

Directions

Read this article. Then do Numbers 22 through 26. You may look back at the article as often as you like.

What Is a Mineral?

by Elizabeth Marcus

A mineral is something in nature that is neither a plant nor an animal. Most rocks contain two or more minerals. To identify a mineral, you should look for four things.

First, look for **color**. Some minerals are light in color, while others are dark. They may be white, yellow, pink, red, blue, green, gray, or even black. But color is not always the best way to identify a mineral. This is because many minerals have extra chemicals in them that give them a different color than might be expected.

Second, look for **luster**, or shininess. Some minerals shine brightly, like metal. Others may look glassy or dull. Still others may have a pearly luster, like the inside of some seashells.

Third, look for **how the mineral breaks apart**. Some minerals split into thin, flat sheets. Some split into tiny cubes. Still others break up into pieces with different shapes.

Finally, look for **hardness**. You can test a mineral for hardness by trying to scratch it. Some minerals are so soft you can scratch them with your fingernail. Others can be scratched with a penny. Still others can be scratched with the steel blade of a penknife.



Today you will read and think about the folktales “Coyote and Fire” and “How Big Bear Stuck to the Sky.” As you read these texts, you will gather information and answer questions about how the illustrations help you understand the folktales so you can write an essay.

Read the Native American folktale “How Big Bear Stuck to the Sky.” Then answer the questions.

How Big Bear Stuck to the Sky

A Native American Legend

Retold by Kathleen Muldoon

- 1 Once upon a time when Earth was young, Winter ruled. Snow and ice covered mountains and rivers, fields and forests. So hard was the floor between Earth and Sky that Sun could not peek through to warm the ground.
- 2 Animals that survived this harsh cold hunted to provide what little food they could for their young. A big bear, called Fisher because the magic in his tail helped him catch fish, decided it was time to bring Summer to Earth.
- 3 So Fisher invited all of Earth’s creatures to a meeting.
- 4 “We will find a way to warm Earth,” he said. “Sun will bring grass and flowers and birds. We must reach the Great Spirit and ask for help. Who will go with me to the place where Earth is closest to Sky?”
- 5 Otter, Lynx, and Wolverine agreed to accompany Fisher on his journey. They traveled across frozen lakes and rivers. Icy twigs snapped as they tramped through snowy woods. They climbed hills and slid through valleys.

6 Fisher swished his magical, stubby tail in the frigid waters and caught fish for them to eat along the way. After many days, he led them to the top of the tallest mountain on Earth, so high it almost tickled Sky.

7 There Fisher stood on his back paws and stretched, swiping his front claws on Sky's floor. But he made only a tiny scratch. He could not break through to Sky.

8 "Let me try," cried Otter.



9 He jumped so high his head thumped the sky floor. Otter fell back to Earth and WHOOSH! Down the mountain he slid, riding on his belly all the way to the bottom.

10 Next Lynx took a step back and pounced at Sky. THUNK! She hit her head so hard that she fell unconscious to the snow. Wolverine pushed her aside.

11 "I am the strongest," he growled.

12 Wolverine leaped against Sky's floor, once, twice, three times. Finally, he caused the tiniest of cracks to appear. He jumped again and again, widening the crack into a hole. Soon Wolverine climbed through the sky hole, followed by Fisher.

13 All at once, birds of every color and size surrounded them. Some swooshed through Wolverine's hole and flew over Earth, spreading Sky's warmth with each flap of their wings.

14 Soon Sun sent its rays through the hole, and Fisher and Wolverine watched as snow on the mountain-top began to melt.

15 "We must make the hole bigger," Fisher said. He twitched his magic tail. Then, using his sharp teeth, he gnawed off more pieces of the sky floor.

16 Suddenly a band of Sky People ran toward them.

17 "Stop, thieves," they cried, brandishing bows and arrows. "Stop stealing our warmth!"

18 Wolverine escaped through the hole and tumbled down the mountainside back to Earth. But Fisher kept working. By the time the Sky People reached him, he'd widened the hole enough so that Sun could warm Earth for half of every year.



19 Fisher ran from the Sky People's arrows and climbed to the top of a tall tree. But one arrow struck Fisher's tail and he began falling. Before he could hit Sky's floor, the Great Spirit, admiring Fisher's persistence, took pity on the bear. He adorned Fisher with stars, and set him in a place of honor in the sky. If you look to Sky on a starry night, you will see him there still.

