



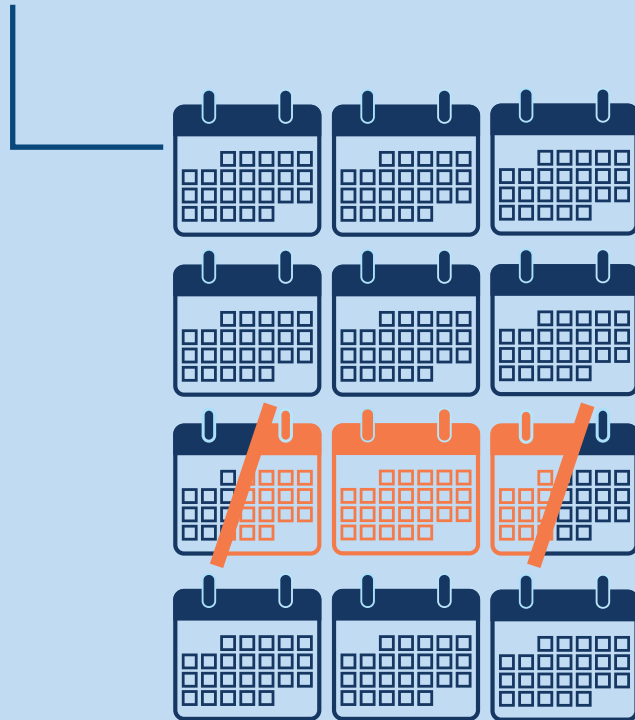
WHITE PAPER
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SUMMER LEARNING LOSS



Summer learning loss is an established phenomenon in education. External research points to a 2.6 month drop in students' maths knowledge when they are inactive over the summer period.¹ In this study we use data from our virtual tutoring service, Maths-Whizz, to find our own estimate of the extent of learning loss over the summer, and break down the loss by topic.

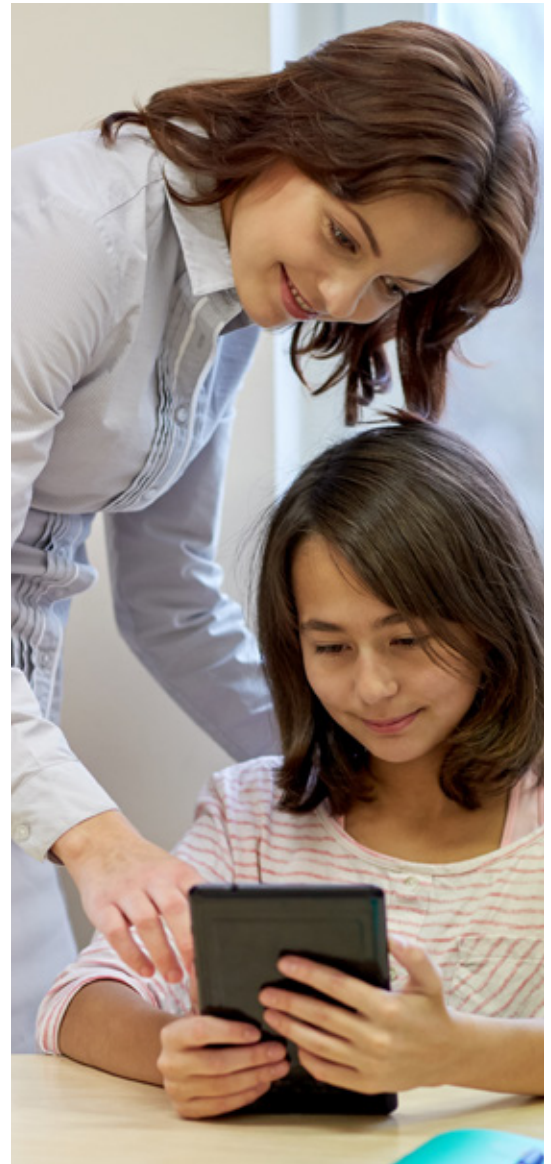
2.6 MONTH DROP IN STUDENTS' MATHS KNOWLEDGE WHEN THEY ARE INACTIVE OVER THE SUMMER PERIOD¹



HOW THE ESTIMATE WAS DERIVED

To estimate summer learning loss, we selected students on Maths-Whizz in the UK who met the following criteria:

- Assessed at the start of the academic year (Sep '14, '15, '16 or '17)
- Not reassessed until September or October the following year
- The initial assessments did not take more than two months to complete (after starting the assessment)
- Average weekly usage was at least 30 minutes between Sep-Jun in the first year - ensuring the student's Maths age at the end of the academic year is a reliable measure of their true maths knowledge at that point
- Total usage from 20 July - 31 August in the first year did not exceed 30 minutes - so we can assume they did not acquire new knowledge on Maths-Whizz
- Following reassessment, their Maths Age did not increase by more than one month - so we can assume they did not acquire new maths knowledge outside of Maths-Whizz
- Only topics that appear in the diagnostic assessment are considered, which ensures that all comparisons of students' Topic Ages are based on knowledge they have demonstrated in Maths-Whizz



¹ Cooper H., Nye B., Charlton K., Lindsay J., Greathouse S. (1996). The effects of summer vacation on achievement test scores: A narrative and meta-analytic review. *Review of Educational Research*, 66(3), 227–268. <http://journals.sagepub.com/doi/10.3102/00346543066003227>

RESULTS

A total of 681 students met this criteria and are included in the following results.

