

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- Identify the instruments and procedures used by astronomers to gather information
- Construct an improvised instrument for observing/watching stars

Values: Patience/Resourcefulness

II. Subject Matter:

Topic: Gathering Information about Stars

Sub-topic: Instruments/Procedures Used

A. Science Concept/Idea:

- Astronomers observe the stars using various instruments, the most basic of which are the optical telescope, radio telescope, spectroscope and space probes to study the stars.
- A telescope is instruments consisting of special mirrors that make distant objects appear bigger and closer. The arrangement of these color corresponds to specific elements.
- Astronomers study stars and other heavenly bodies.
- Scientists use scientific instruments to observe and study heavenly bodies.

B. Science Processes:

Identification, Communication

C. Materials:

Discarded cardboard, masking tape, a pair of scissors, photos of a telescope, a spectroscope and a model of a space probe

References:

Into the Future, pp. 242-244

Science and Health 6, J.A. Villegas, p. 74

III. Procedure:

A. Preparatory Activities:

1. *Review/Checking of Assignment:*

What are the four types of climate in the Philippines?

B. Developmental Activities:

1. *Motivation:*

Stars are a source of inspiration to many people, why?
Have the class sing: When You Wish Upon a Star.

2. *Presentation:*

- a. Do stars move? What do you need in order to make your observations?
- b. Group the children into four and make their own improvised telescope following the instructions in Activity 7.1, "A Tube to Observe the Sky".
- c. The groups discuss the answers to the questions in the activity

3. *Discussion/Analysis:*

- a. What are the different kinds of telescope?

- b. Why is it necessary to study heavenly bodies?
 - c. What is the use of a telescope?
 - d. Where are the different kinds of instruments housed?
4. **Concept Formation/Generalization:**
What instrument and procedures are used by astronomers to gather information about stars?
5. **Application:**
Discuss materials and procedures for making a star viewer, p. 242.

IV. Evaluation:

Choose the letter of the correct answer.

1. How is the composition of stars determined?
 - a. by using a telescope
 - b. by using a spectroscope
 - c. by using a parallax
 - d. both a and b
2. Which of the following must you use to make distant stars appear closer and bigger?
 - a. parallax
 - b. spectroscope
 - c. telescope
 - d. eyeglasses

V. Assignment:

Collect pictures of telescopes, spectroscopes and space probes. Label each picture and write at least one function of each instrument.

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- Observe the stars as to color, size and brightness

Values: Value/Appreciate the works of God

II. Subject Matter:

Topic – Stars: Their Size, Color and Brightness

A. Science Concept/Idea:

- Stars vary in color, size and brightness. Stars may be yellow, red, blue or white in color. In size, some stars are bigger or smaller than others. Not all stars that appear at night shine with the same brightness.

B. Science Processes:

Observation, Description, Inference

C. Materials:

A pair of binoculars

References:

TM Into the Future, pp. 153-154

Text Into the Future, pp. 245-246

Science and Health VI, J.A. Villegas pp. 74 Science and Health VI, p. 247

III. Procedure:

A. Preparatory Activities:

1. *Review/Checking of Assignments:*

What are the different kinds of instruments used by astronomers to gain information about stars?

B. Developmental Activities:

1. *Motivation:*

- You have sometimes watched stars at night. What are some of your observations?

2. *Presentation:*

- Observe the stars in a clear night sky. Do they appear to twinkle?
- Do activity 7.2 p. 245 Stars and Our Sun
- What conclusion can you draw about stars?

3. *Discussion/Analysis:*

- a. You know that the sun is a star. What is the sun's color? What different colors of the stars have you seen? Have you seen a red star? A blue star? A white star?
- b. Are all the stars of the same size? Have you noticed that some stars are smaller, bigger than others?
- c. Where do stars get their light? Do all the stars show the same brightness?

4. ***Concept Formation/Generalization:***

What characteristics of the stars can be observed at night?

