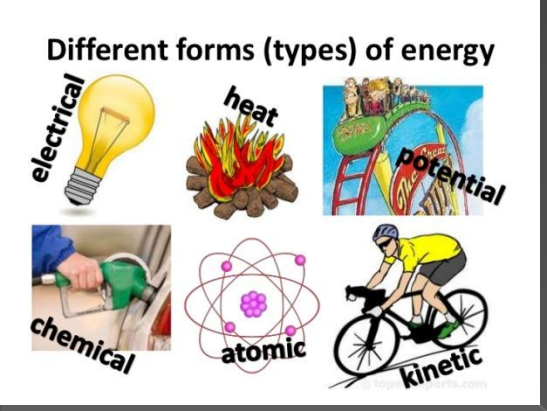
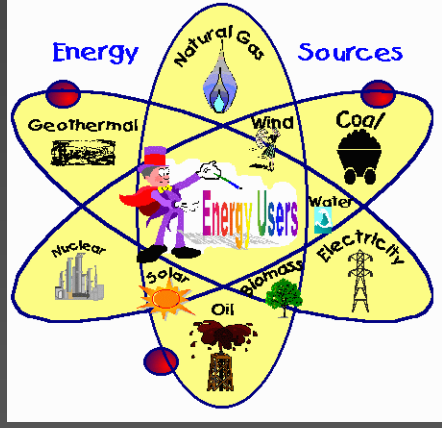
THE TRIP OF ENERGY POSTERS

SCIENCE 4°



A need to know

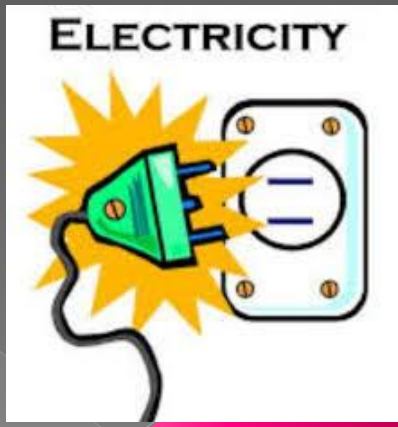


Forms of energy

Sources of energy

Energy changes

electricity



We want to teach others how **ENERGY** travels

Executive function skills

CALP

KINETIC ENERGY
CHEMICAL ENERGY
ELECTRICAL ENERGY = ELECTRICITY
LIGHT ENERGY
THERMAL ENERGY
SOUND ENERGY
HYDROELECTRIC ENERGY
WIND ENERGY
SOLAR ENERGY
BIOENERGY

Non - renewable energy
Renewable energy
Light bulb
Reuse
Reduce
Recycle
Coal
Petroleum
Natural gas

Advance organizers

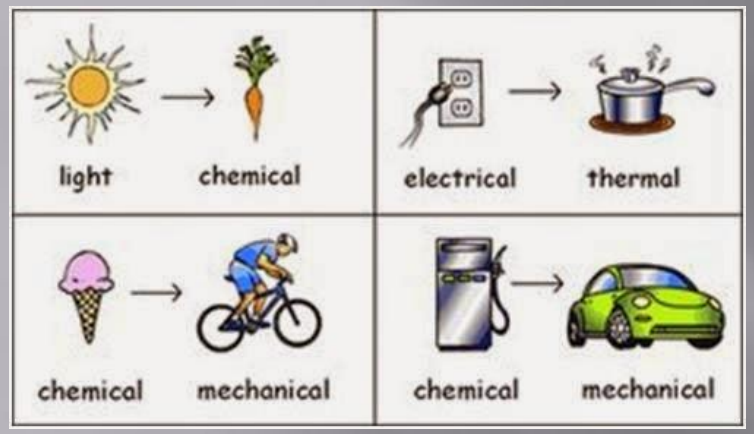
What do they need to work?

