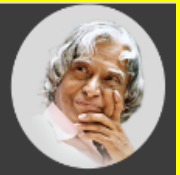
Srini Science Mind

Abdul Kalam Physical Science Group



NEW

9th class

PHYSICAL SCIENCE

MODEL LESSON PLAN

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MODEL LESSON PLAN

CLASS: 09 **SUBJECT:** PS **Name of the Teacher:** M.Srinivasa Rao **Name of the School:** A.G.K.M.H.School, Gudivada

Name of the Lesson/Unit	Topic	No.of Periods Required	Timeline for teaching		Any specific information
			From	To	
Work and Energy (Chapter-10)	Introduction - Work	1	xx/xx/xxxx	xx/xx/xxxx	
	Definition of work in science - Examples	2	xx/xx/xxxx	xx/xx/xxxx	
	Idea of Energy	2	xx/xx/xxxx	xx/xx/xxxx	
	Sources of energy – Forms of energy	1	xx/xx/xxxx	xx/xx/xxxx	
	Kinetic energy - Examples	3	xx/xx/xxxx	xx/xx/xxxx	
	Potential energy - Examples	4	xx/xx/xxxx	xx/xx/xxxx	
	Conservation of energy	2	xx/xx/xxxx	xx/xx/xxxx	
	Power - Examples	2	xx/xx/xxxx	xx/xx/xxxx	

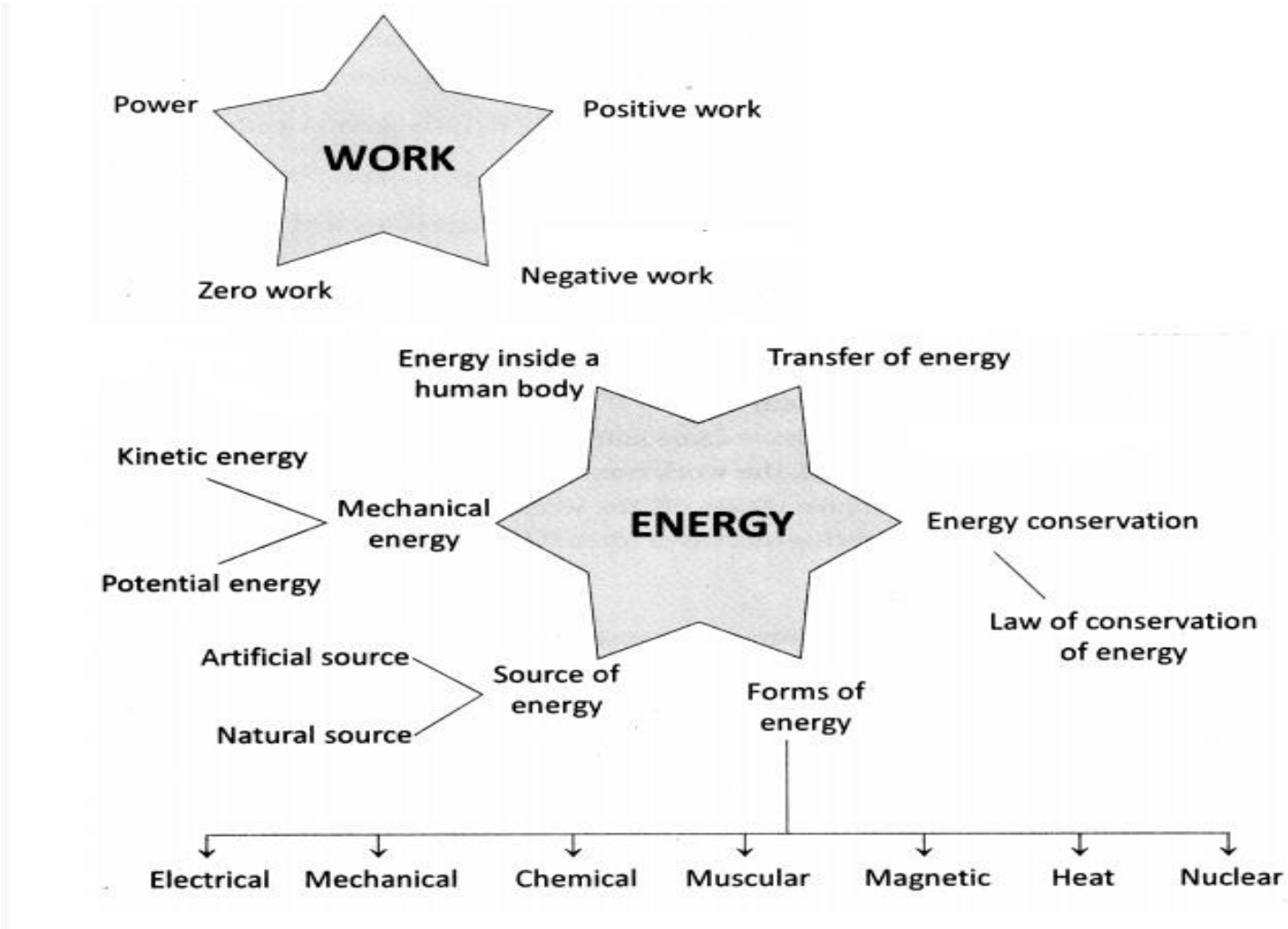
Prior Concept/Skills:

1. What are S.I units of Force and Displacement?
2. How many forms of energy are there?
3. How do green plants produce food?