5. ***Application:***

In terms of the weather condition, what does a starry night mean?

IV. Evaluation:

- 1-3. Besides yellow, identify other colors of stars.
4. Describe how stars may differ as to size.
5. Describe how stars differ as to brightness.

V. Assignment:

1. Using your improvised instruments viewer, observe a group of stars.
2. Draw what you observe on a piece of bond paper and so on.
3. In what ways do stars differ?
4. Why do we see stars only during the night?

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- Identify the kind of stars according to their sizes

Values: Accuracy/Alertness

II. Subject Matter:

Topic: Characteristics of Stars

Sub-Topic: Kinds of Stars According to Size

A. Science Concept/Idea:

- Super giant stars are those that are a thousand times bigger than our sun
- Giant stars are those that are smaller than super giant ones but bigger than our sun.
- Medium stars are average-sized stars like the sun.
- Dwarf stars are stars smaller than the sun.

B. Science Processes:

Identification, Comparison

C. Materials:

Illustrations of super giant, giant, medium and dwarf stars

References:

TM Into the Future, pp. 153-156

Text Into the Future, pp. 245-246

Science and Health VI, J.A. Villegas pp. 76 - 2.4.2 Science and Health VI, pp. 248-249

III. Procedure:

A. Preparatory Activities:

1. *Review/Checking of Assignment:*

How can stars, as observed at night be described?

B. Developmental Activities:

1. *Motivation:*

What do you know about the size of the stars? Can you imagine the size of the stars?

2. *Presentation:*

- The sun is a million larger than the earth. Although, this may sound huge, the sun is really only an average star. It is a medium-sized star.
- Illustration shows a round thing.
- A round thing is measured in terms of its diameter. Diameter is a straight line that cuts a circle passing through the center point.
- Stars are of different sizes. The smallest known star has a diameter of 20 km.
- The largest known star has a diameter of about 1,000 times that of the sun.
- Do activity 1 on page 248 of Science and Health, using different coins, a ruler and a piece of string to compare the diameter and the circumference of a circle.

3. **Discussion/Analysis:**

Some stars are so large, yet they cannot be seen by the naked eye because they are too far away. In size, our sun is an average star. It is not too large or too small. The diameter gives us an idea of the size of a round object.

4. **Concept Formation/Generalization:**

What are the kinds of stars as to size?

5. **Application:**

- How does the sun compare in size with other stars?
- Compare Aldebaran with Epsilon Aurigae in size.

IV. Evaluation:

1. Giant stars are old stars.
2. Betelgeuse is a red giant.
3. A white dwarf is a newly born star.
4. The sun is a yellow dwarf.
5. A black hole is a dead star.

V. Assignment:

Do a library research on the evolution or life stage of a star.

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- Tell that the brightness of stars observed we see in the sky are their apparent brightness

Values: Always look at the brighter side of life

II. Subject Matter:

Topic: Characteristics of Stars

Sub-Topic: The Magnitude of Stars

A. Science Concept/Idea:

- The apparent brightness of a star due to their size and distance from earth and their apparent magnitude.

B. Science Processes:

Observation, Comparison, Inference

C. Materials:

Chart of Star Magnitudes

References:

PELC VI 2-3, p. 49; TM Into the Future, pp. 153-156; Text Into the Future, pp. 247-250
Science and Health 6, J.A. Villegas, p. 76 — 2.4.;1 Science and Health 6, pp. 250-251

III. Procedure:

A. Preparatory Activities:

1. *Review/Checking of Assignment:*

What are the kinds of stars according to their size?

B. Developmental Activities:

1. *Motivation:*

Which star appears brightest to us? Why?

2. *Presentation:*

- Do Activity 7.3 related to the brightness of stars. This activity was done four days ago before class discussion,
- Activity 7.4 is performed by the last two groups.

3. *Discussion/Analysis:*

- Discuss with the groups their observations/experiences in performing the activities.
- Analyze through the charts, which stars appear to be the brightest and the dimmest.

