

# EFFECTS OF *MEASURE UP* ON AREA CONSERVATION

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While Piaget proposed that development is a necessary precursor to learning, Vygotsky (1978) maintained that the relationship between development and learning is highly complex and dynamic. His work labels the stages identified by Piaget as the *actual level of development*. *Potential development* is the level at which the child can solve problems with assistance. Between these two levels lies *the zone of proximal development*. Teaching children in this zone should push them to new levels of actual development. In fact, Vygotsky claims “the only ‘good learning’ is that which is in advance of development” (p. 89). There is evidence that children learn concepts and skills beyond the level indicated by performance on Piagetian tasks, hence these are not indicators of readiness for instruction (Weaver, 1985).

*Measure Up* (MU) is an elementary curriculum based on the work of Russian mathematicians and psychologists (Davydov, 1966). MU develops mathematics concepts through lessons that assume conservation of length, area, volume, and mass. According to Piaget, however, not all six- and seven-year-olds conserve (Piaget, Inhelder, & Szeminska 1960).

This research investigates the influence of MU on the development of conservation of area. The study compares students in grades 1 and 2 in the MU curriculum with those who are not. Higher levels of conservation in MU students would support Vygotsky’s view that with appropriate instruction in the zone of proximal development children advance beyond their actual level of development. The research design uses a classic Piagetian task to investigate students’ conservation of area when shapes are transformed by rotation, reflection or by cutting and rearranging the parts. The task is an adaptation in response to critiques of Piaget’s work (Mogdil & Mogdil, 1976). Students’ responses from individual interviews are analyzed according to developmental levels (Piaget, Inhelder, & Szeminska 1960). Results of this preliminary investigation will be shared. The study will form the basis for future design studies to investigate the dynamics of learning mathematical concepts.

## References

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