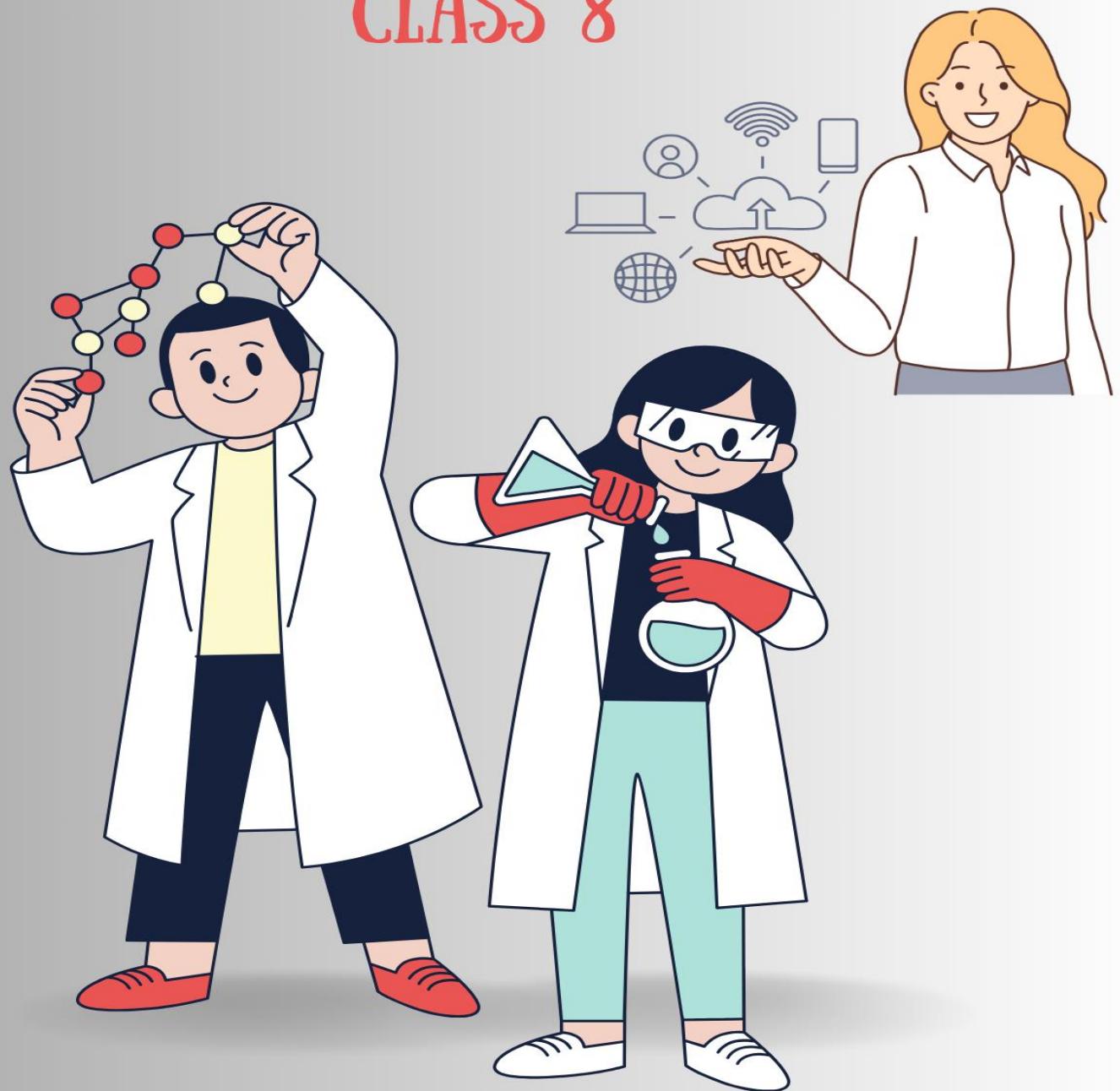


MULTIMEDIA LESSON DESIGN

“SCIENCE BOOK”

CLASS 8



Index

Chapter no.	Chapter Name
01	Study of Motion
02	Energy
03	Structure of Atoms
04	Cell Division and Its Types
05	Cells, Tissues of Plants and Their Specialties
06	Wave and Sound
07	Sun, Earth and Moon
08	Chemical Reaction
09	Acid, Base and Salt
10	Animal Classification System
11	Geographical coordinates, Local Time and Regions
12	Magnet
13	Organ and Organ System in Human Body
14	Uses of Chemistry in Everyday Life
15	Renewable and Non-renewable Resources
16	Natural Resources of Bangladesh

Date:

