Browning, Sandra T.; Beauford, Judith E.

Language and number values: the influence of number names on children’s understanding of place value.


Summary: In recent years, the idea of language influencing the cognitive development of an understanding of place value has received increasing attention. This study explored the influence of using explicit number names on pre-kindergarten and kindergarten students’ ability to rote count, read two-digit numerals, model two-digit numbers, and identify the place value of individual digits in two-digit numerals. Through individual student interviews, pre and post assessments were administered to evaluate rote counting, reading five two-digit numerals, modeling five two-digit numbers, and identifying place value in two two-digit numerals. Chi-square tests for independence showed two significant relations: (a) the relationship between the traditional and explicit group membership on the post assessment of modeling two-digit numbers, and (b) the relationship between place value identifications and group membership. Analysis of the children’s performance and error patterns revealed interesting differences between children taught with explicit number names and children taught with traditional number names. The improvement of the explicit group overall exceeded the improvement of the traditional group. This study indicates that teaching children to use explicit number names can, indeed, have a positive influence on their understanding of place value.

Classification: F21 C51

Keywords: language; place value; explicit number names; two-digit numerals; performance; error patterns; traditional number names