

# PROGRAM RESEARCH BASE

CONTEMPORARY  
SCIENCE SERIES  
RESEARCH BASE



Wright Group

## **WRIGHT GROUP'S CONTEMPORARY SCIENCE SERIES RESEARCH BASE**

Wright Group's *Contemporary Science Series* is a series of research- and literacy-based content area science programs covering the concepts of biology, Earth & space science, and physical science through a literacy-based approach. The *Reading Next* findings, as well as other studies, fully support the fundamental concepts and instructional design of Wright Group's Contemporary Science Series. The curriculum offers an instructional balance of teacher-directed and hands-on activities for differentiated instruction.

## **EDUCATIONAL RESEARCH IDENTIFIES NEED FOR CURRICULUM**

*The Nation's Report Card—Science 2005* shows that 59 percent of grade 8 students and 54 percent of grade 12 students scored at or above the *Basic* level. The *Basic* level represents the lowest of the three science categories used by the NAEP (National Assessment of Educational Progress). *The Nation's Report Card—Reading 2005* shows that 73 percent of grade 8 students and 73 percent of grade 12 students scored at or above the *Basic* level. The Alliance for Excellent Education reports that 1.2 million students annually fail to graduate high school on time, while approximately 70% of students earn their high school diplomas. The Contemporary Science Series was created in response to this identified need for a text to reach all students through a literacy-based approach.

## **EDUCATIONAL RESEARCH IS FRAMEWORK FOR CURRICULUM**

Wright Group's *Contemporary Science Series* is a research- and standards-based science curriculum intended to develop science proficiency for all students through a literacy-based approach. The program incorporates the findings of several different types of research including educational research, research on how adolescents learn, and best practices in the science classroom. Key instructional research and best practice findings have built a strong foundation for the curriculum by providing literacy- and standards-based science instruction, offering multiple opportunities to differentiate and scaffold instruction, including activities and text to activate and generate prior knowledge, and embedding the 5E Instructional Model.

## **PROVIDING LITERACY- AND STANDARDS-BASED SCIENCE INSTRUCTION**

Wright Group's *Contemporary Science Series* aligns to the National Science Education Standards, research from Project 2061, and best practices for literacy instruction in a content area classroom. According to *Reading Next* (2006), teachers must provide nine key elements to help students achieve:

1. Direct, explicit comprehension instruction
2. Effective instructional principles embedded in content
3. Motivation and self-directed learning
4. Text-based collaborative learning
5. Strategic tutoring
6. Diverse texts
7. Intensive writing
8. Technology component
9. Ongoing formative assessment of students

Each of these nine key elements is included throughout Wright Group's *Contemporary Science Series* and is identified on the chart on the following page.

