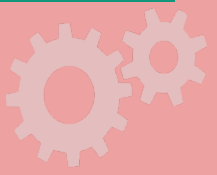
EFFECTIVE STRATEGIES TO DEVELOP WRITING SKILLS

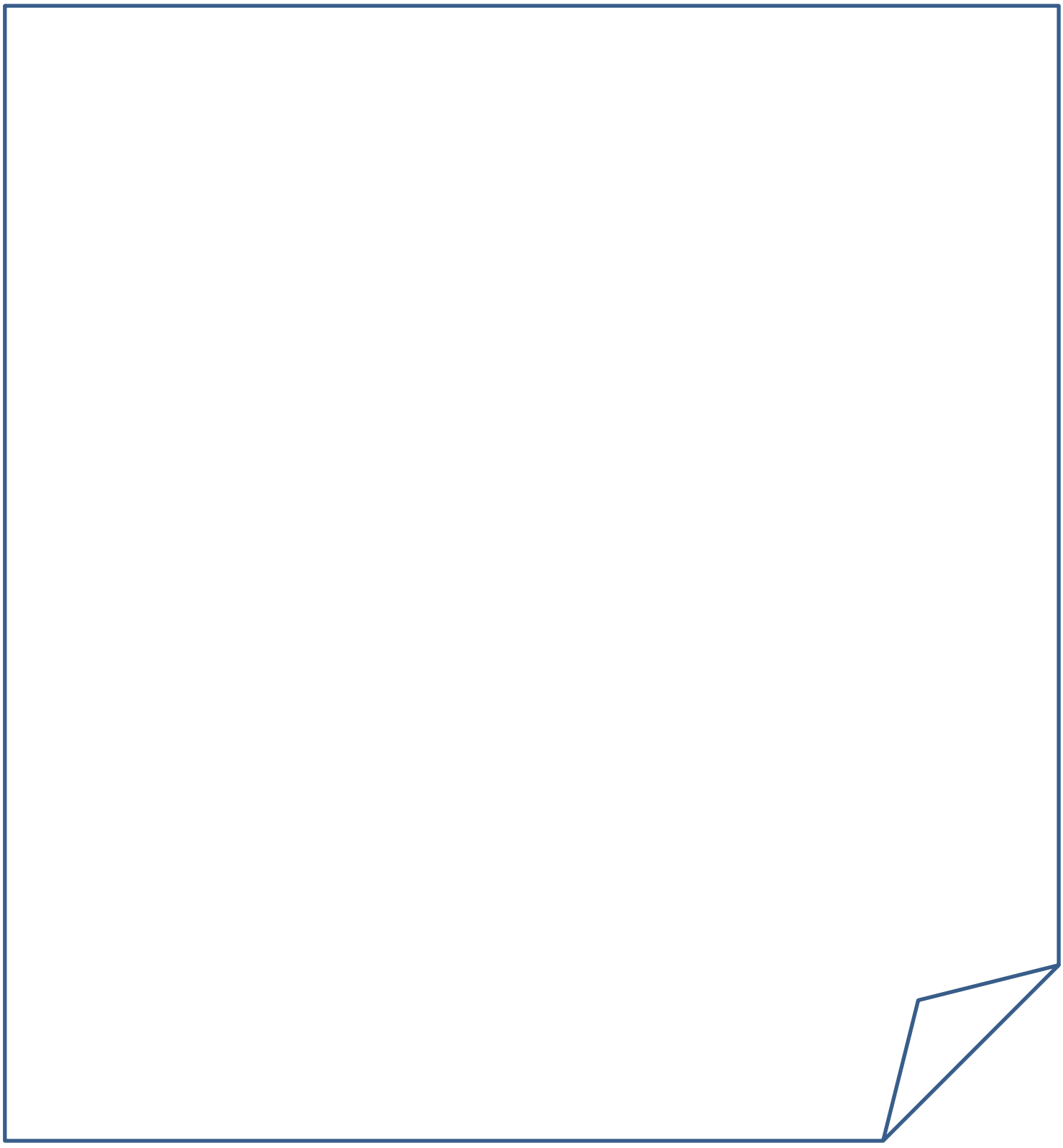
PARTICIPANT HANDOUT

ASDN Webinar Series - 6

