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TAN TAO UNIVERSITY
FROM KNOWLEDGE TO THE STARS

PLASTIC: USES & ISSUES
Vocabulary for EXPERIMENTS

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TABLE OF CONTENT

Quiz
Plastic Statements: True or false

(https://quizizz.com/admin/quiz/5df7c6fee6d3ae001b76229a/plastic-pollution?fromSearch=true&source=)

DEFINITION OF PLASTIC

- Plastic is a synthetic material made from polymers, which are long chains of molecules derived from petrochemicals or renewable sources like plants.
- It is moldable, durable, lightweight, and versatile, making it ideal for various applications in manufacturing, packaging, construction, healthcare, and more.

Group Discussions

1. What are some common plastic items you use in your daily life? What do you think about the use of plastic?
2. What are properties of plastic?
3. What happens to plastic after you throw it away? Why?
4. What are the possible impacts of plastic on the environment , people, and animals?
5. Should we do something about plastic pollution?

01

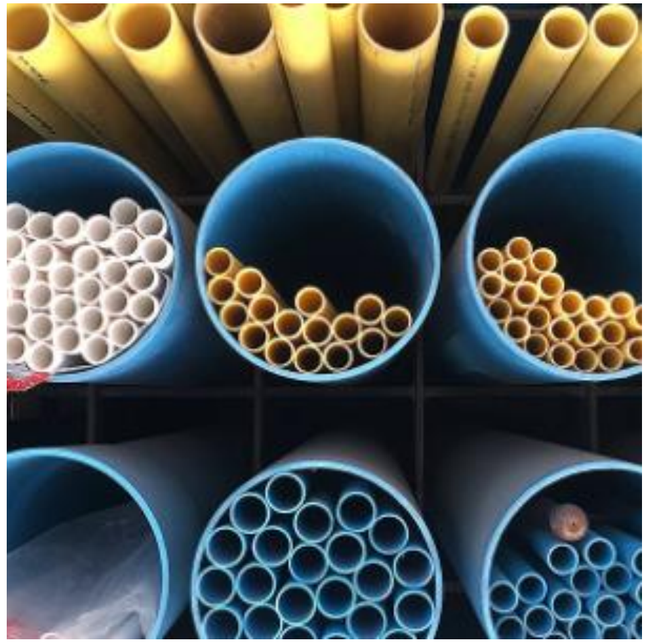
Packaging: Plastic is widely used in packaging materials such as bottles, containers, bags, and wraps due to its versatility, durability, and ability to preserve freshness.

02

Consumer Goods: Plastic is used in a wide range of consumer goods, including toys, kitchenware, furniture, electronics, and appliances, due to its affordability and ease of manufacturing.

03

Construction: Plastic materials are used in construction for pipes, insulation, windows, doors, roofing materials, and decorative finishes due to their durability, lightweight, and resistance to weathering.



Uses of Plastic

Uses of Plastic

04

Transportation: Plastics are used in automotive and aerospace industries for interior and exterior components, including dashboards, bumpers, panels, and aircraft parts, due to their lightweight and impact resistance.

05

Medical supplies: Plastic materials are widely used in healthcare for medical devices, equipment, packaging, and implants due to their sterility, durability, and biocompatibility.

06

Agriculture: Plastics are used in agriculture for irrigation systems, greenhouse films, mulch films, and packaging materials for fertilizers and pesticides due to their water resistance and durability.

PROPERTIES OF PLASTIC

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01.
Versatility

Plastic materials are highly versatile and can be molded into various shapes and forms, allowing for diverse applications.

02.
Durability

·Plastics are generally durable and resistant to wear, tear, and corrosion, making them suitable for long-term use.

03.
Lightweight

·Many plastics are lightweight, which makes them ideal for applications where weight is a concern, such as in transportation and packaging.

04.
Insulation

·Some plastics have excellent insulating properties, making them suitable for use in electrical and thermal insulation applications.

05.
Water Resistance

·Most plastics are resistant to water and moisture, making them suitable for outdoor and aquatic applications.

