

Woot Math Rational Numbers Units Pilot Study Brief

Product Info

Product Name: Woot Math: Rational Numbers Units

Product Description: Woot Math is a technology-supported mathematics curriculum that delivers interactive and personalized learning to students and adaptive lesson plans and curriculum to teachers.

Learning Focus: Rational numbers for 4th and 5th grade students

Teacher Training: The content and pedagogy for the tech portion of the unit was based on research that identified best practices, including effective ways to model fraction concepts and operations. Teacher PD did not occur though teachers were accessing research-based curriculum and lesson plans.

Student Usage Minimum: Woot Math infused instruction suggested for 60% of the instructional time.

Pilot Context

Pilot demographics: Twenty three 4th and 5th grade teachers from 8 schools across 2 districts in 2 states were recruited to participate in this study. 552 students participated in the pilot study.

Pilot Goal

Improve student understanding of rational number concepts and operations, and achievement on rational number assessments.

Implementation Plan

Duration: 2016-17 Academic Year

Quality of Support: No professional development opportunities were made available to teachers who participated in the study.

Implementation Model: Teachers chose the material taught from the Woot Math curriculum and the timing and format of their instruction. All content from Woot Math was aligned with Common Core State Standards for Mathematics and addressed math concepts known to be challenging to elementary and middle grades students.

Data collected: The study compared student results in classrooms with teachers using Woot Math rational number units to students in classrooms with teachers who completed non-tech rational number units. Pre-, mid-, and post-assessments, comprised of primarily externally validated items from national and international mathematics assessments, were administered to students.

Findings

Actual implementation model: The actual implementation model aligned with the implementation model outlined at the onset of the study. While in the treatment phase, students used Woot Math for an average of 2.6 hours.

Educator engagement: Educators were engaged in the study and adhered to the schedule outlined by the study design.

Student learning: Students who used Woot Math's statistically significant assessment gains were greater than the gains by students who did not use Woot Math. Results demonstrate that exposure to Woot Math infused instruction increases the rate at which students learned the mathematical concepts tested.

The study, a crossover design, allowed for the direct comparison of student groups across two phases of the study: those in treatment, or using Woot Math, and those in a control group, who did not use Woot Math. This approach was used to ameliorate potential teacher-related differences associated with the treatment group. Under the crossover analysis, it was found that students with exposure to Woot Math outperformed those in the control condition by scoring 5.6% higher in their assessment gains. That is 0.39 standard units and highly statistically significant at the $p < .001$ level. The study also found a descriptive relationship between hours of use of Woot Math and gains from the pre- to mid-assessment. A one hour positive difference in Woot Math use was associated with a 1.6% increase in assessment gain ($p < .01$).

Outcome

Study Discussion: Results suggest that the Woot Math infused instruction was effective at increasing student fluency in solving rational number tasks and promoted deeper understanding of the concepts involved with rational numbers.