Principal Messages

This panel, diverse in experience, expertise, and philosophy, agrees broadly that the delivery system in mathematics education—the system that translates mathematical knowledge into value and ability for the next generation—is broken and must be fixed. This is not a conclusion about any single element of the system. It is about how the many parts do not now work together to achieve a result worthy of this country’s values and ambitions.

On the basis of its deliberation and research, the panel can report that America has genuine opportunities for improvement in mathematics education. This report lays them out for action.

The essence of the panel’s message is to put first things first. There are six elements, expressed compactly here but in greater detail in the report.

- The mathematics curriculum in grades PreK–8 should be streamlined and should emphasize a well-defined set of the most critical topics in the early grades.

- Use should be made of what is clearly known from rigorous research about how children learn, especially by recognizing (a) the advantages for children in having a strong start; (b) the mutually reinforcing benefits of conceptual understanding, procedural fluency, and automatic (i.e., quick and effortless) recall of facts; and (c) that effort, not just inherent talent, counts in mathematical achievement.

- Our citizens and their educational leadership should recognize mathematically knowledgeable classroom teachers as having a central role in mathematics education and should encourage rigorously evaluated initiatives for attracting and appropriately preparing prospective teachers and for evaluating and retaining effective teachers.

- Instructional practice should be informed by high-quality research, when available, and by the best professional judgment and experience of accomplished classroom teachers. High-quality research does not support the contention that instruction should be either entirely “student centered” or “teacher directed.” Research indicates that some forms of particular instructional practices can have a positive impact under specified conditions.

- National Assessment of Educational Progress (NAEP) and state assessments should be improved in quality and should carry increased emphasis on the most critical knowledge and skills leading to algebra.

- The nation must continue to build capacity for more rigorous research in education so that it can inform policy and practice more effectively.

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