

## Multimedia Science Instruction

Research documentation fully supports the use of video and other media to increase student understanding and retention of content in the science classroom. Videos, when used as a dynamic resource that supports the curriculum as presented in *SRA Snapshots Video Science*™, generate excitement, allow for classroom flexibility, and enhance instruction. Examples of supporting research include the following:

- King, K., Lietz, S., and Shumow, L. 2000. Science education in an urban elementary school: Case studies of teacher beliefs and classroom practices. *Science Education*, 85, 2, 89–110.
- Kumplainin, K., and Mutanen, M. 1998. Collaborative practice of science instruction in a computer-based multimedia environment. *Computer Education*, 30, 75–85.
- Lawless, K. A., and Brown, S. W. 1997. Multimedia learning environments: Issues of learner control and navigation. *Instructional Science*, 25, 117–131.
- Marzano, R. J. 2004. Building background knowledge for academic achievement: Research on what works in schools. Alexandria, VA: Association for Supervision and Curriculum Development.
- Mayer, R.E., and Moreno, R. 2002. Animation as an aid to multimedia learning. *Educational Psychology*, 14, 87-99.

## Specialized Vocabulary Development

Research documentation fully supports the specialized vocabulary skills instruction, practices, and strategies found in *SRA Snapshots Video Science*™. Examples of supporting research include the following:

- Brassell, D., and Flood, J. 2004. *Vocabulary strategies every teacher needs to know*. San Diego, CA: Academic Professional Development.
- Graves, M. F. 2006. *The Vocabulary book: Learning and instruction*. Williston, VT: Teacher's College Press.
- Holmes, H. 2002. *Content-area vocabulary strategies: Science*. Portland, ME: Walch.

- Saul, E. W., ed. 2004. *Crossing borders in literacy and science instruction: Perspectives on theory and practice*. Arlington, VA: NSTA Press.
- Wilson, M. 1998. Identifying and teaching essential science vocabulary. *School Science Review* 80, 291, 63–66.

## Differentiated Instruction Opportunities

To foster science education for all, *SRA Snapshots Video Science*™ employs a systematic approach in which students see science, hear science, and read science. Research fully supports this method, which gives ample opportunities for differentiated instruction. Examples of supporting research include the following:

- Carlson, C. 2000. Scientific literacy for all. *The Science Teacher* 67(3), 48–52.
- Dye, G. A. 2000. Graphic organizers to the rescue! Help students link – and remember – information. *Teaching Exceptional Children* 32(3), 72–76.
- Gardner, H. 1995. *Frames of mind: The theory of multiple intelligences*. New York: HarperCollins.
- Kameenui, E. J., Carnine, D. W., Dixon, R. C., Simmons, D. C., and Coyne, M. D. 2002. *Effective teaching strategies that accommodate diverse learners (2nd ed.)*. Upper Saddle River, NJ: Merrill/Prentice Hall.
- Klahr, D., and Nigam, M. 2004. The Equivalence of learning paths in early science instruction: Effects of direct instruction and discovery learning. *Psychological Science*, 15, 661–67.
- Marzano, R., and Kendall, J. 1998. *Content knowledge*. Aurora, CO: Mid-continent Regional Educational Laboratory.
- Rothenberg, C., and Fisher, D. 2007. *Teaching English-Language Learners: A differentiated approach*. Upper Saddle River, NJ: Pearson Education.
- Tomlinson, C. A., and McTighe, J. 2006. *Integrating differentiated instruction and understanding by design: Connecting content and kids*. Alexandria, VA: Association for Supervision and Curriculum Development.

## Core Science Content

The core science content found in *SRA Snapshots Video Science*™ is based on the recommendations of the National Academy of Science and the National Science Teachers Association, as outlined in the following:

- Lowery, L. F. 1997. *NSTA Pathways to the science standards: Guidelines for moving the vision into practice*. Elementary School Edition. Arlington, VA: National Science Teachers Association.
- National Academy of Science. 2005. *National Science Education Standards*. Washington, DC: National Academy Press.
- National Research Council. 2001. *Classroom assessment and the National Science Education Standards*. Washington: National Academy Press.

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