06.
Chemical Resistance

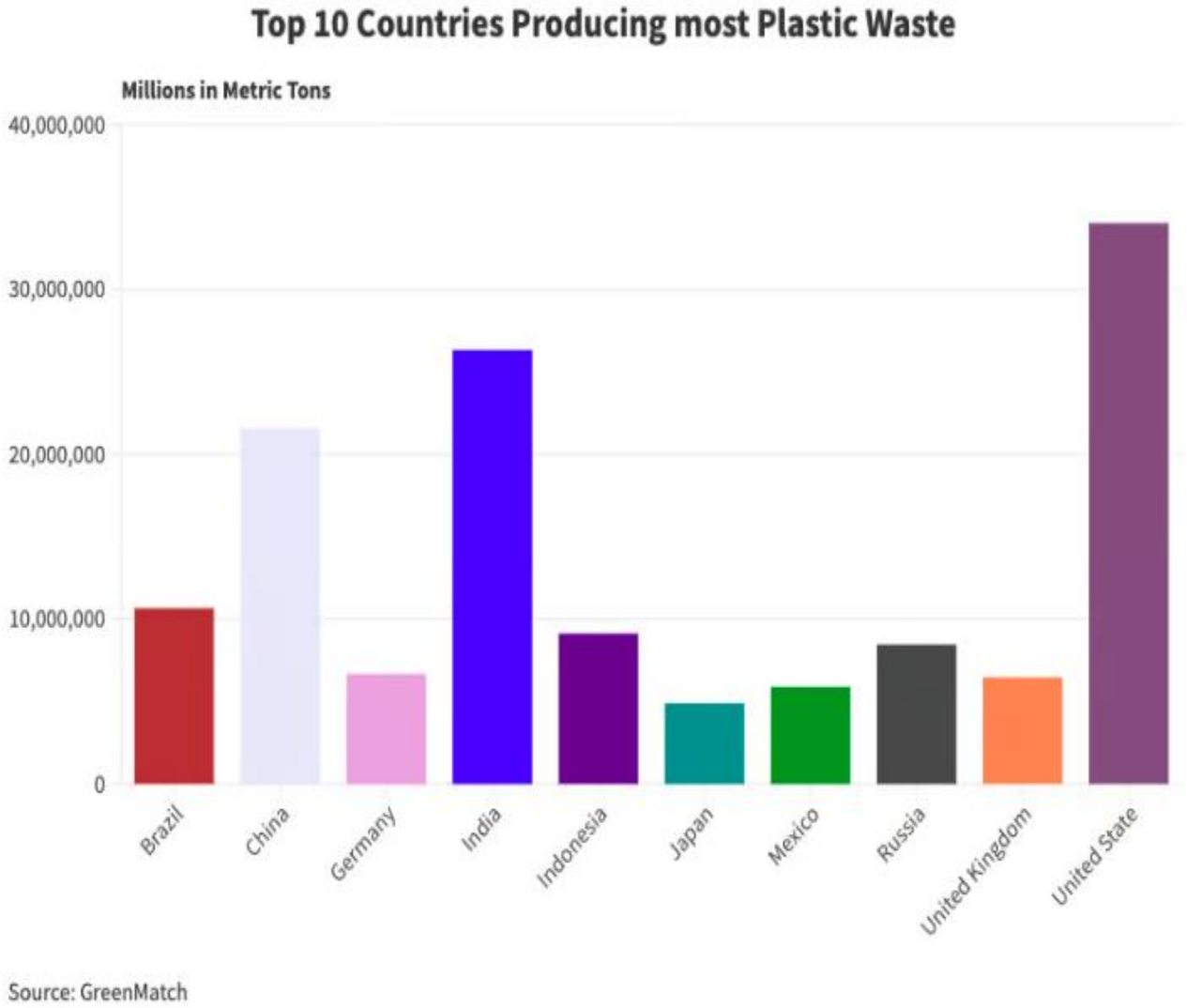
Plastics exhibit varying degrees of resistance to chemicals, depending on their composition, making them suitable for storing and transporting a wide range of substances.

Questions

1. What do you say about plastic mentioned in the video cllip?

2. What should be done about plastic waste/pollution?

Global Plastic Waste



Plastic waste in Vietnam

vietnamnews.vn/society/1652007/viet-nam-still-witnesses-large-amount-of-plastic-waste-leaking-into-environment.html

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Việt Nam still witnesses large amount of plastic waste leaking into environment

March 15, 2024 - 08:50

Like 1 Share

0:03 / 6:28

In 2021 alone, the country was discarding over 8,000 tonnes of plastic waste daily, totaling around 2.93 million tonnes annually. This marks a significant increase from the 2.7 million tonnes recorded in 2018 and 2.83 million tonnes in 2019.