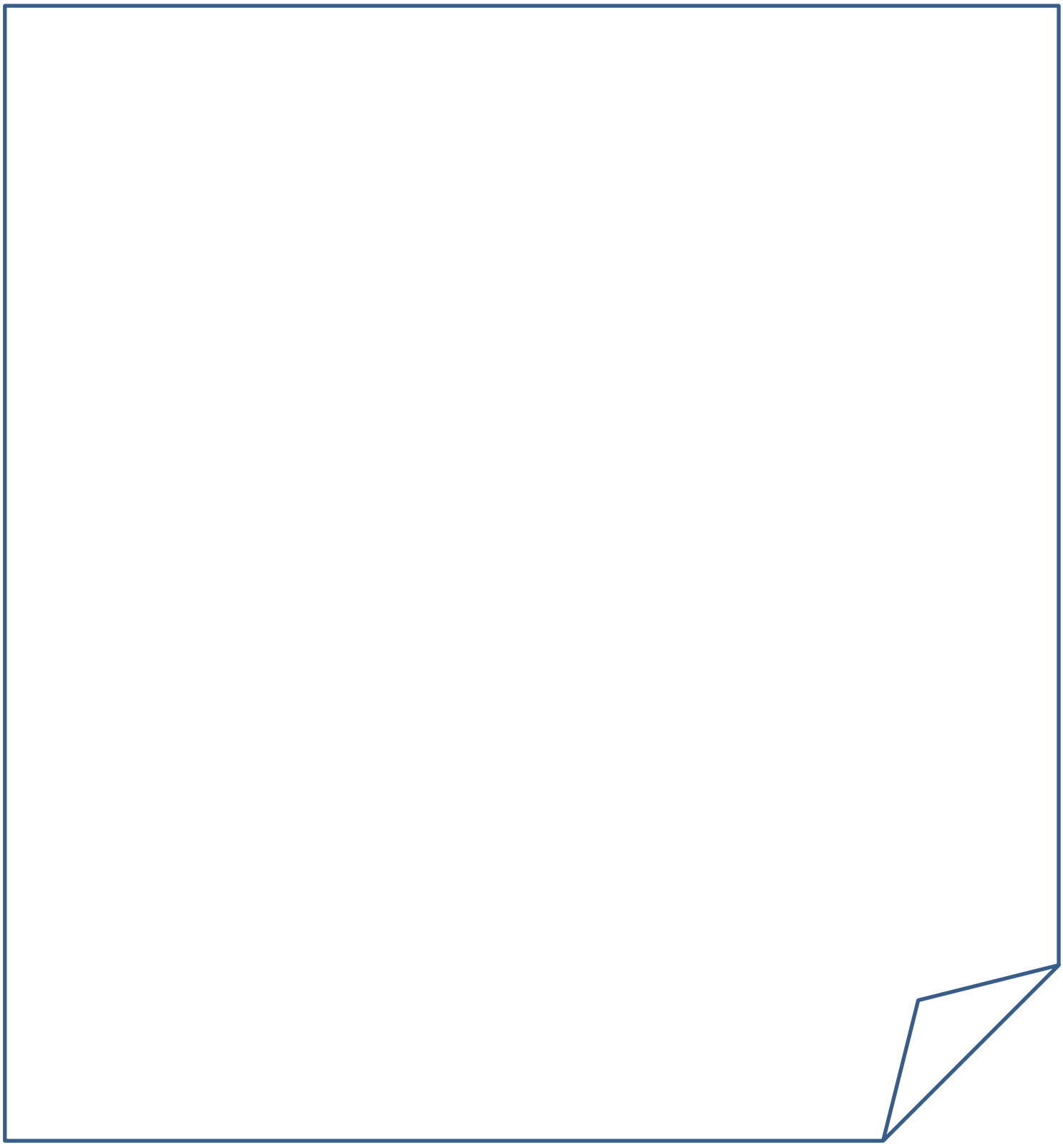


Developed by Lexie Domaradzki and Shelby Skaanes

Best Practices to Support Deliberate Practice at the Sentence Level



