

**MAHAJUBILEE  
TRAINING COLLEGE**  
MULLOOKARA - THRISSUR (DT) 680 583.



Topic : PEDAGOGIC ANALYSIS

Name : ANNA VIJO

Optional Subject : PHYSICAL SCIENCE

Semester : SECOND SEMESTER

Reg. No. : MTAUTPN002

Certified that this is the bonafide record of ANNA VIJO

Reg.No. MTAUTPN002 for the year 20.20 - 20.22

*Reema*  
Faculty Member

Date...5/10/2021

Asst. PROFESSOR IN PHYSICAL SCIENCE  
MAHAJUBILEE TRAINING COLLEGE  
MULLOOKARA - 680 583



*Chacko*  
Principal

Date...5/10/2021...

Rev. Dr. Chacko Chiramel  
PRINCIPAL  
MAHAJUBILEE TRAINING COLLEGE  
MULLOOKARA - THRISSUR



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## INTRODUCTION

As a part B.Ed curriculum, we had a task to conduct Pedagogic analysis of a chapter from physics or chemistry in high school session. The students were divided into two groups. Pedagogic analysis consist of 20 steps and we prepared them through various meetings and discussions.

Pedagogic analysis is selection of appropriate objectives and strategies in various instructional institutions, situations to access the level of teaching at the end. A comprehensive vision of required tasks, strategies for realization of specific goals facilitates effective teaching. We selected the chapter 'Work Energy and Power' of class IX for the task.



# PEDAGOGICAL ANALYSIS OF SCIENCE CONTENT

- Subject - Physics
- Name of the unit - Work, Energy and Power
- Standard - IX

## STEP 1 - Analysis of the unit into major concepts and minor concepts

MAJOR CONCEPT	MINOR CONCEPT
1. Work	<p>1.1 Work - A body undergoes displacement in the direction of the applied force.</p> <p>1.2 Unit of work is joule</p> <p>1.3 Work = Force <math>\times</math> displacement</p> <p>1.4 Positive work</p> <p>1.5 Negative work</p> <p>1.6 Work done against gravitational force = <math>mgh</math>.</p>
2. Energy	<p>2.1 Energy - capacity to do work</p> <p>2.2 Unit of energy is joule</p> <p>2.3 Mechanical energy</p> <p>2.4 Heat energy</p> <p>2.5 Electrical energy</p> <p>2.6 Two types of mechanical energy 1) Kinetic energy 2) Potential energy</p>



3. Kinetic Energy

3.1 kinetic energy - energy possessed by a body by virtue to its motion

3.2 kinetic energy =  $\frac{1}{2}mv^2$

3.3 kinetic energy and momentum.

4. Work Energy Principle

4.1 Newton's second law of motion

4.2 Acceleration

4.3 Initial velocity

4.4 Final velocity.

5. Potential Energy

5.1 Potential energy - energy possessed by a body by virtue of its position.

5.2 Potential energy (u) = mgh

5.3 Position and potential energy

5.4 Potential energy due to strain.

6. Law of conservation of energy

6.1 Energy transformation

6.2 Different types of energy transformations

7. Power

7.1 Power - work done per unit time

7.2 Horse power

7.3 unit of power J/s or watt



## STEP II - Analysis of concepts into attributes.

CONCEPTS	ATTRIBUTES
1. Work	<ul style="list-style-type: none"> <li>• A body undergoes displacement in the direction of the applied force.</li> <li>• <math>Work = Force \times displacement</math></li> </ul>
2. Unit	<ul style="list-style-type: none"> <li>• The SI unit of work is Joule (J)</li> </ul>
3. Positive work	<ul style="list-style-type: none"> <li>• Force and displacement are in same direction</li> </ul>
4. Negative work	<ul style="list-style-type: none"> <li>• Force and displacement are in different direction</li> </ul>
5. Energy	<ul style="list-style-type: none"> <li>• The capacity to do work.</li> </ul>
6. Unit	<ul style="list-style-type: none"> <li>• The SI unit of energy is Joule (J)</li> </ul>
7. Mechanical Energy	<ul style="list-style-type: none"> <li>• Sum of kinetic energy and potential energy in an object that is used to do a particular work i.e. energy of an object due to its motion or position or <del>by</del> both.</li> </ul>
8. Heat energy / Thermal energy	<ul style="list-style-type: none"> <li>• It is result of movement of tiny particles called atoms, molecules or ions in solids, liquids and gases.</li> <li>• It can be transformed from one object to another.</li> </ul>



MAHAJUBILEE  
TRAINING COLLEGE  
MULLOOKARA - THRISSUR (DT) 680 583.



