

ZMATH 2016a.00150

Lapp, Douglas, A.; Ermete, Marie; Brackett, Natasha; Powell, Karli

Linked representations in algebra: developing symbolic meaning.

Math. Teach. (Reston) 107, No. 4, 306-312 (2013).

From the text: The use of symbols provides mathematics with enormous power. From the learner's perspective, however, symbols can present enormous obstacles. Using symbols to encapsulate big ideas allows readers to see various stages of arguments within one field of view. However, for many learners, unpacking symbolization poses a significant hurdle in the development of conceptual understanding. Here we compare and contrast symbolic reasoning approaches that algebra students used when solving equations. What is a root of an equation, and how is it related to various representations? More generally, what does it mean for a value to be a solution to an equation? These are standard questions that we expect students to be able to address and discuss. Although many students maybe able to solve equations, far too many have limited conceptual understanding and rely primarily on procedural knowledge of the equation-solving process.

Classification: C34 H34 I24

Keywords: modes of representation; dynamic linking; concept formation; research; upper secondary; interviews; mathematical language; notation; abstract reasoning; mathematical ability; quadratic equations; parabolas; zeros; solving equations; graph of a function; concepts; understanding; symbolic meaning; calculators

http://www.nctm.org/Publications/mathematics-teacher/2013/Vol107/Issue4/Connecting-Research-to-Teaching-Linked-Representations-in-Algebra_-Developing-Symbolic-Meaning/