Best Practices to Support Deliberate Practice at the Sentence Level



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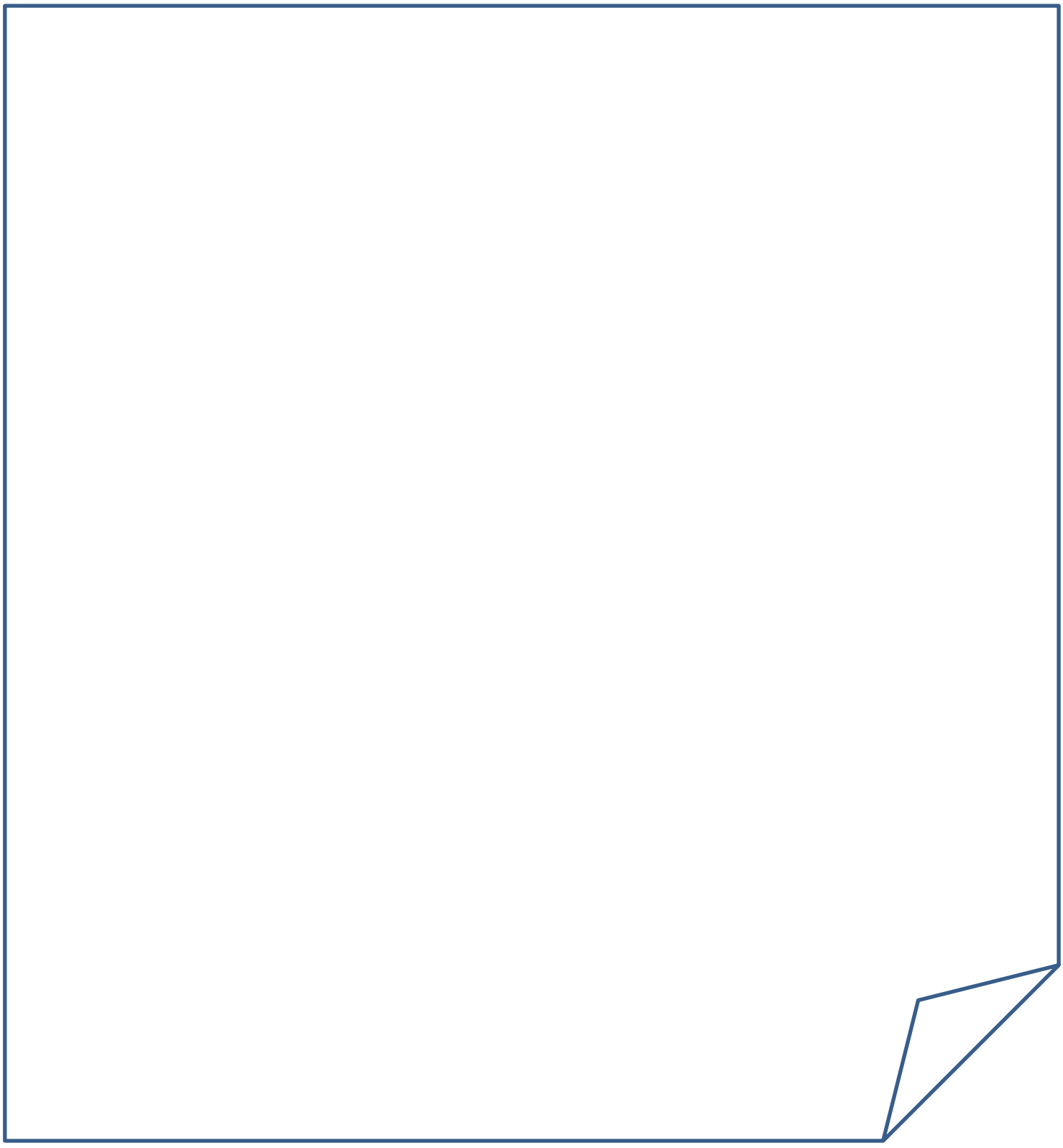

