


Figure 1 - The Experiment

In Figure 1, the tests are coded as follows; L1 represents the children who did literacy first, L2 those who did it second. N1 represents those children who did numeracy first, N2 those who did it second. Note that in each pair of tests – L1 and N2 and L2 and N1 are the same children thus a child who did literacy first will always have done numeracy second.

Hypothesis

The hypothesis was that learning **gain would be the greatest** in the groups engaging with the relevant learning and less between groups that were not engaging with the relevant content between the tests.

Learning journey		Expected learning gain
L1P to L1M	Learning literacy	Higher
N1P to N1M	Learning numeracy	Higher
L2M to L2A	Learning literacy	Higher
N2M to N2A	Learning numeracy	Higher
L2P to L2M	Not learning literacy	Lower
N2P to N2M	Not learning numeracy	Lower
L1M to L1A	No longer learning literacy	Maybe some residual learning
N1M to N1A	No longer learning literacy	Maybe some residual learning

Apparatus

The lesson Grade 1 literacy vowel combos was chosen for literacy and Grade 1 STEM for addition and subtraction was chosen for numeracy. Literacy was made up of 10 units and numeracy made up of 8. Each included a test at the end that we used for the tests in this study. The subject areas were chosen due to their content not being taught in the classroom at the time.

In addition we logged observations in a subset of sessions using specially designed log sheets that captured general observations, a score of the observed fun being had by the children (on a five point Smileyometer (Read & Horton, 2025) from Awful to Brilliant), a measure of engagement (using poor to very good on a five point thumbs up scale) and an indication of how much we thought the children were learning (a lot, a little, something, nothing)

Participants

25 children aged 4 and 5 from a single reception classroom in a UK primary school took part in this study. Half the children came to two tables and were given the iPads to commence their assigned session (literacy or numeracy), once they had finished, the other half of the class came to the same tables to do the other topic – the same iPads were used. **The children attended three times a week for four weeks with each session lasting around 40 minutes for the children and subsequently 90 minutes for the study on the day (two groups) were kept in their two assigned classroom groups. The children each completed around 2 modules per session over a 3-week period before swapping to the other subject area.** Each session was observed and managed by two researchers from the University, there were teachers present at all times although they did not get involved with the study; the children worked on school laptops provided by the school with the content pre-loaded; most, but not all of these had stands but some could only be used flat on the table.

RESULTS



Learning

The children’s learning was measured using tests taken from the Lingokids app. **The literacy scores were out of 6 and the numeracy scores were out of 8.**

NP	NP	NM	NA	LP	LM	LA
L1 children (13)	3.54	(3.85	4.00) ¹	(2.08	(2.08	3.08
N1 children (12)	(4.00	3.75) ²	5.00	3.33	(2.50	3.75)

Figure 2 - Average scores in the tests



In figure 2, the emboldened scores enclosed in brackets are the pairs that were hypothesised to rise if there was learning. It can be seen that in all but one case, the children doing numeracy first, there was evidence of improvement in the scores overall. Examining the group that did numeracy first there was one outlier in the numeracy scores who scored 7 on the first test, 2 on the second and then 6 on the third suggesting that that child was not paying any attention to the middle test. Removing this outlier results in a 5% gain for that group in numeracy from 3.73 to 3.91. There was also a similar outlier in the literacy first group that scored 8, 8, 1 on numeracy, again suggesting a lack of focus in the last test; when this score is removed it adjusts the gain in numeracy for that group from 3.5 to 4.25 – i.e. a 21% gain. Taken together across both groups we can see the average overall gain in numeracy, when using the app was 13%. Figure 3 shows the adjusted figures once these two outliers are removed for numeracy showing, in bold, gains for all learning experiences. There were no outliers for literacy; learning with the app resulted in a 53% increase in literacy scores.