4. *Concept Formation/Generalization:*

What is the brightest of the stars that we see at night?

5. *Application:*

Compare the sun's absolute brightness with the other stars. Which stars are brighter than the sun? fainter than the sun?

IV. Evaluation:

Choose the letter of the correct answer.

1. The Greek astronomer who set up a system for measuring the magnitude of stars.
 - a. Hipparchus
 - b. Hippocrates
 - c. Ptolemy
 - d. Galileo
2. A stars brightness is it's
 - a. amplitude
 - b. temperature
 - c. magnitude

V. Assignment:

Differentiate between apparent and absolute magnitude of a star.

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- Describe the relationship between color and temperature of a star

Values: Helpfulness and cooperation

II. Subject Matter:

Relationship Between the Color and Temperature of a Star

A. Science Concept/Idea:

- The color of a star is related to its temperature.
- Bluish stars are the hottest, followed by white and yellow stars.
- Red stars are the coolest.
- A star's color depends on its surface temperature.
- The age of stars can be determined by their color.
- Stars are distant suns.

B. Science Processes:

Comparing, Observing

C. Materials:

A graph showing the age, color and surface temperature of stars

References:

Science Connection 6, pp. 251-252

Into the Future: Science and Health b. pp. 251-253

Science for Better Health and Environment, Efrain C. Abracia, p. 229

III. Procedure:

A. Preparatory Activities:

1. *Review/Checking of Assignment:*

What is star's apparent magnitude? It's absolute magnitude?

B. Developmental Activities:

1. *Motivation:*

Have you looked closely at the colors of a flame?

2. *Presentation:*

1. Activity

- Present the table on Activity 7.5.
- Let the pupils identify the stars; their colors and surface temperature.
- Rank the stars from the hottest to the coolest.
- Relate the color of the hottest star and coolest star.
 - What are the colors of the stars?
 - Why do you think stars are of these colors?

2. Reading of text 251-253

3. **Concept Formation/Generalization:**

How is the color of a star related to its surface temperature and to its age?

4. **Application:**

How do you know a given star is young or old?

IV. Evaluation:

Multiple Choice: Choose the letter of the correct answer.

1. Which star is hottest?
 - a. Capella
 - b. Sun
 - c. Rigel
 - d. Betelgeuse
2. How do we classify our sun?
 - a. white star
 - b. yellow star
 - c. red star
 - d. bluish-star

V. Assignment:

Find out the names of red super giants, red giants and white dwarfs. Arrange the following in a table, like the one below.

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- Describe the relationship between the brightness as seen in the distance of stars from the earth.

Values: Show concern to the members of the group. Attentiveness, willingness to share ideas

II. Subject Matter:

Topic: Characteristics of Stars

Sub-Topic: Relationship Between the Brightness and Distance of a Star

A. Science Concept/Idea:

- Without considering the size of a star, the farther the star is from Earth, the fainter it is.
- The nearer it is from Earth, the brighter the star is.

B. Science Processes:

Observing, Describing, Comparing

C. Materials:

Penlights, notebook

References:

Science for Better Health and Environment — Efrain E. Abracia, p. 232

The Science Connection 6, Vinalisi Rivera, pp. 255-257

III. Procedure:

A. Preparatory Activities:

1. *Review:*

How is the color of a star related to its temperature?

B. Developmental Activities:

1. *Motivation:*

Why do some stars seem to look very faint?

2. *Presentation:*

1. Activities: (Pre-assign the activities, one or two days before class discussion)

Activity 1

Do this activity at night with three of your friends, if possible.

1. Get 3 penlights. Give one to each of your friends. Let them stand in the same direction, one 20 meters away from you, the second 40 meters away and the third 60 meters away.
2. Tell them to point their penlights at you.
3. Describe the light you see from each of the penlights. Which one looks brightest? Why? Which one looks faintest? Why?
4. Exchange places for everyone to experience being a viewer.

