

CHILDREN'S UNDERSTANDING OF THE EQUAL SIGN



COMMON MISCONCEPTIONS ABOUT THE EQUAL SIGN:

- The equal sign means 'the answer' to a math problem (1).
- It is viewed as a 'do something signal' (2).
- It is an indication to carry out an operation from left to right (3).
- Equality and equivalence concepts and ideas are not as important as finding an answer (4).
- The equal sign is embedded into mathematics instruction so much so that it is inherent and does not need to be taught explicitly (4).

What does the research tell us?



Children view the equal sign as either operational ("do something") or relational ("same as"). We want children to think relationally about equality (2).

A variety of instructional strategies should be used when helping students develop a relational understanding of the equal sign. Some of these approaches include the use of concrete apparatuses, visuals, or developing kinaesthetic notions of equality (2).

The use of relational words allows student to think about the relationships between both sides of the equation (5). This can be used in conjunction with other instructional approaches that involve comparing symbols, fostering their 'relational' view of the equal sign (6).

What can teachers do to help?



Develop children's relational understanding by using concrete apparatuses, such as pan balances (2). This allows students to visualize the relationship between equivalent sets of objects.

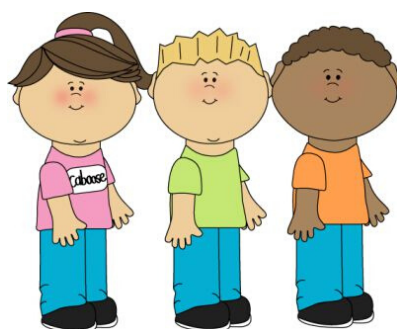
Make a human equation. With the use of signs representing the equal sign and other operational symbols, students can explore the concept of equality kinesthetically by positing the signs in a way that make the (human) quantities balance around the equal sign (2).

Use relational words and symbols to convey the intrinsic meaning of the equal sign. To emphasize the relational nature of the equal sign, teachers can use words such as "is the same as" or "is equal to" instead of words like "makes" or "gives".

Activities: From Concrete to Abstract



Concrete



Representational

$$1 + 12 > 8$$

$$11 - 3 < 8$$

$$5 = 9 - 4$$

5 is the same amount as 9 - 4

Abstract



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3 Powell S. R. (2012). EQUATIONS AND THE EQUAL SIGN IN ELEMENTARY MATHEMATICS TEXTBOOKS. *The Elementary school journal*, 112(4), 627-648.

4 Diaz, Jennifer D. (2017). "A Cultural History of Reforming Math for All: The Paradox of Making In/ Equality." *The Cultural Politics of School Math*, pp. 12-26., doi:10.4324/9781315637822-2.

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6 Hattikudur, S., & Alibali, M. W. (2010). Learning about the equal sign: Does comparing with inequality symbols help? *Journal of Experimental Child Psychology*, 107(1), 15-30.