"ENHANCING THE UNDERSTANDING OF ATMOSPHERIC LAYERS THROUGH VIDEO LESSONS AMONG THE FIFTH STANDARD STUDENTS"

ACTION RESEARCH REPORT
(2023-2024)

SUBMITTED BY

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SUBMITTED TO
STATE COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING
CHENNAI -600006

DECLARATION

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I hereby declare that the action research entitled **"Enhancing the understanding of atmospheric layers through video lessons among the fifth standard students"** submitted by me to the State Council of Educational Research and Training, Chennai-600006 is the result of my original and independent action research carried out under the guidance of The Principal, District Institute of Education and Training, Vadalur, Cuddalore District. This work has not been submitted earlier for completing any project work or other similar titles in this or any other Institution.

Place: Vadalur

Date :

(A.S.Rajesh kumar)

CERTIFICATE

Dr.G.PALANI, M.Sc, M.Ed., M.Phil., Ph.D.,
Principal,
District Institute of Education and Training,
Vadalur - 607303
Cuddalore District

This is to Certified that this action research entitled **"Enhancing the understanding of atmospheric layers through video lessons among the fifth standard students",** is done by Mr. A.S.Rajesh kumar, Senior Lecturer, District Institute of Education and Training, Vadalur, Cuddalore District and the report has been submitted to the State Council of Educational Research and Training, Chennai-600006.

Place: Vadalur

Date :

Signature.

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Mr. A.S.Rajesh Kumar,

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CHAPTER I

1. Introduction

1.1. Galaxy:

A galaxy is a massive, gravitationally bound system that consists of stars, stellar remnants, interstellar gas, dust, dark matter, and various other celestial objects. These systems can vary greatly in size, ranging from dwarf galaxies with just a few billion stars to giant galaxies containing trillions of stars.

One of the most famous galaxies is our own Milky Way, which is a barred spiral galaxy containing hundreds of billions of stars, including our own Sun. The Milky Way is just one of billions of galaxies in the observable universe.

The study of galaxies, known as galactic astronomy, helps astronomers understand the structure, formation, and evolution of these cosmic behemoths. Galaxies are thought to have formed through gravitational interactions and mergers between smaller structures in the early universe.

Understanding galaxies is fundamental to our comprehension of the cosmos as a whole, as they serve as building blocks of the universe and play a crucial role in its evolution.

Figure 1Galaxy picture

1.2. The Earth:

Earth, the third planet from the Sun in our solar system, is an incredible place. It's the only known celestial body to harbor life. With a diverse range of ecosystems, from lush rainforests to barren deserts, and a rich tapestry of life forms, Earth is truly unique. It's also the only planet in the universe where we know for sure that life exists.

From space, Earth appears as a beautiful blue marble, owing to its vast oceans that cover about 71% of its surface. The remaining 29% consists of continents and islands where life thrives in various forms. Earth's atmosphere, composed mostly of nitrogen and oxygen, provides the air we breathe and protects us from harmful radiation.

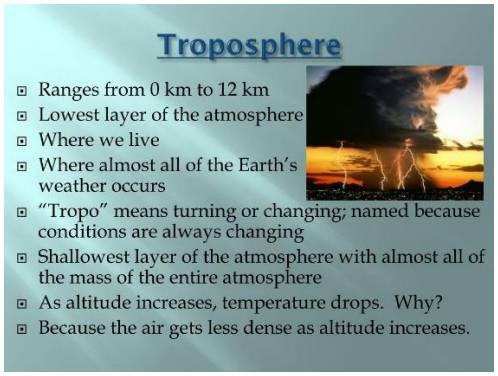
Figure 2.Earth

Understanding and caring for Earth is crucial for the well-being of all its inhabitants, including future generations. Many individuals, organizations, and governments are working to address environmental issues and promote sustainability to ensure that Earth remains a hospitable home for all life.

1.3. Atmosphere:

The Earth's atmosphere is divided into several layers based on temperature variation and composition. These layers, from the ground up, are the troposphere, stratosphere, mesosphere, thermosphere, and exosphere. Here is a brief overview of each layer:

Troposphere: This is the lowest layer of the atmosphere, extending from the Earth's surface up to about 8-15 kilometres (5-9 miles) depending on latitude. The troposphere is where weather phenomena occur, including clouds, precipitation, and most of the Earth's atmosphere's water vapor. Temperature generally decreases with altitude in this layer.



Stratosphere: Above the troposphere lies the stratosphere, extending from the top of the troposphere to about 50 kilometers (31 miles) above the Earth's surface. The stratosphere is characterized by a temperature inversion, where temperatures increase with altitude due to the presence of the ozone layer. This layer plays a crucial role in absorbing the majority of the Sun's harmful ultraviolet (UV) radiation.

Mesosphere: Beyond the stratosphere is the mesosphere, reaching up to about 85 kilometers (53 miles) above the Earth's surface. Temperatures in this layer decrease with altitude, reaching extremely low temperatures, sometimes as cold as -90°C (-

130°F). The mesosphere is where most meteors burn up upon entering the Earth's atmosphere.

Thermosphere: Above the mesosphere lies the thermosphere, extending from about 85 kilometers (53 miles) to 600 kilometers (372 miles) above the Earth's surface. Despite its high altitude, the thermosphere experiences very high temperatures due to the absorption of intense solar radiation. However, the air density is extremely low in this layer, so it would not feel hot to a human in direct contact but rather very cold due to the lack of molecules to transfer heat.

Exosphere: The outermost layer of the Earth's atmosphere is the exosphere, which gradually fades into outer space. Molecules in this layer are very sparse, and they can escape into space without colliding with other molecules. The exosphere is where satellites and other human-made objects orbit the Earth.

These atmospheric layers play essential roles in regulating climate, weather patterns, and protecting life on Earth from harmful solar radiation. Each layer has distinct characteristics and interactions with solar energy and other phenomena, contributing to the dynamic system that is Earth's atmosphere.

