

Group members: Chen Yunying (Renee), Mo Ting (Tina), Zeng Xiaoqian (Gini)

Topic: Renewable Energy in China

Subject: Liberal Study

Level: 5 A

Time of lesson: 35 minutes

Teaching Objectives:

Upon completion of the lesson, students are able to

1. Knowledge:

- Identify the current situation and prospect of renewable energy in China and grasp the problems of energy supply and demand in China.
- Brainstorm and write out the reasons for the difference between the two pie graphs of energy consumption structures in China and in other countries.
- Classify and explain the reasons of the difference between the two pies in detail
- Identify three environmental impacts due to energy consumption in China

2. Skills:

- Raise awareness of rational using renewable energy and pay attention to the development of renewable energy in China
- Enhance creative thinking skills by doing Brainstorming activity
- Improve fluency of communicative skills by discussing with group members
- Strengthen ability of time management in 6-3-5 brainwriting

3. Attitude:

- Increase learning motivation by participating in Brainstorming activity

- Enhance personal responsibility as a group member

Teaching Resources:

PPT

Teacher's Assessment Form

Worksheets / Pie Graphs

Video

Abbreviation: Ss-Students T-Teacher

	<ul style="list-style-type: none"> •<i>Group 1: What is the current situation and prospect of renewable energy in China?</i> •<i>Group 2: Point out the problems of energy supply and demand in China.</i> •<i>Group3: Describe the overall trend of the energy production and consumption in China.</i> <p>(2) Choose a member from each group to present their opinions to the whole class. T assesses the performance of group discussion and presentation.</p> <p>Justification:</p> <ul style="list-style-type: none"> •Video, as a multi-sensory teaching approach, can promote students' different kinds of senses (e.g. auditory, visual, kinesthetic) to the active involvement of the teaching process and to create a profound memory towards classroom activities, which is conducive to the improvement of learning efficiency as well as teaching quality. •Videos are more attractive and impressive to students. Students' attention can be concentrated and new-learned knowledge can be better consolidated. •Video can give Ss a more intuitive feeling. Through watching video, Ss can be cultivated the awareness of the significance of renewable energy in China as well as be learned how to rational use the renewable energy. Discussing in groups provides Ss a good opportunity to express their ideas actively. 			
--	---	--	--	--

<p><u>While-task:</u></p> <p>- To show their basic understanding on the pie graphs</p> <p>-To understand the learning goal of the task</p>	<p><u>While-task: Groupwork Activity (9 mins)</u></p> <p>Brainstorming: 6-3-5 method</p> <p>STEP 1:</p> <p>1. T review and compare the two pie graphs of energy consumption structures again.</p> <p>Justification:</p> <p>Ss should review the information and make comparison of two pie graphs again. This provide ss with opportunity to show their basic understanding on the knowledge given from the textbooks.</p> <p>Formative assessment will be the Ss’ answer to the T’s question. This is to test whether they have master the information of two pies.</p> <p>STEP 2:</p> <p>1. T illustrates the rules of activity and distributes worksheets to Ss</p> <p>a. Ss are asked to form a 6-person group</p> <p>b. Each Ss needs to write down 3 ideas about why the structure of energy consumption is different between in china and in other country</p> <p>c. Activity will be completed in 5 mins</p>	<p>Pie Graphs (appendix 2)</p> <p>Worksheet (appendix 1)</p>	<p>1 min</p> <p>5 mins</p>	<p>Ss’ answer to the questions</p> <p>Ss’ performance in Brainstorming</p>
---	---	--	----------------------------	--

<p>-To encourage Ss generate ideas in different perspectives</p> <p>-To stimulate Ss' creative thinking skills</p> <p>-To increase Ss' learning motivation by brainstorming</p> <p>-To enhance Ss'</p>	<p>2. Ss form groups to complete the learning task in 5 mins</p> <p>Justification: Students are required to form 6-person groups. Each student will brainstorm and write down three ideas about why the energy consumption structures are different in China and in other countries. The ideas should be written on a specific worksheet within 5 mins.</p> <p>Brainstorming approach allows them to generate ideas and to think of the reasons from different perspectives. This also enhances their creative thinking skills and their learning motivation. Formative assessment will be the students' performance in Brainstorming activity to exam whether they have understood why the energy consumption structures in China and in other countries are different.</p> <p>STEP 3: 1. All groups are required to classify and analyze the reasons. T walks around and</p>		<p>3 mins</p>	<p>Ss' explanation of the ideas</p>
--	--	--	---------------	-------------------------------------