3. *Concept Formation/Generalization:*

How does distance affect the brightness of a star?

4. **Application:**

Cite other explanations why stars appear in different brightness.

IV. Evaluation:

Explain in one or two sentences the relationship between distance and brightness of a star.

V. Assignment:

Why do we consider the sun as the brightest star?

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- Explain why star seem to twinkle

Values: Attentiveness during discussions, show cooperation and helpfulness

II. Subject Matter:

Why Stars Twinkle

A. Science Concept:

- Stars seem to twinkle because their light passes through different layers of air surrounding the Earth.
- Stars appear to twinkle because their light is refracted as they move through Earth's atmosphere.
- Atmosphere is the later of air that surround Earth.

B. Science Processes:

Observing, Inferring

C. Materials:

Bowl, mirror face, flashlight

References:

Science for Better Health and Environment — Efrain E. Abracia, p. 236

III. Procedure:

A. Preparatory Activities:

1. **Review/Checking of Assignment:**
Why are star distances measured in light years?

B. Developmental Activities:

1. **Motivation:**
Have you observed how flames move when blown by a breeze or slight wind?
2. **Presentation:**
 1. What happens to the reflected light passing through moving water?
 1. Fill a bowl with water, about three-fourths full.
 2. Lay a small mirror face up at the bottom of the bowl of water.
 3. Hold a flashlight at an angle about 12 cm above the bowl. Let the light which is reflected from the mirror, hit a wall. Is the light reflected on the wail moving?
 4. Tap the surface of the water with your fingers. Does the reflected light or the wall seem to move?
 2. Explaining the meaning of reflected light.
 3. Explains why stars seem to twinkle. (See attached B.I.T)
3. **Concept Formation:**
Why do stars appear to twinkle?

IV. Evaluation:

1. The layers of air comprising Earth's atmosphere have different causing light beams that pass through them to bend.
 - a. characteristics
 - b. colors
 - c. sizes
2. The bending of light coming from stars makes them appear to
 - a. change size
 - b. change shape
 - c. twinkle

V. Assignment:

Why star distances are measured in light year?

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- Explain why star distances are measured in light year

Values: Show willingness to share ideas with the group

II. Subject Matter:

Why Star Distances are Measured in Light Years

A. Science Concept:

- A light year is the distance traveled by light in one year. One light year is approximately 9.5 trillion kilometers.

B. Science Processes:

Observing, Comparing, Inferring

C. Materials:

Globe, ball

References:

Into the Future: Science and Health 6, pp. 247-248 The Science Connection 6, pp. 256-257

III. Procedure:

A. Preparatory Activities:

1. Review:

What is the relationship between brightness and distance of a star?

B. Developmental Activities:

1. Motivation:

How do we measure the distance between one end of the classroom and another? Between one jeepney station to another? Between towns? Between countries? Between heavenly bodies?

2. Presentation:

a. Activities

1. Explaining the enormous distances between the earth and stars.
2. Defining a light year.

The unit used in measuring the distance of stars is called light year. A light year is the distance traveled by light in one year.

3. Point out that light year is more convenient to use than kilometers because to use the latter is more laborious and overwhelming.

3. Concept Formation:

Why are star distances measured in light years?

4. Application:

What do you think will happen if the sun is four light years away, or as far away as Proxima Centauri? Would the earth look dark or bright?

IV. Evaluation:

Answer the following.

1. How long is one light year?
 - a. 300,000 km/sec
 - b. 30,000 km/yr
 - c. 186,000 km/sec
 - d. 9.5 trillion kilometers
2. The sun's light reaches the earth in
 - a. 8 years
 - b. 8 days
 - c. 365 days
 - d. 8 minutes

V. Assignment:

Look at the stars tonight. When you see their lights, think how many they have traveled to reach the earth.

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- Describe how constellation are useful to people

II. Subject Matter:

Topic: Constellation

Sub-Topic: How Constellation are Useful to People

A. Science Concept/Idea:

- Constellations can be used to tell direction and rime, to Predict weather and to serve as birth signs.