Learning Outcomes:	No. of Periods
1. Differentiates work as positive, negative and zero work.	2
2. Uses scientific symbols to represent various physical quantities and SI units.	1
3. Derives formulae and equations of work, kinetic energy, potential energy and power.	1
4. Calculates using the data given of kinetic and potential energies of an object.	2
5. Draws flow charts of transfer of energy.	1
6. Conducts investigations on the transfer of energy from kinetic energy to potential energy and vice versa.	1
7. Explains processes of transfer of energy.	1
8. Draw a diagram to show the conservation of mechanical energy in case of a free falling body.	1
9. Applies scientific concepts in daily life and solving problems of law of conservation of energy.	2
10. Explains processes of conservation laws.	1
11. Uses scientific conventions and equations to represent various quantities of energies.	1
12. Communicates the findings and conclusions effectively of Conservation of energy	1
13. Calculates using the data given of conservation of energy.	1
14. Draws conclusion of power delivered by the machines.	1

TEACHING LEARNING PROCESS

Induction/Introduction:



Experience and Reflection:

1. Students will identify situations where work is done in everyday life.
2. Students imagine situations in which energy transformations occur in day-to-day life,
3. Students give examples of energy transformations that occur in everyday life.

Explicit Teaching/Teacher Modelling (I Do)	**Group Work (We Do)**	**Independent Work (You Do)**	**Notes for:**
1. Discussion and explain the difference between the way we use the term work in our day-to-day life and the way we use in Science.	1. Discussion of some situations. (Where work is done)	1. Students identify where is work done or not	1. Can work be done without force?
2. Explain the scientific meaning of the work with examples.	2. Students give examples of work.	2. Students express what conditions are necessary to do work.	2. What would be the work done when the force on the object is zero?
3. Discussion and explain the definition of work in science, types of work.	3. Group discussion on types of work.	3. Students complete the homework.	3. Is work scalar or vector?
4. Explain the problems and solutions to work.	4. Students will solve the problems.	4. Students give the value of 'g' and their units.	4. What is the formula for work done on an object?
5. Discussion and explain the concept of Energy.	5. 'How can we decide that an object possess energy or not? – Group discussion.	5. Students write the definition of energy?	5. What is the SI unit for Energy?
6. Explain and demonstrate "Understanding the increase and decrease in energy of an object"	6. Students conduct activity.	6. Students complete the homework.	6. What two factors affect the amount of energy of an object?
7. Discussion and explain the sources of energy, forms of energy.	7. Students collect information on forms of energy	7. Students give examples of sources of energy.	7. What was the primary source of energy?
8. Explain and conduct an activity on kinetic energy with help of a table, metal ball and a plastic block.	8. Students describe the activity in their own way.	8. Students give a reason why kinetic energy of the objects depend on velocity.	8. Why does kinetic energy depend on mass?
9. Explain the numerical expression for kinetic energy and solved the problems.	9. Students will solve the problems.	9. Students derive the formula of kinetic energy.	9. What is the formula for kinetic energy?
10. Explain and conduct an activity on potential energy with help of a bamboo stick, rubber band and light stick.	10. Students collect information on potential energy	10. Students complete the homework.	10. Define Potential energy?

11. Observing the potential energy in an object at different heights.	11. Does the international space station have gravitational potential energy? – Group discussion.	11. Students write the definition of potential energy.	11. What type of potential energy is due to gravity?
12. Explain the numerical expression for potential energy and solved the problems.	12. Students derive the formula of potential energy.	12. Students solve problems.	12. What is the S.I unit of potential energy?
13. Explain mechanical energy and conversion of energy in day-to-day life.	13. Students draw a flow chart on the conversion of energy.	13. Students complete the homework.	13. What happens to mechanical energy when an object falls?
14. Discussion and demonstration of the conservation of mechanical energy.	14. Students explain the process of conservation of mechanical energy.	14. Students draw a diagram of the conservation of mechanical energy.	14. What is total mechanical energy equal to?
15. Explain and demonstrate of calculating the total energy of the freely falling object at different heights.	15. Students calculated potential and kinetic energies.	15. Students complete the homework.	15. Is the mechanical energy conserved in the system?
16. Explain the concept of Power and its problems.	16. Students collect information on power of machines	16. Students solve problems.	16. What is the unit for power?

Check For Understanding Questions	**TLM's (Digital + Print)**
1. Factual: 1. When the work is said to be done? 2. What energy conversion occurs when riding a bicycle? 3. How do you know which object has the most kinetic energy? **2. Open Ended/Critical Thinking:** 1. What happens to the speed of a ball while it moves up with an initial velocity? 2. Is the energy spent by the force doing work the same every time? 3. What would happen if nature does not allow the transfer of energy? **3. Student Practice Questions & Activities:** 1. Compare and differentiate between potential energy and kinetic energy. 2. What is potential energy? Derive an equation for gravitational potential energy of a body of mass 'm' at a height 'h'.	1. Used prepared Quiz paper. 2. Utilized digital classroom. 3. Provide video links QR codes, DIKSHA App

3. State the principle of conservation of energy. 4. Why does a person standing for a long time get tired when he does not appear to be doing any work? 5. Draw a diagram to show the conservation of mechanical energy in case of a free falling body.	4. YouTube video links

Assessment:

1. What is kinetic energy? Derive an expression for the kinetic energy of a body of mass ‘m’ moving at a speed ‘v’.
2. A man carrying a bag of total mass 25kg climbs up to a height of 10m in 50 seconds. Calculate the power delivered by him on the bag.
3. Collect pictures showing various situation where potential energy possessed by an object depends an its shape and position. Prepare a scrap book.
4. Draw a diagram to show conservation of mechanical energy in case of a free falling body.
5. A woman does 250 J of work in 10 seconds and a man does 100 J of work in 4 seconds. Who delivers more power?

SIGNATURE OF THE TEACHER

SIGNATURE OF THE HEADMASTER

VISITING OFFICER WITH REMARKS