<b>Key Feature</b>	<b>Advantage and Benefit</b>	<b>Reading Next (2006)</b>
<b>Before You Read As You Read After You Read</b>	Incorporate research-based reading comprehension and literacy skills strategies to assist students in developing reading and critical thinking skills.	<ul style="list-style-type: none"> <li>- Direct, explicit comprehension instruction</li> <li>- Effective instructional principles embedded in content</li> <li>- Motivation and self-directed learning</li> <li>- Text-based collaborative learning</li> <li>- Strategic tutoring</li> </ul>
<b>Think About . . .</b>	Real-world examples of how the chapter concept relates to students' lives to activate and generate prior knowledge.	<ul style="list-style-type: none"> <li>- Motivation and self-directed learning</li> <li>- Text-based collaborative learning</li> <li>- Intensive writing</li> </ul>
<b>Connection boxes</b>	Link concepts between the sciences and to other academic disciplines to make the science topics pertinent to other areas of students' lives.	<ul style="list-style-type: none"> <li>- Direct, explicit comprehension instruction</li> <li>- Motivation and self-directed learning</li> <li>- Diverse texts</li> </ul>
<b>People in Science</b>	Profiles individuals and their contributions to the scientific community by providing historical perspectives and explaining science as a human endeavor.	<ul style="list-style-type: none"> <li>- Motivation and self-directed learning</li> <li>- Diverse texts</li> </ul>
<b>Explain It!</b>	Provides opportunities for students to express their thoughts and ideas in writing.	<ul style="list-style-type: none"> <li>- Effective instructional principles embedded in content</li> <li>- Motivation and self-directed learning</li> <li>- Text-based collaborative learning</li> <li>- Intensive writing</li> </ul>
<b>Explore It!</b>	Provides short hands-on activities that explore science concepts.	<ul style="list-style-type: none"> <li>- Motivation and self-directed learning</li> <li>- Text-based collaborative learning</li> <li>- Strategic tutoring</li> <li>- Intensive writing</li> </ul>
<b>Extend It!</b>	Offers research topics that extend the curriculum and reinforce critical thinking and research skills.	<ul style="list-style-type: none"> <li>- Effective instructional principles embedded in content</li> <li>- Motivation and self-directed learning</li> <li>- Text-based collaborative learning</li> <li>- Intensive writing</li> </ul>
<b>Figure It Out</b>	Guides students through examining important graphically-presented data and interpreting data displays.	<ul style="list-style-type: none"> <li>- Direct, explicit comprehension instruction</li> <li>- Effective instructional principles embedded in content</li> <li>- Motivation and self-directed learning</li> <li>- Text-based collaborative learning</li> <li>- Diverse texts</li> <li>- Intensive writing</li> </ul>
<b>Science Journal</b>	Introduces articles related to current scientific research and career connections that highlight the application of science concepts and principles.	<ul style="list-style-type: none"> <li>- Direct, explicit comprehension instruction</li> <li>- Motivation and self-directed learning</li> <li>- Diverse texts</li> <li>- Intensive writing</li> </ul>
<b>Laboratory Manual</b>	Provides three independent activities per chapter through scaffolded, hands-on learning opportunities.	<ul style="list-style-type: none"> <li>- Direct, explicit comprehension instruction</li> <li>- Effective instructional principles embedded in content</li> <li>- Motivation and self-directed learning</li> <li>- Text-based collaborative learning</li> <li>- Strategic tutoring</li> <li>- Diverse texts</li> <li>- Intensive writing</li> </ul>
<b>Student Workbook</b>	Vocabulary, key concepts, graphic organizing skills, reading comprehension, cross-curricular topics, and challenge activities reinforce reading, writing, and science skill acquisition.	<ul style="list-style-type: none"> <li>- Direct, explicit comprehension instruction</li> <li>- Effective instructional principles embedded in content</li> <li>- Motivation and self-directed learning</li> <li>- Text-based collaborative learning</li> <li>- Diverse texts</li> <li>- Intensive writing</li> </ul>
<b>Interactive Software</b>	Differentiates instruction and targets various learning styles through audio narration of the student text, interactive laboratory activities, graphic organizers, lab report templates, Spanish narratives and writing activities, a Spanish cognate dictionary, and a digital library of images.	<ul style="list-style-type: none"> <li>- Effective instructional principles embedded in content</li> <li>- Motivation and self-directed learning</li> <li>- Text-based collaborative learning</li> <li>- Strategic tutoring</li> <li>- Diverse texts</li> </ul>
<b>Interactive Software</b>	Ready-made and customized tests assess students and inform instruction	<ul style="list-style-type: none"> <li>- Ongoing formative assessment of students</li> </ul>