ENVIRONMENTAL IMPACT OF PLASTIC

ENVIRONMENTAL IMPACT OF PLASTIC

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Marine Pollution

- Discussing the widespread contamination of oceans and waterways by plastic waste.
- Examples of marine animals affected by plastic ingestion and entanglement.

Terrestrial Pollution

- Exploring the effects of plastic pollution on land ecosystems, including soil and vegetation degradation.
- Highlighting the presence of plastic litter in urban, rural, and natural environments.

ENVIRONMENTAL IMPACT OF PLASTIC

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Air Pollution

- Examining the role of plastic production, incineration, and decomposition in air pollution.
- Addressing the release of harmful chemicals and greenhouse gases from plastic materials.

Wildlife Endangerment

- Illustrating the threat posed to wildlife by plastic pollution, including species extinction and habitat destruction.
- Showcasing case studies and examples of endangered species affected by plastic contamination.

ENVIRONMENTAL IMPACT OF PLASTIC

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Human Health Impacts

- Investigating the potential health risks associated with plastic exposure, including chemical leaching and bioaccumulation.
- Discussing the ingestion of microplastics through food and water consumption.

Environmental Degradation

- Long-term consequences of plastic pollution on ecosystems, biodiversity, and natural resources.
- Challenges of plastic waste management and the need for sustainable solutions.

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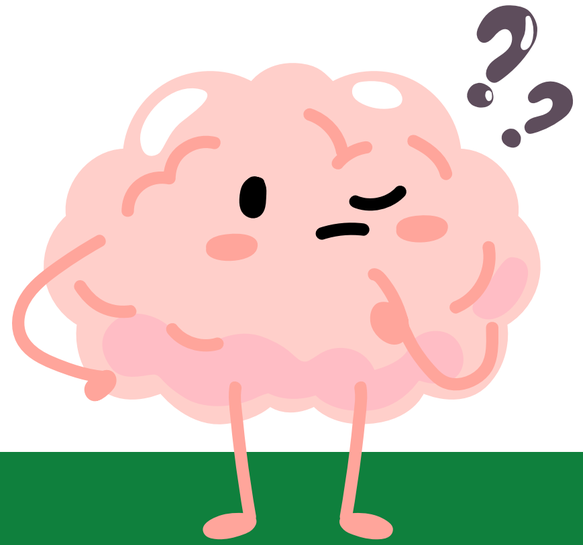
QUESTIONS



Plastic Pollution

Q1:

True/
False

Plastic pollution refers to the presence of plastic materials in the environment that are harmful to ecosystems.

Plastic Pollution

Q2:

What is the term for discarded or abandoned plastic items and fragments that accumulate in the environment?

A. Plastic waste

C. Plastic contamination

B. Plastic debris

D. Plastic accumulation

The decisions of the quiz master cannot

Plastic Pollution

Q3:

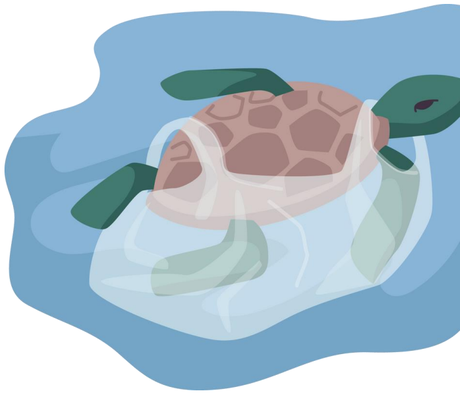
What is the process by which larger plastic items break down into smaller fragments due to exposure to environmental factors?

_____

Plastic Pollution

Q4:

Name one common type of plastic pollution found in oceans and waterways.



Plastic Pollution

Q5:

True/
False

Plastic bioaccumulation refers to the accumulation of plastic particles in the tissues and bodies of organisms through ingestion and absorption.

Plastic Pollution

Q6:

What is the collective impact of plastic consumption, production, and disposal on the environment and society called?

Plastic Pollution

Q7:

Name one environmental issue/impact caused by plastic pollution.