20 The Great Bear constellation, also called Ursa Major, is one of the largest and easiest star groupings to find in the sky. This is because one group of stars within it looks like a soup ladle and is called the Big Dipper. It forms the back end and tail of the whole constellation, which resembles a bear.

21 On a clear night, if you study the northern sky, you will see Ursa Major if you look first for the Big Dipper. Ursa Major is highest in the spring sky and lowest in the autumn because, according to Native American legend, Bear is looking for a place to hibernate before winter.

"How Big Bear Stuck to the Sky" by Kathleen Muldoon, illustrations by Robert Meganck from Spider Magazine's November/December 2011 issue, copyright © 2011 by Carus Publishing Company. Reprinted by permission of Spider Magazine.



AMERICAN INSTITUTES FOR RESEARCH



Does Deeper Learning Improve Student Outcomes?

Results From the *Study of Deeper Learning: Opportunities and Outcomes*

For the *Study of Deeper Learning: Opportunities and Outcomes*, funded by the William and Flora Hewlett Foundation, experts at American Institutes for Research (AIR) set out to determine whether students who attended high schools with a mature and at least moderately well-implemented approach to promoting deeper learning actually experienced greater deeper learning opportunities and outcomes than would likely have been the case had they not attended these schools.

The study aimed to provide evidence about whether the *concept* of deeper learning—applied across a variety of reasonably well-implemented approaches and a diversity of students—has potential merit as a means for education improvement.

What Is Deeper Learning, and Why Is It Important?

What do today's students really need to learn in order to succeed, not only in the classroom but also later on in college, careers, and as engaged citizens? This question is the subject of considerable discussion and debate, particularly as efforts to increase student performance and college preparedness often fail to meet expectations.

Much of American education policy focuses on the need for students to develop deeper content knowledge and an ability to apply their knowledge and skills to tasks and situations inside and outside of school. The Common Core State Standards and Next Generation Science Standards reflect this dual focus on academic learning and real-world application.

Yet even staunch supporters of new standards believe the goals of education must reach further. Academic knowledge and skills alone won't enable students to successfully navigate a rapidly changing world, participate in a complex and increasingly diverse democracy, or engage fully in the ever-evolving 21st century workplace.

Students must be able to communicate their ideas effectively, think creatively, work collaboratively to solve problems, and manage their own learning. They need to develop dispositions—or mindsets—that empower them to confront new challenges, take initiative, and persevere through difficulties and setbacks.

AIR's Study of Deeper Learning: Opportunities and Outcomes found that students who attended high schools that explicitly focused on deeper learning experienced superior outcomes when measured against students in comparison schools.

This combination of (1) a deeper understanding of core academic content, (2) the ability to apply that understanding to novel problems and situations, and (3) the development of a range of competencies, including people skills and self-control, is called “deeper learning.”

The William and Flora Hewlett Foundation identified six dimensions of deeper learning that, collectively, have become the focus of a national initiative to promote deeper learning in schools. These dimensions are:

- Mastery of core academic content
- Critical thinking and problem-solving
- Effective communication
- Ability to work collaboratively
- Learning how to learn
- Academic mindsets (Chow, 2010; Hewlett Foundation, 2013; Trilling, 2010)

Taking a slightly different approach, a National Research Council panel defined deeper learning as “the process through which an individual becomes capable of taking what was learned in one situation and applying it to new situations (i.e., transfer).” (National Research Council, 2012, p. 4). The concept of transferring information and skills learned in one setting to another is an important part of deeper learning.

As the definition and understanding of deeper learning evolves, experts look to research to learn how to measure its impact and use it as a strategy to improve outcomes for students.

Opportunities for Deeper Learning in Study Schools

Did students who attended high schools with at least moderately well-implemented approaches to promoting deeper learning actually experience greater deeper learning opportunities and outcomes than they would have had they not attended these schools? This question addressed a fundamental assumption that a well-implemented approach to deeper learning can result in more and better opportunities to develop critical competencies.

Research showed that deeper learning network schools applied a range of strategies and structures to foster deeper learning competencies. Those strategies and structures reported through interviews with school administrators and staff included:

- Project-based learning for mastery of core academic content and critical thinking skills
- Internship opportunities to develop connections to the real world
- Group work and long-term assessments such as portfolios and exhibitions to develop collaboration and communication skills
- Study groups and student participation in decision making to help develop academic mindsets and support learning how to learn

Students in these network schools reported experiencing more opportunities to engage in deeper learning through such strategies and structures than did similar students who attended comparison schools. Researchers found positive effects across all measures, including opportunities for complex problem solving, collaboration, communication, learning how to learn, creative thinking, assessments aligned with deeper learning, receiving feedback, interdisciplinary learning, and real-world connections. These effects were evident among a diverse group of students, including students who entered high school as either low or high achievers and students who did and did not qualify for free or reduced-price lunch.

