Teacher Preparation Lesson Plan

Subject Area: Science
Unit Title: Understanding Matter
Grade Level: 5th Grade
Lesson Number: 1 of 5

Duration: 60 minutes
Date: Ongoing
Teacher: To be assigned
Room: Science Lab

Curriculum Standards Alignment

Content Standards:

- 5-PS1-1: Develop a model to describe that matter is made of particles too small to be seen
- 5-PS1-2: Measure and graph quantities to provide evidence that matter is conserved
- 5-PS1-3: Make observations and measurements to identify materials based on their properties

Skills Standards:

- Scientific Observation and Documentation
- Data Collection and Analysis
- Model Development and Usage
- Scientific Reasoning and Explanation

Cross-Curricular Links:

- Mathematics: Measurement, Data Analysis, and Graphing
- Language Arts: Scientific Writing and Communication
- Technology: Digital Tools and Simulations

Essential Questions & Big Ideas

Essential Questions:

- What is matter and how can we prove everything around us is made of it?
- How do the properties of matter help us identify and classify materials?
- How does matter change states and what causes these changes?
- Why is understanding matter important in our daily lives?

Enduring Understandings:

- Matter is anything that has mass and takes up space
- Matter exists in different states with distinct properties
- Matter can change states through various processes
- Understanding matter helps us make sense of the physical world

Pre-Lesson Preparation

Room Setup:

- Arrange lab tables in groups of 4 students
- Set up 6 investigation stations around the room
- Prepare demonstration area at front of room
- Ensure safety equipment is accessible
- Post vocabulary wall cards

Materials Needed (per group):

- 3 clear containers for state of matter demonstrations
- Ice cubes (500ml)
- Room temperature water (500ml)
- Balloons for gas demonstrations
- Digital thermometers
- Balance scales
- Graduated cylinders
- Safety goggles for each student
- Student observation journals
- Data collection sheets

Technology Setup:

- Interactive whiteboard with matter simulation loaded
- Document camera for demonstrations
- Student tablets/computers for digital activities
- Matter state change visualization software

Safety Considerations

General Safety Protocols:

- Review lab safety rules before beginning
- Ensure proper handling of thermometers
- Monitor water temperature for safety
- Maintain clear walkways between stations
- Establish emergency procedures
- Review proper use of safety equipment

Special Considerations:

- Students with sensory sensitivities may need modified activities
- Keep extra safety goggles available
- Have cleanup materials readily accessible
- Post emergency procedures visibly

Detailed Lesson Flow

Pre-Class Setup (15 mins before)

- Set up investigation stations
- Test all digital equipment
- Distribute materials to group tables
- Write agenda and learning objectives on board
- Prepare entry task materials

Bell Work / Entry Task (5-7 mins)

- Students enter and complete "Matter in My World" worksheet
- Identify and list 5 examples of matter in their immediate environment
- Predict the state of matter for each example
- Share responses with shoulder partner

Opening/Hook (10 mins)

- Dramatic demonstration: "Disappearing" water trick using state changes
- Class discussion on observations
- Introduction of essential questions
- Connection to real-world applications

> **Engagement Strategies:**
> - Think-Pair-Share about demonstration
> - Visual anchor charts
> - Interactive questioning
> - Student prediction opportunities

Direct Instruction (20-25 mins)

- Define matter and its basic properties
- Introduce three states of matter with molecular models
- Demonstrate particle behavior in each state
- Guide students through interactive simulation
- Model proper use of scientific tools

Detailed Lesson Flow (continued)

Guided Practice (25-30 mins)

- Station Rotation Activities:
  - Station 1: Measuring mass and volume
  - Station 2: Observing state changes
  - Station 3: Properties investigation
  - Station 4: Digital simulation exploration
  - Station 5: Data collection and graphing
  - Station 6: Scientific modeling
- Groups rotate every 4-5 minutes
- Teacher facilitates and provides support

Independent Practice (15-20 mins)

- Complete investigation worksheets
- Record observations in science journals
- Create particle behavior diagrams
- Answer analysis questions

Closure (10 mins)

- Class discussion of findings
- Exit ticket completion
- Preview next lesson
- Clean-up procedures

Assessment Strategies

Formative Assessment:

- Entry task responses
- Station activity completion
- Group participation observation
- Student questions and discussions
- Exit ticket responses

Summative Assessment:

- Investigation worksheets
- Science journal entries
- Particle behavior diagrams
- Analysis questions

Differentiation Strategies

For Advanced Learners:

- Extended investigation opportunities
- Complex analysis questions
- Leadership roles in group work
- Additional challenge activities

For Struggling Learners:

- Simplified recording sheets
- Visual supports and guides
- Partner pairing strategies
- Modified success criteria

For English Language Learners:

- Vocabulary support cards
- Visual demonstrations
- Language scaffolds
- Native language resources when available

Extension Activities

Homework Options:

- Matter scavenger hunt at home
- Online simulation exploration
- Research project on real-world applications
- Creative writing about particle behavior

Enrichment Activities:

- Design your own matter experiment
- Create a digital presentation
- Develop a matter transformation comic strip
- Write a matter transformation story

Teacher Reflection Space

Post-Lesson Analysis:

- What worked well?
- What needs adjustment?
- Student engagement levels
- Time management effectiveness
- Materials effectiveness
- Next steps for instruction