_____

Plastic Pollution

Q8:

What is the term for the gradual buildup of plastic debris in terrestrial and aquatic ecosystems?

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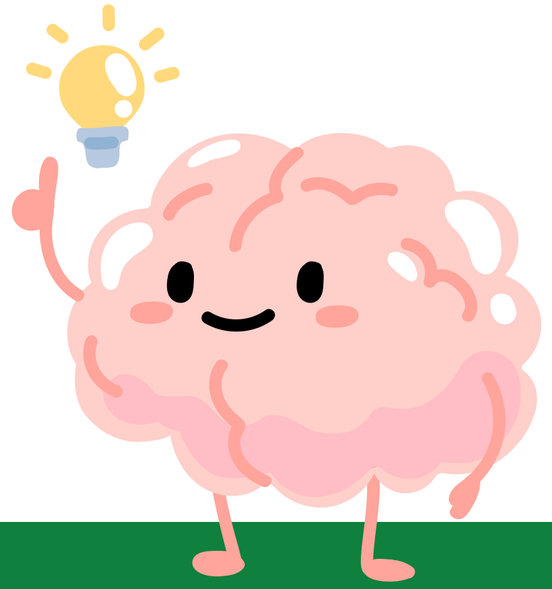
ANSWERS



Plastic Pollution

Q1:

True/
False

Plastic pollution refers to the presence of plastic materials in the environment that are harmful to ecosystems.

Plastic Pollution

Q1:

Plastic pollution refers to the presence of plastic materials in the environment that are harmful to ecosystems.

True

Plastic Pollution

Q2:

What is the term for discarded or abandoned plastic items and fragments that accumulate in the environment?

A. Plastic waste

C. Plastic contamination

B. Plastic debris

D. Plastic accumulation

The decisions of the quiz master cannot

Plastic Pollution

Q2:

What is the term for discarded or abandoned plastic items and fragments that accumulate in the environment?

Plastic debris refers to discarded or abandoned plastic items and fragments that accumulate in the environment.

B. Plastic debris

Plastic Pollution

Q3:

What is the process by which larger plastic items break down into smaller fragments due to exposure to environmental factors?

_____

Plastic Pollution

Q3:

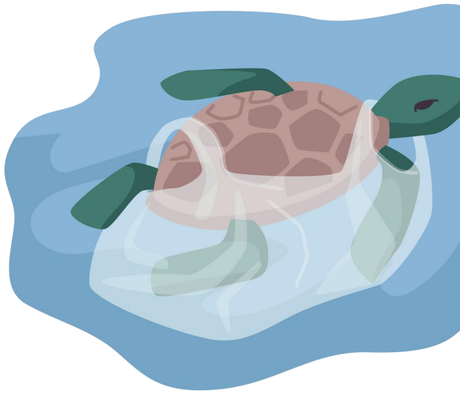
What is the process by which larger plastic items break down into smaller fragments due to exposure to environmental factors?

Plastic fragmentation.

Plastic Pollution

Q4:

Name one common type of plastic pollution found in oceans and waterways.

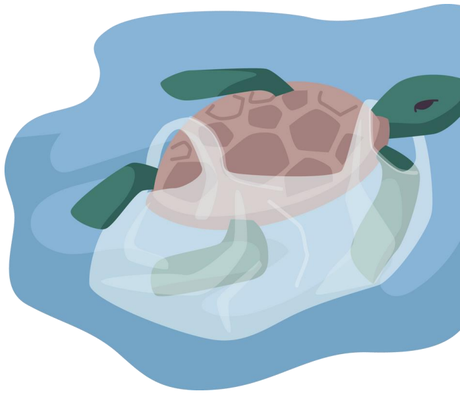


Plastic Pollution

Q4:

Name one common type of plastic pollution found in oceans and waterways.

Microplastics



Plastic Pollution

Q5:

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Plastic bioaccumulation refers to the accumulation of plastic particles in the tissues and bodies of organisms through ingestion and absorption.

Plastic Pollution

Q5:

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True

Plastic Pollution

Q6:

What is the collective impact of plastic consumption, production, and disposal on the environment and society called?

Plastic Pollution

Q6:

What is the collective impact of plastic consumption, production, and disposal on the environment and society called?

Plastic footprint

Plastic Pollution

Q7:

Name one environmental issue caused by plastic pollution.