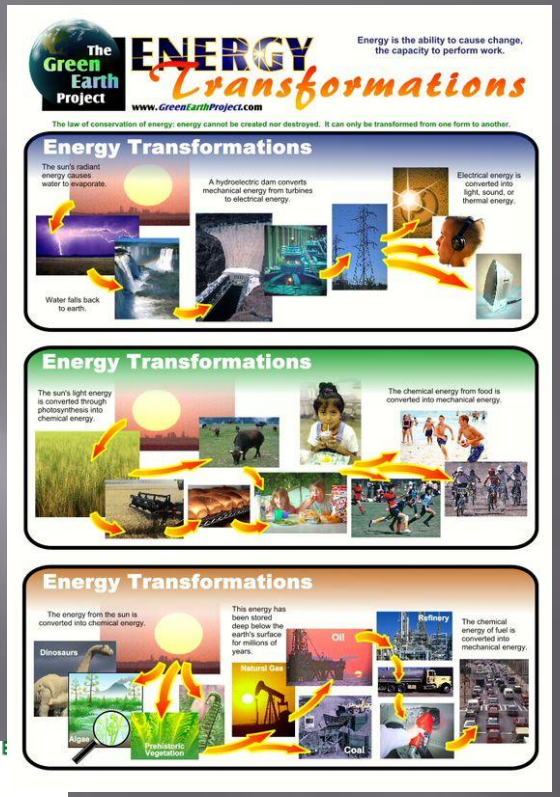
ALTHOUGH WE KNOW WE NEED ENERGY FOR LIFE,

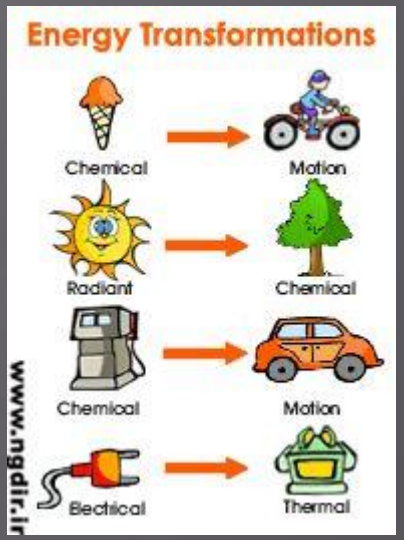
WHERE CAN WE FIND ENERGY IN OUR EVERYDAY LIFE AND IN THE SCHOOL ?

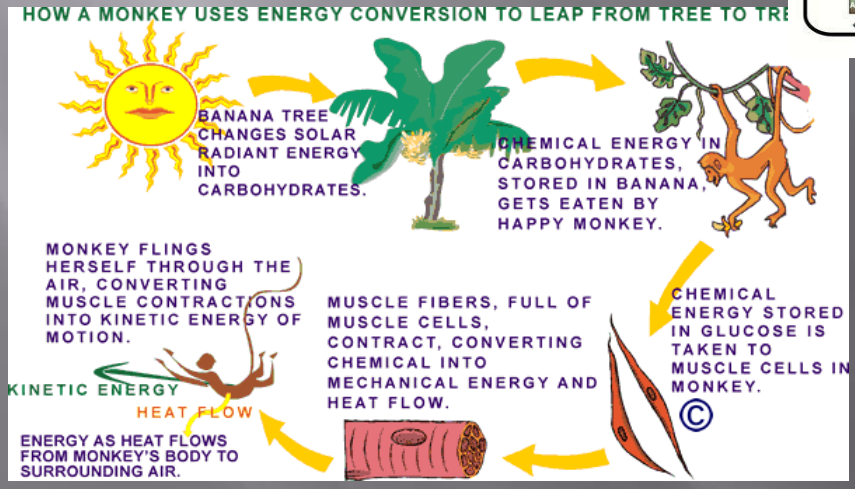
HOW CAN IT TRAVEL?

(activate their previous knowledge)


light
chemical
electrical
thermal
chemical
mechanical
chemical
mechanical


The Green Earth Project
ENERGY Transformations
Energy is the ability to cause change, the capacity to perform work.
www.GreenEarthProject.com
The law of conservation of energy: energy cannot be created nor destroyed. It can only be transformed from one form to another.
Energy Transformations
The sun's radiant energy causes water to evaporate.
A hydroelectric dam converts mechanical energy from turbines to electrical energy.
Electrical energy is converted into light, sound, or thermal energy.
Water falls back to earth.
Energy Transformations
The sun's light energy is converted through photosynthesis into chemical energy.
The chemical energy from food is converted into mechanical energy.
Energy Transformations
The energy from the sun is converted into chemical energy.
This energy has been stored deep below the earth's surface for millions of years.
The chemical energy of fuel is converted into mechanical energy.
Dinosaurs
Oil
Refinery
Natural Gas
Algae
Prehistoric Vegetation
Coal


Energy Transformations
Chemical
Motion
Radiant
Chemical
Chemical
Motion
Bectrical
Thermal
www.ngdir.ir


