**5B Energy Lesson Plan**

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| **Targeted questions + Learning Intention** | **Learning Engagement**  | **Teachers Notes and Assessment** |
| What is energy? FORM**L.I: to understand the basic use and knowledge of energy** | **“It” is ENERGY.** -***Tuning in***Teachers come up with some examples of words which taken from daily action. Teacher can start from the word “it does things for us”. The followed with other examples. “ It moves cars along the road and boats over the water. It bakes a cake in the oven and keeps ice frozen in the freezer. It plays our favorite songs on the radio and lights our homes.” Then students have to guess what the word “it” refers to. Students then can follow up this by making their own definition of energy and create some examples of action sentences of their daily life. Scientists define **energy as the ability to do work**. People have learned how to change energy from one form to another so that we can do work more easily and live more comfortably.  | *Teachers observe students definition and student’s action sentences on a strip paper.* Then cut and paste them on a big paper with the title “It” is energy.  |
| How is the energy being used in activities? Where does the energy come from? **Li.I: to get students prior knowledge of energy and it uses** | **Analyzing picture-Pre-assessment**Student analyzes an illustration of some activities. Then they will foind out how energy being used in the activity and where does the energy come from? | Teachers use picture from IEA’s.*Teacher did observation about their prior knowledge* |
| Why do we need energy? How can energy help our lives? How can an object work? FUNCTION**L.I: to deepen understanding of function concept about how an object used energy in order to work.**  | **How can it work?-*Finding out and Sorting out***Prepare some materials and some pictures of working/moving object. Students then analyze how each object can work by describing the system that makes that object work. Until then they will conclude that every object needs energy in order to work, including analyze the pictures. Students may bring their toys, the toys should be varied (could be potential or kinetic energy) not only electronic toys. | Some materials: torch, stick matches mechanic, spray, batterries, sound system, windmill, rubbers. Teachers also bring picture of car, refrigerator, strectch rubber arrow,*Students write an analysis of an object on half A4 paper with these questions below:**1. What energy does it produce?**2. Where does the energy come from?**3. How the energy is being used in the object?* |
| What are forms of energy? How energy can be stored as potential energy? How movements produce energy as kinetic energy? How potential and kinetic enrgy relate or connected? CHANGE**L.I : to understand two states of energy (potential and kinetic) and to differenciate forms of energy related with them** | **2 States of Energy Potential and Kinetic Energy - *Finding out***Energy makes everything happen and can be divided into two types: * Stored energy is called potential energy.
* Moving energy is called kinetic energy.

With a pencil, try this example to know the two types of energy. Put the pencil at the edge of the desk and push it off to the floor. The moving pencil uses kinetic energy. Now, pick up the pencil and put it back on the desk. You used your own energy to lift and move the pencil. Moving it higher than the floor adds energy to it. As it rests on the desk, the pencil has potential energy. The higher it is, the further it could fall. That means the pencil has more potential energy. It’s called gravitational energy**Teacher can distribute the paper of potential and kinetic energy, so students can learn the differences by looking at the example of forms of energy** | Pencil or yoyo other small object from the class. The heavies or the fastest the object the more yoyoimageenergy it produce. rubberbandstretchedrubberbandStudents must differenciate clearly potentials and kinetic energy. Can be in venn diagram or in T-chart. Students then make more examples of potential and kinetic energy (5 for each) |
| What are kinds of potential energy? What are kinds of kinetic energy? FORMS**L.I: to understand how potential and kinetic energy works in an object or activity** | **Forms of energy- *Sorting out***Teachers will ask students to analyze some toys and they will try to analyze the potential and kinetic and the example of forms of energy it produce.  | **5B Formative Assessment** Students in group will analyze the traditional toys (yoyo,windy ball, arrow, slingshot, and windwheel) based on the questions below:*How does it work?**When and where does the potential energy and kinetic energy being used/ produced?**What forms of energy does it produce?*Present it to other group |
| Where does the energy actually come from? How is Sun role as te main source of energy of earth?L.I: to understand sun as the main source of energy | **Sun is the Sources of Energy- Finding Info**Teachers read book how “energy makes thing happen.” To show how sun becom ethe main sources of energy. this book is also a good resources to open students mind about energy and its resources. | **Students will create a backward chart** to show how every activity is always go back to the sun as the main source of energy |
| What are the source f energy? what are renewable and what are non renewable resources?what are the differences between forms and sources of energy?**L.I: To understand the characteristic of each source of energy** | Students are asked to go back to the previous activity that they have done. they will analyze an activity and identify the sources of energy of that acivity/object. Teacher will read story of fossil stern to see one of the source of energy being made. hen teachers distribute the source of energy poster for students to lear | **Students do dichotomous key of the energy source** to describe each of the source characteristic e.g: is it renewable, non-renewable?gas, liquid, etc.**FORMATIVE ASSESSMENT:****Students will draw an illustration of human activity and the object around them and hey mst include: the use, forms and source of energy, & the transformation. put all the knowledge into drawing.** |
| Is the energy only performing in one form at a time? How can energy help to do the work? How can energy changing/transform form one form to another? CHANGEL.I: **to understand how energy is derived from certain resources and transform into another sort of energy** | **Energy Changing Guest Speaker- *Sorting out***Energy can be transformed into another sort of energy. But it cannot be created AND it cannot be destroyed. Energy has always existed in one form or another. Here are some changes in energy from one form to another. * Stored energy in a flashlight's batteries becomes light energy when the flashlight is turned on.
