Unlocking Children’s Math Potential:
5 Research Results to Transform Math Learning

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There is a huge elephant standing in most math classrooms, it is the idea that only some students can do well in math. Students believe it, parents believe and teachers believe it. The myth that math is a gift that some students have and some do not, is one of the most damaging ideas that pervades education in the US and that stands in the way of students’ math achievement.

This short paper summarizes five recent and important areas of knowledge that have emerged from studies of the brain and learning and that address this myth head-on.

In the last few years scientists’ understanding of ability and learning have changed dramatically. The advent of brain scans and other technological advances have enabled researchers to gain new and important information about learning and ability. The results that are emerging have major importance for all those running schools, teaching mathematics or helping others learn mathematics.

1. All Students Can Achieve at High Levels.

Three studies have been particularly important in shifting scientists understanding of “ability” and learning potential:

(1) Taxi drivers in London have to take a 2-4 year course to become qualified to drive a ‘black cab’ anywhere in central London. The drivers learn routes involving 20,000 streets and 25,000 landmarks in the Greater London area. Scientists now know that the brains of black cab drivers grow during their training period. At the end of their training period the black cab drivers’ hippocampus, the area of the brain that specializes in acquiring and using complex spatial information, is significantly larger. Scientists also found that when the cab drivers retired from driving their hippocampus shrank back to its original size (Maguire, et al, 2000).

(2) In 2007 a girl had half of her brain removed because she was suffering from uncontrollable fits. Doctors expected her to be paralyzed for many years, as the