HOW A MONKEY USES ENERGY CONVERSION TO LEAP FROM TREE TO TRE
BANANA TREE CHANGES SOLAR RADIANT ENERGY INTO CARBOHYDRATES.
CHEMICAL ENERGY IN CARBOHYDRATES, STORED IN BANANA, GETS EATEN BY HAPPY MONKEY.
CHEMICAL ENERGY STORED IN GLUCOSE IS TAKEN TO MUSCLE CELLS IN MONKEY.
©
MUSCLE FIBERS, FULL OF MUSCLE CELLS, CONTRACT, CONVERTING CHEMICAL INTO MECHANICAL ENERGY AND HEAT FLOW.
MONKEY FLINGS HERSELF THROUGH THE AIR, CONVERTING MUSCLE CONTRACTIONS INTO KINETIC ENERGY OF MOTION.
KINETIC ENERGY
HEAT FLOW
ENERGY AS HEAT FLOWS FROM MONKEY'S BODY TO SURROUNDING AIR.

HOTS : ANALIZE, EVALUATE, CREATE

- Show andanalyze posters,
- Pay attention to the components and qualities
- Compare the posters.
- Choose the kind of poster with all the components. (voice and choice)
- Drafft the cycle for the activity they choose from the energy resource to the final use we do.
- Create a template with all the transformations.

TEACHING SEQUENCE and COOPERATIVE LEARNING

•SESSION 1: Advance organizer and introduce first section "forms of energy"
INQUIRY:Where is energy in our everyday life and in school? Cooperative learning- think pair during advance organizer, gallery walk with some examples of uses of energy any morning between 7am to 10am

•SESSION 2: continue with forms of energy. Begin "sources of energy" Cooperative learning- jigsaw. For the reading in book

• SESSION 3 : start the project , posters. Analyze, evaluate and create. · templates. HOTS
Components and qualities.
exemplars of posters.
create a drafft of a poster they choose

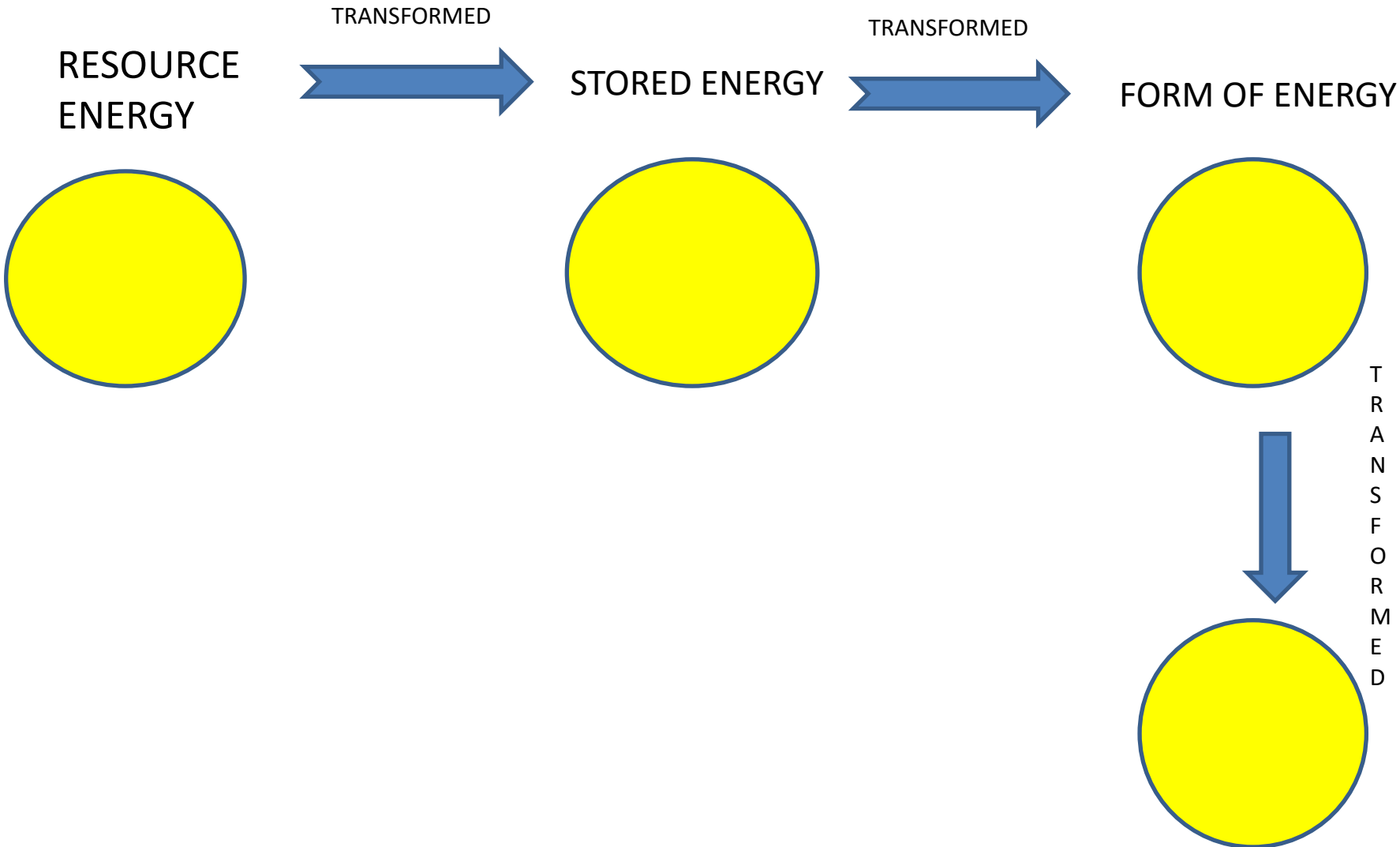
•SESSION 4: work on section two……"sources of energy"
INQUIRY: where can we get energy in our planet?