B. Science Processes:

Observing, Describing, Inferring

C. Materials:

Diagrams of how to tell time with Polaris as shown on pp. 255-256

References:

Science and Health 6, pp. 258-260 into the Future 6. pp. 256-258 Teacher's Module, p. 77

III. Procedure:

A. Preparatory Activities:

1. Review:

What are constellations? Name some familiar ones?

B. Developmental Activities:

1. Motivation:

Do you read horoscope? What is your zodiac sign?

2. Presentation:

Activity

- a. Read the text on pp. 254-258
- b. Show the diagram of constellations

Analysis and Discussion

- How can Polaris mark or signal direction?
- What are other stars or constellations that are used to determine direction?
- How can the constellations c-f the zodiac sign determine the seasons or time of year?

3. Concept Formation/Generalization:

How can the presence of constellations indicate the kind of weather?

4. Application:

What is your zodiac sign? How does it helps you?

IV. Evaluation:

Choose the letter of the correct answer.

1. All the other stars move around
 - a. Rigel
 - b. Betelgeuse
 - c. Antares
2. People in the equator can see Polaris
 - a. directly above their heads
 - b. at 45 degrees from the horizon
 - c. at 15 degrees from the zenith

V. Assignment:

Find out about nova and supernova. Differentiate between these two terms.

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- Describe that constellations are group of stars that forms patterns in the SKY

Values: Awareness

II. Subject Matter:

Constellations

A. Science Concept:

- Constellations are group of stars that form patterns in the sky.
- Big Dipper, Little Dipper, Cassiopeia and Orion are some of the common constellations

B. Science Processes:

Observing, Comparing, Inferring

C. Materials:

Pictures/diagrams or map of constellation

References:

Science and Health 6, pp. 258-260; Into the Future 6, pp. 254-258
Teacher's Module: Science and Health 6, J.A. Villegas, p. 77

III. Procedure:

A. Preparatory Activities:

1. *Review:*
In what way are stars similar to our sun T

B. Developmental Activities:

1. *Motivation:*
What figures can you imagine when you look at some of the stars at night?
2. *Presentation:*
 - Perform Activity 7.6, Star Gazing (see attached sheet)
 - Follow the procedures to perform the activity
 - Did you have similar findings?
3. *Discussion:*
Describe constellation
Name some common constellations in the northern sky. In the southern sky.
4. *Concept Formation/Generalization:*
What are constellations? What are some of the familiar ones?
5. *Application:*
From the star map, copy some of the familiar constellations and label them.

IV. Evaluation:

Choose the letter of the correct answer.

1. They are group of stars that form patterns in the sky.
 - a. galaxy
 - b. constellations
 - c. stars
2. There are how many known constellations
 - a. 50
 - b. 88
 - c. 100

V. Assignment:

Observe the sky tonight and construct a star map.

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- Describe the galaxies

Values: Attentiveness

II. Subject Matter:

Topic: Beyond the Solar System

Sub-Topic: Galaxies

A. Science Concept:

- Galaxy is made up of clouds of dust and billions of stars and appears as hazy patches of light from a great distance.

B. Science Processes:

Describing, Identifying, Inferring

C. Materials:

Illustration showing the galaxies

References:

Teacher's Guide, p. 77 C. Nacpil and J. Villegas
Into the Future: Science and Health 5, pp. 259-260

III. Procedure:

A. Preparatory Activities:

1. **Review:**
What is constellation?
How are constellation useful to people?

B. Developmental Activities:

1. **Motivation:**
Have you seen thousands of stars at night?
Have you ever noticed what appear to be holes in the night sky?
2. **Presentation:**
 - Divide the class into four groups.
 - Do activity 8.8 on page 259 of Into the Future: Science and Health 6.
 - Pupils report about their findings.
 - Reading of the text on p. 260.
3. **Concept Formation:**
What are galaxies?
5. **Application:**
Each group will draw an illustration of galaxy.
Describe to each illustration and give the importance of studying galaxies to mankind.