1.4. Troposphere:

The troposphere is the lowest layer of Earth's atmosphere, and it is where most of Earth's weather phenomena occur. Here are some salient features of the troposphere:

a. Weather Processes: The troposphere is the layer closest to the Earth's surface, extending from the surface up to an average altitude of about 8-15 kilometers (5-9 miles) depending on location and season. It is where most weather processes, such as cloud formation, precipitation (rain, snow, etc.), storms, and wind patterns, take place.

The interactions between air masses of different temperatures and humidity levels lead to the diverse weather conditions experienced on Earth.

b. Temperature Decrease with Altitude: Generally, temperatures in the troposphere decrease with increasing altitude. This lapse rate averages about 6.5°C per kilometer (3.5°F per 1000 feet) of altitude gain, known as the environmental lapse rate. This cooling trend is due to the decrease in atmospheric pressure and the heat absorbed and emitted by the Earth's surface.

c. Air Composition: The troposphere contains the majority of Earth's atmospheric gases, including nitrogen (about 78%), oxygen (about 21%), argon, carbon dioxide, water vapor, and trace gases. The concentration of water vapor decreases rapidly with altitude, leading to varying humidity levels across different altitudes within the troposphere.

d. Jet Streams: High-speed air currents known as jet streams are found in the upper troposphere and lower stratosphere, typically at altitudes of 10-15 kilometers (6-9 miles). Jet streams flow from west to east in narrow bands and are influenced by temperature gradients between air masses. They play a significant role in shaping global weather patterns and influencing the paths of weather systems.

e. Human Activities and Pollution: The troposphere is directly influenced by human activities, including pollution from industrial emissions, vehicle exhaust, and agricultural practices. Pollutants released into the troposphere can have significant impacts on air quality, human health, and ecosystems, highlighting the importance of monitoring and regulating emissions.

f. Life Support System: The troposphere is crucial for supporting life on Earth as it contains the oxygen necessary for respiration and maintains temperatures suitable for

life. It also plays a role in regulating the planet's energy balance by absorbing and re-radiating solar energy, contributing to Earth's overall climate system.

Understanding the characteristics and dynamics of the troposphere is essential for studying weather patterns, climate change, air quality, and the interactions between the atmosphere and Earth's surface environments.

1.5. Stratosphere:

The stratosphere is a layer of Earth's atmosphere that lies above the troposphere and below the mesosphere. It exhibits several salient features that distinguish it from other atmospheric layers. Here are the key characteristics of the stratosphere:

a. Ozone Layer: One of the most significant features of the stratosphere is the presence of the ozone layer. Ozone (O3) molecules are concentrated in this layer, particularly in the lower portion of the stratosphere known as the ozone layer. These molecules absorb and scatter a portion of the incoming ultraviolet (UV) radiation from the Sun, providing a shield that protects life on Earth from harmful UV rays.

b. Temperature Inversion: Unlike the troposphere, where temperatures generally decrease with altitude, the stratosphere experiences a temperature inversion. In this layer, temperatures increase with altitude due to the absorption of solar radiation by the ozone layer. The stratopause, marking the top of the stratosphere, is where this temperature inversion ends.

c.Lack of Weather Phenomena: The stratosphere is relatively stable and lacks the weather processes (such as clouds, precipitation, and turbulent mixing) that characterize the troposphere below it. This stability is due in part to the absence of significant vertical air movements and the stratification of temperature layers.

d. Aviation and Jet Streams: Commercial airliners often operate within the lower portion of the stratosphere due to its stability and reduced weather disturbances. Additionally, the stratosphere is home to the polar and subtropical jet streams, which are high-altitude air currents influenced by temperature gradients and play a role in shaping global weather patterns.

e. Atmospheric Composition: The stratosphere contains a mixture of gases, including nitrogen, oxygen, argon, and trace amounts of other gases. Ozone concentrations are highest in the lower stratosphere, peaking in the ozone layer. However, the overall density of molecules in the stratosphere is much lower compared to the troposphere.

f. Chemical Reactions and Ozone Depletion: Chemical reactions involving ozone molecules occur naturally in the stratosphere. However, human-made chemicals such as chlorofluorocarbons (CFCs) can lead to ozone depletion, particularly in polar regions, resulting in the formation of ozone holes. International efforts, such as the Montreal Protocol, have aimed to reduce ozone-depleting substances to protect the ozone layer.

Understanding the unique characteristics of the stratosphere, including its stability, ozone layer dynamics, and interactions with human activities, is crucial for atmospheric science, climate studies, and environmental protection efforts.

1.6. Mesosphere:

The mesosphere is the third layer of Earth's atmosphere, situated above the stratosphere and below the thermosphere. It exhibits several distinct features that characterize its properties and behaviors. Here are the salient features of the mesosphere:

a. Altitude and Temperature Profile: The mesosphere extends from about 50 kilometers (31 miles) to about 85 kilometers (53 miles) above the Earth's surface. In this layer, temperatures decrease with increasing altitude, reaching some of the coldest temperatures in the Earth's atmosphere. Near the top of the mesosphere, temperatures can drop to around -90°C (-130°F).

b. Micrometeoroid and Meteoroid Burn-Up: The mesosphere is notable for being the layer where most meteoroids and micrometeoroids entering Earth's atmosphere burn up due to friction with air molecules. These objects, often debris from space, encounter resistance as they travel through the mesosphere at high speeds, generating heat that causes them to disintegrate or vaporize.

c. Noctilucent Clouds: Noctilucent clouds, also known as polar mesospheric clouds, are a rare type of cloud formation that occurs in the mesosphere. These clouds consist of ice crystals and are visible during twilight hours in polar regions. They form at high altitudes within the mesosphere where temperatures are cold enough for ice to exist even though the lower atmosphere is too warm for ice clouds.

d. Limited Human Activity: Unlike the lower layers of the atmosphere, such as the troposphere and stratosphere, the mesosphere is beyond the reach of most human-operated aircraft and satellites. As a result, direct observations and measurements in the mesosphere are often limited, and much of our understanding comes from remote sensing and indirect studies.

e. Thermal Tides and Gravity Waves: The mesosphere experiences complex atmospheric phenomena such as thermal tides and gravity waves. Thermal tides are temperature variations driven by solar heating, while gravity waves are atmospheric

disturbances caused by forces like wind blowing over mountains or atmospheric instability. These phenomena contribute to the dynamic nature of the mesosphere's temperature and wind patterns.

f. Ionization and Auroras: The upper mesosphere interacts with the lower regions of the ionosphere, where charged particles (ions) are present. This interaction plays a role in the formation of auroras, spectacular light displays in the polar regions caused by charged particles from the solar wind interacting with Earth's magnetic field and atmosphere.

