



NCTM Annual Exposition 2013 Denver, Colorado

What Does your Mental Number Line Look Like?

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Opening Doors to Successful Number Learning for Those Who are Vulnerable

Anne Gervasoni, Australian Catholic University

<http://www.mav.vic.edu.au/files/conferences/2005/anne-gervasoni.pdf>

Keys to open doors for those who are vulnerable

Vulnerability and Building Bridges

Focus on Quantity

Development of a Mental Number Line

Using Reasoning Strategies for Calculating

Understanding Pathways of Number Learning

Customizing Learning Experiences

Whole School Approach and Providing Interventions

Logarithmic to Linear Shift

Number sequence 1-10 shift from logarithmic to linear at preschool level

Number sequence 1-100 shift from logarithmic to linear between kindergarten and 2nd grade

Number sequence 1-1000 shift from logarithmic to linear between 2nd and 4th grades

Tutorial on how to determine if a student's estimates are best described by a logarithmic or linear model by John Opfer at Carnegie Mellon University: <http://www.psy.cmu.edu/~siegler/SiegOpfer03Tut.pdf>

Instructional Resources

The Great Race

Ramani, G. B., & Siegler, R. S. (2008). Promoting broad and stable improvements in low-income children's numerical knowledge through playing number board games. *Child Development*, March/April 2008, Volume 79, Number 2, Pages 375 – 394.

<http://www.psy.cmu.edu/~siegler/Ram-Sieg2008.pdf>

National Library of Virtual Manipulatives: Place Value Number Line

http://nlvm.usu.edu/en/nav/frames_asid_334_g_1_t_1.html?from=category_g_1_t_1.html

Use of Empty Number Lines

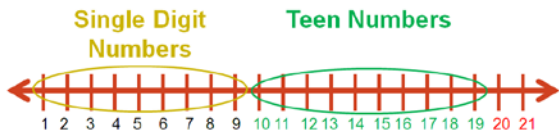
"One way to help children develop a mental number line is to engage them in activities involving an empty number line. This is a strategy widely used in the Netherlands where they have adopted a curriculum based on the empty number line. "The choice of the empty number line as a linear model of number representation up to 100 (instead of grouping models like arithmetic blocks) reflects the priority given to mental counting strategies as informal knowledge base."

[\(Anne Gervasoni, p. 3\)](#)

Additional Background Information on the Empty Number Line

<https://grade2commoncoremath.wikispaces.hcps.org/Empty+Number+Line>

Connecting quantity models to number sequence models



- Less than 10
- Show on ten frames
- Beginning counting numbers

- Ten and some more
- Between singles and twenties
- Begin with 1
- Most say “teen”

Which is closer to 34?
25 or 55?