IV. Evaluation:

Multiple Choice: Choose the letter of the correct answer.

1. What makes up a galaxy?
 - a. dust
 - b. clouds and dust
 - c. dust, gases and stars
 - d. stars only
2. Why do billions of stars appear as clouds or patches of light in the night sky?
 - a. because of their great distance from the Earth
 - b. because of the gravitational pull of stars
 - c. because of the influence of other heavenly bodies
 - d. because of the sun's radiation

V. Assignment:

Draw the galaxies and describe each.

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- Name the common galaxies

Values: Show willingness to share ideas with the group

II. Subject Matter:

Topic: Beyond the Solar System

Sub-Topic: The Common Galaxies in Space

A. Science Concept:

- The Milky Way, Andromeda, The Large and Small Magellanic clouds are the common galaxies in space.

B. Science Processes:

Identifying, Observing, Describing

C. Materials:

Illustration of the common galaxies

References:

Teacher's Guide, Science and Health 6, pp. 77-78 Celia Nacpil and Jessie A. Villegas
Into the Future: Science and Health 6, pp. 260-261

III. Procedure:

A. Preparatory Activities:

1. Review:

What is a galaxy?
Describe a galaxy.

B. Developmental Activities:

1. Motivation:

- What do you call group of stars in the sky that you've seen last night? What galaxy can be seen by our naked eye?
- Do you think there are other galaxies in the universe besides the Milky Way? Let's find out.

2. Presentation:

- Have the pupils observe the illustrations of the Milky Way Galaxy and other galaxies in the universe.
- Reading the text on pp. 260-262
- Interaction
 - What galaxy comprises two to three percent of the total number of galaxies?
 - Which galaxy has a spiral shape and form?
 - Which is nearly ball-shaped to lens-shaped?

3. Concept Formation:

What are some of the common galaxies?

4. **Application:**

Each group will make an illustration of Milky Way Galaxy, Andromeda Galaxy and the Large and Small Magellanic Clouds.

Write a description of each galaxy.

IV. Evaluation:

Multiple-Choice: Choose the letter of the correct answer.

1. Which of the following is a spiral galaxy?
 - a. Large Magellanic Clouds
 - b. Andromeda
 - c. Milky Way
2. This galaxy resembles a thin convex bulging at the center.
 - a. Milky Way Galaxy
 - b. Andromeda Galaxy
 - c. Large Magellanic Clouds Galaxy

V. Assignment:

Draw the illustration of the common galaxies in the universe. Label each type of galaxy.

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- State that our solar system is part of the Milky Way Galaxy

Values: Be attentive in class discussions

II. Subject Matter:

Unit: Beyond the Solar System

Topic: The Solar System is a Part of the Milky Way Galaxy

A. Science Concept:

- Our Solar System is a part of the Milky Way Galaxy.

B. Science Processes:

Describing, Identifying

C. Materials:

Illustration of the Milky Way Galaxy 212

References:

Into the Future: Science and Health VI, pp. 260-261 M. pp. 161-162

Exploring Science and Health 6, pp. 257-258 Teacher's Guide, Science and Health 6, pp. 77-78

Celia Nacpil and Jessie A. Villegas

III. Procedure:

A. Preparatory Activities:

1. Review:

What are the common galaxies in space?

Describe each galaxy.

B. Developmental Activities:

1. Motivation:

In what galaxy does the Earth belong?

Let's find out!

2. Presentation:

- a. Pupils observe the illustration of the Milky Way Galaxy.
- b. Describing the location of the solar system from the Milky Way Galaxy.
- c. Reading the text on p. 260.
- d. Interaction

3. Concept Formation:

In what galaxy does the Solar System belong?

4. Application:

Each group will draw the Milky Way Galaxy showing the position of the Solar System.