Understanding the mesosphere and its unique characteristics is important for studying atmospheric dynamics, space weather interactions, and the global circulation of gases and energy within Earth's atmosphere. Ongoing research and advancements in atmospheric science continue to shed light on this relatively unexplored region of our atmosphere.

1.7. Thermosphere:

The thermosphere is a layer of Earth's atmosphere located above the mesosphere and below the exosphere. It possesses several distinctive features that set it apart from other atmospheric layers. Here are the salient features of the thermosphere:

a. High Temperatures: Despite its high altitude, the thermosphere experiences very high temperatures. Temperatures can reach thousands of degrees Celsius (or Fahrenheit) in the upper thermosphere due to absorption of intense solar radiation. However, these high temperatures would not be felt by a human because the density of molecules is extremely low, resulting in a lack of thermal transfer to objects.

b. Low Density: The thermosphere is characterized by an extremely low density of molecules. The sparse atmosphere in this layer means that there are relatively few gas

molecules per unit volume compared to lower atmospheric layers. As a result, even though the thermosphere can have high temperatures, it would feel cold to a human in direct contact due to the lack of molecules to transfer heat.

c. Ionization and Ionosphere: The upper thermosphere is where significant ionization of gases occurs due to exposure to solar ultraviolet (UV) and X-ray radiation. This ionized region is known as the ionosphere, and it plays a crucial role in long-distance radio communication by reflecting radio waves back to Earth. Different layers within the ionosphere, such as the D, E, and F layers, have varying degrees of ionization and electron density.

d. Auroras: The interaction between charged particles (electrons and ions) from the solar wind and Earth's magnetic field occurs predominantly in the thermosphere. This interaction leads to the phenomenon of auroras, also known as the northern and southern lights, which are beautiful displays of colorful lights in the sky near the polar regions.

e. Orbital Decay and Satellite Drag: Although the density of molecules is very low in the thermosphere, it is sufficient to cause orbital decay for low Earth orbit (LEO) satellites. The few remaining gas molecules at these altitudes can exert drag on satellites, leading to a gradual decrease in orbital altitude over time. Space agencies must account for this effect when planning satellite missions.

f. Extreme Ultraviolet (EUV) Radiation Absorption: The thermosphere absorbs a significant amount of extreme ultraviolet (EUV) radiation from the Sun. This absorption contributes to the high temperatures in the upper thermosphere and plays a role in the dynamics of the ionosphere.

Understanding the thermosphere's unique characteristics is essential for space exploration, satellite operations, atmospheric modeling, and studying interactions between solar radiation, Earth's magnetic field, and the upper atmosphere. Ongoing research and satellite observations help scientists better comprehend the complexities of this dynamic atmospheric layer.

1.8. Exosphere:

The exosphere is the outermost layer of Earth's atmosphere, extending from the upper boundary of the thermosphere to the edge of space. It exhibits several salient features that distinguish it from the lower atmospheric layers. Here are the key characteristics of the exosphere:

a. Extreme Low Density: The exosphere is characterized by an extremely low density of gas molecules. The few particles present in this layer are primarily hydrogen and helium, along with traces of other gases such as oxygen and nitrogen. The density is so low that the average distance between gas molecules is greater than their own diameter.

b. Transition to Space: The exosphere represents the transition region between Earth's atmosphere and outer space. It is where the atmosphere gradually thins out until it merges with the near-vacuum conditions of space. The boundary between the exosphere and space is not precisely defined but is often considered to be where the atmospheric density becomes negligible compared to the density of space.

c. Limited Gas Molecules: Gas molecules in the exosphere can travel long distances without colliding with other molecules due to the large spacing between them. As a result, the concept of temperature in this layer becomes less meaningful, as temperature is a measure of the average kinetic energy of particles due to collisions.

d. Ionization and Escape of Gases: Solar ultraviolet (UV) and X-ray radiation can ionize gas molecules in the exosphere, turning them into ions. Some of these ions gain enough energy to escape Earth's gravitational pull and enter space. This process is known as atmospheric escape and contributes to the loss of lighter gases such as hydrogen and helium from Earth's atmosphere over geological time scales.

e. Satellite Orbits: The exosphere is where many artificial satellites orbit Earth. Satellites in low Earth orbit (LEO) and higher orbits, such as geostationary orbit, operate within or pass through the exosphere. The low-density environment reduces drag on satellites, allowing them to maintain their orbits for longer periods without significant propulsion adjustments.

f. Auroras and Magnetosphere Interaction: While auroras primarily occur in the thermosphere, the exosphere plays a role in the broader interaction between Earth's magnetosphere and the solar wind. Charged particles from the solar wind can interact with Earth's magnetic field in the exosphere, contributing to the overall dynamics of space weather phenomena.

