



Honeycutt Science

4-Part Lesson (List & Matrix)

Activity Introduction

Introduction

- ↑ Construct lists and matrices from text.
- ↓ Write text passages using lists and a matrix.



Learning Objectives

At the end of this activity, students should be able to:

- Identify similarities between lists of information and a graphical matrix.
- Recognize and interpret information presented in a matrix format.
- Construct a meaningful matrix from information in an article or other text.



Instructions

Your instructor might modify these instructions.

1. As a class – construct a matrix based on a physical science text passage.
 2. As a class – write a text passage based on a biology matrix of information.
 3. As an individual – create a matrix based on a text passage.
 4. As an individual – write a text passage based on a matrix of information.
-

Examples

Physical Science

Important Ideas in Physics

	Classical	Modern
<i>New Idea</i>	Copernican heliocentrism	energy quanta
<i>When</i>	1543	1918
<i>Contributor</i>	N. Copernicus	M. Planck

Biology

Common Reptiles

	Turtle	Crocodile	Snake
<i>Circulation</i>	3-chamber	4-chamber	3-chamber
<i>Metabolism</i>	ectotherm	ectotherm	ectotherm
<i>Skin</i>	varied ovular	large angular	small angular

Earth Science

Floodplains and Water Usage

	Use	Example
<i>Farming</i>	Crops & Stock	Haskell County
<i>Transportation</i>	Barge & Ferry	Kerr Lock Fort Smith Riverwalk
<i>Urban Development</i>	Attraction	

Earth topic 34

Chemistry

Basic Concepts in Chemistry

	Atom	Molecule
<i>Symbol</i>	H	H ₂ O
<i>Common Name</i>	hydrogen	water
<i>Atomic Weight</i>	1.0 g/mol	18.0 g/mol



Part I

As a Class

Construct a Matrix from Text Passage

Make a Matrix from a Text Passage

- 1 Scan text for important information.
- 2 Highlight/circle key ideas.
- 3 Make lists out of those key ideas.
- 4 Organize information in the lists.
- 5 Construct a matrix.



Scan Text

1

People have attempted to explain their observations of natural phenomena for centuries. In the recent-most centuries, significant ideas have emerged from these observations – some of which form the basis of explanations we make use of today.

While our understanding of the universe has improved significantly from ideas first presented by N. Copernicus. In 1543, he postulated a model – called Copernican heliocentrism – which described the Sun near the center of the Universe, motionless, with Earth and the other planets orbiting around it in circular paths. At that time, his concepts were at odds with the notion of Earth being the center of the universe. His thoughts are part of what might be considered as “classical physics.”

As part of the “modern physics” period, M. Planck contributed to several new ideas (or, explanations) of our universe. He is credited with introducing concepts of energy and quanta in 1918.

Scientists in the 21st century will undoubtedly find improvements to our understanding of the universe – much like Copernicus and Planck helped to challenge our thinking.

H

Highlight Key Ideas

2

People have attempted to explain their observations of natural phenomena for centuries. In the recent-most centuries, **important ideas** have emerged from these observations – some of which form the basis of explanations we make use of today.

While our understanding of the universe has improved significantly from ideas first presented by **N. Copernicus**. In **1543**, he postulated a model – called **Copernican heliocentrism** – which described the Sun near the center of the Universe, motionless, with Earth and the other planets orbiting around it in circular paths. At that time, his concepts were at odds with the notion of Earth being the center of the universe. His thoughts are part of what might be considered as “**classical physics**.”

As part of the “**modern physics**” period, **M. Planck** contributed to several new ideas (or, explanations) of our universe. He is credited with introducing concepts of **energy and quanta** in **1918**.

Scientists in the 21st century will undoubtedly find improvements to our understanding of the universe – much like Copernicus and Planck helped to challenge our thinking.

H

Make Lists

3

important ideas

N. Copernicus.

1543

Copernican heliocentrism

classical physics

modern physics

M. Planck

energy and quanta

1918.



Organize the Information

4

Important ideas

overall subject

category

classical physics

modern physics

person

N. Copernicus

M. Planck

date / year

1543

1918

The idea

Copernican heliocentrism

energy and quanta



Create a Meaningful Matrix

5

Important Ideas in Physics

	Classical	Modern
<i>New Idea</i>	Copernican heliocentrism	energy quanta
<i>When</i>	1543	1918
<i>Contributor</i>	N. Copernicus	M. Planck



Part II

As a Class

Write Text based on a Matrix

Use a Matrix to write a Text Passage

1

Review the matrix to gain understanding. Use the matrix title as the overall subject.

2

Identify similarities and differences of information listed in each column.

3

Draft an introductory paragraph (*and DRAFT summary*) based on the overall subject.

4

Draft paragraphs in the body of your text - based on content presented in the matrix.

5

Complete the text passage by rewording or restructuring portions of the topic paragraph, body, and summary. Confirm correct spelling and grammar.