Why is it important to know the position of the Solar System in the Milky Way Galaxy-

IV. Evaluation:

Multiple Choice: Choose the letter of the correct answer.

1. Our Solar System is a member of the
 - a. Large Magellanic Clouds
 - b. Milky Way Galaxy
 - c. Andromeda Galaxy
2. Our Galaxy belongs to a small group of 17 galaxies called
 - a. Social Group
 - b. Local Group
 - c. Economy Group

V. Assignment:

Draw the Milky Way Galaxy showing the position of the Solar System. Place it in your science album.

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- Identify modern space facilities, tools and equipment used to study our universe

Values: Change for the better

II. Subject Matter:

A. Science Concept:

- The age of space travel and exploration opened in the universe when Sputnik I was launched by the Russians.
- As we study heavenly bodies, which are farther from the earth, we cannot avoid talking about great distances. It is difficult to imagine the size of universe. But now astronomers were able to invent and make powerful instruments and spacecraft that helped them gather information about space and the heavenly bodies in it.

B. Science Processes:

Describing, Identifying, Communicating

C. Materials:

Pictures or models of artificial satellites, space probes, space stations, radio telescopes and flannel board with different celestial bodies, cut outs of galaxies and other heavenly bodies

References:

Into the Future: Science and Health VI, pp. 274-276 Science and Health 6, pp. 266-268
Exploring Science and Health 6, pp. 259-262

III. Procedure:

A. Preparatory Activities:

1. *Review/Checking of Assignment:*

What are the different members of our solar system?

B. Developmental Activities:

1. *Motivation:*

Can you imagine how vast the universe, which contains all the heavenly bodies?

2. *Presentation:*

Activities

- a. Instruct the pupils to place their cut outs of various heavenly bodies on the board. Tell them to describe the universe.

Discussion and Analysis

1. How can man travel in the farthest corner of the universe?
2. What are the modern instruments, tools and equipment used by the astronomers and other specially trained persons in their space explorations

3. *Concept Formation:*

What special instruments do scientists use to study the vast universe?
Describe each of them in terms of features and functions.

4. ***Application:***

The basic equipment that we use today to study the universe are our eyes, intelligence and imaginations. But to help our sense organs, different modern and sophisticated space facilities, tools and equipments have been invented and introduced by scientists and astronomers.

IV. Evaluation:

1. Which instrument can view the heavenly bodies clearly and without the filtering effect of Earth's atmosphere?
2. Why is a space probe better than a space telescope in exploring distant planets?
3. Why is a radio telescope an important instrument in space exploration?

V. Assignment:

Draw or collect photographs of some modern instrumental equipment used by man in space exploration.

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- Explain the theories about the universe

Values: Appreciate the significance of one discovery

II. Subject Matter:

Explaining the Origin of the Universe

A. Science Concept:

Astronomers gave four possible explanations of the origin of the universe, namely:

- The Big Bang Theory states that the universe began as one dense concentration of matter that exploded with its fragments continuously moving outward and away from one another.
- The Big Crunch Theory believes that the universe started from an explosion of a dense huge ball of hydrogen but contracted due to the force of gravity.

B. Science Processes:

Describing, Illustrating

C. Materials:

Cut out of fragmented rocks, magnet or iron fillings, a balloon

References:

Into the Future: Science and Health 6 pp. 268-270

Science and Health 6, pp. 270-272

III. Procedure:

A. Preparatory Activities:

1. *Review/Checking of Assignments:*

What special instruments do scientists use to study the universe?

Describe each special instrument in terms of features and functions.

B. Developmental Activities:

1. *Motivation:*

What is universe? How do you think it begun? Does it have a life history?

2. *Presentation:*

Activity

- Ask the pupils to inflate a toy balloon with a teaspoonful of starch inside. Let them burst the balloon.
- Perform Activity 7.11, p. 268
- Analysis and Discussion
- Describe the results of a bursting balloon.
- How the dots appear to move farther from each other?