Chapter: 01

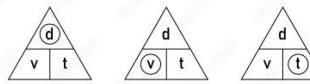
Chapter name: Study of Motion

Materials needed:

- Smart Board
- Online resources

Procedure:

Topic name	Objectives	Multi-media Resources	Activities																																																		
Distance and Displacement	<ul style="list-style-type: none"> • Familiarize students with the "Moving Man" simulation interface and its functionality, enabling them to manipulate variables related to distance and displacement 	<p>https://phet.colorado.edu/en/simulations/moving-man</p> <p>https://images.app.goo.gl/U33PJjsQLKVHE2uQK8</p>	<ul style="list-style-type: none"> • Demonstrate how the "Moving Man" simulation works and explain its interface to the students. 																																																		
Speed and Velocity	<ul style="list-style-type: none"> • Encourage critical thinking by prompting students to evaluate the relationship between speed and velocity, and other factors such as time and acceleration. 	<p>Graph of equation:</p> <p>(a) Jet Car Displacement: A graph of Displacement, x (dm) vs Time, t (s). The displacement increases linearly from 0 to approximately 18 dm over 70 seconds.</p> <table border="1"> <caption>Data for Jet Car Displacement</caption> <thead> <tr> <th>Time (s)</th> <th>Displacement (dm)</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>10</td><td>5</td></tr> <tr><td>20</td><td>10</td></tr> <tr><td>30</td><td>15</td></tr> <tr><td>40</td><td>20</td></tr> <tr><td>50</td><td>25</td></tr> <tr><td>60</td><td>30</td></tr> <tr><td>70</td><td>35</td></tr> </tbody> </table> <p>(b) Jet Car Velocity: A graph of Velocity, v (m/s) vs Time, t (s). The velocity increases from 160 m/s at t=0 to 250 m/s at t=70 s. Two points are highlighted: (Δt, Δv).</p> <table border="1"> <caption>Data for Jet Car Velocity</caption> <thead> <tr> <th>Time (s)</th> <th>Velocity (m/s)</th> </tr> </thead> <tbody> <tr><td>0</td><td>160</td></tr> <tr><td>10</td><td>180</td></tr> <tr><td>20</td><td>200</td></tr> <tr><td>30</td><td>220</td></tr> <tr><td>40</td><td>240</td></tr> <tr><td>50</td><td>250</td></tr> <tr><td>70</td><td>250</td></tr> </tbody> </table> <p>(c) Jet Car Acceleration: A graph of Acceleration, a (m/s²) vs Time, t (s). The acceleration decreases from 5 m/s² at t=0 to near zero at t=70 s.</p> <table border="1"> <caption>Data for Jet Car Acceleration</caption> <thead> <tr> <th>Time (s)</th> <th>Acceleration (m/s²)</th> </tr> </thead> <tbody> <tr><td>0</td><td>5</td></tr> <tr><td>10</td><td>3</td></tr> <tr><td>20</td><td>1</td></tr> <tr><td>30</td><td>0.5</td></tr> <tr><td>40</td><td>0.2</td></tr> <tr><td>50</td><td>0.1</td></tr> <tr><td>70</td><td>0</td></tr> </tbody> </table>	Time (s)	Displacement (dm)	0	0	10	5	20	10	30	15	40	20	50	25	60	30	70	35	Time (s)	Velocity (m/s)	0	160	10	180	20	200	30	220	40	240	50	250	70	250	Time (s)	Acceleration (m/s²)	0	5	10	3	20	1	30	0.5	40	0.2	50	0.1	70	0	<ul style="list-style-type: none"> • Facilitate a discussion on the observed outcomes, asking questions like, "What happens when the velocity was 3.2m/s?" • Use quizzes, worksheets or interactive assessments to evaluate students' understanding of distance and displacement.
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Acceleration and Deceleration	<ul style="list-style-type: none"> • Integrate technology into the learning process by utilizing the simulation as a tool for visualization, experimentation, and 																																																				

Equations of Motion	interactive learning experiences.	Velocity Formula  $d = v \times t$ $v = d \div t$ $t = d \div v$	
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Date:

Chapter: 02

Chapter name: Energy

Materials needed:

- Smart Board
- Online resources

Procedure:

Topic name	Objectives	Multi-media Resources	Activities
Work and Energy			
Concept of Potential Energy and Kinetic Energy	<ul style="list-style-type: none"> • To apply students' knowledge of mechanical energy to real-world scenario. • Teach the scientific method by designing and conducting experiments within the simulation. • Collaboration and communication by working with others to design and test skate parks. 	https://phet.colorado.edu/sims/html/energy-skate-park-basics/latest/energy-skate-park-basics_all.html	<ul style="list-style-type: none"> • Explain the Conservation of Mechanical Energy concept using kinetic energy and gravitational potential energy. • Describe how the Energy Bar and Pie Charts relate to position and speed. • Explain how changing the Skater Mass affects energy. • Calculate speed or height, KE and PE at one position from information about a different position.
Relationship between Mass and Energy			

