

# Close Reading

Plus Writing Activities

## GALAXIES, GALAXIES!

By Gail Gibbons

**Galaxies**

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**\* Facts:**

- Galaxies are made of stars, gas, and dust.
- Each star is part of a galaxy.
- Each galaxy is held together by gravity.
- Galaxies come in different sizes and shapes.
- Many galaxies have a central black hole.
- One year in a galaxy is about 100 million years on Earth.
- Galaxies are born from gas and dust.

**\* Explorations:**

- In the 1920s Edwin Hubble discovered Andromeda.
- New equipments are available: observatories & ground-based telescopes.
- In 1990, Hubble Space Telescope launched.
- Unmanned space probes launched.

**Milky Way Galaxy**

- Is a spiral galaxy.
- Has more than 100 billion stars.
- The Earth is part of it.

**\* Stars by Color:**

- Blue/white: hottest & youngest.
- Yellow/orange: cooler & older.
- Our sun is a yellow star.

**Five Galaxies by Shape**

- 1. Spiral Galaxy**
  - 100,000 light-years wide.
  - Arms of stars, gases, and dust spiral out from its center.
- 2. Barred Spiral Galaxy**
  - Barred spiral galaxy.
  - Arms of stars, gases, and dust spiral out from its center.
- 3. Elliptical Galaxy**
  - Shape like a ball.
- 4. Lenticular Galaxy**
  - Shape like a lens.
  - Arms of stars, gases, and dust spiral out from its center.
- 5. Irregular Galaxy**
  - No one kind of shape.
  - Small in size.
  - Formed when galaxies collide and merge into each other.

Teaching Astronomy Science through  
Reading, Comprehension, Vocabulary,  
Posters, and Reflection

Qiang Ma



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- Galaxies are made of stars, gases, & dust.
- Each star is part of a galaxy.
- Each galaxy is held together by gravity.
- Galaxies are in different sizes & shapes.
- Many galaxies have a core.
- Light-year is the unit of measurement.
- More than 100 billion galaxies.
- Give off energy.
- Still more being formed.

#### \* Explorations:

- In 1920, Edwin Hubble discovered galaxies beyond the Milky Way.
- New instruments are available:
- Observatories & ground-based telescopes
- In 1990, Hubble Telescope launched.
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- Is a spiral galaxy.
- Has more than 100 billion stars.
- The Milky Way is part of it.

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- Yellow/orange: middle.
- Red: coolest and oldest.
- Our sun is a yellow star.

## Galaxies

Five Galaxy Shapes



#### 1. Spiral Galaxy

- 100,000 light-years wide.
- Arms of stars, gases, and dust spiral out from its core.



#### 2. Barred Spiral Galaxy

- Dense, bar-shaped.
- Spiral arm spins out from each end.



#### 3. Elliptical Galaxy

- Shape like a ball.



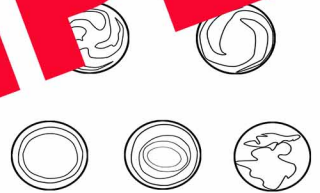
#### 4. Lenticular Galaxy

- Shape like lens.
- Disk of stars & gases.



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Name: \_\_\_\_\_ #1: \_\_\_\_\_ Date: \_\_\_\_\_

## Galaxies, Galaxies! Close Reading (1)

Title: \_\_\_\_\_

## Things to remember

## Colors to mark the passage

- Highlight the title in yellow.
- Underline the important words in red.
- Circle the important words in green.
- Use close reading symbols throughout text.

## CLOSE reading symbols

- Check Mark (✓) – understands story
- Star (\*) – something is important
- Exclamation mark (!) – something new, something that is surprising
- Question mark (?) – unsure, don't understand it

The main idea of these passages is to \_\_\_\_\_

What have you learned about galaxies?

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The main idea of these passages is to introduce the basic information about galaxies.

What have you learned about galaxies?

I learned that the Milky Way is one of the Milky Way Galaxy.

## (1) The Milky Way

On a clear, dark night, many stars light up the sky. A milky glow from one end of the night sky to the other. The Milky Way is called the Milky Way. It is made up of so many stars that they viewed from planet Earth.

The Milky Way is not the same as the Milky Way. The Milky Way is only part of the Milky Way. In the galaxy's vast areas of dark space, there are stars, clouds of gases, and dust that exist around a nucleus, or central core. They are held together by gravity. Planet Earth and the other planets that orbit around our sun make up our solar system. Our solar system is a small part of the Milky Way Galaxy.

