

Subject Area: Science
Unit Title: Creating a Mini Indoor Garden to Observe and Learn from Photosynthesis in Action
Grade Level: 6-8
Lesson Number: 1 of 4

Duration: 60 minutes
Date: [Insert Date]
Teacher: [Insert Teacher Name]
Room: [Insert Room Number]

Curriculum Standards Alignment

Content Standards:

- MS-LS1-6: Construct an explanation based on valid and reliable evidence for how populations of living organisms adapt to their environment.
- MS-LS2-2: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and ecosystems.

Skills Standards:

- MS-LS1-1: Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation.
- MS-LS2-1: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and ecosystems.

Cross-Curricular Links:

- Mathematics: Measurement, Data Analysis
- English: Writing, Communication
- Art and Design: Observation, Drawing

Essential Questions & Big Ideas

Essential Questions:

- What is photosynthesis and why is it important?
- How do plants adapt to their environment?
- What is the role of light, water, and chlorophyll in photosynthesis?

Enduring Understandings:

- Photosynthesis is the process by which plants, algae, and some bacteria convert light energy from the sun into chemical energy in the form of glucose.
- Plants have adaptations that allow them to survive and thrive in different environments.
- Light, water, and chlorophyll are essential for photosynthesis to occur.

Student Context Analysis

Class Profile:

- Total Students: 25
- ELL Students: 5
- IEP/504 Plans: 3
- Gifted: 2

Learning Styles Distribution:

- Visual: 40%
- Auditory: 30%
- Kinesthetic: 30%

Pre-Lesson Preparation

Room Setup:

- Arrange tables and chairs to facilitate group work
- Set up materials and equipment for the mini indoor garden activity

Technology Needs:

- Computer or tablet with internet access
- Interactive whiteboard or presentation software

Materials Preparation:

- Mini indoor garden kits
- Soil, seeds, and small plants
- Watering cans and spray bottles

Safety Considerations:

- Ensure students wear gloves when handling soil and plants
- Use child-friendly and non-toxic materials

Detailed Lesson Flow

Introduction to Photosynthesis (10 minutes)

- Introduce the concept of photosynthesis and its importance
- Use visual aids to explain the process of photosynthesis

Creating a Mini Indoor Garden (20 minutes)

- Provide students with materials to create a mini indoor garden
- Demonstrate how to plant seeds and care for plants

Observing and Recording Plant Growth (20 minutes)

- Have students observe and record plant growth over time
- Encourage students to measure and record data on plant growth

Conclusion and Reflection (10 minutes)

- Have students reflect on what they have learned about photosynthesis
- Encourage students to share their observations and findings

Differentiation & Support Strategies

For Struggling Learners:

- Provide additional support and scaffolding
- Use visual aids and diagrams to explain complex concepts

For Advanced Learners:

- Provide challenging activities and projects
- Encourage independent research and exploration

ELL Support Strategies:

- Provide visual aids and diagrams to support language learning
- Use simple language and definitions

Social-Emotional Learning Integration:

- Encourage teamwork and collaboration
- Teach self-regulation and self-monitoring skills

Assessment & Feedback Plan

Formative Assessment Strategies:

- Observe student participation and engagement
- Review student work and provide feedback

Success Criteria:

- Students can explain the process of photosynthesis
- Students can identify the importance of photosynthesis

Feedback Methods:

- Verbal feedback
- Written feedback

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Homework & Extension Activities

Homework Assignment:

Have students create a diagram of a plant cell and label its parts.

Extension Activities:

- Have students research and write a report on a plant that is adapted to a specific environment
- Have students design and create a mini indoor garden using recycled materials

Parent/Guardian Connection:

Introduction to Photosynthesis

Introduction:

Introduce the concept of photosynthesis and its importance in the ecosystem.

Procedure:

1. Use visual aids to explain the process of photosynthesis
2. Provide a simple definition of photosynthesis and its role in plant growth

Creating a Mini Indoor Garden

Introduction:

Provide students with materials to create a mini indoor garden.

Procedure:

1. Demonstrate how to plant seeds and care for plants
2. Have students create their own mini indoor garden

Observing and Recording Plant Growth

Introduction:

Have students observe and record plant growth over time.

Procedure:

1. Have students measure and record data on plant growth
2. Encourage students to observe and record changes in plant growth

Assessment

Formative Assessment:

- Observe student participation and engagement
- Review student work and provide feedback

Summative Assessment:

- Written test on photosynthesis
- Mini indoor garden project

Resources

Digital Tool:

- Interactive diagrams of plant cells and chloroplasts
- Photosynthesis simulation software

Physical Material:

- Mini indoor garden kits
- Soil, seeds, and small plants

Prior Knowledge

Plant Structure:

- Students should have a basic understanding of the different parts of a plant

Photosynthesis Basics:

- Students should have a basic understanding of what photosynthesis is and its importance

Differentiation Strategies

Visual, Auditory, and Kinesthetic (VAK) Learning:

- Provide a range of resources to cater to different learning styles

Learning Centers:

- Set up learning centers to cater to different learning needs

Technology Integration

Digital Tools:

- Interactive diagrams of plant cells and chloroplasts
- Photosynthesis simulation software

Online Resources:

- Educational videos on photosynthesis

Cross-Curricular Links

Mathematics:

- Measurement, Data Analysis

English:

- Writing, Communication

Conclusion

Summary:

In conclusion, creating a mini indoor garden to observe and learn from photosynthesis in action is a engaging and interactive way to introduce students to the concept of photosynthesis.

Key Takeaways:

- Understanding the process of photosynthesis
- Recognizing the importance of photosynthesis

Next Steps

Lesson 2:

Exploring the Water Cycle

Lesson 3:

Investigating the Effects of Light on Photosynthesis

Reflection Questions

Reflection Questions:

- How well did students understand the concept of photosynthesis?
- Were students able to apply their knowledge of photosynthesis to real-life situations?

