

## Principles of Effective Reading Instruction

The following principles are the foundation for instruction in *Waterford Early Reading Program™*.

- Consistent, high-quality reading education should be provided to all students.
- Reading instruction should be based on research, national and state standards, and best teaching practices.
- Emergent readers need to understand how print works.
- Rapidly recognizing individual letters is a critical determinant of reading proficiency.
- Phonological awareness plays a critical role in learning to read.
- Beginning readers need to understand the relationships between written letters and spoken sounds or the alphabetic principle.
- Beginning readers need practice reading and listening to a variety of texts.
- Beginning readers need to develop automatic word recognition skills so they can pay attention to meaning.
- Readers should practice spelling and writing new words.
- Readers need practice reading orally with expression and with automaticity.
- Readers can develop comprehension strategies that help them better understand what they read.
- Readers should practice writing connected text to express ideas and to learn basic grammar and usage skills that improve their writing.

### Expert Consultants

Marilyn J. Adams

Isabel L. Beck

Philip Gough

Bill Honig

Richard K. Olson

William H. Teale

Joseph Torgesen

Grover J. (Russell) Whitehurst

Barbara Wise

### Major Research Sources

Adams, M. J. (1990). *Beginning to read: thinking and learning about print*. Cambridge, MA: MIT Press.

Neuman, S. B., Copple, C., & Bredekamp, S. (2000). *Learning to read and write: developmentally appropriate practices for young children*. Washington, DC: National Association for the Education of Young Children.

Burns, M. S., Griffin, P., & Snow, C. E. (1999). *Starting out right: a guide to promoting children's reading success*. Washington, DC: National Academy Press. Committee on the Prevention of Reading Difficulties in Young Children.

Snow, C. E., Burns, M. S., & Griffin, P. (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

Armbruster, B. B., Lehr, F., Osborn, J., & Adler, C. R. (2001). *Put reading first: the research building blocks for teaching children to read: kindergarten through grade 3*. Washington, DC: National Institute for Literacy, National Institute of Child Health and Human Development, U.S. Dept. of Education.

National Reading Panel (U.S.). (2000). *Teaching children to read*. Washington, DC: National Institute of Child Health and Human Development, National Institutes of Health.

## Principles of Effective Early Math Education

The following principles are the foundation for instruction in *Waterford Early Math and Science™*.

- Consistent, high-quality math education should be provided to all students.
- Math instruction should be based on research, national and state standards, and best teaching practices.
- Math learning needs to build on students' understandings, abilities, and experiences with the physical world.
- Problem solving, reasoning, flexibly representing concepts, formulating proofs, communicating, and making connections should be encouraged.
- Mathematics processes need to be modeled for, directly taught to, and used by early learners.
- Math learners need to develop solid understanding of concepts before using written symbols.
- Hands-on investigation is an integral part of early math education.
- Students need to develop an understanding of the relationship between math and their everyday lives.
- Familiarity with key vocabulary in context enhances students' understanding of number, operations, algebra, geometry, measurement, data analysis, and probability.
- Appropriate use of technology and of tools aids students as they learn math concepts and processes.

## Principles of Effective Early Science Education

The following principles are the foundation for instruction in *Waterford Early Math and Science™*.

- Consistent, high-quality science education should be provided to all students.
- Science instruction should be based on research, national and state standards, and best teaching practices.
- Science learning needs to build on students' existing understandings, abilities, and experiences with the physical world.
- Observing, asking questions, forming hypotheses, designing experiments, collecting data, analyzing results, communicating findings, and refining explanations and understandings through further research should be encouraged.
- Science inquiry processes need to be modeled for, directly taught to, and used by early science learners.
- Hands-on investigations are an integral part of early science education.
- Students need to develop an understanding of the relationship between science and their everyday lives.

- Familiarity with key vocabulary in context enhances students' understanding of physical science, life science, earth and space science, science and technology, science in personal and social perspectives, and the history and nature of science.
- Appropriate use of technology and of tools aids students as they learn science concepts and processes.

## Expert Consultants

James Barufaldi

Douglas Clements

David C. Geary

Patricia Kerr

Stephanie Sheffield

Robert Siegler

## Major Research Sources

Project 2061 (American Association for the Advancement of Science). (1993). *Benchmarks for science literacy*. New York: Oxford University Press.

Baroody, A. J. (1987). *Children's mathematical thinking: a developmental framework for preschool, primary, and special education teachers*. New York: Teachers College, Columbia University.

Charlesworth, R., & Lind, K. (1990). *Math and science for young children*. Albany, NY: Delmar Publishers.

Geary, D. C. (1994). *Children's mathematical development: research and practical applications*. Washington, DC: American Psychological Association.

Hogben, L. T. (1993). *Mathematics for the million*. New York: W.W. Norton.

Holt, B.-G. (1989). *Science with young children*. Washington, DC: National Association for the Education of Young Children.

Ma, L. (1999). *Knowing and teaching elementary mathematics teachers' understanding of fundamental mathematics in China and the United States*. Mahwah, NJ: Lawrence Erlbaum Associates.

National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*. Reston, VA: National Council of Teachers of Mathematics.

National Research Council (U.S.). (1996). *National Science Education Standards: observe, interact, change, learn*. Washington, DC: National Academy Press.