Benno Baumgarten from Italy was interested in stones even when he was a boy.

Benno Baumgarten, *Geologist*

What would have happened if Benno Baumgarten's father had brought home medicinal herbs from his hikes?

Stones are really interesting, and you can find them everywhere: on the street, on the beach, in the forest and on mountain slopes. Have you ever looked at stones very carefully? Do you have any stones among your treasures?

In South Tyrol in Italy there is a very curious geologist and researcher who is interested in stones: Benno Baumgarten. Geologists investigate the structure and composition of the Earth, among other things. Even as a young child, Benno Baumgarten was very interested in the many different kinds of stone in his home region. He collected lots of them and guarded them like small treasures. He tried to find out where they came from, how they were formed, and whether there were secrets and stories about them.

Benno Baumgarten was born in Bolzano, the capital of South Tyrol province in Italy, on 24 June 1956. When he was a child, he lived together with his parents and his grandmother. His grandmother was a very clever woman who could make all kinds of things, such as soap, herself from just a few materials. Benno liked that, and he wanted to investigate all the things he was curious about, just like his grandmother. That way he learned at an early age how to do experiments with many different materials.

Even as a boy, Benno Baumgarten collected all kinds of stones

Over time, he focused more and more on stones and minerals. He was fascinated by the great variety of stones. He soon realized that every stone was beautiful and fascinating in its own way. He especially liked to find things out about stones on his own. He looked for stones on his way to school and in the neighbourhood. His father and his older brother were enthusiastic mountain climbers, and when they came back from their hikes they often brought back new treasures and gave them to Benno. He didn't think it was important to have big stones in his collection. He much preferred to

have many different small ones. He especially liked opals. Opals are stones that can be used to make jewellery because they shimmer in different colours when you move them.

Many questions led Benno to a stone expert

The more stones Benno had, the more he wanted to find out about them. So he asked questions of his teacher and other experts who lived nearby. For example, one of the neighbours of Benno Baumgarten's family was a man who laid flagstones and polished semi-precious stones. He visited this man again and again to show him his new stones and find out something about them. This mysterious man was a real stone expert. Over time Benno became especially fond of crystals, because they sparkle so beautifully.

In middle school, Benno Baumgarten found two close friends who were also interested in stones. The three boys bonded through their research into minerals, and they developed a secret logo as a symbol of their friendship.

When Benno was a bit older he went to the grammar school in Bolzano. He especially liked the subject of chemistry, because he loved to do chemical experiments. One day he had the bright idea of setting up his own chemical laboratory in the cellar at home. His parents let him do it, but they thought it was more important for him to study music and learn to play the organ. Benno didn't like this idea at all, because he was interested in discovering, investigating and understanding aspects of natural science.

He needed many devices and chemical substances for his chemical laboratory in the cellar, and he bought many of them at flea markets. He also subscribed to a magazine for chemical lab assistants. His chemical experiments were extremely unusual, and they fascinated him greatly. And they inspired him to do more and more experiments.

When he finished grammar school, he went to Munich to study geology. Today Benno Baumgarten has a degree in geology and is the Director of the Geology Department of the Museum of Nature South Tyrol in Bolzano. There children and adults can find out a lot about stones and their history.

Do you know the geologist's most important tools?

They are a hammer and a magnifying glass. The geologist uses a hammer to smash stones apart in order to create a fresh break. He can then use a magnifying glass to take a close look at the stone without any vegetation or deposits getting in the way. A hammer and a magnifying glass are simple tools, but a geologist could not work without them. Many geologists have a microscope in their laboratory so that they can examine thin sections of the stones. A thin section is a stone sample that is between 0.02 and 0.03 millimetres thick – that's only half as thick as a human hair!

Now it's your turn!

1 Stone collecting hike

Go on a hike with your class. Choose a place where you can take your time and look for stones. Decide whether you want to form teams that look for certain kinds of stone. Look carefully in all the places where you can find stones. Collect stones and take them back to your classroom. Figure out how you can make sketches to show where you found your stones.

2 Sorting stones

What you need:

- Magnifying glass
- Ruler
- Scales
- Stones

How to do it:

- Every pupil brings along ten stones. You can form groups of pupils. Take a close look at the stones and consider how you can sort them into groups. The following concepts can help you do that: size, weight, circumference, shape, surface, colour, brightness, smell, hardness.
- Present your results to the whole class and give reasons why you put the individual stones into their groups.

3 Becoming a stone expert

Choose a type of stone and become an expert on it. Prepare yourself by using books, the Internet and other information sources for your research, and make a short talk or presentation about what you have learned.