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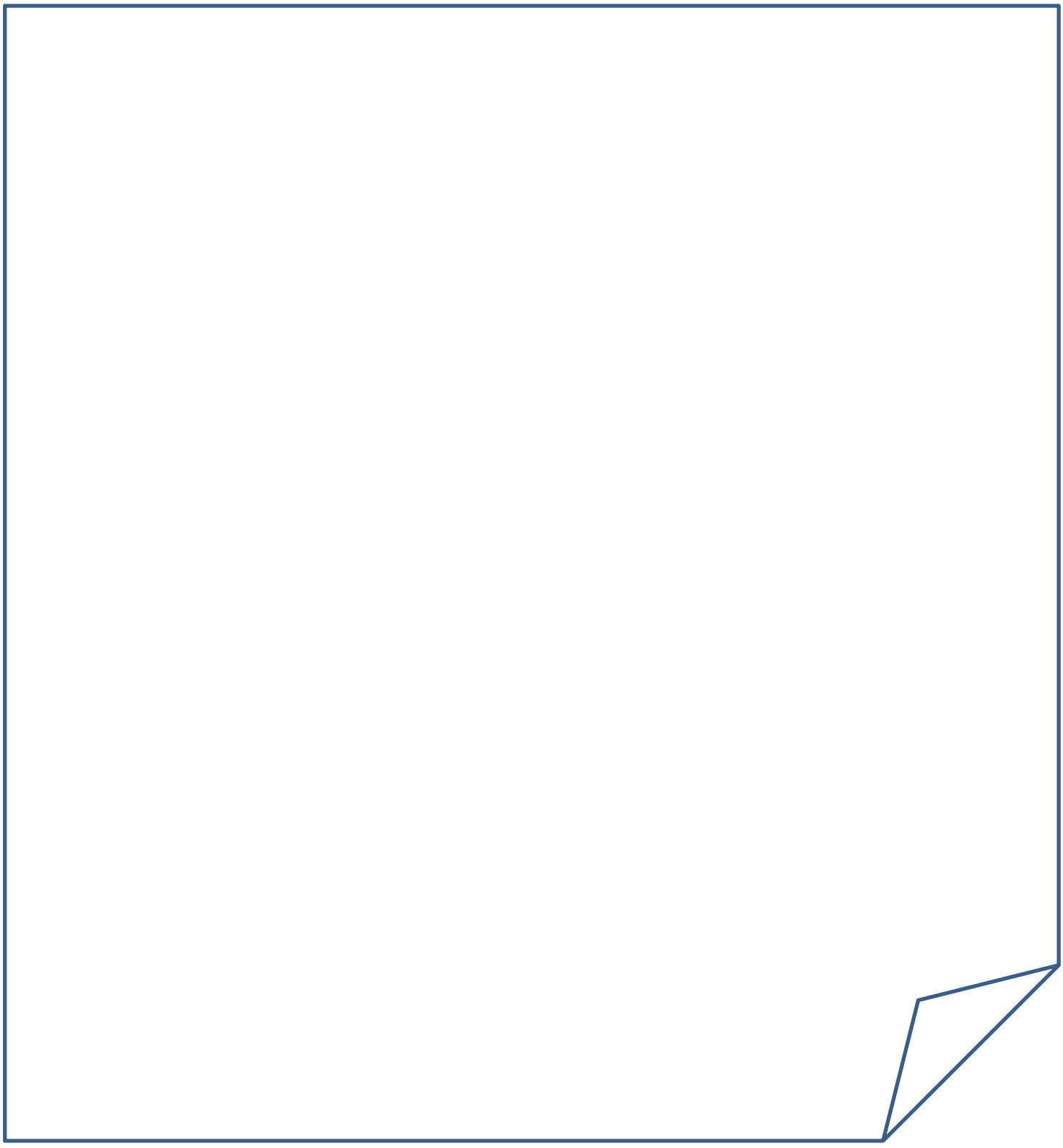

Why Is the Moon So Scarred with Craters?

This text is from NASA Space Place.

An asteroid or meteor is more likely to fall toward Earth than the moon because our planet's stronger gravity attracts more space debris. But we can see many thousands of craters on the moon and we only know of about 180 on Earth! Why is that?

The truth is both the Earth and the moon have been hit many, many times throughout their long 4.5 billion year history.

Where did all of Earth's craters go?

The main difference between the two is that Earth has processes that can erase almost all evidence of past impacts. The moon does not. Pretty much any tiny dent made on the moon's surface is going to stay there.

Three processes help Earth keep its surface crater free. The first is called erosion. Earth has weather, water, and plants. These act together to break apart and wear down the ground. Eventually erosion can break a crater down to virtually nothing.

The moon has almost no erosion because it has no atmosphere. That means it has no wind, it has no weather, and it certainly has no plants. Almost nothing can remove marks on its surface once they are made. The dusty footsteps of astronauts who once walked on the moon are still there today, and they aren't going anywhere anytime soon.

The second thing is something called tectonics. Tectonics are processes that cause our planet's surface to form new rocks, get rid of old rocks, and shift around over millions of years.

Because of tectonics, the surface of Earth is recycled many times throughout its long history. As a result, very few rocks on Earth are as old as the rocks on the moon. The moon has not had tectonics for billions of years. That's a lot more time for craters to form and stay put.

The third thing is volcanism. Volcanic flows can cover up impacts craters. This is a major way impact craters get covered up elsewhere in our solar system, but it is less important than the recycling of crust here on Earth. The moon once had large volcanic flows way in the past that did cover up many of the bigger earlier impacts, but it has been without volcanism for around three billion years.

A powerless moon

The moon may attract fewer bits of space rock than the Earth, but the moon is powerless to do anything about it after it has been hit. Once something hits the moon, that event becomes frozen in time. Earth, on the other hand, simply brushes these impact craters off and moves on with its life.