Outcomes for Students in the Study

AIR analyzed data for students who attended well implementing network schools and students in comparison schools in California and New York to assess the outcomes of deeper learning strategies and structures. After accounting statistically for differences in student background characteristics, researchers identified the following results:

TEST SCORES



On average, students in deeper learning network schools achieved higher scores on the OECD PISA-based Test for Schools (PBTS)—a test that assesses core content knowledge and complex problem-solving skills—in reading, mathematics, and science than did similar students in comparison schools. These students also earned higher scores on state-mandated English language arts and mathematics tests.

INTERPERSONAL AND INTRAPERSONAL SKILLS



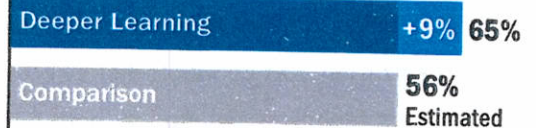
Students in deeper learning network schools reported higher levels of collaboration skills, academic engagement, motivation to learn, and self-efficacy. There were no significant differences between students who attended network schools and non-network schools relative to reported creative thinking skills, perseverance, locus of control, or self-management.

ON-TIME HIGH SCHOOL GRADUATION

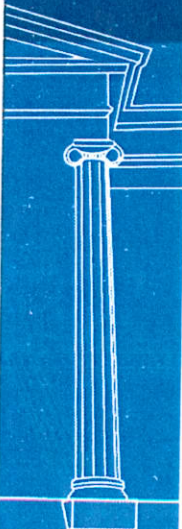


Students in deeper learning network schools were more likely to graduate from high school on time (within four years of entering Grade 9) than were students from comparison schools. The graduation rate among network school students was estimated to be about 9 percentage points higher than the graduation rate among similar students in comparison schools.*

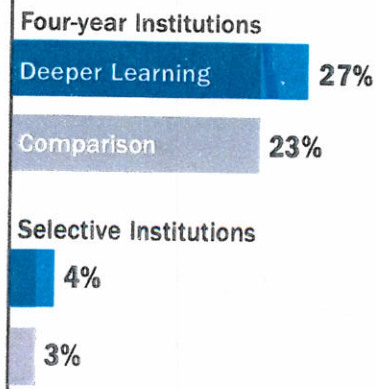
* These graduation rates may appear lower than typically reported graduation rates because students who transferred to another district prior to graduation were classified as non-graduates. According to the California state and New York City data systems, published graduation rates for schools in this study ranged from 48 percent to 100 percent, with an average graduation rate of approximately 77 percent.



COLLEGE ENROLLMENT



Students in deeper learning network schools and comparison schools had similar overall rates of enrollment in postsecondary institutions. However, students who attended deeper learning network schools were more likely to enroll in four-year institutions (27 percent compared with 23 percent) and in selective institutions (4 percent compared with 3 percent).



About the Study

For the **Study of Deeper Learning: Opportunities and Outcomes**, AIR's research team examined a set of selected high schools associated with 10 established networks from across the country. These networks embrace the goals of deeper learning, promote instructional practices that their member schools believe are likely to lead to deeper learning competencies, and participate in the Hewlett Foundation's Deeper Learning Community of Practice. Schools in the network serve a diverse and traditionally underserved group of students, including substantial populations of students living in poverty and, in some cases, large populations of English language learners.

To examine whether students in these high schools benefitted from greater opportunities for deeper learning and more enhanced outcomes than they probably would have experienced in other schools, AIR also included students from a set of comparison schools that served similar student populations and were located in the same geographic locales as the network schools.

For more information on the **Study of Deeper Learning: Opportunities and Outcomes**, visit www.air.org/deeperlearning.

About AIR

Established in 1946, American Institutes for Research (AIR) is an independent, nonpartisan, not-for-profit organization that conducts behavioral and social science research on important social issues and delivers technical assistance, both domestically and internationally, in the areas of education, health, and workforce productivity.



1000 Thomas Jefferson Street NW
Washington, DC 20007-3835
202.403.5000 | TTY: 877.334.3499

www.air.org

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