3. *Concept Formation:*

How did the universe originate according to astronomers?

4. *Application:*

How did the universe start according to different theories?

IV. Evaluation:

Identify the different theories about the origin of the universe and explain.

V. Assignment:

Research on some recent space explorations that tend to support one of the Theories of the origin of the universe.

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- Enumerate space probes and their missions

Values: Cooperation/Resourcefulness

II. Subject Matter:

Space Probes and their Missions

A. Science Concept:

- Several space probes were sent into outer space to gather important data about the planets their moons and other heavenly bodies.
- Some of these space probes are as follows: Lunar I, Viking I and II, Vivera 9, Pioneer-Venus 2, Mariner 10, and Voyager 1 and 2.
- Voyager 1 and 2 took photographs of Jupiter, Saturn, Uranus and Neptune.

B. Science Processes:

Describing, Differentiating, Enumerating

C. Materials:

Photographs of some space probes and their latest discoveries

References:

Into the Future: Science and Health 6 p. 168 — TM, TX pp. 271-273
Science and Health 6, pp. 278-279

III. Procedure:

A. Preparatory Activities:

1. *Review/Checking of Assignments:*

What are the different theories about the origin of the universe? Describe each. .

B. Developmental Activities:

1. *Motivation:*

If you were allowed to do a space mission, where would you go? What kind of space craft would you use? Why?

2. *Presentation:*

- Space Age began in 1957 when the first spacecraft was launched into outer space.
- What did you know about space explorations made after 1957?
- Describe a space probe. What are their special functions?
- Perform Activity 7.12

3. *Concept Formation:*

What are some of the latest space probes sent into outer space?
What are their missions and findings?
What is the first Philippine satellite launched?

4. *Application:*

Enumerate some space probes and give their missions.

IV. Evaluation:

1. Why do scientists send unmanned space probes to outer space?
2. Why was Pioneer-Venus 2 sent to Venus?
3. What space probe is considered as one of the most successful space missions?

V. Assignment:

List down some of the space probes sent into outer space. Describe the mission of each space probe.

SCIENCE AND HEALTH VI

Date: _____

I. Objective:

- Name some achievements/problems met in space explorations

Values: Resourcefulness and Cooperation

II. Subject Matter:

Achievements and Problems in Space Explorations

A. Science Concept:

- Man's greatest achievement in space exploration is his landing on the moon on July 19, 1969.
- Some problems man met in space travel include; airlessness, weightlessness, extreme heat and radiation, food intake, disposal of waste and escape from the Earth's gravity.

B. Science Processes:

Enumerating, Describing, Differentiating

C. Materials:

A table of man's achievements in space exploration, a picture of an astronaut wearing a space suit, a picture of a spacecraft in outer space.

References:

Into the Future: Science and Health 6 pp. 171-172 — TM, TX pp. 275-278 Science and Health 6, pp. 279-280

III. Procedure:

A. Preparatory Activities:

1. *Review/Checking of Assignments:*

What are some of the space probes sent to space?
What are their missions and findings?

B. Developmental Activities:

1. *Motivation:*

Why does man want to explore the universe?

2. *Presentation:*

Activity

- Show a picture of an astronaut wearing a spacesuit and walking in outer space beside his spacecraft.
Why do you think astronaut need a spacesuit?
Perform Activity 7.13 — Space Achievements.
- Analysis/Discussion
Enumerate the achievements and problems man met in exploring the space.

3. *Concept Formation:*

What were some of man's achievements in space explorations?
How was he able to solve some of the significant problems related to space travel?

4. *Application:*

What country is leading in space technology?

What are the advantages of costly space missions?

How are the instruments in space missions used?

IV. Evaluation:

Enumerate at least three problems in space travel and discuss how man was able to solve them.

V. Assignment:

Research on man's achievements in the following:

1. spacecraft design
2. escaping gravity
3. spacesuit design
4. packaging for space food