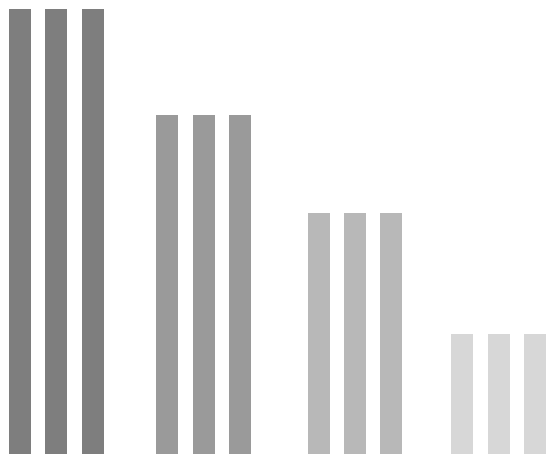
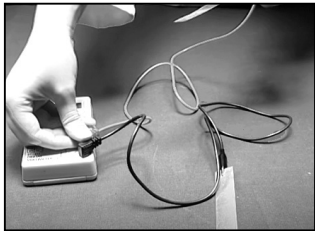
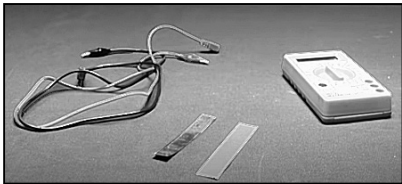
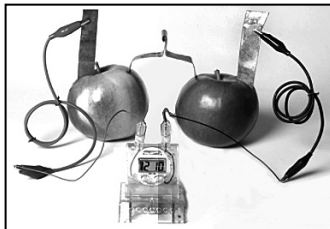




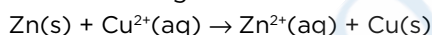
ART INTEGRATION



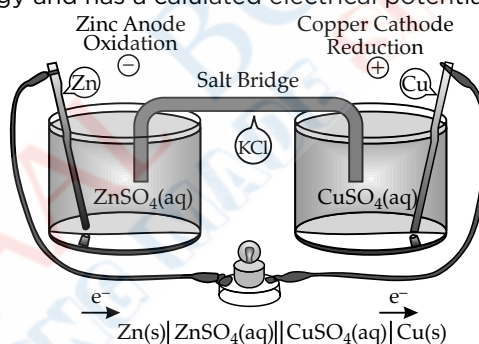
Subject	Chemistry
Chapter(Topic)	Electrochemistry (Galvanic cell/ voltaic cell)
Art-Integration	Working model of Voltaic cell
Objective	Student will able to: Understand the working principle of voltaic cell using household materials. Analyse the working of voltaic cell in the laboratory Understand the concept of salt-bridge and redox reaction. Able to relate with real world.
Material required	A voltmeter, a copper strip, a zinc strip, 2 apples, a metal strip for connectivity of apples and two different coloured wires (black and red)
Methodology	A working model using materials available at home. <ol style="list-style-type: none">1. Take two wires, 2 strips of copper and zinc and a voltmeter.2. Connect strips with voltmeter at marked positive and negative terminals3. Take two apples and punch two strips to them connected with voltmeter.4. Attach a metal strip as a salt bridge to connect both apples and complete the circuit. <div style="display: flex; justify-content: space-around;"></div>



5. Note the reading of voltmeter when attached with salt bridge.
6. You will recognise that voltmeter shows a potential difference when terminals are connected.
7. Repeat the procedure by connecting and disconnecting the positive and negative terminals.
8. Why did this happen? Apples are rich in copper and zinc metals where copper strip act as cathode and zinc strip act as anode.
9. The experiment can be performed in laboratory using CuSO_4 and ZnSO_4 solutions.
10. Copper is reduced and zinc is oxidised. This is how cell converts the chemical energy liberated during the redox reaction



to electrical energy and has a calculated electrical potential equal to 1.1 V.



Learning Outcomes

Student will able to analyse the working of a voltaic cell at home as well as in the laboratory.
Recognise the equipments that involves the voltaic or galvanic cell.