NP	NP	NM	NA	LP	LM	LA
L1 children (13)	3.17	(3.5	4.25	(2.08	3.23)	3.08
N1 children (12)	(3.73	3.91)	4.91	3.33	(2.50	3.75)

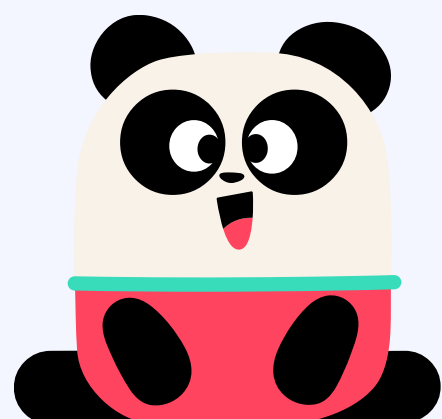
Figure 3 - Average scores in the tests after the two outliers are removed

Figure 3 also shows that in the periods that the children were NOT learning with the Lingokids app, the scores for literacy all went down which is clear evidence that the skills learned in the Lingokids app were not being taught in class thus making a strong case that children were learning with the app.

When looking at overall learning when using the app versus overall learning when not using the app, the percentage rise overall was 29% when using the app as compared to 2% rise when not using the app.

¹One outlier affected this gain – once removed it reads as from 3.5 to 4.25

²One outlier affected this gain – once removed it reads as from 3.73 to 4.91



Fun, Engagement and Learning

As noted above, observations were made during some of the sessions that included notes as well as scores. From Figure 4 it can be seen that fun marginally increased as the sessions went on as did engagement. The observers all rated the learning as ‘a little’ for all the sessions – this relates to the number 2 on the chart against learning.

From these data – it can be seen that engagement held up as did fun.