Date:

Chapter: 03

Chapter name: Structure of Atoms

Materials needed:

- Smart Board
- Online resources

Procedure:

Topic name	Objectives	Multi-media Resources	Activities
Structure of atoms, atomic number, mass number	<ul style="list-style-type: none">• Introduce students to the basic structure of atoms, including the nucleus and electron shells.	https://phet.colorado.edu/sims/html/build-an-atom/latest/build-an-atom_all.html	<ul style="list-style-type: none">• Utilize the "Build an Atom" simulation to visually demonstrate the structure of atoms, allowing students to assemble atoms by adding protons, neutrons, and electrons.
Concept of electron in atom	<ul style="list-style-type: none">• Teach students to understand the concepts of atomic number and mass number and how they relate to an element's identity and mass.		<ul style="list-style-type: none">• Design interactive quizzes or worksheets where students practice calculating atomic number, mass number, and identifying isotopes based on atomic symbols.
Difference between Cation and Anion	<ul style="list-style-type: none">• Explain the concept of isotopes as atoms of the same element with different numbers of neutrons, and discuss their significance in terms of atomic mass and stability.		<ul style="list-style-type: none">• Conduct a hands-on experiment or simulation to illustrate how ions are formed by adding or removing electrons from atoms. Students can observe the resulting charge and classify ions as cations or anions.
Concept of isotopes and importance of isotopes in our life	<ul style="list-style-type: none">• Describe how ions are formed when atoms gain or lose electrons, resulting in the formation of positively charged cations or negatively charged anions.		<ul style="list-style-type: none">• Provide students with examples of chemical compounds and guide them in determining the chemical formula based on the combination of cations and anions present.• Discuss real-life applications of isotopes dating in archaeology, medical imaging using radioactive isotopes, and agricultural uses in plant breeding.

Date:

Chapter: 04

Chapter name: Cell Division and Its Types

Materials needed:

- Smart Board
- Online resources

Procedure:

Topic name	Objectives	Multi-media Resources	Activities
Structure of a cell	<ul style="list-style-type: none">• Develop a clear understanding of Cell Division• Identify notable difference between Mitosis and Meiosis• Recognize the phases of Mitosis and Meiosis.• Identifying the Structures of a cell.	https://human.biodigital.com/view?id=production/maleAdult/cell&lang=en https://youtu.be/TnJL_8ZVbTI?si=WShUlmEzwnjUIInHB https://youtu.be/53p9OOaPPVU?si=6xhXxWbyiKKtf0RS	<ul style="list-style-type: none">• Watch the provided YouTube videos with students, focusing on the visualization of mitosis and meiosis phases. Pause the videos at each phase to discuss the observed changes in cell structure and organization.• Provide materials for students to build models of cells undergoing mitosis and meiosis• Assign students a task to compare and contrast the phases of mitosis and meiosis, highlighting similarities and differences in chromosome behavior, spindle formation, and cell division outcomes.
Phases of Mitosis Cell Division			
Phases of Meiosis Cell Division			

Date:

Chapter: 09

Chapter name: Acid, Base and Salt

Materials needed:

- Smart Board
- Online resources

Procedure:

Topic name	Objectives	Multi-media Resources	Activities
Acid, base, and indicator	<ul style="list-style-type: none">• Develop a clear understanding of the definitions of acid, base, and salt.	https://phet.colorado.edu/sims/html/acid-base-solutions/latest/acid-base-solutions_all.html	<ul style="list-style-type: none">• Engage students in an activity to understand the pH scale and its relevance.
Reactions of acid and base, salt	<ul style="list-style-type: none">• Identify notable characteristics of acids and bases.• Recognize different types of acids and bases through practical applications.		<ul style="list-style-type: none">• Explore various chemical substances to identify noticeable characteristics of acids and bases.
Important properties of acid and base	<ul style="list-style-type: none">• Determine the significance of the pH scale.• Understand methods for measuring pH accurately.	https://phet.colorado.edu/sims/html/ph-scale/latest/ph-scale_all.html	<ul style="list-style-type: none">• Investigate chemical reactions using different substances to demonstrate acid and base properties.
Identification of acid and base	<ul style="list-style-type: none">• Illustrate chemical processes involving acids and bases.		<ul style="list-style-type: none">• Allow students to conduct experiments where they can observe changes in acidity and basicity under controlled conditions.