Resources

Concept-Voltaic Cell



Concept-Galvanic Cell

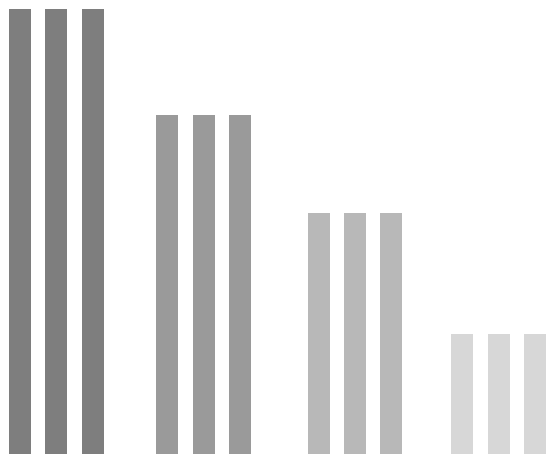


Concept-Copper-Zinc Voltaic Cell

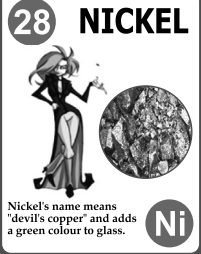

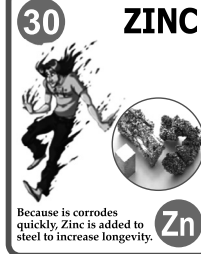


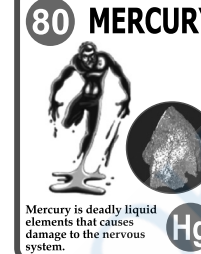






ART INTEGRATION

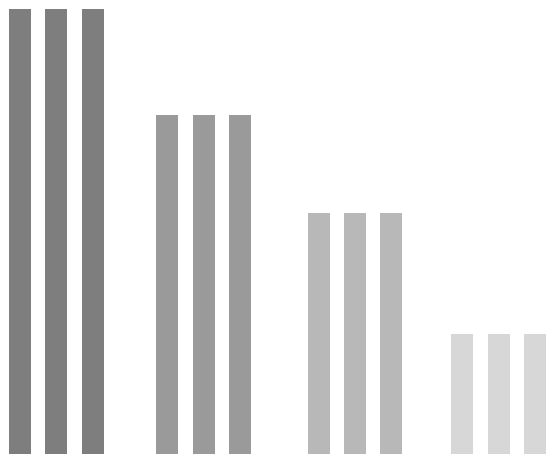


Subject	Chemistry
Chapter	d and f-block elements (Different Elements with properties)
Art-Integration	Flash Cards
Objective	<p>Student will able to:</p> <p>Understand the position of elements in periodic table.</p> <p>Recognise the different types of properties through visuals.</p> <p>Able to relate with real world.</p>
Material required	30-40 cards of length 3 by 5 inches, different colourful markers
Methodology	<p>Make flash cards of some d- block elements with atomic number and physical/chemical properties.</p> <div style="display: flex; flex-wrap: wrap; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>22 TITANIUM</p> <p>Titanium is non-allergenic and can be used in body piercings. Ti</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>23 VANADIUM</p> <p>Vanadium is added to steel to make it stronger, and is found in many tools. V</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>24 CHROMIUM</p> <p>Cars from the 1950's and 60's were often decked out with Chromium. Cr</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>25 MANGANESE</p> <p>Manganese can lead to manganism, a toxic state causing hallucinations and violence. Mn</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>26 IRON</p> <p>Iron rusts by itself, which is why a lot of elements are added to it to make steel. Fe</p> </div> <div style="border: 1px solid black; padding: 5px; width: 30%;"> <p>27 COBALT</p> <p>Cobalt helps create one of the strongest magnets in the world. Co</p> </div> </div>