<p>communicative skills</p>	<p>gives guidance e.g. Cost: the price of coal fuel is cheaper than other energy</p> <p>Technology: technology in China is too limited to explore new energy</p> <p>2. T encourages each group to explain at least one idea. Appropriate guidance will be given</p> <p>3. T summary the reasons why the two pie graphs of energy consumption structures are different in China and in other countries</p> <p>Justification: It aims to show their personal thinking about why two different energy consumption structures exist. This will improve their ability of communication. Students' explanation of the ideas will be assessed to test whether they further understand the reasons behind the two pies. T's guidance will be given to help ss understand the information.</p>			
<p><u>While-task:</u></p>	<p><u>While-task: Travelling Frog Activity (12 mins)</u></p> <p>1. Teacher first manipulates the popular iPhone game “Travelling Frog” to PPT and introduces the story settings to the students: assuming that the energy consuming structure remains the same from 2018, what would China be like in the year of 2018?</p>	<p>PPT Computer Projector</p>	<p>12 mins</p>	

	<p>Let' s follow the travelling frog and start the journey!</p> <p>2. Recall students' prior knowledge of the products after burning petroleum and coal from chemistry lesson: Nitrogen dioxide, Carbon dioxide, Sulfur dioxide, Sulfur oxides, Suspended particles</p> <p>3. Teacher introduces the functions of different tools from “the shop” and then asks students to pack the luggage for the frog.</p> <p>4. Different combinations of tools would help the frog travel to various destinations. The frog would bring back different “souvenir” after each journey which convey messages correlated to environmental problems. However, the condition is slightly exaggerated in the game to enhance the memory points.</p> <p>1) Zhongzi & green hat: The problem of acid rain is serious in the Southern part of China, which corrodes the hat;</p> <p>2) Dumpling & mask: There is heavy smog in most part of China, especially the Northern part, therefore the mask protects the respiratory tract of the little frog. The song “Stranger in the North” mentions about the smoggy weather in China as well;</p> <p>3) Dumpling & jacket: Due to the emission of greenhouse gas, global warming affects the weather. The frog returns the jacket because it has no use under the high temperature.</p>			
--	--	--	--	--

<p><u>Post-task:</u></p>	<p>4) Fortune cookie & good luck charm: Global warming also influences the ecosystem and causes “mutation” on the frog. The good luck charm keeps him away from the disaster.</p> <p>5. Teacher leads students to conclude the affects mentioned above and ends the little frog’ s journey in China.</p> <p>Justification: T arouses Ss’ interest by presenting the abstract concept of environmental impacts into a concrete “game-based” presentation. The story line of the “travelling frog” creates sense of familiarity as well as enhances Ss’ participation via decision making. T’s humor also brightens the boring learning content and brings it to life, playful examples such as comical voices, jokes, pictures. These strategies create a comfortable learning environment other than chalk and talk.</p> <p><u>Post-task: Summary</u> T invites one of the Ss to act as an assistant teacher in the platform to guide others to summarize what they have learned in this lesson. Then gives a conclusion about this lesson.</p> <p>Justification: Standing in the platform can give Ss much more confidence in expressing their ideas. Summarizing what they have learned in this class in their own words can train their concluding ability and deepen their impression of the content of this classes.</p>		<p>2 mins</p>	
---------------------------------	--	--	-------------------	--

Other Material 1 Worksheet

Ideas			
Group Members			
Member 1			
Member 2			
Member 3			
Member 4			
Member 5			
Member 6			

Other Material 2

Pie Graph (from textbook)

◆ 資料 2：中國和全球的能源消耗結構（2010 年）