Overall: students experience an average drop of 0.20 in Topic Age (Figure 1), corresponding to 2.4 months of lost learning, which is close to the external estimate of 2.6 months.

A drop is experienced in every assessed topic (Figure 2). The greatest loss is seen in Pencil and Paper - multiplication (0.34 years) and the smallest loss is observed in Percentages and Ratio (0.01 years). One contributing factor is the maximum and minimum possible Topic Ages - since Percentages and Ratio starts at a later point in the curriculum, there may be less scope for learning loss for those that have covered the topic. This is a question for further research.

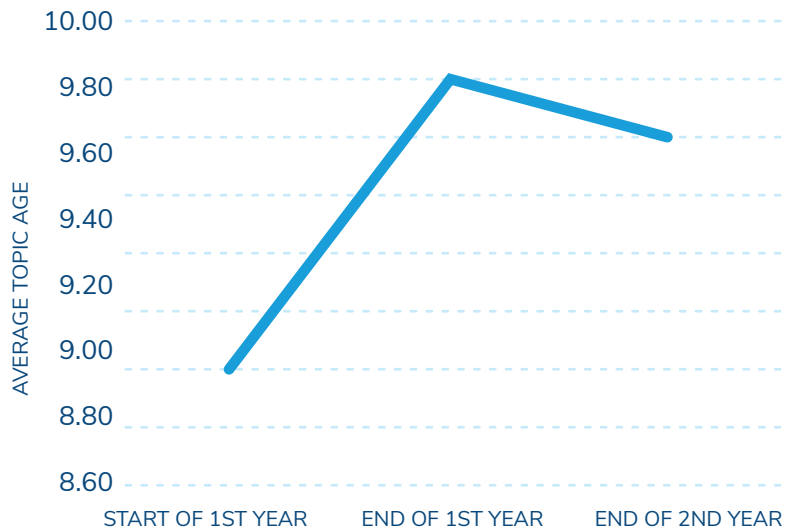


FIGURE 1: OVERALL SUMMER LEARNING LOSS

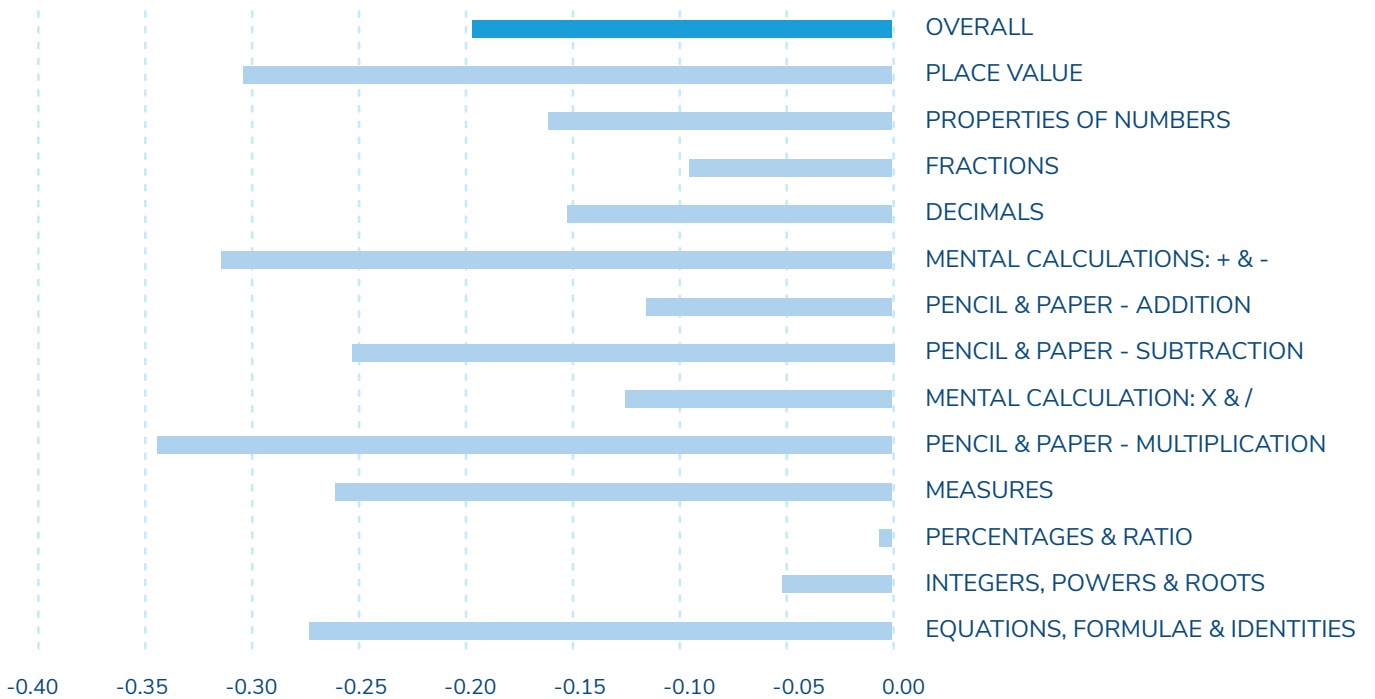
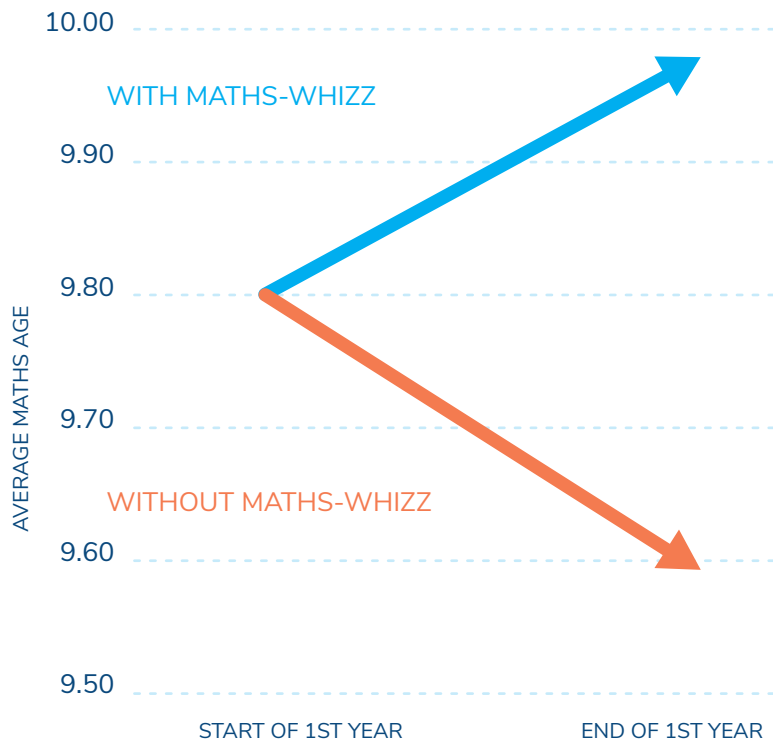


FIGURE 2: LEARNING LOSS BY TOPIC



THE MATHS-WHIZZ DIFFERENCE

Figure 3 shows the learning potential of Maths-Whizz over the summer. With 45-60 minutes per week of Maths-Whizz a week, over a 6-week summer period students can expect to acquire 9 weeks of knowledge (based on an expected Progress Rate of 1.5, which has been verified by separate Whizz studies). This amounts to 0.17 years of acquired knowledge, compared to 0.20 years of lost learning for those students not active on Maths-Whizz (and not accessing other maths resources).

Thus Maths-Whizz amounts to 0.37 years of learning gains over the summer, or 4.44 months:

FIGURE 3: LEARNING PROGRESS WITH AND WITHOUT MATHS-WHIZZ



