

Improving Number Fluency in KS2 Maths Using the Winning with Numbers Program (Year 4 pupils)

Winning with Numbers (WWN) is an educational programme designed to enhance pupils' fluency and confidence in number knowledge. It consists of a structured sequence of 300 number concepts, delivered via a comprehensive learning platform that supports pupils, teachers, and parents. The platform includes teaching materials, training for educators, and feedback mechanisms for pupils, ensuring personalised learning pathways.

The intervention provides teachers with a fully guided curriculum sequence, including animated teaching aids and question banks that support face-to-face teaching. The platform also offers automatic, personalised guidance for pupils based on their progress, directing them to previous content if knowledge gaps are detected. WWN can be integrated into daily classroom teaching, small group sessions, or assigned as homework.

Purpose of the Study

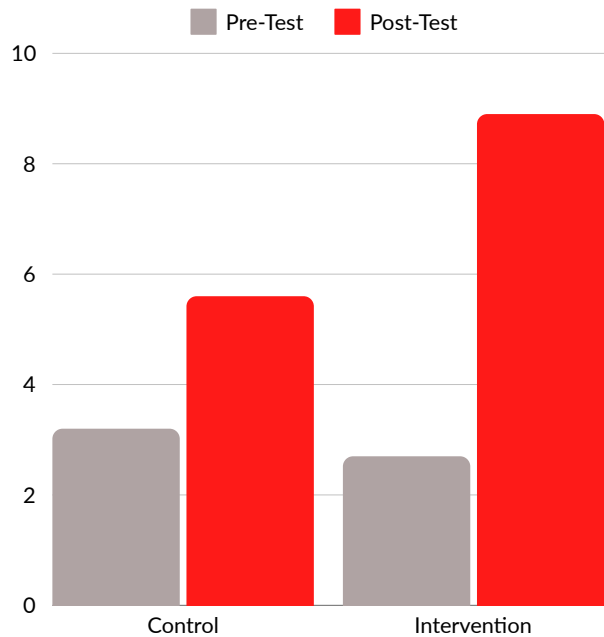
The primary goal of this research was to evaluate the impact of the Winning with Numbers program on number fluency for Year 4 students by comparing the outcomes between an intervention group and a control group using a randomised controlled trial (RCT). Two Year 4 classes were randomised into:

- Intervention group (n=29): Implemented the Winning with Numbers program.
- Control group (n=25): Continued with the standard maths curriculum.

In intervention classes, teachers used Winning with Numbers in daily teaching with supplemental independent practice via the online platform. The intervention focused on enhancing number fluency, specifically targeting understanding of hundredths and two decimal place numbers.

Results

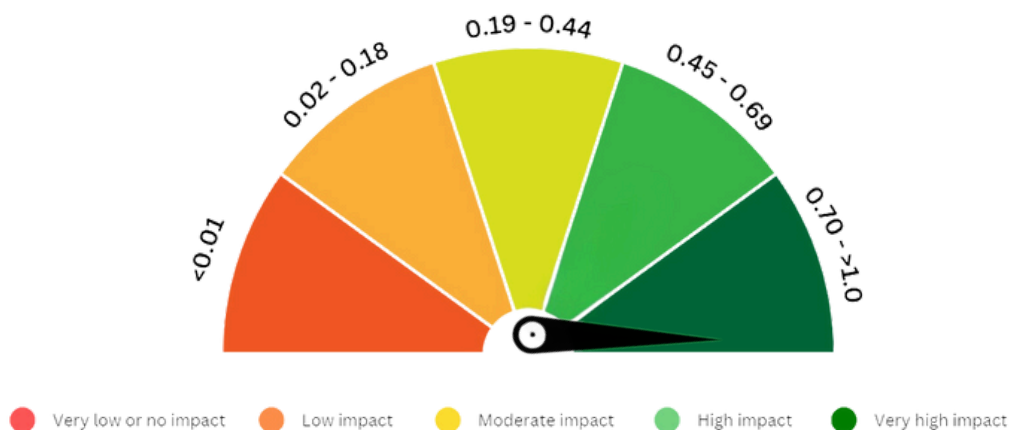
Pre-test results recorded the intervention group starting with a mean score of 2.7, while the control group had a higher mean score of 3.2. After the intervention, the intervention group's mean increased to 8.9, compared to the control group's mean of 5.6.



Key Findings

Effect Size

The study found an effect size of 1.09, which indicates a large positive impact. Typically, an effect size of 0.2 is considered small, 0.5 medium, and 0.8 large.* This result suggests that the WWN platform had a significant positive effect on pupils' mathematical performance.



*It is important to note that the effect sizes for the mini-RCTs should not be compared with large scale RCTs due to a number of design features such as the small sample size, non-standardised assessment and short delivery timescale. Smaller scale trials often have a larger effect size compared to larger studies. As more schools complete the evaluation, a cumulative meta-analysis could provide a more robust overall effect size.