

## English Communication I Lesson 6 Biodiesel Adventure

The 1<sup>st</sup> grade English department

Textbook : Landmark Fit Lesson6 Biodiesel fuel

Period : September-October (depending on classes)

### ● The aim of this lesson (cross-curriculum classes only)

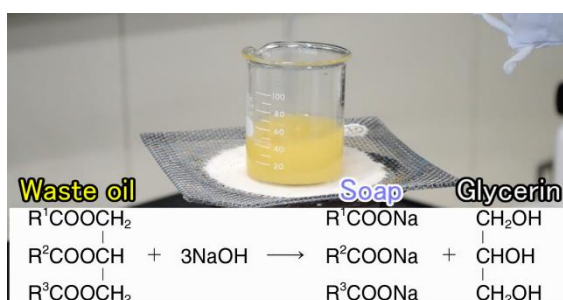
- Students think about familiar ecological products and actions.
  - According to a textbook example, people recycle waste oil to biodiesel fuel and can drive a car.
  - For lesson 6's introduction, we made a movie in which we recycled waste oil and made it into soap.
- We understand what kinds of eco-friendly car there are. We also discuss their power sources, price, strong points, and weak points, so the students understand eco-friendly cars deeply.
- The students discussed what eco-friendly cars would be discovered in the future and their merits.

Introduction: An English teacher recycled waste oil and made it into.

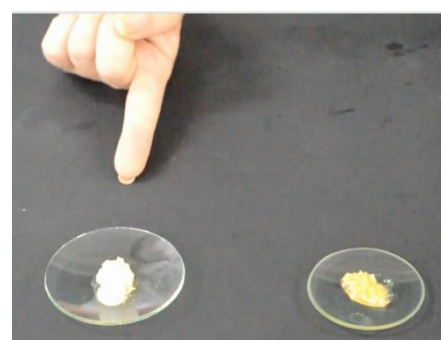
An experiment, taking a video and editing a video cooperation: A chemistry teacher, Mr. Yamagata



←We explained the process of how we made soap using waste oil. To do this, we showed a simple chemical reaction chart.  
→ Mr. Yamagata was in charge of this experiment.



←We put a beaker over a fire and beat it, while showing a chemical equation (Students will learn about this in the 3<sup>rd</sup> grade)  
→ We succeeded in making soap (the right, Mr. Yamagata made the solid soap the day before).



We often throw away waste oil, but we could make soap instead. The students could learn about new words and phrases, such as waste oil, heat, filter, stir, chemical equation, sodium hydroxide and glycerin. They could understand these words which were repeated when they performed the experiment. Each word might be difficult for them but the movie supported their comprehension.

## ● The clarification of Eco-friendly cars we could buy

Mr. Shusei Yamada's car, Vasco-V, had a special device which could recycle waste oil into biodiesel fuel. He collected waste oil and went on a trip all over the world.



Isuzu Motors Limited engineered a biodiesel bus. Its power source was euglena. Now this bus is working in Tokyo.

The students were familiar with several kinds of electric cars, for example the TOYOTA Prius (its power source is gasoline and electricity) and the Nissan Leaf, (its power source is electricity). These cars are known as “Eco-friendly car”, We discussed the reason why these cars were ecofriendly. We introduced them to a hydrogen vehicle, The TOYOTA MIRAI, but almost all the students did not know the car because they had never seen its commercial on TV. MIRAI's strong point was it being “Zero-emission car”, but its price was a little expensive.



## ● Designing a “Dream eco-friendly car”

Thanks to technology, self-driving cars and zero-emission cars have been developed and tested. During this lesson, we held a career lecture. A lecturer referred to 100-year-old newspaper. 100-year-old Japanese people imagined the world in another 100 years. Some ideas have been realized, for example smartphones and PCs, but others have not been realized yet, for example, a cannon that could break up typhoons.

We got inspired his lecture, so we tried designing cars for 100 in the future. The students designed their original eco-friendly cars. They also named their cars and summarized their feature briefly. After that, they gave a brief presentation.

(Listening)(Thinking)(Cooperating)(Foresight) L1a, L1c, I1c

The students learned about the subjunctive mood on Saturday intensive courses, to retain it, we made use of the subjunctive mood when the students described their imaginary car. (Thinking) W1c

<The examples of students' dream eco-friendly car in another 100 years>

- An electric Unagi(eel) car: Its power source is an eel's bioelectricity

- A running car: Its power source is humans running on a special machine and solar energy
- A water power car: Making use from a power of a moving water wheel and fish migration
- A wind powered car: Making use of wind power. That has a wind turbine attached.
- A garbage and solar car: When it's rainy, it burns house hold garbage and when it's sunny, it makes use of solar energy.

## ● Considering Japanese manufacturing in terms of SDGs

We started mini-investigation. The students were researching the problems of the Donan area and would find some solutions in terms of SDGs, the 17 goals and 169 targets of the UN's sustainable development goals. Soon we will start to research the problems of various countries in terms of SDGs. It is important for the students to understand the relationship between Japan and foreign countries, as they will live in "global society" in the future. Japan has a lot of methods that can things to learn from other countries, also has a lot of things to support them in future. Japanese technology was world-famous.

Japanese people could develop cars which are gentle to both mankind and nature. This Japanese technology might become one of the strongest points on industrial field in the world. It is possible that with some imagination and dreaming, the eco-friendly cars which the students designed, could someday be a reality.