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Index of Reading Assignments

The following required reading assignments for this workshop can be found at the end of this Appendix.

Workshop 1

Davis, R. B., Maher, C. A., and Martino, A. "Using Videotapes To Study the Construction of Mathematical Knowledge of Individual Children Working in Groups." *Journal of Science, Education and Technology*, 1(3), 177-189, 1992.

Workshop 2

Maher, C. A. and Martino, A. M. "Conditions for Conceptual Change: From Pattern Recognition to Theory Posing." In H. Mansfield and N. H. Pateman (Eds.), *Young Children and Mathematics: Concepts and Their Representation*. Sydney, Australia: Australian Association of Mathematics Teachers, 1997.

Maher, C. A. and Martino, A. M. "Young Children Invent Methods of Proof: The Gang of Four." In P. Nesher, L. P. Steffe, P. Cobb, B. Greer, and J. Goldin (Eds.), *Theories of Mathematical Learning*, 431-447. Mahwah, NJ: Lawrence E. Erlbaum Associates, 1996.

Workshop 3

Maher, C. A. "The Nature of Learning." In *Can Teachers Help Children Make Convincing Arguments? A Glimpse Into the Process*, 21-34. Universidade Santa Ursula: Rio de Janeiro, Brazil, 1998.

Maher, C. A., and Martino, A. M. "Brandon's Proof and Isomorphism." In *Can Teachers Help Children Make Convincing Arguments? A Glimpse Into the Process*, 77-101. Universidade Santa Ursula: Rio de Janeiro, Brazil, 1998.

Workshop 5

Maher, C. A. and Speiser, M. "How Far Can You Go With Block Towers? Stephanie's Intellectual Development." *The Journal of Mathematical Behavior*, 16(2), 125-132, 1997.

Suggested Reading

Kiczek, R. D., Maher, C. A., and Speiser, R. (in press). "Tracing the Origins of Michael's Representation." In *NCTM 2001 Yearbook: The Role of Representation in School Mathematics*. Virginia: Reston.

Maher, C. A., Davis, R. B., and Alston, A. "Implementing a 'Thinking Curriculum' in Mathematics." *The Journal of Mathematical Behavior*, 10(3), 219-224, 1991.

Maher, C. A., and Davis, R. B. *Mathematical Reasoning: Analogies and Images: How Students Think: The Role of Representations*, 93-115, 1997.

Mosteller, Frederick, et al. *Probability With Statistical Applications*. Addison-Wesley Publishing Company, Inc., Reading, Massachusetts, 1961.

Speiser, R. "Block Towers and Binomials." *The Journal of Mathematical Behavior*, 16(2), 113-124, 1997.

Speiser, R., and Walter, C. "Catwalk: First Semester Calculus." *The Journal of Mathematical Behavior*, 13(2), 135-152, 1994.

Speiser, R., and Walter, C. "Second Catwalk: Narrative, Context, and Embodiment." *The Journal of Mathematical Behavior*, 15(4), 351-371, 1996.

Tobias, Sheila. *Overcoming Math Anxiety*. W. W. Norton & Company, New York, London, 1993.

Video Production Credits

Produced by Harvard-Smithsonian Center for Astrophysics

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Production Notes and Acknowledgments

This series is the result of dedicated work and commitment on the part of many people. Over 450 hours of videotape was gathered, logged, evaluated, and edited to create the finished programs. Much of this material is from the Robert B. Davis Institute for Learning at Rutgers University, which has gathered over 2,000 videotapes of qualitative research footage in mathematics education, dating back to 1988.

For the most part, this material is preserved in excellent condition, but sometimes the limitations of the equipment available at the time of recording are noticeable as a slight fuzzy quality in the image and sound. In spite of this, we feel that the strength and originality of the student thinking that was so artfully captured overshadow the technical limitations of the medium.

In editing this material into manageable length, every effort was made to retain the integrity, authenticity, and spirit of the students' work. For example, when assembling the archival footage, the editors tried to maintain the original order of shots as much as possible. Furthermore, in the series overall, the scenes in which Kenilworth students appear are placed in the order in which the events depicted actually occurred. For the mathematically minded, the opening and closing music in the series is an original score based on the Fibonacci Series.

In addition to the archival footage, the series includes a great deal of original videotaping in a number of public school districts. The producers wish to thank the Kenilworth, Englewood, Jersey City, and Middlesex public school districts in New Jersey, and the Provo, Utah public school district for allowing access to their schools. The teachers, students, and administrators who participated in the series should be applauded for their willingness to "go public" with their ongoing efforts to raise student achievement in mathematics.

This series is the first comprehensive effort to make available on videotape the fruits of the Rutgers long-term study. Simply put, the career-spanning efforts of Carolyn Maher and her colleagues and collaborators at the Robert B. Davis Institute for Learning are what have made the series possible, and the producers hope that these workshops do some small justice to their long-term efforts.

Finally, all of us who have had the privilege of working with the students in the Kenilworth study appreciate their willingness to take on the challenges of mathematics. It is all too easy to forget that this cohort was randomly selected in first grade. Only the stability of small-town life has allowed so many of this group of students to stay together over such a long period. We only hope that the lessons this wonderful group of young men and women have taught us will be of benefit to other educators who have the vision and courage to help their own students reach for deeper understanding in mathematics.