Understanding the properties and dynamics of the exosphere is crucial for space exploration, satellite operations, studying atmospheric escape processes, and gaining insights into interactions between Earth's atmosphere and outer space environments. Ongoing research and space missions continue to expand our knowledge of this unique and complex atmospheric lay The Earth's atmosphere is composed of several layers, each with distinct characteristics that play a role in shaping global climate patterns. Understanding the interactions between these atmospheric layers and climate is crucial for studying Earth's climate system. Here's how the atmospheric layers influence climate:

1.9. Learning about atmospheric layers at an elementary stage:

Learning about atmospheric layers at an elementary stage can lay a foundation for students' understanding of Earth's environment and how it functions. Here are several reasons why it is beneficial to introduce atmospheric layers to elementary students:

a. Understanding Earth's Systems: Learning about the atmosphere introduces students to Earth's interconnected systems, including the atmosphere, hydrosphere, lithosphere, and biosphere. It helps them grasp the concept of Earth as a dynamic planet with different layers and processes.

b. Awareness of Weather and Climate: Understanding atmospheric layers lays the groundwork for learning about weather phenomena, climate zones, and climate patterns. Students can begin to understand concepts such as temperature variations, air pressure, precipitation, and how they relate to different atmospheric layers.

c. Environmental Awareness: Learning about the atmosphere encourages environmental awareness and stewardship. Students can explore topics such as air pollution, greenhouse gases, ozone layer protection, and the importance of preserving Earth's atmosphere for life.

d. Space Exploration: Introducing atmospheric layers can spark interest in space exploration and astronomy. Students can learn about the challenges of space travel, the effects of altitude on air pressure and temperature, and the composition of atmospheres on other planets.

e. Scientific Inquiry and Observation: Studying atmospheric layers promotes scientific inquiry skills and encourages students to make observations about their

surroundings. They can learn about tools used to study the atmosphere, such as weather instruments, satellites, and telescopes.

f. Critical Thinking and Problem-Solving: Exploring atmospheric layers encourages critical thinking about complex systems and phenomena. Students can engage in discussions about climate change, natural disasters, weather forecasting, and the impact of human activities on the atmosphere.

g. Interdisciplinary Connections: Learning about atmospheric layers integrates concepts from various disciplines, including earth science, geography, physics, chemistry, and environmental science. It helps students see the connections between different areas of science and the real world.

h. Cultural and Historical Context: Exploring atmospheric layers can also incorporate cultural and historical perspectives, such as indigenous knowledge of weather patterns, historical weather events, and cultural practices related to seasons and climate.

By introducing atmospheric layers at an elementary stage, educators can nurture curiosity, scientific literacy, and environmental responsibility in young learners, laying the groundwork for deeper explorations in later stages of education.

1.10. Problem Identification:

There are information bunches in fifth standard geography lesson Atmosphere, but only the names of the atmospheric layers given in the text book, it is very difficult to understand the concept of atmosphere without seeing evidences about atmospheric layers. Even in the primary teachers also faced lots of struggle to teach this concept. So, the researcher plan to create clear idea about atmospheric layers through video lessons.

1.11. Defining problem:

Enhancing the understanding of atmospheric layers through video lessons among the fifth standard students in Panchyat union primary school, Pudhupettai, Annagramam block, Cuddalore district

1.12. Probable Causes:

a) Lack of age appropriate in content creation.

b) Lack of connectivity between the information's

c) Lack of awareness about atmospheric layers

1.13. Sample:

24 Fifth standard students of Panchayat union primary school, Pudhupettai, Annagramam Block, Cuddalore District

1.14. Objective of the Action Research:

1. To create clear knowledge about atmospheric layers

2. To enhance the level of understanding in atmospheric layers

3. To make the students apply his theoretical knowledge into practical life

1.15. Tools:

Pre-test – post-test method of assessment was carried out to assess the prior and post intervention of this research.

Chapter II

2.1 Choosing appropriate solutions and interventions:

The researcher conducted a diagnostic assessment and created a well-structured assessment tool based on the textbook's content to improve their understanding of atmospheric layers. The tool consists of 25 items related to atmospheric layers such as multiple-choice questions, filling the blanks, true or false and matching type questions.

Pre-Test Mark Sheet

S.No	Name of the student	Mark @25	Mark @100
1	M.SUMAN	10	40
2	G.NITHISH	08	32
3	P.YUGESWARAN	09	36
4	P.RITHISH	09	36
5	S.BARANIBHARATHI	10	40
6	T.RAKESH	07	28
7	M.HARISH KUMARAN	08	32
8	J.RAGUL	06	24
9	S.BHUVANESWARAN	14	56
10	L.RAJALAKSHMI	06	24
11	B.SATHYASNI	05	20
12	B.MALINI	06	24
13	A.NEHA	08	32
14	S.DEEPIKA	10	40
15	B.SARUMATHI	09	36
16	V.NAGAVALLI	03	12
17	P.SIVANI	10	40
18	S.SUJITHA	10	40
19	V.KAVIYASHRI	09	36
20	G.NIKITHA	11	44
21	Y.MDHUMITHA	07	28
22	M.VISHMITHA	10	40
23	V.PRIYANKA	13	52
24	S.SAMEERA	10	40
		208	**832**

Figure 3 Students writing pre-test

2.2. Interventions:

Activity 1:

In order to understand the layers of the atmosphere, Students were given a picture based on the layers of the atmosphere in which they were given activities to identify the specific layers in which each student had to identify that layer of the atmosphere with the notes that the researcher could outline.

