The long-range objectives of mathematics education would be better served if the tall shape of mathematics were de-emphasized, by moving away from a standard sequence to a more diversified curriculum with more topics that start closer to the ground.

There have been some trends in this direction, such as courses in finite mathematics and in probability, but there is room for much more.

There should be more courses available to freshmen and nonmajors which exploit some of the breadth of mathematics, to permit starting near the ground level without a lot of repetition of topics that students have already heard.

For instance, elementary courses in topology, number theory, symmetry and group theory, probability, finite mathematics, algebraic geometry, dynamical systems (chaos), computer graphics and linear algebra, projective geometry and perspective drawing, hyperbolic geometry, and mathematical logic can meet this criterion.

From kindergarten through high school, they often have teachers who are uncomfortable with anything off the beaten path.

Young children come up with many ingenious devices to work out mathematical questions, but teachers usually discourage any nonconventional approach—partly because it is not easy to understand what a child is thinking or trying to say, and the teachers don't catch on, partly because the teachers think it's not okay to use an alternative method or explanation.