Biology

Common Reptiles

	Turtle	Crocodile	Snake
<i>Circulation</i>	3-chamber	4-chamber	3-chamber
<i>Metabolism</i>	ectotherm	ectotherm	ectotherm
<i>Skin</i>	varied ovular	large angular	small angular



Biology

1

Common Reptiles

2

	Turtle	Crocodile	Snake
<i>Circulation</i>	3-chamber	4-chamber	3-chamber
<i>Metabolism</i>	ectotherm	ectotherm	ectotherm
<i>Skin</i>	varied ovular	large angular	small angular



Biology

There are many common _____.

3

_____ are an example of common reptiles. They have a ____ chambered heart for circulation. Snakes also have a 3-chambered heart.

In contrast, crocodiles have a ____ chambered heart.

Regardless though, turtles, snakes and crocodiles have similar metabolism. Their ectotherm metabolism sets them apart from mammals (for example).

4

One way to distinguish snakes, crocodiles and turtles from each other is from the pattern on their skin. Crocodiles have large angular patterns on their skin. Snakes also have _____ patterns. But, the patterns on snake skin are _____ compared to those on a crocodile.

Patterns on turtle skin are not angular. Rather, turtle skin patterns are usually _____ and vary considerably from animal to animal.

H

Reptiles commonly found around the world have many similarities. But, there are several differences among them also.

Biology

There are many common reptiles.

Turtles are a common reptile type. They have a 3-chambered heart for circulation. Snakes also have a 3-chambered heart. In contrast, crocodiles have a 4 chambered heart.

Turtles, snakes and crocodiles have similar metabolism. Their ectotherm metabolism sets them apart from mammals

Snakes, crocodiles and turtles have distinct skin patterns. Crocodiles have large angular patterns. Snakes also have angular patterns. But, the patterns on snake skin are small compared to those on a crocodile. Patterns on turtle skin are not angular. Rather, turtle skin patterns are usually ovular and vary considerably from animal to animal.

Reptiles commonly found around the world have many similarities – such as their metabolism. But, there are also differences. The number of chambers in the heart, and skin pattern are an examples of differences among some types of reptiles.

5



Part III

As an Individual

Construct a Matrix from Text Passage

Construct a Matrix from Text Information

- 1 Scan text for important information.
- 2 Highlight/circle (write down) key ideas.
- 3 Make lists out of those key ideas.
- 4 Organize the key ideas.
- 5 Construct a matrix.

Construct a Matrix from This Text

Natural science includes the scientific study of living and non-living things. Many scientists have contributed to our understanding of natural science.

Physical science is a natural science. It is the study of non-living things. Earth science is an example of physical science. Life science is also a natural science. Life science is the study of living things. Biology is an example of life science.

Physics is the general analysis of nature, conducted in order to understand how the universe behaves. Physics is one of the oldest academic disciplines.

Chemistry is the science of matter and the changes it undergoes. The science of matter is also addressed by physics, but while physics takes a more general and fundamental approach, chemistry is more specialized.

Earth science (*also known as geoscience*) is an all-embracing term for the sciences related to the planet Earth. There are some overlaps between Earth science and ecology – although the disciplines are about non-living and living things, respectively. Ecology is the scientific study of the relationships that living organisms have with each other and with their environment.

Biology is the branch of natural science concerned with the study of life and living organisms. Zoology and biology have a great deal of overlap. Zoology is the branch of science that relates to the animal kingdom, including the structure, embryology, evolution, classification, habits, and distribution of all animals.

Marie Curie (1867–1934) was a two time Nobel Laureate. She studied chemistry and physics. Her ideas were important to our understanding of radioactive material. Margaret Mead is another famous scientist. Mead was an anthropologist inducted into the National Women's Hall of Fame in 1976 for her contributions to understanding human interactions and culture.

Nikola Tesla (1856-1943), Albert Einstein (1879-1955), and Sir Isaac Newton (1643-1727) are among the most recognized names in science by students today. Tesla was a futurist who contributed to modern-day usage of electricity. Einstein and Newton contributed to our understanding of physics.

Natural science includes a broad spectrum of subjects spanning the study of non-living things and the study of living things. Throughout history, scientists have observed the universe and our world contributing to our better understanding.

Part IV

As an Individual

Write a Text Passage from a Matrix

Select A Matrix. Write a Passage.

Floodplains and Water Usage

	Use	Example
<i>Farming</i>	Crops & Stock	Haskell County
<i>Transportation</i>	Barge & Ferry	Kerr Lock
<i>Urban Development</i>	Attraction	Fort Smith Riverwalk

Earth topic 34

Basic Concepts in Chemistry

	Atom	Molecule
<i>Symbol</i>	H	H ₂ O
<i>Common Name</i>	hydrogen	water
<i>Atomic Weight</i>	1.0 g/mol	18.0 g/mol

- 1 Review the matrix. Find the title.
- 2 Identify similarities and differences in each column.
- 3 Draft introduction and summary paragraphs.
- 4 Draft the body.
- 5 Complete the text passage.

Earth Science

Floodplains and Water Usage

	Use	Example
<i>Farming</i>	Crops & Stock	Haskell County
<i>Transporation</i>	Barge & Ferry	Kerr Lock
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