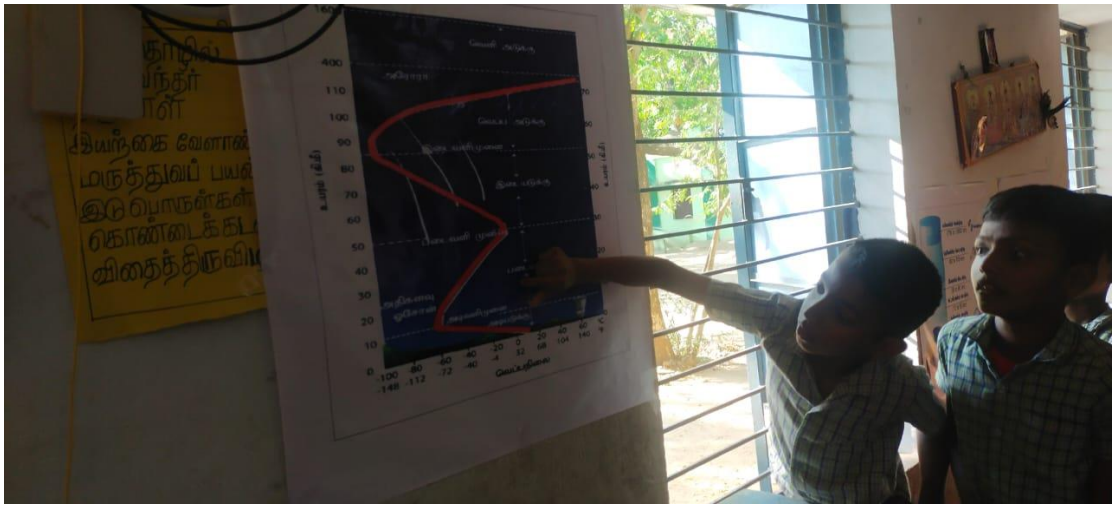


Figure 4Group activity

Activity 2:

The students should be divided into five groups and the five groups would be given a message containing the importance of the 5 layers of the atmosphere and given activities so that the students would understand the importance of each layer of the atmosphere. If any mistake is made while pointing, the other group students will correct it.

Activity 3:

In the classroom of the students, the pictures about the layers of the atmosphere and its importance, its height and its nature were printed separately and pasted here and there in the classroom for the students to see. The students were given a period of five days to focus on, in which every day the students had to discuss with others about the pictures we had seen and then at the end the students had to answer the questions asked by the researcher about the pictures, in which if the students gave wrong answers, the researcher gave the correct answer in his video.

Figure 5 Investigators intervention

Activity 4:

Researcher-produced video was screened in the classroom. It contains What is atmosphere? Number of atmospheric layers, their names and importance of atmospheric layer, relationship between atmospheric layer and climate, relationship between atmospheric layer and global warming, duty of every individual to protect the atmosphere were explained. The students watched it and then compared it with their already seen pictures, and answered the questions asked to the students from here and there.

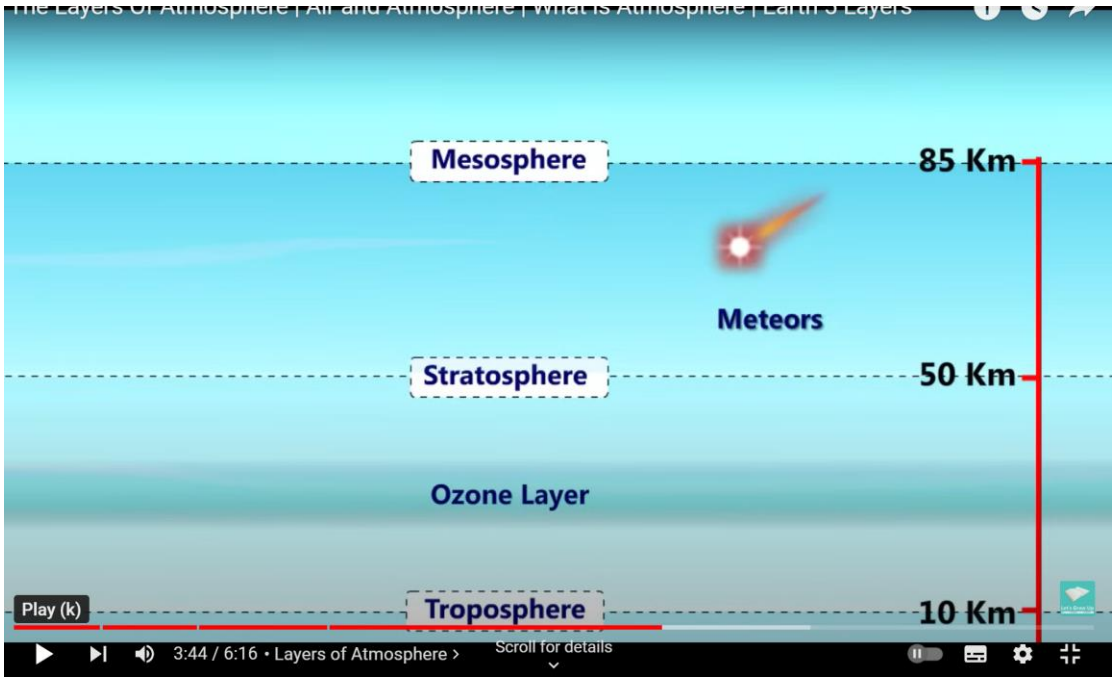


Figure 6 Video projection

Chapter III

3.1 Data Analysis and Interpretation:

Post-intervention assessment was carried out using the same assessment tool used for pre-intervention after detailed interventions to enhance understanding of atmospheric layers. The scores were analysed with measures of central tendencies and the results were interpreted.

Post Test Mark Sheet

S.No	Name of the student	Mark @25	Mark @100
1	M.SUMAN	15	60
2	G.NITHISH	17	48
3	P.YUGESWARAN	21	84
4	P.RITHISH	18	72
5	S.BARANIBHARATHI	22	88
6	T.RAKESH	16	64
7	M.HARISH KUMARAN	20	80
8	J.RAGUL	14	56
9	S.BHUVANESWARAN	22	88
10	L.RAJALAKSHMI	13	52
11	B.SATHYASNI	15	60
12	B.MALINI	16	64
13	A.NEHA	17	68
14	S.DEEPIKA	20	80
15	B.SARUMATHI	19	76
16	V.NAGAVALLI	8	32
17	P.SIVANI	19	76
18	S.SUJITHA	21	84
19	V.KAVIYASHRI	16	64
20	G.NIKITHA	20	80
21	Y.MDHUMITHA	12	48
22	M.VISHMITHA	17	68
23	V.PRIYANKA	24	96
24	S.SAMEERA	18	72
Total		**420**	**1660**