•SESSION 5 and 6: work on section 3 of the unit "energy changes"
INQUIRY: What's the main characteristic of energy? Cooperative learning- think pair listening

•Sesion 7: continue with section 3 "energy changes"
INQUIRY : WHERE IS ELECTRICITY?

•SESSION 8: work on part of the unit.

•Sesssion 9. presenting the project..(panflet, poster video…..etc


RESOURCE ENERGY
TRANSFORMED
STORED ENERGY
TRANSFORMED
FORM OF ENERGY
TRANSFORMED

- ACTIVITIES WE DO BEFORE SCHOOL IN WHICH WE USE ENERGY. 8h-9h. In the morning.
- ACTIVITIES WE DO AT SCHOOL 9h-10h in the morning. (session 1)
- we and things need energy to work. (session 1)
- Energy changes in its form. (Sessions 2)
- Examplers of energy changes. Popeye eating spinachs.

TASK 1 (1ST SESSION)

Explanation:

- Advance question (picture of Cars, popeye eating spinachs)
- Teacher and children comment and observe the photos, children realice energy is necessary.
- Discussion where energy comes from

Practice:

Performance:

Checklist for the poster

Checklist Tasks 4 (8th session)

- Explanation

Practice:

Performance: students share therir works.

Teaching session 1

- PROBLEM-BASED LEARNING (inquiry and innovation)attempting to solve an open ending problems. Students work as investigators. Learn content throug the solution of the problems.
- Reinventing a public High school with problem-based learning.

PROBLEM SOLVIG

RUBRIC

Poster Rubric

	1 Point	3 Points	6 Points	10 Points	Earned Points
Project Layout	Poster is made out of notebook paper or is not complete at all.	Poster is done on computer paper.	Poster is done on poster board smaller than 22" x 28".	Poster is done on a 22" x 28" size board or on a display board.	
Module Content	There is little information about the module included on the poster.	There is some information about the module included on the poster.	The information includes descriptions about the module and the activities done.	The poster includes detailed information about the descriptions about the module and the activities.	
Career Content	A related career is mentioned.	The poster includes minimal information to a related career.	Career information includes: description, training, qualifications	Career information includes: description, training, qualifications, employment, job outlook, salary, etc	
Creativity	The poster contains a few graphics and enhancements.	The poster contains some graphics and enhancements.	The poster includes a good amount of graphics and enhancements that are appropriate for the module.	The poster contains an adequate amount of graphics and enhancements that adds attraction without taking away from the content.	
Presentation	Poster looks like it was thrown together. Parts are falling off or don't fit. Spelling and grammar errors are frequent.	Poster looks okay. Some problems with looks. Some of the words are spelled correctly and some grammar is correct.	Poster has a few minor problems. Could have been neater. Most of the words and grammar are spelled correctly.	Poster looks excellent. All spelling and grammar are correct.	
				Total Points:	