EDU Q&A

# Should we be teaching maths differently?

Rebecca Klemm, PhD, founder of NumbersAlive!, outlines her approach to numeracy

Students linking animal details to geometric shapes as part of Dr. Klemm's trophy-winning patented puzzle and game system.

## What is your teaching background?

I have taught numerical, mathematical and critical thinking for over 40 years to learners of all ages, from pre-school to graduate school. The common thread of my teaching has been mentoring through life relevance and storytelling. I focus on the question being investigated, and then lead learners through the design-thinking process – providing the skills and tools needed to address the question as originally perceived, and adjusted once initial efforts suggest possible alternatives.

## What principles underlie the NumbersAlive! approach?

NumbersAlive! is sensitive to the often 'hidden' questions of "When will I ever use this stuff?" or "Why do I have to do this?" Leading with realistic applications implicitly addresses such questions, so they're rarely asked. Practice is important to skill develop in most disciplines, but maths is often taught with a focus on the 'doing' without considering the end goal. My mother taught piano by asking her students to select a piece they wanted to be able to play – the selected piece would then be brought out regularly to reinforce that goal. Practising scales was never the end goal, but rather a necessary step toward playing the piece. I adopted the same approach to teaching.

I was always intrigued by a *New Yorker* cartoon that showed numbers sitting on a stage above the caption, 'We'll now let the numbers speak for themselves.' I was struck by the frequency of that statement and the visualisation hit me like a cold shower. With an interest in theatre, I wrote a musical where the numbers were the characters, telling their own stories and demonstrating their role in human endeavours. The name NumbersAlive! seemed perfect, as it suggests maths is a living, useful subject rather than a mysterious, abstract discipline involving seemingly infinite doses of worksheets.

## What sets it apart from other maths resources?

I simplify sophisticated maths through observation, discovery, and creation. I ask students to invent maths which responds to the basic question of why maths exists. The same could be asked about any language. Whatever their origin, languages become more complicated and confusing over time due to human migration and invention. We teach young children to count from 1 to 10 or higher, as if 10 is a new character rather than a multi-digit number 'word.' We then wonder why students don't understand our current place-value system.

I created small and soft magnetic numbers so that small hands could construct maths in a fun and friendly way and realise that rearranging the same numbers creates different 'number words' of varying value (i.e. 23 versus 32). NumbersAlive! also uses a lot of geometry, because arithmetic and multidimensional geometry should be able to talk together, rather than be treated separately as if they're distinct disciplines.

## What materials do schools receive by signing up to a NumbersAlive subscription?

Our subscription series is still in development, but will include curriculum-linked actual life activities. We recently launched a free video learning series called *The Numbers Show*, starring Zero and the Digits, which includes 8- to 12-minute videos alongside extensive cross-disciplinary learning guides, scavenger hunt questions that users can use in their own games, and episode-specific activities. The subscription series will take the ideas introduced in the videos and move them to more formal lessons that will help teachers and parents lead learners through practical applications in disciplines they may not understand.

**To find out more, email info@numbersalive.org, visit numbersalive.org or follow @numbersalive**