Difference in Pre-Test and Post Test Mark Sheet

S.No	Name of the student	Pre-Test Mark	Post Test Mark	Difference
1	M.SUMAN	40	60	20
2	G.NITHISH	32	48	16
3	P.YUGESWARAN	36	84	48
4	P.RITHISH	36	72	36
5	S.BARANIBHARATHI	40	88	48
6	T.RAKESH	28	64	36
7	M.HARISH KUMARAN	32	80	48
8	J.RAGUL	24	56	32
9	S.BHUVANESWARAN	56	88	32
10	L.RAJALAKSHMI	24	52	28
11	B.SATHYASNI	20	60	40
12	B.MALINI	24	64	40
13	A.NEHA	32	68	36
14	S.DEEPIKA	40	80	40
15	B.SARUMATHI	36	76	40
16	V.NAGAVALLI	12	32	20
17	P.SIVANI	40	76	36
18	S.SUJITHA	40	84	44
19	V.KAVIYASHRI	36	64	28
20	G.NIKITHA	44	80	36
21	Y.MDHUMITHA	28	48	20
22	M.VISHMITHA	40	68	28
23	V.PRIYANKA	52	96	44
24	S.SAMEERA	40	72	32
Total		**832**	**1660**	**828**

Statistical Comparison Table:

Mean:

S.No	Test	Mean
1	Pre-Test	34.66
2	Post- Test	69.16

The above table shows that the average mean value of the total population before intervention is 34.66, in the same after the intervention is 69.16. It shows that the selected intervention of improving the understanding of atmospheric layers has considerably increased among the 5th standard students in panchayat union primary school. Pudhupettai.

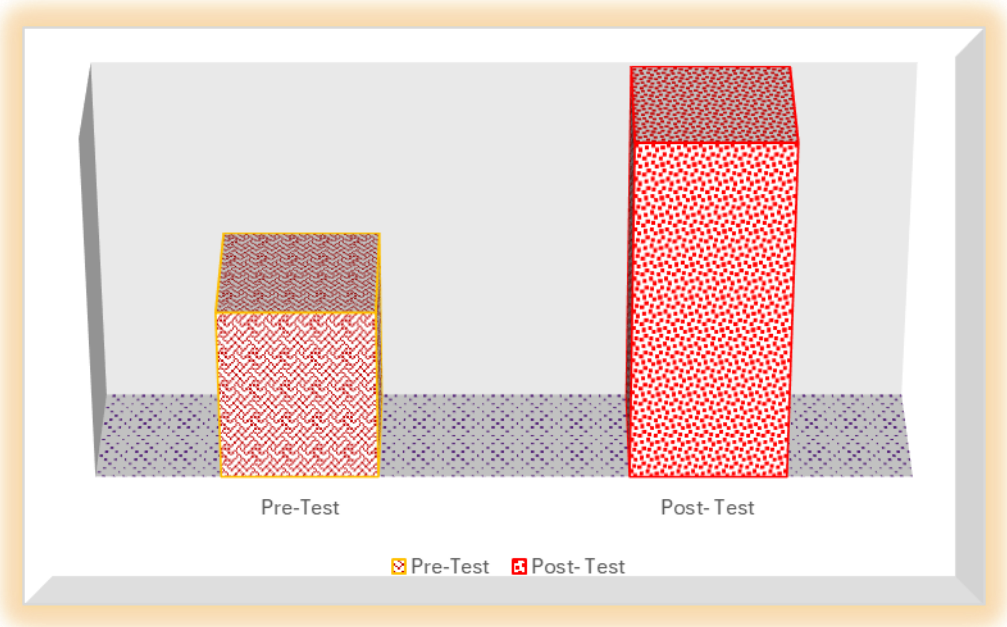
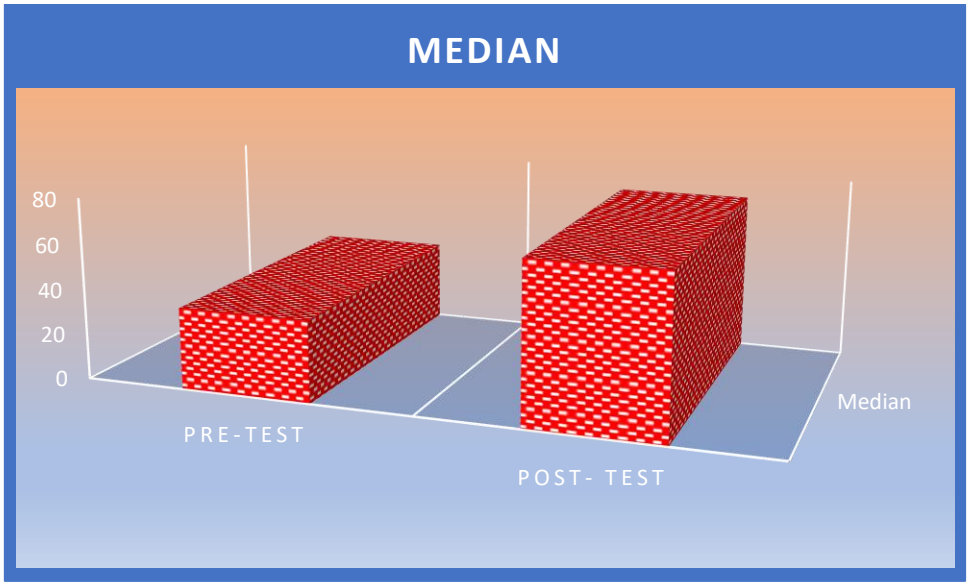


Figure 7Pre-Test and Post-Test Mean value

Median:

