

Exploring and understanding fuels used in vehicles

Students identify, explore and understand fuels for vehicles through interactive classroom activities like discussions, drawings, video screenings, data collection and analysis.

Learning objectives

1. Understand different kinds of fuel used in vehicles
2. Identify the causes and effects of pollution
3. Differentiate between renewable and non-renewable energy sources
4. Develop observation and data collection skills
5. Locate oil refineries in India

Activity 1: Discussion

The discussion started by analyzing what is energy, why do we need energy, where do we get energy from, and more on energy. The students replied that we need energy for doing work, running and playing and the conclusion was that energy is strength and power. Most of the students said that we get energy from food. The discussion then shifted on to what work we needed to do. The students replied: going to office, cooking, studying, reading, etc. When asked how we go to office or school or from one place to other, the students replied: walking, cycling, by motorbike, by bus, etc.

The discussion was started with energy for us and then shifted to energy for traveling. This was engaging for students and they realized the importance of fuels in our daily life.

Activity 2: Drawing the energy sources

The students were asked to draw things which represent an energy source. Students drew fruits,



a 'muscle' man, cool drinks and other food as well as vehicles filled with petrol or diesel. After this activity, we discussed food as an energy source for human power; fuels are the energy source for vehicles and cooking. Then we discussed the energy sources for traveling and listed them as

- a. Human power for walking and cycling
- b. Petrol, diesel and gas for bikes, cars, buses, lorries and trains
- c. Electricity for battery bikes and trains

Students also listed some energy sources for cooking: gas, wood, kerosene and electricity (induction stoves and cooking equipment).

Activity 3: About Fossil fuels

The students watched videos on fossil fuels (Fossil fuel 101 - <https://www.youtube.com/watch?v=zaXBVYr9Ij0>) and petroleum oil (Oil 101 - <https://www.youtube.com/watch?v=UPAqfTNiais>). The videos explained the formation of fuels, extraction, refining and transportation process and the uses of fuel. Students understood how fossil fuels are



formed, how they reach them and what fossil fuels are. From the visuals on fuel formation, they later narrated how it takes a long time for the formation of fossil fuels and it is not easy to produce fossil fuels ourselves. We also discussed the products we get from the refining of oil.

The next day, I wrote “fossil fuel” on the board and asked students to write whatever they think are fossil fuels or connected to fossil fuels. They wrote about commonly used fuels and also about some products of refining process (petrol, diesel, LPG) This shows that they had been exposed to fossil fuels for vehicles, cooking and other products for general use.



Activity 4: Data collection and analysis

The students were asked to make a list of vehicles at their home and the distance traveled in a day using the vehicles. Only ten students collected the data. The students who collected the data drew a bar chart on the number of vehicles. The activity was followed by a discussion of the vehicles, distance traveled and the need for bar charts to analyze data.

The students are then divided into six groups

to collect the number of vehicles on Villupuram main road in Sulthanpet for a period of thirty minutes. Groups collected the number of cycles, bikes, auto rickshaws, cars, buses and vans, and load vehicles (mini load autos and lorries). The result was then tabulated with the number of vehicles and the number of people travelled. The group which collected the number of bikes said that it was very tough since there were too many vehicles and the group which collected cycles felt too relaxed. It was discussed that the reasons for so many bikes and many fewer cycles are the speed, easy riding experience and availability of fuel. Also the smaller number of buses was due to the closure of the road for bridge construction. Then a bar chart was made from data to visually see the difference and then there was a discussion on the how the bar chart in a book would have been made. The students enjoyed the whole activity while also had learnt about vehicle usage in their locality.



Activity 5: Renewable and Non-renewable resources

We discussed renewable energy and non-renewable energy sources. We took a sample of petrol as non-renewable source and electricity through solar energy as renewable source.

Then a game was played where an energy resource was talked about. If it is a renewable source the students should touch mouth and if it

is non-renewable source they should touch their head. Students identified most of the resources like coal, petrol, solar, water and wind energy. Students had challenges in identifying wood and LPG which were later clarified as being non-renewable and reasons were given as to why they are non-renewable. After the activity, a list of renewable and non-renewable sources was tabulated on the board in which most of the sources were listed by students. After collecting a considerable list we discussed each sources.

Activity 6: Pollution.

Students were shown pictures of diesel rail locomotives giving out too much smoke and a bus giving out smoke and the students were asked what they feel about this. The students responded that it was dusty, causes pollution and was not good for health. Then pictures of electric rail locomotives and electric buses were shown, and the students identified them as electric

powered and not giving out any smoke. Some students also talked about electric bikes used by their families. From this, it was discussed about the future of transportation which is less polluting.

Activity 7: Map recording

Students were shown a map of India and asked to map the places where oil fields are found in India. With help from me, the students mapped the oil fields in Trombay, Assam. They realized that oil is found in few places and this helped them to realize that petroleum oil is not found everywhere beneath the ground and is rare in nature. This also helped them identify places on the map.

Activity 8: Poster making

Students made posters and wrote slogans on fuels and fuel conservation.

The above activities have been tried for grade 5 EVS lesson, 'What if it finishes'.



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