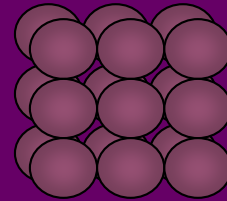


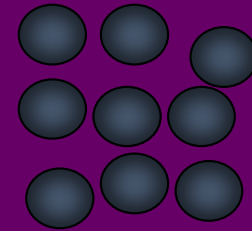
Fluids Unit



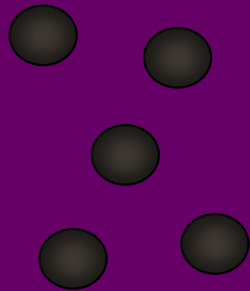
- 11 weeks of teaching material
- 10 PowerPoints totaling 292 slides
- 4 Lab Station Activities
- 6 Reading Comprehension Activities
- 2 Digital Scavenger Hunt Activities
- 2 Digital Interactive Notebook Activities



Solid



Liquid



Gas



1) Matter

2) Density

3) Mass vs. Weight

4) The Particle Theory and Classification of Matter

5) Liquids and Gases

6) Mass, Volume, Density, and Buoyancy

7) Pressure, Volume, and Temperature

8) Viscosity

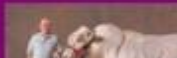
9) Pneumatics

10) Comparative Fluid Mechanics



Matter

1. What is Matter
2. Mass and Volume
3. The Particle Theory of Matter
4. States (Phases) of Matter



Density & Buoyancy Lesson

1. Mass and Volume
2. What is density?
3. $d = m/V$
4. Solving Density Problems
5. Archimedes
6. Buoyancy
7. Applications
8. Practice Problems



Mass vs. Weight

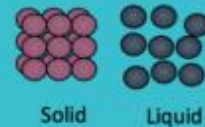
- Mass
- Weight
- Gravity
- Calculating Weight
- Metric and The Standard/Imperial system of measurement
- Mass vs. Weight
- Mass and Weight in Zero Gravity
- Scales



Liquids and Gases

Middle School Physical Science

- Matter
- States of Matter
- Liquid
- Gas
- Conversion
- Fluids
- Pascal's Law



Mass, Volume, Density, and Buoyancy Lesson

1. Mass
2. Mass vs weight
3. Volume
4. Density
5. Archimedes
6. Buoyancy



The Particle Theory

1. The 5 Particle Theory Rules
2. Matter review
3. Pure Substances

Pressure, Volume, Temperature

- Gases
- Gas Properties
- Relationships
- Boyle's Law
- Charles' Law
- Gay-Lussac's Law
- Avogadro's Law
- Ideal Gas Law



Viscosity

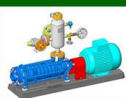
- Viscosity
- Dynamic vs Kinematic
- Newtonian Fluids
- Non-Newtonian Fluids
- Viscosity and Temperature
- Viscosity and Pressure
- Measuring Viscosity
- Importance of Viscosity

Pneumatics

- What Is Pneumatics
- How Pneumatic Systems Work
- Pneumatic Circuits
- Pneumatics Applications
- Pneumatics Advantages
- Pneumatics Disadvantages

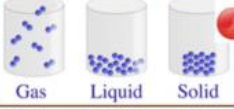
Comparative Fluid Mechanics Lesson

- What Is Fluid Mechanics?
- Fluids in Living Things
- Fluids in Man-Made Products
- Fluid Systems
- Driver
- Pumps
- Tubes and Pipes
- Valves
- Actuators
- Fluid Statics



The Particle Theory and the Classification of Matter

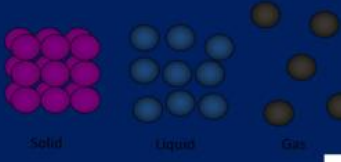
Lab Station Activity

7 Lab Station Activities to get your kids out of their seats and engaged in their learning

Liquids and Gases

Lab Station Activity






7 Lab Station Activities to get your kids out of their seats and engaged in their learning

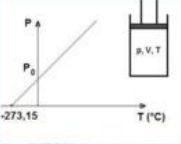
Mass, Volume, Density, and Buoyancy





7 Lab Station Activities to get your kids out of their seats and engaged in their learning

Pressure, Volume, and Temperature



7 Lab Station Activities to get your kids out of their seats and engaged in their learning

How Do Ships Float?