S.No	Test	Median
1	Pre-Test	36
2	Post- Test	70

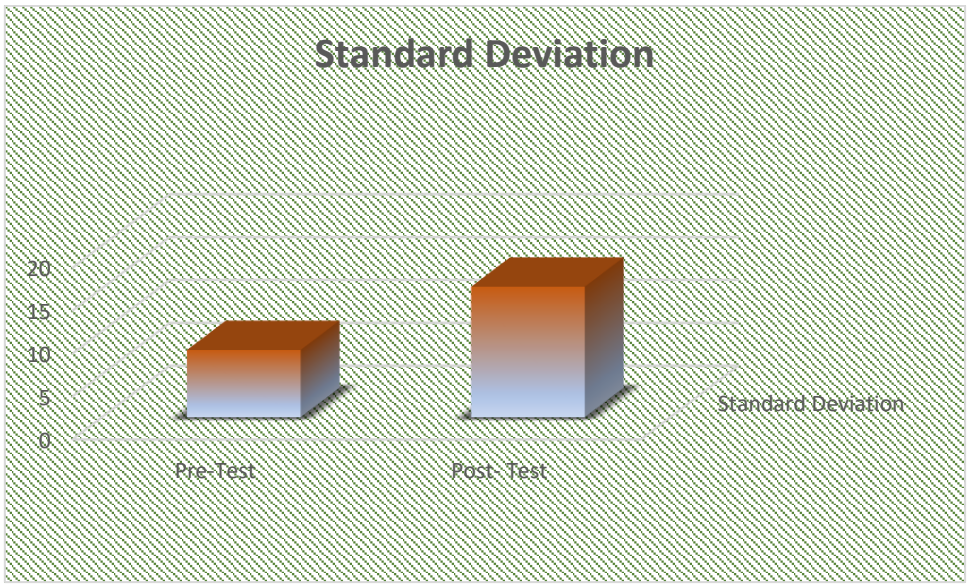
The above table shows that the median value of the total population before intervention is 36 in the same after the intervention is 70. It shows that the selected intervention of improving the understanding of atmospheric layers has considerably increased among the 5th standard students in panchayat union primary school. Pudhupettai.



Standard Deviation:

S.No	Test	Standard Deviation
1	Pre-Test	7.84
2	Post- Test	15.21

The above table shows that the standard deviation value of the total population before intervention is 9.84 in the same after the intervention is 15.21. It shows that the selected intervention of improving the understanding of atmospheric layers has considerably increased among the 5th standard students in panchayat union primary school. Pudhupettai.



Chapter-IV

Major findings and conclusion:

1. The average mean value of the total population before intervention is 34.66, in the same after the intervention is 69.16. It shows that the selected intervention of improving the understanding of atmospheric layers has considerably increased among the 5th standard students in panchayat union primary school. Pudhupettai.

2**.** The median value of the total population before intervention is 36 in the same after the intervention is 70. It shows that the selected intervention of improving the understanding of atmospheric layers has considerably increased among the 5th standard students in panchayat union primary school. Pudhupettai.

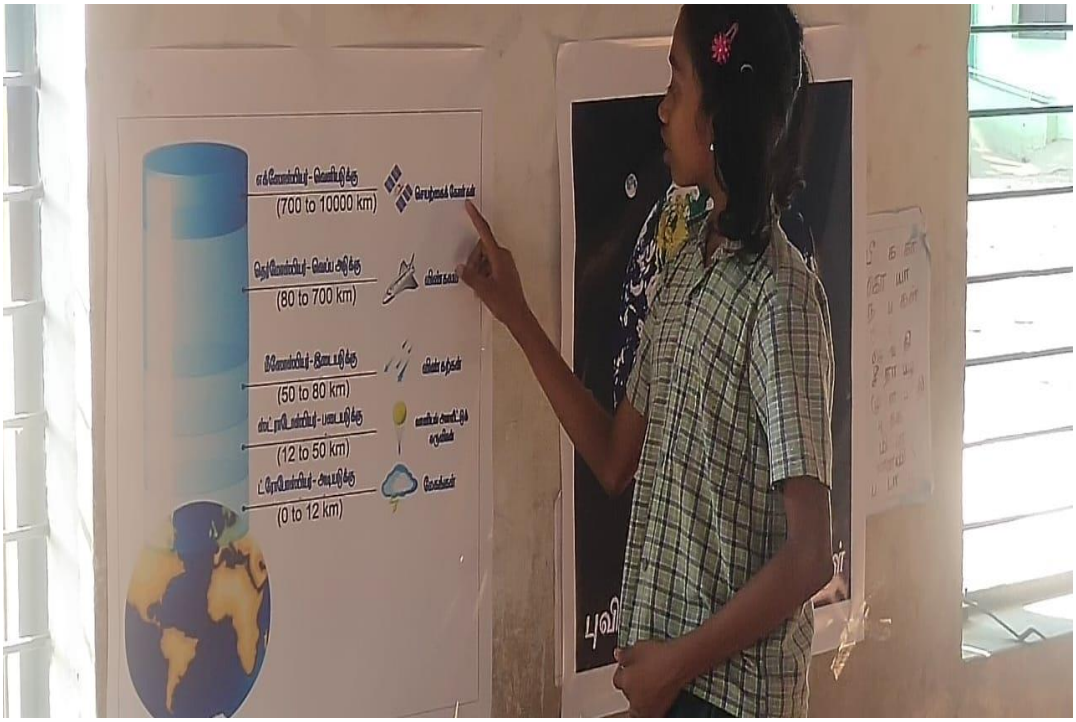
3. The standard deviation value of the total population before intervention is 9.84 in the same after the intervention is 15.21. It shows that the selected intervention of improving the understanding of atmospheric layers has considerably increased among the 5th standard students in panchayat union primary school. Pudhupettai.

4. It is observed that all the students actively participated in all the activities given to them regarding this action research process.

5. Videos explaining about various features and the importance of atmospheric layers are very welcome among the population.

Conclusion:

In science and social science subjects, information is provided about the atmospheric layers, and activities of atmospheric layers. However, providing only images and names related to atmospheric layers in the social science subject has led to students finding it difficult to understand easily, resulting in a challenging learning environment. An atmospheric layer's information has been included in the science subject as well, when students study atmospheric layers in the first semester of social science will leads to get better understanding while the same topic delt in the third semester of science subject. Therefore, this research has been prioritised. As a result, the educators have been provided with a conducive environment to understand and interpret basic image activities and conduct an in-depth discussion about the atmospheric layers. The provision of visual aids to this topic has resulted in students achieving a good level of understanding, making it possible to view and analyse the activities and images produced for parts of the curriculum where significant information is included. If actions and visuals are presented in a structured manner for these students , they will easily comprehend the information, leaving no room for doubt. In this regard, this study was a small but significant step towards being a source of joy and satisfaction.