CONCLUSION

The established phenomenon of summer learning loss is further reinforced by our data, which quantifies the loss at 2.4 months over a 6-week period and shows variation between topics. When combined with the learning gains afforded by Maths-Whizz in the same period, this amounts to a learning differential of 4.4 months.

The study relied on a sample of UK students who met the strict criteria for inclusion. We have no reason to suspect the trends would differ markedly in other regions, though this is a topic for future research.

CONTACT US

UNITED KINGDOM

Whizz Education Ltd
Macmillan House
Platform 1, Paddington Station
London, W2 1FT
United Kingdom

Tel: +44 (0) 203 328 6564
Email: support@whizz.com

USA

Whizz Education, Inc.
PO Box 3060,
Roanoke, VA. 24015,
United States

support@whizz.com

KENYA

Whizz Education
Karen Office Park,
Hemingways Building
PO Box 2101-00502
Nairobi
Kenya

+254 734 774 972
kenya@whizzeducation.com

UAE

Whizz Education
Office EO-17, 3rd Floor
Building 12
Dubai International Academic City
PO Box 98427
Dubai, UAE

Tel: +971 4 454 8340
Email: support@whizz.com

OUR AGENTS

NEW ZEALAND

iLearn Interactive
PO Box 200
Mangawhai, 0540
New Zealand

Tel: +64 9 431 4466
Email: info@ilearn.co.nz

THAILAND

Nanmee Books
11 Soi Sukhumvit 31 (Sawasdee)
Sukhumvit Road, Klongtoey Nua
Wattana, Bangkok, 10110
Thailand

Tel: +66 (0) 2662 3000
Email: mathswizz@nanmeebooks.com

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