Topic : MINDMAP

Name : ANNA-VIJO

Optional Subject : PHYSICAL SCIENCE

Semester : FIRST SEMESTER

Reg. No. : MTAUTPN002

Certified that this is the bonafide record of ANNA-VIJO

Reg. No. MTAUTPN002 for the year 2020-2022

Faculty Member

Date 15/03/2021

ASSL PROFESSOR IN PHYSICAL SCIENCE  
MAHAJUBILEE TRAINING COLLEGE  
MULLOOKARA - 680 583



Principal

Date 16/03/2021

Rev. Dr. Chacko Chiramel  
PRINCIPAL  
MAHAJUBILEE TRAINING COLLEGE  
MULLOOKARA - THRISSUR



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# 1. INTRODUCTION

Mind Mapping (Tony Buzan, 1968), which is also called "clustering ideas", is a way of collecting ideas around a particular topic and defining connections. This can be defined as a "non-linear brainstorming process akin to free association". Mind Mapping is an effective means to take notes and brainstorm essay topics. A mind map involves writing down a central theme and thinking of new and related ideas which radiate out from the centre. By focussing on key ideas written down in your own words and looking for connections between them you can map knowledge in a way that will help you to better understand and retain information.



## 2. THEORY AND USES

Mind mapping was developed as an effective method for generating ideas by association. In order to create a mind map, you usually start in the middle of the page with central theme/main idea from that point you work outward in all directions to create a growing diagram composed of keywords, phrases, concepts, facts and figures. It can be used for assignments and essay writing especially in the initial stages, where it is an ideal strategy to use for your 'thinking'. Mind mapping can be used for generating, visualising, organising, note taking, problem solving, decision making, revising and clarifying your university topic, so that you can get started with assessment tasks. Essentially a mind map is used to 'brain storm' a topic and is a great strategy for students.



## BENEFITS

To achieve higher education level of concentration and creativity, together with greater organisation and more concise communication, mind mapping might be an effective strategy for you to consider. The benefits of mind mapping are many and varied.

In summary they include

Giving you an overview of a large subject/broad topic and allowing you to represent it in a more concise fashion.

Encouraging you to see the the bigger picture and creative pathways.

Enabling you to plan/make choices about the selection of resource material you have for an assignment and where you are going to place it.

Providing you with a more attractive and enjoyable format for your eye/brain to look at and remember.



# MAHAJUBILEE TRAINING COLLEGE

MULLOOKARA - THRISSUR (DT.) Pin: 680 583



Topic : *Techno pedagogic content analysis of a unit  
from secondary school level text book*

Year ...*2020-2022*...

Semester ...*FOURTH*.....

Name :.....*ANNA VITO*.....

Reg.No. :.....*MTAUTPN002*.....

Optional Subject :.....*PHYSICAL SCIENCE*.....

*Reshma*

**FACULTY MEMBER**

Date *30-03-2022*

Asst. PROFESSOR IN PHYSICAL SCIENCE  
MAHAJUBILEE TRAINING COLLEGE  
MULLOOKARA - 680 583



*Chacko*  
**PRINCIPAL**

Date *30-03-2022*

Rev. Dr. Chacko Chiramel  
PRINCIPAL  
MAHAJUBILEE TRAINING COLLEGE  
MULLOOKARA - THRISSUR







## 1. INTRODUCTION

As a part of B.Ed curriculum we have to carry out a task in EDU 13.12 Professionalising Physical, Social Education, on the topic 'prepare a Techno pedagogic content analysis of a unit from secondary school level textbook.'

Pedagogic analysis refers to the logical and systematic breakup of the curriculum from the point of a pedagogue for the purpose of effectively transmitting it. This would not only help the teacher to identify each component of the learning material and its type. In addition to these it involves the process of determining objectives and selecting suitable learning experiences. It also aims at pooling of all the resources for the effective realisation of the goal anticipated.

Techno pedagogy refers to electronically mediated courses that integrate sound pedagogic principles of teaching or learning with the use of technology. Technology in the profession develops specific techno-



pedagogical competencies allows faculty to make the work practitioners at the center of professional study in a community of practice. The technopedagogical knowledge is collaboratively developed framework of scholars and researchers seeking to conceptualize and clarify the competencies that evolve from the intersection between pedagogy and technology. Investments and interactive technologies in education require both the technological and pedagogic skills to use them.

## 2. PEDAGOGICAL ANALYSIS

Name of the teacher : Anna. Vijo

Name of the school : MJTC

Name of the subject : Chemistry

Name of the unit : Redox reaction and rate of chemical reactions

Name of the topic : Factors affecting rate of chemical reaction.



## Learning objectives of the topic

- To identify the factors that effecting rate of chemical reactions
- To analyse how the nature of reactants, concentration and surface area of reactants, temperature and catalyst effects the rate of chemical reaction.

## Learning outcomes of the topic

- The learner will be able to identify about the various factors that effecting rate of chemical reactions
- The learner will be able to know how the nature of reactants, concentration and surface area of reactants, temperature and catalyst effect the rate of chemical reactions.

## Content Analysis

Terms: concentration, reactants, surface area, collision, temperature, catalyst, threshold energy.

Facts: → All the chemical reactions all doesnot takesplace in a same reaction rate.



→ rate of a chemical reaction can be increase or decrease

concepts - → Nature of reactants influences the rate of chemical reactions

→ Concentration of reactants increases number of molecules per unit volume and the number of effective collision increases consequently rate of reaction increases.

→ To take part in a chemical reaction molecules should attain a certain minimum kinetic energy. This energy is called. threshold energy.

Technological pedagogical analysis of content