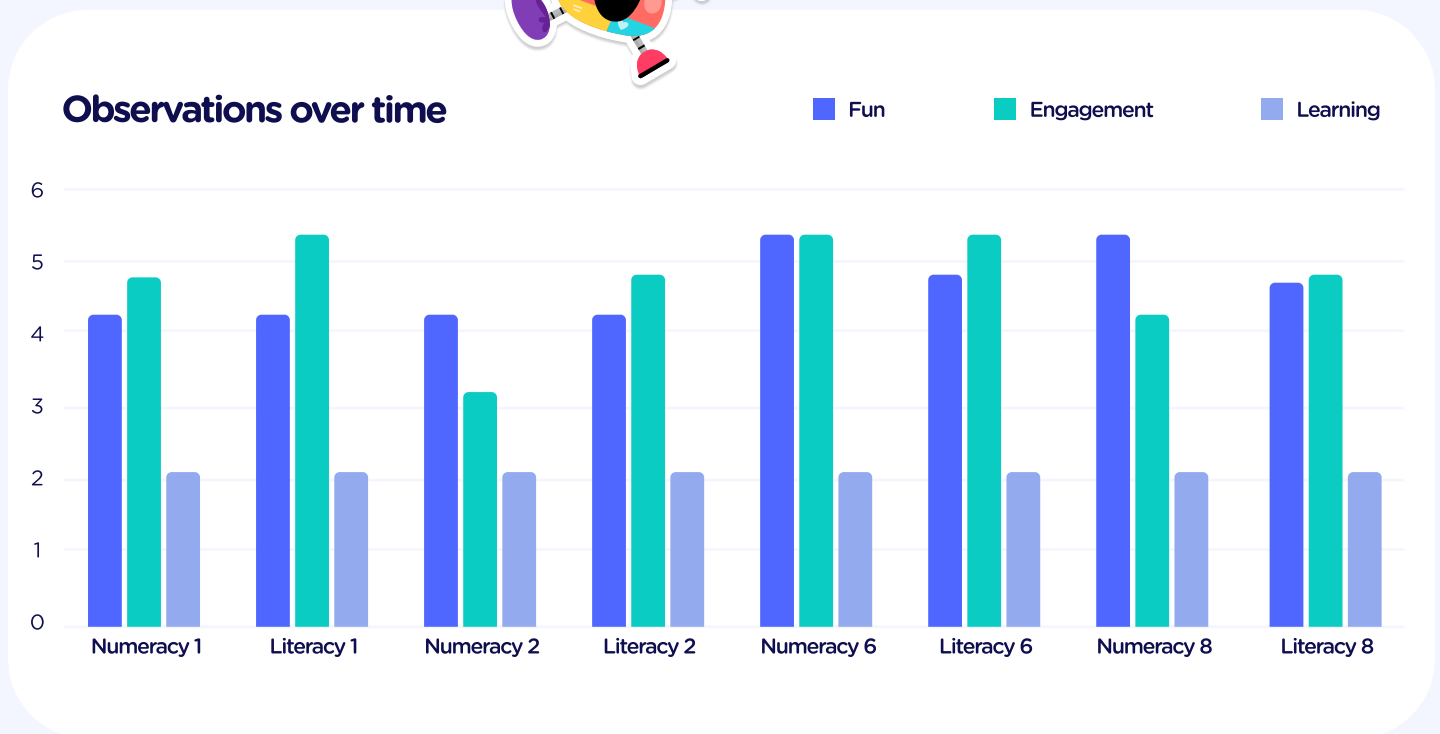


Figure 4 - Observations over time

When the scores for learning are normalised (taking them all to 2.5), the overall average scores for numeracy and literacy are 3.71 and 3.83. This slightly higher score for literacy could be attributed to the learning gains that came from the literacy sessions.

The qualitative data contributed observations around usability, engagement and the study design and were most helpful from the first couple of sessions.

Engagement

There was much evidence of fun, collaboration and competition. Engagement seemed to improve as the tasks became more familiar; one child in session six declared 'this is the best'; but in some of the later sessions it was clear that for some children this had become a bit of a chore with children in the later sessions choosing to exit the app earlier than they had in the first sessions to go back to class as well as some flicking onto other apps on the iPad. We saw children helping one another, comparing where others were at and engaging in competition. Within one table, children remarked 'You're in the lead of me' and 'yeh we won' evidencing that they were connecting with one another's learning. Despite some of the games being quite hard to play, the children showed considerable resilience with one remarking, having finally got to the end of a game that 'that was so long!'. In every session there were children who didn't want to end but sadly we had to tell them to leave the iPads to go back to class.

Managing the study - lessons learned

The children were given in ear earphones for the first session that we noticed were problematic and so after that we gave them over ear headphones which was more successful. Often in the early sessions the children didn't know how to turn on the sound so we spent quite some time ensuring each child could hear which made the early sessions quite slow to start.

As we moved from one session to the next we were not able to log children back onto the exact iPad they had been on before with the consequence that some lessons could be skipped if a child had been behind after session 1 but had used an iPad from a child who had been ahead from session 1; we mitigated for this by trying to get all the children to the same place in each session; this meant that the faster children were told to stop and go back to their class activities once they had got to the stage we were aiming for in that session. In the same vein, there were a handful of children who struggled so much that they never quite got to that stage but we did check that they were all at least onto the target module before they finished each time.

We observed the second observation mentioned was the children's engagement levels, all children engaged in the tablets for two full modules at a minimum. Some children chose to end their session at that point, whereas others carried on until they felt they had finished. This leads to the third most watched action which was the children's Transitions on and off the technology.

DISCUSSION

In conclusion, the data on learning supported the hypotheses with learning being shown in all sessions with the app. When compared to learning ‘outside’ the app, the literacy content showed clear learning; the numeracy learning, while evident, was somewhat mirrored in the other groups who were not, at that time, doing numeracy so further work might be needed to understand the app related gains. That said, learning with the app was an enjoyable experience for all the children who engaged with the games and demonstrated collaborative, competitive and cooperative behavior. Some of the snags with the technology and study design were unexpected but given the study had a good number of sessions we were able to react in the moment to ensure these did not negatively affect the study. One limitation of this study was the choice to use the LingoKids post less on tests for the tests for learning. These were not especially granular and so a child missing a couple of pieces of understanding could have a big effect on the score – especially in the literacy test. We recommend the development of more diverse tests for future studies – perhaps using the approaches suggested in Read et al (2023).

It is worth noting that the study was run with UK children which in turn did mean that some struggled with some of the Americanism’s in the lessons such as “Fries” instead of “Chips”. This potentially impacted the learning as it wasn’t words the children were used to hearing or seeing. However, this does not necessarily mean the impact would be the same for those learning English as an additional language (EAL). More research would be needed in this area for those who use the app as an EAL tool.

In summary the Lingokids app brought learning to the children in a fun and engaging way, the children were enthused by the app. There was a high level of engagement and enjoyment and the teachers all felt the children benefitted from their experience.

REFERENCES

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