Scientists have never stopped studying about galaxies. At first, astronomers believed the Milky Way Galaxy was the entire universe. Over time, telescopes were made larger and their lenses stronger. The stars and other objects in the night sky became clearer. Many new discoveries could be made. In the 1920s, an American astronomer named Edwin Hubble discovered that a large group of stars called Andromeda was not part of the Milky Way but actually another galaxy in the universe. Hubble and other astronomers discovered more galaxies. Soon it was determined that there were billions and billions of galaxies. The known universe was getting bigger and bigger.

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The main idea of these passages is to introduce the basic information about galaxies.

What have you learned about galaxies?

I learned that the Milky Way is one of the Milky Way Galaxy.

## Text Dependent Questions (1)

What does the Milky Way made up?

Is the Milky Way the same as Milky Way Galaxy?

Explain gravity in the Milky Way.

What did Edwin Hubble discover in 1920s? Why was it significant?

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What does the Milky Way made up?

Is the Milky Way the same as Milky Way Galaxy?

Explain gravity in the Milky Way.

What did Edwin Hubble discover in 1920s? Why was it significant?

In the 1920s, Edwin Hubble discovered that a large group of stars called Andromeda was not part of the Milky Way but actually another galaxy. This was the first time scientists could confirm that there was more than one galaxy in the universe.

## (3) Studies on Galaxies

Today astronomers are able to discover and study galaxies. Observatories have huge reflecting telescopes that gather light from objects in the universe. Many observatories are built on the tops of mountains, where the air is clear and there are no distracting city lights over there.

Galaxies can give off different kinds of energy that we can see. Some of these are X-rays, gamma rays, and radio waves. Radio waves transmit sounds. Ground-based radio telescopes use giant antennas to tune in to radio waves coming from faraway stars and galaxies. More discoveries are made this way.

There are telescopes in space too. The largest, a reflecting telescope named after Edwin Hubble, was launched in 1990. It is about as big as a school bus. Because it orbits above Earth's atmosphere, it can see deep into the universe. The Hubble can see galaxies billions of light-years away. Unmanned space probes have been launched into deep space. They are loaded with cameras and other equipment for exploring. They transmit their discoveries back to astronomers on Earth.

Currently astronomers know there are more than 100 billion galaxies in the universe, with many left to be discovered. There are still many more galaxies to be discovered.

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## Text Dependent Questions

What are the functions of radio waves and ground-based radio telescopes?

Explain the functions of Hubble telescope.

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## Vocabulary

star

gravity

orbit

planet

galaxy

universe

## Vocabulary

star

gravity

orbit

planet

galaxy

universe

1. It is suggested to [redacted] following item

Item Needed	Teacher	Student
The book "A Christmas Carol" by Gail Gibbons	V	
Lesson plan		
Sub Header		
	Teacher can blow the original black and white sample into a poster.	
Info Organizer	V	V
Blank Paper for Drawing on Day 1	V	V
3 Reading Passages	V	V
3 Text Dependent Questions Sets	V	V
Vocabulary	V	V
1 Galaxy Black and White Drawing	V	
1 Galaxy Black and White Drawing with labels		
1 Galaxy Color Drawing	*	*
1 Galaxy Color Drawing with labels	Teacher can blow the original black and white sample into a poster and color it.	Students may create the poster in groups by using teacher's sample. It makes a great open house project.
Teacher Filled Sample Black and White Galaxy Color Drawing with labels Sub Header with Post-it notes Info Organizer completed <ul style="list-style-type: none"> <li>3 Reading Passages with marks</li> <li>3 Text Dependent Questions Set with answers</li> <li>Vocab Sheet with answers</li> <li>1 Teacher Writing Sample</li> <li>2 Student Individual Writing Samples</li> </ul>	<p>I type as much as possible to make it as easily reproducible as possible for you and your students.</p> <p>Write to model for your students.</p>	
Sharpie	V	V
Crayon/Markers	V	V
Post-It	*	

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V: must, \*: optional

2. Read the lesson plan.
3. Look at the finished sample works included.
4. Photocopy 9 page package (1 Empty page for drawing, 1 Info Organizer, 3 Reading Passages, 3 Text Dependent Questions Sets, and 1 Vocab Sheet) for students. Make an extra set for the teacher to use.
5. The lesson is designed as a cross-curriculum using ELA, Science/Astronomy/Galaxy, and Fine Arts using close reading and a 3-2-1 AD strategy.

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# Credits

I draw all the clipart myself for all the products in my store.

Thank you so much and I hope you enjoy this lesson.