Date:

Chapter:10

Chapter name: Animal Classification System

Materials needed:

- Smart Board
- Online resources

Procedure:

Topic name	Objectives	Multi-media Resources	Activities
Classification of Animal World	<ul style="list-style-type: none">• Teach students in an interactive way.	https://kahoot.it/challenge/0761883?challenge-id=9aebf6a4-b37b-4d45-acf1-b7db5ba34e94_1716408026965	<ul style="list-style-type: none">• Teacher will provide the game to the students as homework.
Taxonomic characteristics of animals for identification and their examples			

Date:

Chapter: 12

Chapter name: Magnet

Materials needed:

- Smart Board
- Online resources

Procedure:

Topic name	Objectives	Multi-media Resources	Activities
Permanent Magnet	<ul style="list-style-type: none">• Predict the direction of the magnet field for different locations around a bar magnet and electromagnet		<ul style="list-style-type: none">• Introduce the concept of magnetic fields by asking students what they already know about magnets and then using the simulation to show them how magnetic field lines around a bar magnet change as the magnet is moved.
Electromagnetism	<ul style="list-style-type: none">• Compare and contrast bar magnets and electromagnets		
Electromagnet	<ul style="list-style-type: none">• Identify the characteristics of electromagnets that are variable and what effects each variable has on the magnetic field's strength and direction• Relate magnetic field strength to distance quantitatively and qualitatively	https://phet.colorado.edu/sims/checkbox/faraday/latest/faraday.html?simulation=magnets-and-electromagnets https://phet.colorado.edu/sims/html/faradays-law/latest/faradays-law-all.html	<ul style="list-style-type: none">• Help students explore the relationship between magnetism and electricity by using the simulation to show them how a moving magnet can induce a current in a coil of wire• Ask students to design and build electromagnets using the simulation
Magnetic Field of Earth			

Date:

Chapter: 13

Chapter name: Organ and Organ System in Human Body

Materials needed:

- Smart Board
- Online resources

Procedure:

Topic name	Objectives	Multi-media Resources	Activities
Skin	<ul style="list-style-type: none">• Understand the structure and functions of the skin, nails, hair, and respiratory system.	https://youtu.be/I34RQzGw9WI?si=SwVaPU_XulvtSmHd	<ul style="list-style-type: none">• Watch educational videos or documentaries about the skin's structure and functions, followed by a discussion on its role in protecting the body and regulating temperature.
Nails	<ul style="list-style-type: none">• Identify common disorders or diseases related to these systems.		<ul style="list-style-type: none">• Examine nail and hair samples with magnifying glasses.
Hair	<ul style="list-style-type: none">• Explain the importance of maintaining good hygiene for these systems.		<ul style="list-style-type: none">• Role-play scenarios or create skits to demonstrate proper hygiene practices.
Gland	<ul style="list-style-type: none">• Recognize the role of these systems in overall health and well-being.	https://youtu.be/uyqt7ekkP2E?si=rMcH250vSE5J9ZoT	<ul style="list-style-type: none">• Create a simple lung model. Then Measure and record breathing rates.
Respiratory System			

Date:

Chapter: 14

Chapter name: Uses of Chemistry in Everyday Life

Materials needed:

- Smart Board
- Online resources

Procedure:

Topic name	Objectives	Multi-media Resources	Activities
Household Chemistry	<ul style="list-style-type: none">• Learn how everyday things like cleaning supplies and cooking ingredients work with chemistry.	https://youtu.be/L2Q2q20KaEk?si=eaZISNySvO0OJz	<ul style="list-style-type: none">• Students will mix baking soda and vinegar to see bubbles! Or they can mix lemon juice with baking soda to analyze.
Food Chemistry	<ul style="list-style-type: none">• Understand what's in student's food and how it helps us stay healthy and taste yummy.	https://youtu.be/Nxkjn-XhgE0?si=TXZDQKDzfZtVfb0v	<ul style="list-style-type: none">• Students will check food labels to learn about what's in their snacks. They will find out how food keeps us healthy and tastes good.
Chemistry in Agriculture	<ul style="list-style-type: none">• Explore how farmers use chemistry to grow crops and take care of the land.		<ul style="list-style-type: none">• Students will see how they can help nature staying healthy.
Chemistry in Industry	<ul style="list-style-type: none">• Discover how chemistry helps making things like medicine, clothes, and toys.		<ul style="list-style-type: none">• Students will use a computer to see how things are made in big factories. They will learn how chemistry helps making toys, clothes, and other things we use every day.