_____

Plastic Pollution

Q7:

Name one environmental issue/impact caused by plastic pollution.

Marine pollution

Plastic Pollution

Q8:

What is the term for the gradual buildup of plastic debris in terrestrial and aquatic ecosystems?

Plastic Pollution

Q8:

What is the term for the gradual buildup of plastic debris in terrestrial and aquatic ecosystems?

Plastic accumulation

SOLUTIONS TO PLASTIC POLLUTION

Reduce, Reuse, Recycle:

- Emphasizing the importance of the "3 Rs" in minimizing plastic waste generation.
- Encouraging individuals and communities to reduce consumption, reuse plastic items, and recycle whenever possible.

SOLUTIONS TO PLASTIC POLLUTION

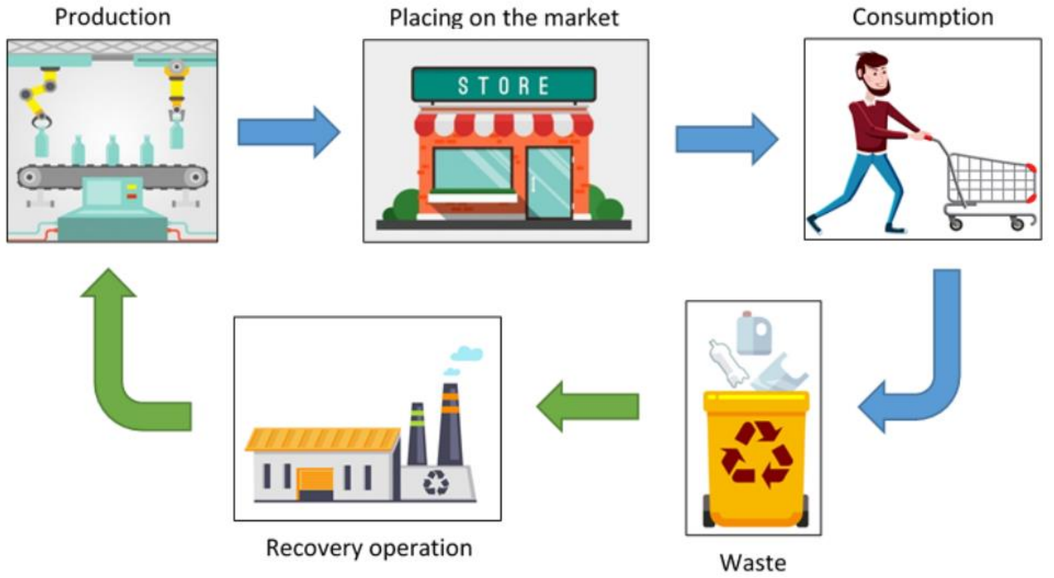
Single-Use Plastics Alternatives:

- Exploring alternatives to single-use plastics, such as biodegradable materials, reusable containers, and compostable packaging.
- Highlighting successful initiatives and businesses that have implemented plastic-free solutions.

SOLUTIONS TO PLASTIC POLLUTION

Extended Producer Responsibility (EPR):

- Introducing the concept of EPR, where manufacturers are held accountable for the lifecycle management of their products.
- Advocating for policies that incentivize producers to design eco-friendly products and invest in recycling infrastructure.



SOLUTIONS TO PLASTIC POLLUTION

Plastic Bans and Regulations:

- Discussing the role of governmental regulations and policies in curbing plastic pollution.
- Showcasing examples of cities, states, and countries that have implemented plastic bans, taxes, or restrictions.

SOLUTIONS TO PLASTIC POLLUTION

Public Awareness and Education:

- Stressing the importance of raising awareness and educating the public about the environmental impact of plastic pollution.
- Promoting environmental literacy through school programs, community workshops, and media campaigns.

SOLUTIONS TO PLASTIC POLLUTION

Clean-Up and Restoration Efforts:

- Highlighting the significance of clean-up initiatives and restoration projects in removing plastic waste from the environment.
- Encouraging volunteer participation in beach clean-ups, river clean-ups, and urban litter clean-up events.

SOLUTIONS TO PLASTIC POLLUTION

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Innovation and Technology:

- Showcasing innovative technologies and solutions for plastic waste management, such as plastic-to-fuel conversion, bioplastics, and ocean cleanup devices.
- Supporting research and development efforts to advance sustainable alternatives and recycling technologies.