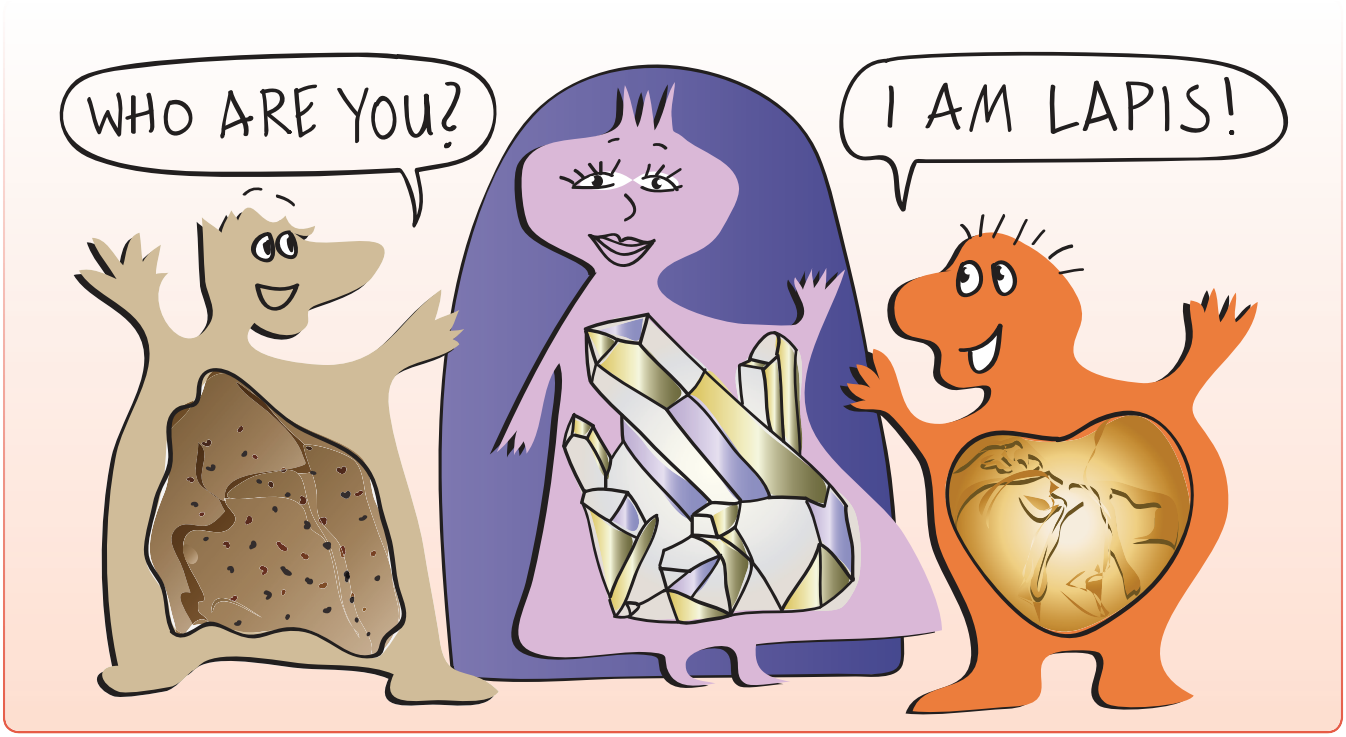
4 Telling stories

What you need:

- One or more of your favourite stones

How to do it:

- Give the stones names and tell or write their story. It can be a fantasy or a true story, for example a story about the place where you found them or about the way they were formed.



Large areas of the Sahara Desert are covered with sand. This desert is so wide that Germany could fit into it 26 times.
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5 Investigating sand

Sand consists of many tiny stones – grains of sand. How many grains of sand are in one kilogram of sand?

What you need:

- A magnifying glass or a stereoscope
- Millimetre paper
- Scales (accurate to within one gram)
- Playground sand, tweezers

How to do it:

It would be very difficult to count every single grain of sand in a kilogram of sand. But you can use the following trick to figure out roughly how many grains of sand are in one kilogram of playground sand. Weigh out one gram of playground sand. Decide how you want to count the grains of sand. The millimetre paper may help you here. How can you use the number you find out to answer the original question?

Incidentally, your results will be correct only for the playground sand you have used. There are many different kinds of sand.

The geologist Benno Baumgarten

What would have happened if Benno Baumgarten's father had brought home medicinal herbs from his hikes?

Stones are really interesting, and you can find them everywhere: on the street, on the beach, in the forest and on mountain slopes.
Have you ever looked at a stone very carefully?
Do you have any stones among your treasures?

In the South Tyrol region there is a researcher who is interested in stones.
His name is Benno Baumgarten, and he is a geologist.
A geologist studies stones and knows a lot about them.
Even as a child, Benno loved stones.
He collected lots of them and guarded them like treasures.
He tried to find out where they came from, how they were formed, and whether there were secrets and stories about them.

Benno Baumgarten was born in Bolzano on 24 June 1956.
When he was a child, he lived together with his parents and his grandmother.
His grandmother was very clever and could even make her own soap.
Benno wanted to try things out, just like his grandmother, so he did various experiments when he was a child.

More and more, Benno liked to look at stones very carefully and find out something about them.
Every stone was different, and that fascinated him.
He looked for stones everywhere.
His father and his brother were mountain climbers, and when they came back from their hikes they often brought back stones for him.
He was very happy to have many different little stones.
He especially liked opals.

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Illustration
Rupert Tacke
info@ruperttacke.de

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info@science-on-stage.de

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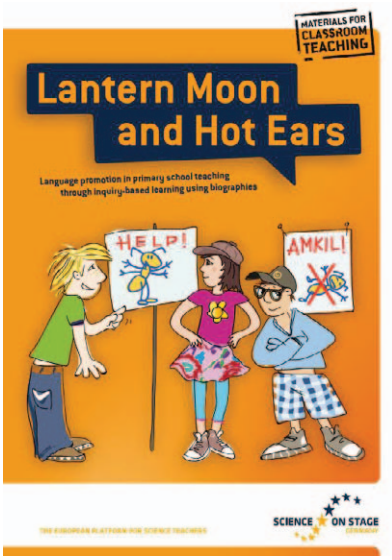

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