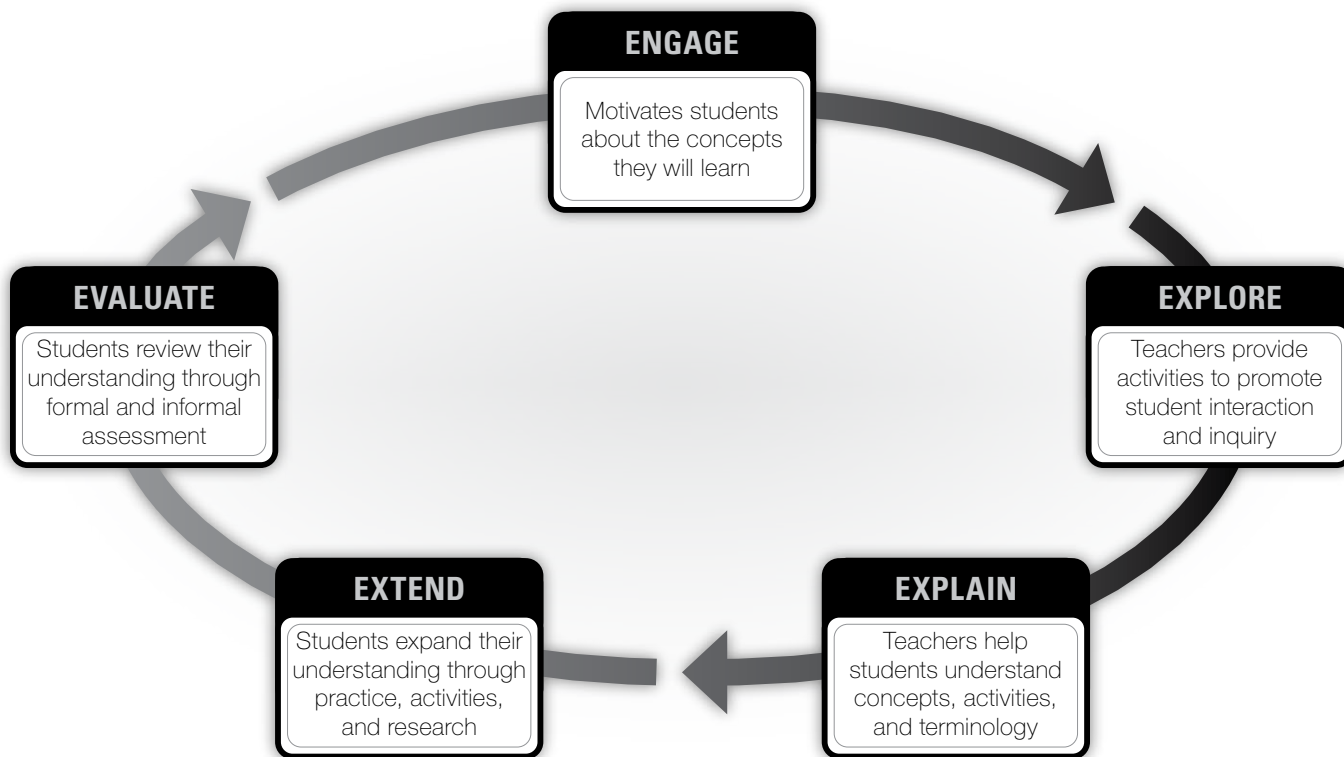
### OFFERING MULTIPLE OPPORTUNITIES TO DIFFERENTIATE AND SCAFFOLD INSTRUCTION

Wright Group's *Contemporary Science Series* offers multiple opportunities for both differentiated and scaffolded instruction through literacy activities, interactive technology, and ancillary support materials such as the Student Workbook and the Laboratory Manual. Scaffolded instruction is a technique in which educators offer high levels of student support during skill acquisition and decrease the support as students are able to take ownership of the skill and demonstrate mastery. The science classroom is the perfect environment for both differentiated and scaffolded instruction as it blends text with hands-on experiences. Differentiation and scaffolding are identified as excellent and effective instructional methods in middle school and high school settings (*Reading Next*, 2006).

### INCLUDING ACTIVITIES AND TEXT TO ACTIVATE AND GENERATE PRIOR KNOWLEDGE

Wright Group's *Contemporary Science Series* is designed to activate and generate prior student knowledge and build links between prior knowledge and the science content of each chapter. Pedagogical research supports the importance of having sufficient content area background knowledge (Kamil, 2003). English language learners often have gaps in knowledge or may lack the background knowledge of topics taught at lower grade levels (Short, 2007). Research also shows that student engagement in content areas increases, and reading comprehension improves, when teachers take the time to explore a student's background knowledge and link that knowledge to the subject being studied (Moje et al., 2004).

### EMBEDDING THE 5E INSTRUCTIONAL MODEL



The 5E instructional model (Engage, Explore, Explain, Extend, and Evaluate) is designed to increase student engagement, motivation, and achievement. It provides a flexible yet consistent structure for instructors to develop and conduct effective science lessons. By promoting a student-centered classroom, teachers can introduce reading and writing skills at any point in the learning process and link these to specific science skills such as observing, communicating, classifying, measuring, predicting, inferring, controlling variables, defining operations, and experimenting. Wright Group's *Contemporary Science Series* provides instructors with a guide to implementing this model and provides students with activities that are specifically designed to support the learning environment.

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