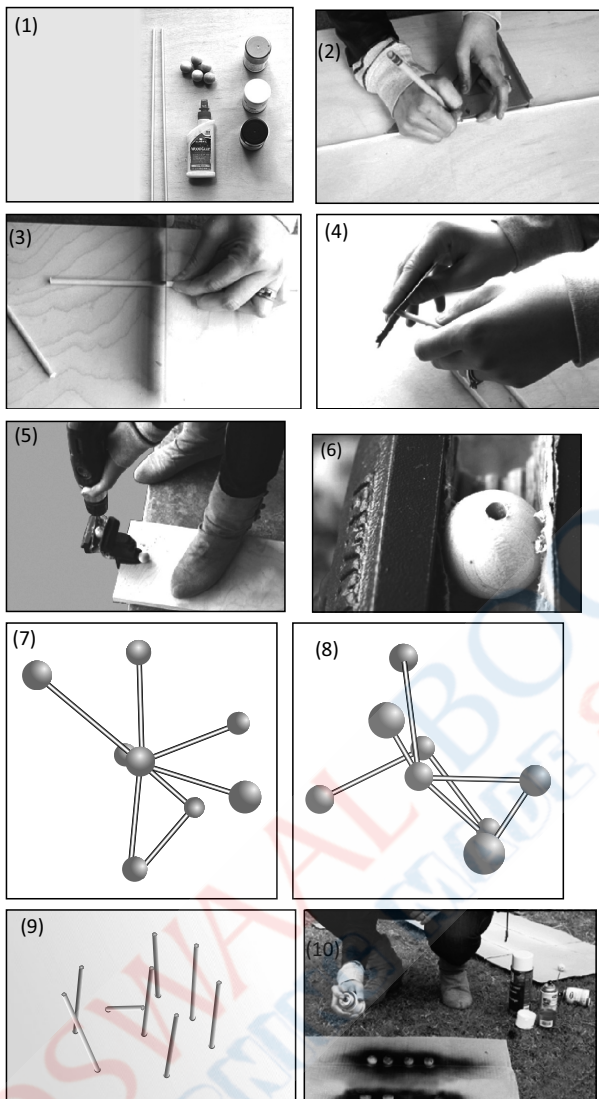
	<div style="display: flex; flex-wrap: wrap;"> <div style="width: 33%; padding: 5px;"> <p>28 NICKEL</p>  <p>Nickel's name means "devil's copper" and adds a green colour to glass. Ni</p> </div> <div style="width: 33%; padding: 5px;"> <p>29 COPPER</p>  <p>Copper is red-coloured metal that is a good conductor of electricity. Cu</p> </div> <div style="width: 33%; padding: 5px;"> <p>30 ZINC</p>  <p>Because it corrodes quickly, Zinc is added to steel to increase longevity. Zn</p> </div> <div style="width: 33%; padding: 5px;"> <p>78 PLATINUM</p>  <p>Platinum is one of the most precious and valued metals in the world. Pt</p> </div> <div style="width: 33%; padding: 5px;"> <p>79 GOLD</p>  <p>Gold is very soft and beautiful metal, has been coveted for thousands of years. Au</p> </div> <div style="width: 33%; padding: 5px;"> <p>80 MERCURY</p>  <p>Mercury is a deadly liquid element that causes damage to the nervous system. Hg</p> </div> </div>
Learning Outcomes	<p>Student will be able to:</p> <ul style="list-style-type: none"> Understand the different elements arrangement in periodic table. Recognise the different physical properties. Able to utilise the properties in chemical reactions like redox reactions that we see around us.
Resources	<div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> <p>Concept-Physical Properties of Transition Metals</p>  </div> <div style="width: 45%;"> <p>Concept- Transition metals and their properties</p>  </div> </div>



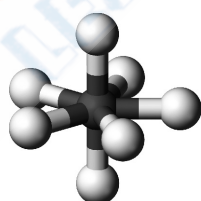
ART INTEGRATION



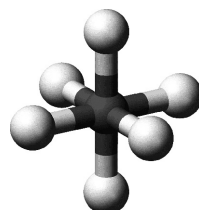
Subject	Chemistry
Chapter	Coordination Compounds
Art-Integration	3D-Coordination polyhedrons
Objective	Student will able to: Understand the molecular geometry with hybridization. Able to relate with real world.
Material required	Wooden sticks Wooden balls Wood glue Cardboard Spray paint (in different colours) Sand paper Pencil Drill
Methodology of Art-Integration	Procedure: 1. Measure and mark with a pencil every 5 inches all the way to the end of wooden sticks. 2. Cut sticks according to your measurements. 3. Use sand paper to make stick's edges smooth. 4. Clamp wooden balls and drill holes into each ball according to unique molecule design. 5. Play around with your structures. 6. Spray paint to sticks and balls of the color you choose. 7. Let it dry in between painting. Put it back together and enjoy the structures!



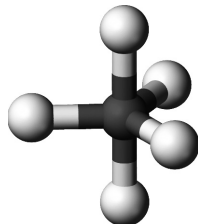
8. Present the structures on the carboard with their molecular geometry and hybridization of the structures.