Scientific Reading Comprehension Article and Extension Activity



Improve your students' Literacy Skills, use as an Emergency Substitute Plan, or create Applicability in your classroom

How Do Ships Float?

Scientific Reading Comprehension Article and Extension Activity



Improve your students' Literacy Skills, use as an Emergency Substitute Plan, or create Applicability in your classroom

Hot-Air Balloons

Scientific Reading Comprehension Article and Extension Activity




Improve your students' Literacy Skills, use as an Emergency Substitute Plan, or create Applicability in your classroom

Hydraulics

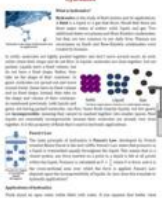
Scientific Reading Comprehension Article and Extension Activity



Improve your students' Literacy Skills, use as an Emergency Substitute Plan, or create Applicability in your classroom

Hydraulics

Scientific Reading Comprehension Article and Extension Activity



Improve your students' Literacy Skills, use as an Emergency Substitute Plan, or create Applicability in your classroom

Pneumatics

Scientific Reading Comprehension Article and Extension Activity



Improve your students' Literacy and Analysis Skills, use as an Emergency Substitute Plan, or create Applicability in your classroom

Device-Based Scavenger Hunt

Liquids and Gases



Includes:

- 5 Unique Locations
- Online form submission
- Answer Key

Works on all smartphones, tablets, Chromebooks

100% Digital

- Simulations
- Quizzes
- Videos
- Games
- and more

Device-Based Scavenger Hunt

Mass, Volume, Density, and Buoyancy



Includes:

- 5 Unique Locations
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100% Digital

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- Games
- and more

Liquids and Gases

Digital Interactive Notebook Pages

Activity 1: States of Matter

Activity 2: Liquid and Gas Properties

100% Digital and Interactive

States of Matter

Activity 1: States of Matter

Activity 2: Liquid and Gas Properties

Chapter 1: Particle Theory and Classification of Matter

Digital Interactive Notebook Pages

- 100% Digital and Interactive
- Perfect for your Google Classroom or Microsoft OneDrive



Write!

TWF

Speed Quizzing

All matter is composed of _____ particles.

A _____ buoyant object will float.

_____ positively.



A fast-moving review activity where students quiz each other, swap cards, then move on to someone new.

Matter Mini Unit

Who's it for?



- ✓ **Middle and high school teachers**
- ✓ **Teachers using NGSS**
- ✓ **Teachers who want to increase students' engagement and retention**
- ✓ **Teachers not looking to reinvent the wheel**

What You Get

Complete Lessons

- ✓ Make sure your students are on track
- ✓ Each lesson comes with a teacher and student version to keep them focused
- ✓ Lessons come with videos embedded right into your slides
- ✓ Includes 5E lessons

Interactive Activities

- ✓ Lab Stations
- ✓ Digital Scavenger Hunts
- ✓ Scientific readings on engaging subjects
- ✓ Digital Interactive Notebooks



Interactive Lab Station Activities

Little to no prep, just print and go

7 Engaging Lab Stations

Each station tests your students' knowledge and provides a fantastic learning opportunity for your kids to learn through assessment



1. Get Hands-On
2. Research
3. Explain Yourself
4. Applicability Reading
5. Test Your Knowledge
6. Learn From The Expert
7. Become the Question Master

Example Lab Station Cards

Station 1

Get Hands-On – Based on your knowledge about the topic, draw an object. Give it a mass and determine its weight on Earth and on the Moon. Give it measurements and determine its volume. What is its density? Will it float in freshwater? Show your calculations.

Station 5

Applicability Reading – Read the following information article and answer the associated questions found below in the *Applicability Reading* section of your passport.