(700 to 10000 km)
(80 to 700 km)
(50 to 80 km)
(12 to 50 km)
(0 to 12 km)


வளிமண்டல அடுக்குகளை அறிவோம்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மாவட்ட ஆசிரியர் கல்வி மற்றும் பயிற்சி நிறுவனம், வடலூர்–607303

கடலூர் மாவட்டம்

செயலாய்வு வினாத்தாள் முன்/பின் தேர்வு

தலைப்பு: "ஐந்தாம் வகுப்பு மாணவர்களிடையே காணொளிகாட்சிகள் மூலம் வளிமண்டல அடுக்குகள் குறித்த புரிதலை மேம்படுத்துதல்"

மதிப்பெண்கள் :25 நேரம் :45 நிமிடங்கள்

மாணவர் பெயர்: …… …… ……

I சரியான விடையை தேர்ந்தெடுத்து எழுதுக.

1. வளிமண்டலம் என்பது……

அ. பூமிக்கு மேலே உள்ள காற்று பகுதி ஆ. பூமிக்கு கீழே உள்ள வெப்பப் பகுதி

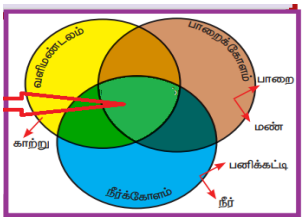
இ. பூமத்திய ரேகை பகுதி ஈ. துருவப் பகுதி

2. வளி என்பதன் பொருள்……..

அ. நீர் ஆ. காற்று

இ. நிலம் ஈ. பாறை

3. பட த்தில் அம்புக் குறியிட்டு காட்டப்பட்டுள்ள பகுதி…….



அ. பாறைக் கோளம்
ஆ. உயிர்கோளம்
இ. நெருப்புப் பகுதி
ஈ. நீர்க் கோளம்

4. உயிர்கோளம் என அழைக்கப்பட காரணம்……

அ. உயிரனங்கள் வாழ்வதால் ஆ. காற்று மற்றும் நீர் இருப்பதால்

இ. நீர் மற்றும் மண் இருப்பதால் ஈ. காற்று, மண் மற்றும் நீர் இருப்பதால்

5. படத்தில் வட்டமிட்டுள்ள பகுதியில் காணப்படும் பொருட்கள்……

அ. பாறை மற்றும் மண்
ஆ. பனிக்கட்டி, நீர்
இ. காற்று
ஈ. நெருப்பு

6. மேகங்கள் உள்ள அடுக்கு எது?

அ. ஸ்ட்ராடோஸ்பியர் ஆஎக்சோஸ்பியர்

இ. ட்ரோபோஸ்பியர் ஈ. மீஸோஸ்பியர்

7. எந்த அடுக்கு வரை ராக்கெட் பறக்கும்?

அ. ட்ரோபோஸ்பியர் ஆ. மீஸோஸ்பியர்

இ. ஸ்ட்ராடோஸ்பியர் ஈ. எக்சோஸ்பியர்

8. அதிக வெப்பமுள்ள அடுக்கு எது?

அ. தெர்மோஸ்பியர் ஆ. மீஸோஸ்பியர்

இ. ஸ்ட்ராடோஸ்பியர் ஈ. எக்சோஸ்பியர்

9. விமானங்கள் எந்த அடுக்கு வரை மட்டுமே பறக்கின்றன?

அ. ட்ரோபோஸ்பியர் ஆ. மீஸோஸ்பியர்

இ. ஸ்ட்ராடோஸ்பியர் ஈ. எக்சோஸ்பியர்

10. ரேடியோ அலைகள் பயணிக்கும் அடுக்கு எது?

அ. தெர்மோஸ்பியர் ஆ. மீஸோஸ்பியர்

இ. ஸ்ட்ராடோஸ்பியர் ஈ. எக்சோஸ்பியர்

II. சரியா? தவறா? கூறுக

11. வளிமண்டலம் என்பது காற்று சூழ்ந்த பகுதி **(சரி/தவறு)**

12. வளிமண்டலமே வானிலையை தீர்மானிக்கிறது **(சரி/தவறு)**

13. வளிமண்டலத்தில் அதிக அளவில் ஆக்ஸிஜன் உள்ளது. **(சரி/தவறு)**

14. வளிமண்டல அடுக்குகள் ஐந்து. **(சரி/தவறு)**

15. பூமிக்கு மிக அருகில் உள்ள அடுக்கு ட்ரோபோஸ்பியர். **(சரி/தவறு)**

16. எக்ஸோஸ்பியர் அடுக்கு பகலில் அதிக வெப்பமாக இருக்கும். **(சரி/தவறு)**

17. ட்ரோபோஸ்பியரில் ஓசோன் படலம் உள்ளது. **(சரி/தவறு)**

18. வளிமண்டல அடுக்குகளால் பூமிக்கு நேரடியாக சூரிய கதிர்கள் வருவது தடுக்கப்படுகிறது.

(சரி/தவறு)

19. வானிலை நிகழ்வுகள் ட்ரோபோஸ்பியரில் நிகழ்கின்றன. **(சரி/தவறு)**

20. புவி வளிமண்டல அடுக்குகளின் எல்லை எக்ஸோஸ்பியர் ஆகும். **(சரி/தவறு)**

III. பொருத்துக.

11. ஸ்ட் ராடோஸ்பியர் அ. 1

12. எக்சோஸ்பியர் ஆ. 2

13. ட்ரோபோஸ்பியர் இ. 3

14. மீஸோஸ்பியர் ஈ. 4

15. தெர்மோஸ்பியர் உ. 5

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