Mystery Rocks

Summary

This lesson is designed to get students thinking about the uses of rocks in the world around them.

Group Size

Large Groups

Materials

Pictures of rocks
Five Mystery Rock Boxes
Ancient rock art
Pieces of plaster of paris
Nails
- *Mystery Rock*
- *Rock Opportunities*

Writing paper

Additional Resources

Books

Easy Field Guide to Rock Art Symbols of the Southwest, by Rick Harris; ISBN 0935810587
How We Use Rock, by Chris Oxlade; ISBN 1410909964
Looking at Rocks, by Jennifer Dussling; ISBN 0448425165
Native American Rock Art: Messages from the Past, by Yvette Lapierre; ISBN 1565660641
Rock Art of Utah, by Polly Schaafsma; ISBN 0874804353

Organizations

Utah Rock Art Research Association, P.O. Box 511324, Salt Lake City, UT 84151-1324, http://www.utahrockart.org/

Background for Teachers

This lesson is designed to get students thinking about the uses of rocks in the world around them. Special focus needs to be placed on 'why' the rock would be suitable for use. It is important that students learn that soft rocks would be unsuitable for buildings or arrowheads, and that hard rocks would be a poor choice for a chalk substitute or for creating a petroglyph.

There are some obvious opportunities to teach more about the culture of the Native Americans at the end of this lesson. There are also opportunities to discuss how we can respect rock art and other ancient artifacts in our state.

The term 'petroglyph' will need to be introduced to most students. It describes art that is carved, scratched, or pecked into rock. It is not interchangeable with the term 'pictograph,' which describes art that is painted onto rock.

The plaster of Paris used in this lesson can be easily and inexpensively obtained from a hardware store in the paint and spackle area. It is a rock product that is similar in composition to limestone. The plaster of Paris powder is mixed with water and sets up within an hour. The plaster can be poured into paper plates, Styrofoam meat trays, or a shallow cookie sheet. If the plaster of paris pieces are painted a dark earth tone, the picture the students etch will be more visible.

Intended Learning Outcomes

1. Demonstrate a positive learning attitude.
5. Understand and use basic concepts and skills.

Instructional Procedures

Invitation to Learn

Show pictures or examples of rocks, one at a time, and encourage student responses about how the rock could be used. Show pictures or examples of how the rock was used. Discuss why that rock was a good choice for that use (for example: granite is a good choice for countertops because it polishes smooth and is very hard).

Instructional Procedures

Invite the class to view the contents of one of the Mystery Rock boxes (not the plaster of Paris piece). Ask them to write at least a paragraph on their half piece of paper describing how they think it is used, and why it would be used that way. Encourage them to use their creativity and write so well that the other students will be convinced that they are right.

Ask the students to share their writings and discuss the possibilities.

Share with them the true identity of the rock and its uses.

Collect the students' writing and staple it inside the halves of the *Mystery Rock* blackline master to make a book.

Display the four other *Mystery Rock* boxes, and half pages of writing paper in a center.

Encourage the students to examine the other mystery rocks and write what they believe each rock is used for.

Compile the students work to make books for each mystery box.

As a class, review the student guesses and their reasoning. Uncover the real uses of each rock and discuss why the characteristics of that rock make it good for its use.

Unveil the plaster of Paris pieces last and discuss how similar rock was used for thousands of years to record history and tell stories.

Show pictures of ancient rock art and discuss what can be learned from the pictures (e.g. how they hunted, what they wore, what animals they lived with, etc).

Distribute plaster of Paris pieces and nails so that students can create their own petroglyph. Encourage students to tell a story or capture a memory with their picture and to think ahead since it is difficult to fix mistakes.

Extensions

Curriculum Extensions/Adaptations/ Integration

A field trip to collect rocks, fossils, or to view rock art would be useful to reinforce the lesson.

An unpainted piece of plaster or Paris can be placed in a shallow bowl of vinegar. Bubbles will form, and over time, it will completely disintegrate. This is a good example of what happens to limestone buildings that are subjected to acid rain for a very long time. Daily observations should be made and can be recorded in a science journal.

Dissolve as much rock salt as possible in very hot water. Hang a string into the center of the salt water. Leave, and allow salt crystals to develop. You can experiment to determine what conditions (light/dark, hot/cold) encourage the best crystal growth. Student observations can be recorded daily in a science journal.

Review academic language using pictures and other appropriate graphic organizers for ESL students.

Family Connections

Send home Mystery Boxes and encourage families to discuss what they think each rock could be used for.

Using the *Rock Opportunities* blackline master, create a list of nearby areas to collect rocks, find fossils, view rock art, etc. Send it home with the students and encourage their families to take a field trip together!

Assessment Plan

Assess the student responses to the Mystery Rock boxes. They should be able to explain what characteristics of each rock make it suitable for their suggested use.
Their artwork should show that they understand that rock art was used to preserve stories or memories.

Bibliography

Research Basis
Hanze, M., & Berger, R. (2007). Cooperative learning, motivational effects, and student characteristics: An experimental study comparing cooperative learning and direct instruction in 12th grade physics classes. *Learning and Instruction*. 17(1), 29-41.
Researchers compared student achievement in classrooms with cooperative learning instruction and traditional direct instruction. The method of instruction was found to interact with student's self-concept; students with low academic self-concept profited more from cooperative learning instruction than from direct instruction because they experienced a feeling of greater competency.
Mintz. E. & Calhoun, J. (2004). Project Notebook: Science notebooks emerge. *Science and Children*. 42(3), 30-34.
Teachers from South Carolina attempting to meet the needs of their diverse student population, create a program implementing science notebooks. They believed that science could be used as a vehicle for increasing student achievement across the curriculum. Science notebooks, used in conjunction with an inquiry-based science curriculum, emerged as the natural vehicle for helping to create an effective science program.

Authors

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