Multi-station lab – Liquids and Gases

Teacher Reference Sheet

Prepping the Lab Stations:

- This activity is super simple to prep. First, access the file and print off the following documents: *Applicability Reading*, *Learn From The Expert*, *Station Cards*, *Test Your Understanding* and *Passport* (1 per group).
- Once you've printed off the station cards, place them around the room, making sure to match the *Applicability Reading*, *Learn From The Expert* and *Test Your Understanding* documents with the correct station card.
- That's it!

Getting Started:

- This lab comes equipped with 7 stations (+ 2 rest stations where students can catch up on some of the work they hadn't been able to finish at a previous station). The groups should be given 6 or 7 minutes to complete each station.
- There should be 9 groups so that each group can be at 1 station at a time. 2 of the groups will need to start at a rest station. These groups can use this time to look through their passports and have a quick walk around the room to check out the different stations. If you are fortunate enough to have a smaller class, only create 7 groups and leave the two rest stations open to start.
- Groups proceed sequentially from station to station and will head to a rest station after stations 3 and 7.
- Preferably, each group should have a device that can access the internet. If this isn't possible, make sure there is at least 1 classroom computer, tablet, netbook, etc. available for use.
- Each group needs to fill in their passport for each station during the lab time. This passport is to be submitted at the end of class.
- Each question (where applicable) comes with the answer included.

This lab activity covers:

- States of Matter
- Matter Conversion
- Cloud Formation
- Fluids
- Hydraulics
- Viscosity
- Compressibility

Bonus Activities:

To ensure your students don't have any downtime between stations, your lab also includes a 10-word word scramble and word search, both with an answer key. You can use it as part of their mark, as a bonus so it's not mandatory, etc. However you choose to use it, it will ensure your students are always busy and never idle.

Note: For stronger classes, I give the word scramble and for weaker ones, the word search.

The Lab Stations:

- 1) *Get Hands-On* – using their creative skills, students are required to draw or build.
- 2) *Research* – using a classroom computer or their own device, students must research a specific question/issue surrounding the topic.
- 3) *Explain Yourself* – students write down an opinion to a question in paragraph form.

Scavenger Hunts

So Easy To Use

1. Print out the QR codes and put them around the room
2. Put your students into groups
3. Let them move from Location to Location as they complete the tasks
 - **All tasks are accessed via the QR Codes**
 - **5 Tasks Total per activity**
4. Have them submit their answers directly to your email via the online form

That's it!

Possible Scavenger Hunt Locations Include:

- Video analysis
- Simulations
- Quiz
- Finish the story
- Start the story
- Calculations
- Matching
- News article
- Opinion
- Word scramble
- Short answer
- Web research

Everything is hosted on my website, which creates consistency and ease of use.

Works with all devices that can scan a QR Code including Chromebooks

Digital Interactive Notebooks

Types of Activities

- Interactive drag and drop
- Creative writing/recording/drawing
- Short answer and other reinforcing activities to improve retention
- Vocabulary and extension activities

Digital Interactive Notebooks

- Works with Google and OneDrive cloud services
- If you don't currently have a Google account, you can sign up for one completely free and get started in 5 minutes. If you're a OneDrive user, no problem. Simply download the notebook as a PowerPoint file to your computer then upload it to your OneDrive account.
- The majority of the items in this resource are fully editable. In addition, slides can be added or removed easily to suit your classroom needs.

Interactive Notebooks

THEN: Before computers, we used interactive notebooks to engage our students and keep their notebooks organized and accessible. This, however, required a lot of material and the unwelcome task of lugging them all home with you to mark. But we used them because they were effective, and allowed us to effectively assess our students' understanding.

NOW: Why use digital interactive notebooks? As prices decrease, many schools are moving towards a 1:1 computer-student ratio and are becoming digital. The way we teach needs to keep up. You don't even need a class set of computers; a personal device (cell phone, laptop, tablet, etc.) will work just as well.



Save yourself
the **STRESS**
and Time

Spend your time wisely



Stimulate Student Interest and Spark their Curiosity



Develop Key Communication, Collaboration and Problem Solving Skills



Incorporate Technology and Increase Collaboration