* Food is stored energy. It is stored as a chemical with potential energy. When your body uses that stored energy to do work, it becomes kinetic energy.
* If you overeat, the energy in food is not "burned" but is stored as potential energy in fat cells.
* When you talk on the phone, your voice is transformed into electrical energy, which passes over wires (or is transmitted through the air). The phone on the other end changes the electrical energy into sound energy through the speaker.
* A car uses stored chemical energy in gasoline to move. The engine changes the chemical energy into heat and kinetic energy to power the car.
* A toaster changes electrical energy into heat and light energy. (If you look into the toaster, you'll see the glowing wires.)
* A television changes electrical energy into light and sound energy.
 | Teachers once again bring some energy objects(torch, stick matches and mechanic, spray, batterries, sound http://www.eia.doe.gov/kids/energyfacts/science/images/EnergyTransformations.gifsystem, windmill, mechanic car)**Students then make a process (pictorial flowchart) to show the system of energy created and used in certain object.** Students can make the prototype of the object. They must include sources of energy, forms of energy, the transformation, the efficient use of it and its uses in our lives. renewable and non-renewable.- **Formative assessment 2- How energy is created** |
| What forms of energy used in our home to support our lives/to make our live better?What are they used for?Do we use the energy efficiently at home? FORMS, EFLECTION | **Exploring energy at home- *Finding out-sorting out***Explore home and find out all the enrgy used at home.Ask everyone around home what kind of energy used to help their work. Students observe home by filing in the form in energy activity worksheet by EIS’s Energy for kids.- | Teachers print and copy the Energy at home observation worksheet. Students bring it home and do it as home project. Parents may involve in doing the tasks. |
| What area that we need the energy the most? Which activity consumes energy a lot? Who is the biggest consumer of energy? REFLECTION | **Energy help us to live- *Going further***People do things because of energy. As a follow up from the previous lesson about important of energy.Students do statistic to analyze the use of energy at different area. Then they will describe the information on a chart. (MATH COLLABORATION)Students must give opinion on the result or the findings.Pie chart or bargraph. | **Share of Energy ConsumedbyMajor Sectors of the Economy** |
| What are the uses of energy in our lives? Why energy is so important for our lives?CONNECTION | **We need energy, We use energy!- *Sorting out***Energy plays an integral part in the progress of human kind. Since the beginning of mankind, we have made use of wood, water, and fossil fuels as a means of heating and making machines work. Students will explore about the uses of energy in lives. The may brainstorm or make list of activity that use energy to perform. It can be in form of mind map or pictorial list include the sources, the forms, the transformation, and the efficiency. | Teachers includes some examples of energy usage in our lives.Students make thelist and give explanation  |
| What if there is no energy? What is the effect of energy in our lives? How human use energy? What will human do if tehre is no energy | **What if there is no energy?-*Going further***Students will use their imagination to draw an illustration of the world or community which don’t have energy to help them to do their work or to make their live easier. Students applied their understanding on the important of energy and the big effect/impact of enrgy in human lives.  | Teachers provide hard papers for students to draw the illustration **Formative assessment - the effect of energy in our lives***The criteria include:** *Explains the use of energy in daily life.*
* *Describe reason why energy important for our lives.*
* *Analyzes the effect of energy in our lives.*
* *Illustrate clearly the situation of the world without energy(people, background, environment, objects)*
* *Use Attractive layout and inetreting title*
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| How should we use energy for our lives efficiently? What ways we can do to save energy? Why we need to save energy? REFLECTION | **Save the energy!- *Reflection and Action***Basedo n the knowledge about the efficient use students then creates tips to save energy or advertisement. It can be in forms of flyers, poster, brochure, and picture.**Formative assessment 3- efficient use of energy** | **Teachers prepare the material for students to create the poster (maximum is A3)** |
| Teachers questions | **SUMMATIVE PROJECT-SCIENCE ENERGY EXPERIMENT****Using the inquiry cycle students may choose one form of energy that they will explore. Then they will produce an object thatuse that enrgy. And students must be able to explain how the energy is used and created in that object, how is the effect of the object and the energy to their lives, and how to use it efficiently** | Teachers became the advisor, the assessor, the facilitator. Teachers must be ready with some experimental process, students must provide their own material needed. Tecahesr prepare the inquiry guideline and science method guideline and science experiment booklet |