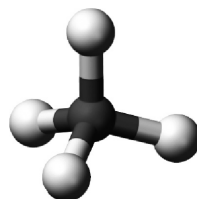
Pentagonal bipyramidal



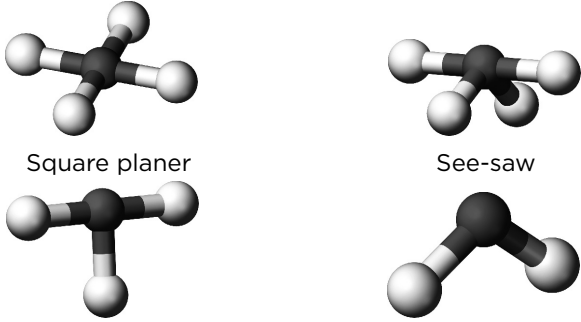

Square bipyramidal



Trigonal bipyramidal

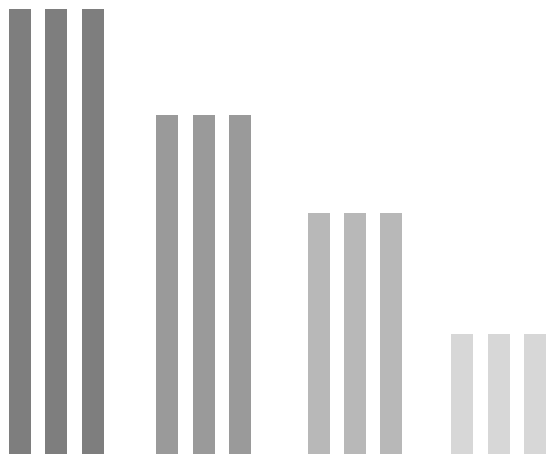


Tetrahedral

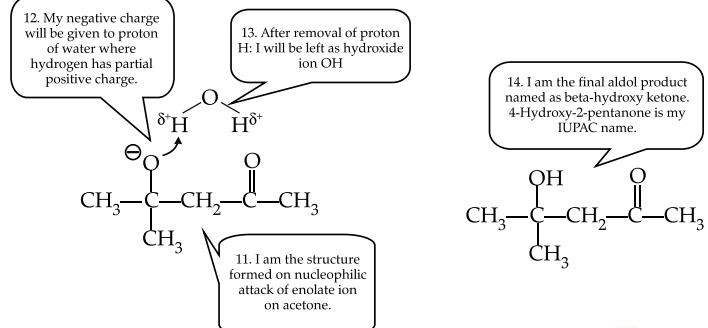


	 <p>Square planer</p> <p>See-saw</p> <p>T-shaped</p> <p>Bent shaped</p>
Learning Outcomes	<p>Student will learn Shapes of coordination compounds.</p> <p>Student will understand Coordination number by counting balls attached to central atom.</p> <p>Student will be able to analyse Hybridization by identification of axial and equatorial bonds involved.</p>
Resources	<p>Concept- Coordination Compounds: Geometry and Nomenclature</p> 



ART INTEGRATION



Subject	Chemistry
Chapter	Aldehyde, ketone and Carboxylic acid (Aldol reaction of propane)
Art-Integration	A Role Play for Aldol Reaction Mechanism
Objective	Student will able to: Understand mechanism through conversation. Able to recognise concepts of nucleophilic, electrophilic nature of atoms/molecules.
Methodology	<p>A conversation between atoms and molecules to explain aldol reaction mechanism.</p>

	 <p>12. My negative charge will be given to proton of water where hydrogen has partial positive charge.</p> <p>13. After removal of proton H: I will be left as hydroxide ion OH</p> <p>14. I am the final aldol product named as beta-hydroxy ketone. 4-Hydroxy-2-pentanone is my IUPAC name.</p> <p>11. I am the structure formed on nucleophilic attack of enolate ion on acetone.</p>
Learning Outcomes	<p>Student will:</p> <p>Learn the reaction mechanisms of aldol reactions.</p> <p>Analyse the nature of nucleophiles and electrophiles to proceed reactions.</p> <p>Understand IUPAC nomenclature to name the compounds.</p> <p>Understand the tautomerism concept from enolate ion.</p>
Resources	<p>Concept- Aldol condensation</p>  <p>Aldol Condensation</p>  <p>Crossed Aldol Condensation of Acetone and Benzaldehyde</p> 