VOCABULARY FOR LAB EXPERIMENTS

VOCABULARY FOR LAB EXPERIMENTS

Hypothesis: A proposed explanation for a phenomenon that can be tested through experimentation.

Words

- Hypothesis
- Variable
- Control Group
- Experimental Group
- Variable Manipulation
- Prediction
- Null Hypothesis

Expressions

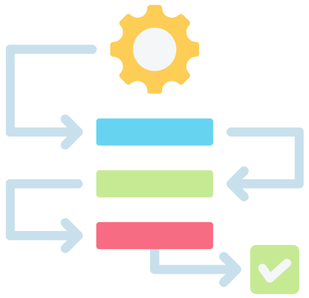
- The hypothesis of this experiment is...
- We predict that...
- Based on previous research, we hypothesize that...
- Our null hypothesis states that...

Examples

1. If plastic bottles are exposed to sunlight, they will degrade faster due to UV radiation.
2. Our hypothesis is that exposure to UV radiation will accelerate the degradation of plastic materials

VOCABULARY FOR LAB EXPERIMENTS

Procedure: A step-by-step sequence of actions or instructions followed to conduct an experiment.



Words

- Procedure
- Observation
- Measurement
- Accuracy
- Precision
- Replication
- Sample Size
- Ethical Considerations
- Equipment
- Materials

Expressions

- The procedure for this experiment involved...
- First, we prepared...
- Next, we conducted...
- We followed a step-by-step protocol to...
- Special care was taken to ensure

Examples

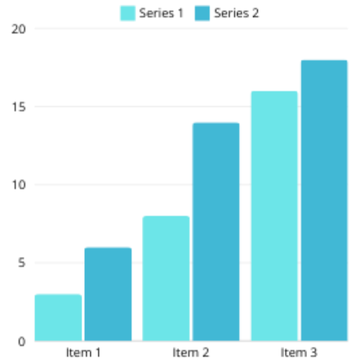
1. The procedure for testing plastic degradation involves placing plastic samples in controlled environments and observing changes over time.
2. The procedure for testing plastic degradation involves exposing samples to varying environmental conditions and monitoring changes over time.

VOCABULARY FOR LAB EXPERIMENTS

Data: Facts, measurements, or observations collected during an experiment.

Words

- Data
- Measurement
- Observation
- Sample Size
- Results
- Raw Data
- Data Collection



Expressions

- The data collected from this experiment includes...
- We recorded measurements of...
- Observations were made regarding...
- The results of our measurements show...
- Raw data was analyzed to...

Examples

The data collected from our experiment shows a decrease in plastic weight over the course of three weeks.

VOCABULARY FOR LAB EXPERIMENTS

Analysis: The process of examining and interpreting data to draw conclusions or identify patterns.

Words

- Analysis
- Validity
- Reliability
- Statistical Analysis
- Data Interpretation
- Graphs
- Charts
- Trends
- Correlation
- Significance

Expressions

- Data analysis revealed that...
- Statistical analysis was performed to determine...
- Graphs and charts were used to visualize...
- Trends in the data indicate...
- The correlation between variables was assessed by...

Examples

1. Through statistical analysis, we found a significant correlation between temperature and the rate of plastic degradation.
2. Statistical analysis revealed a significant correlation between temperature and the rate of plastic degradation.

VOCABULARY FOR LAB EXPERIMENTS

Conclusion and Implication: A summary of the findings and results obtained from an experiment, along with any implications or recommendations.

Words

- Conclusion
- Implication
- Discussion
- Conclusion Drawn
- Future Research
- Practical Application
- Limitations
- Recommendations

Expressions

- In conclusion, our findings suggest that...
- The implications of this experiment are...
- Discussion of the results highlights...
- Future research should focus on...
- Limitations of the study include...

Examples

1. In conclusion, our experiment demonstrates that plastic degradation is influenced by environmental factors, highlighting the need for sustainable waste management practices.
2. In conclusion, our experiment demonstrates that environmental factors such as temperature and UV radiation play a significant role in plastic degradation.

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Scientific English Immersion with Hands-on Experimentation on Microbial Plastic Degradation in Vietnam