No wonder there are so many craters on the moon compared to Earth!

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The Ever-Changing Sky

Look up at the sky on a clear day. You will see the sun. It is bright and shiny, warming much of what its light touches. Look up at the sky again at night. You may see the stars. They are also bright and shiny, glimmering in the dark sky. You may also see the moon. It looks bright and shiny, reflecting light from the sun. People have always looked up at the sky with wonder. Some have even studied the sun, moon, and stars. These people, called astronomers, have learned that those objects in the sky do not stay in the same place all the time.

The earth revolves around the sun and also rotates on its axis, which is an imaginary line that runs from the North Pole to the South Pole, through the earth's center. It takes just under 24 hours for the earth to complete one rotation on its axis — a day, that's right! And guess how long it takes the earth to revolve around the sun? A little over 365 days. That's a year, with an extra quarter of a day.

Let's take a closer look at the moon. The earth does not revolve around the moon. Instead, the moon revolves around the earth. It takes the moon about four weeks to complete a revolution around the earth. The portion of the moon we, here on Earth, see changes over this period of about four weeks as the moon's position around the earth changes. The moonlight we see at night is the moon's reflection of sunlight onto Earth. The different ways the moon appears to us are known as the moon's phases. The moon's phases depend on the moon's position in relation to the earth and the sun.

The four-week period starts and ends with the new moon. The new moon cannot be seen because the side of the moon lit by the sun is facing away from the earth. This is because the moon is nearly between the sun and the earth at this time. After that comes the first quarter moon, which is when we see half of the side of the moon lit by the sun. Then comes the full moon, when we can see the entire side of the moon lit up by the sun. This is because the earth is nearly lined up between the sun and the moon, and the sunlit part of the moon is facing the earth. One of the last phases is called the last quarter moon. This is when we see the other half of the lit side of the moon.

Sometimes the way the sun, moon, and earth are positioned causes an event known as an eclipse. There are two types of eclipses. A lunar eclipse happens when the earth passes between the moon and the sun and when the earth blocks the moon from the sun. The earth's shadow may block the entire moon or just part of the moon from view. A solar eclipse happens when the moon passes directly between the earth and the sun. A solar eclipse can block part of the sun or the entire sun from the earth's view.

Because of the regular orbit of the moon around the earth and the regular orbit of the earth around the sun, astronomers can predict when an eclipse will happen even many years into the future.

The Changing Night Sky

Has anyone ever pointed out a constellation to you? A constellation is a group of stars that people have named. The stars are usually in a pattern that suggests the shape of something else. The Big Dipper, for example, looks a little bit like the outline of a huge spoon in the sky.

If you look up at a clear night sky pretty often, you may realize something interesting. The constellations you can see change over time! The constellations you can see at any given time depends on where you are on Earth and what part of the year it is. Furthermore, a constellation's position in the sky depends on the time of night. What's behind these mysterious changes?

The constellations move across the sky throughout the night because of the movement of the Earth. Like the sun, distant stars appear to rise and set in the sky because of Earth's rotation. Earth rotates from west to east on its axis, or in a counterclockwise direction. This means that the whole sky, including the constellations, appears to "rise" from east to west. Throughout the night, as Earth rotates, the stars continue to move across the sky. This means that if you looked at a constellation at 10:00pm, and then looked at it again at 3:00am, it would have moved west in the sky.

Earth's position in its orbit around the sun also determines which constellations we can see. As Earth moves around the sun, different constellations can be seen during different parts of the year. That's because during the summer, you are seeing a different part of space at nighttime than you see during the winter. Some constellations can only be seen during a specific part of the year. For example, the Taurus constellation can only be seen in the night sky of the Northern Hemisphere, or the northern half of Earth, from November to March. The rest of the year, the Northern Hemisphere faces away from the part of space where Taurus is during the night.

Some constellations can be seen from the same spot on Earth throughout the year. These constellations are called circumpolar constellations. The Big Dipper is one example of a circumpolar constellation. If you live in the Northern Hemisphere, the location of the Big Dipper in the sky changes throughout the year, but the constellation never disappears completely. If you found the Big Dipper in the sky during a fall night, it would be near the horizon to the north. But if you looked for the Big Dipper during a spring night, you would have to look straight up! This is because the Earth is in a different position relative to the constellation, since it's at a different spot in its orbit around the sun.

So the next time you go stargazing, remember to savor the moment. As long as the Earth keeps moving, that same view of the constellations will not last!

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