

ROCK DETECTIVE GEOSCIENCE EDUCATION



A 501(c)(3) NON-PROFIT ORGANIZATION

DEDICATED TO ENHANCING THE QUALITY OF EARTH SCIENCE EDUCATION

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<http://www.rockdetective.org>

MISSION

The soul of the Rock Detective mission springs from the word educate, from the Latin *educare*, which means, to draw out, to call forth what is already present as possibility.

Our goal is to help students and their teachers find that, like scientists, they have the ability to solve mysteries that lead to really big ideas. Their rewards (and ours) are the, Oh, Wows of discovering how the Earth works. We find that this process gives them the self-confidence to be curious ... and curiosity drives further learning.

To accomplish this goal, the Rock Detective provides a carefully structured, hands-on program to enhance and complement K-12 Earth Science education.

OVERVIEW

Over nearly two decades, the 'Become A Rock Detective' program has captivated a wide variety of students. Gifted as well as challenged are eager to become detectives and anxious to share their discoveries. The key is to listen to their ideas. We are routinely amazed by their ability to generate ideas that take things to the next level. Our, Oh, Wow, is to realize that someday they will be giving presentations to a world that thrives on new ideas.

The program is composed of various combinations of activities called Mysteries. Each Mystery introduces several concepts about a rock, fossil, or mineral sample, so that combinations of the Mysteries are a powerful teaching tool. Students and teachers are encouraged to handle and examine the samples as they ponder the answers to mystery questions. Anxious to find out whether they solved the mystery, the students want to tell everyone their ideas. This leads to spirited discussion between students and teacher -- it is the process by which everyone learns. The program draws from a large and growing collection of Mysteries that span the breadth and depth of earth science and grade levels from Kindergarten through University. We provide 25 or more Mysteries in age-appropriate kits along with the rock samples, background information, and teaching instructions. All of our materials are distributed at cost.

The scientific and educational quality of the Mysteries are held to a high standard. Mysteries are reviewed by professional earth scientists and classroom tested by educators.

BOARD OF DIRECTORS

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Ruth Deike, *Geologist (USGS, retired), Founder, Author*

HISTORY

Rock Detective Geoscience Education was incorporated in Maine in May 1996 and granted nonprofit 501(c)(3) exemption in May 2001. The organization is overseen by a Board of Directors, including a President, Vice-president, Secretary-Treasurer, and the Executive Director.

What started nearly 20 years ago as the outreach activity of one scientist has grown into a nationwide volunteer effort to help K-12 students and teachers understand the earth.

In 1987 the unique teaching approach of the Rock Detective program was conceived in the Washington DC area and, over the next several years, the program became very popular. In 1992 the Association of Women Geoscientists (AWG) donated a large collection of rocks, fossils, and minerals to make the program available to

teachers with little or no earth science background. Kits were distributed as a free teaching aid to schools, home study groups, and individuals. Testing during this period established that both students and teachers easily learned sophisticated concepts and developed a curiosity about how the earth works.

In 1996, a small group of teachers and geologists who recognized the enormous need for inquiry-based, hands-on earth science education formed the Rock Detective non-profit organization in order to distribute the Rock Detective program under the guidance of a full time, volunteer consulting geologist.

Since 1992, the Rock Detective has provided an estimated 80,000 samples to more than 2,000 teachers in the US and abroad.

EXECUTIVE DIRECTOR AND FOUNDER

The Founder, Executive Director, and ongoing creator of Mysteries for the Rock Detective is geologist, Ruth Deike. She holds a Master of Science Degree in Geology and Mineralogy and developed the original program from a rich background gleaned from 30 years as a research earth scientist with the U.S. Geological Survey (USGS). Her research focus has been geologic and chemical relationships between water and rocks in natural environments. Details of her scientific publications can be found at: <http://www.ruthdeike.org>.



In designing the Rock Detective program, Ruth was and is motivated by a desire to share the excitement of

research. Her energetic educational work includes several videos for teachers on earth science in urban environments and the seashore, and for nearly two decades she has taught 'Become a Rock Detective', to thousands of eager students.

In 2001 the Maine Science Teachers Association presented her the Philip Marcoux Award for having a significant impact on science education in Maine.

Her colleagues within the research and academic communities provide the Rock Detective with a wide range of earth science expertise and the opportunity to incorporate the latest research findings into mysteries.

INTERNSHIP PROGRAM

We have found that curious college undergraduates are an energetic source of research for, and development of new mysteries. Together with their faculty advisors we help them choose which mystery samples they are curious about, and guide their research toward concepts that fascinate them. The resulting mystery, or mysteries reflect their discoveries.

The Rock Detective Internship program began in 2001 with a student from Antioch College who was interested in work/study with our Earth Science non-profit. She took an active role in classroom presentations of the Rock Detective Program, attended Earth Science conferences, and wrote a paper on a global climate phenomenon called Snowball Earth. In the ensuing years

we have had several interns from Colby College in Maine and the University of Washington in Takoma and the program has grown with each.

Our interns are generally 3rd or 4th year undergraduates with a strong desire to learn about the Earth, and to share their discoveries with others. Many are planning on a career in Earth Science education. Colby College interns are required to design a testing program for their mysteries and to present their study at a major conference. Interns have told us that they benefit greatly, both from the geology they have gleaned, and from the challenging process of helping students discover, Oh, Wows!.

SPANISH TRANSLATION OF MYSTERIES

Nearly 100 mysteries have been translated into Spanish in order to provide Hispanic students with earth science content (the concepts) in their native language, and at the same time provide an English lesson by having the students compare the same mysteries in both English and Spanish. All of the instructional material in the resource

notebook has also been translated in order to provide Hispanic teachers with essential background.

The translations are done by professional geologists and earth science graduate students. Spanish is the their native language.



TESTIMONIALS FROM THE RESEARCH COMMUNITY

The Rock Detective education program is exciting, innovative, and fun! It provides both students and teachers with a stimulating introduction to laboratory science, which is a proven methodology for engaging student interest and for developing complex concepts in a meaningful way. This hands-on approach is also effective in spurring interest in our environment - clearly an important goal in today's world of difficult challenges. Ruth Deike, the founder and Director of Rock Detective, is a dedicated and knowledgeable teacher, with a wonderful sense of humor. These qualities are readily apparent in her many "Mysteries". I especially enjoy those which address problem-solving at the atomic and molecular level. Such detailed understanding has been fruitful and essential for the astounding progress witnessed in numerous fields of science, including chemistry, biology, materials science, surface processes, ... Our education is enriched greatly by the Rock Detective - we indeed need more such programs.

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