



Saving Resources - Lesson plan of ESD in Geography Can advanced technologies foster sustainable development ?

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Geographical education has to perceive the world from diversified viewpoints by involving ESD (Education for Sustainable Development). This can be realized by teaching geography as an integrated science, including ESD that considers ecological, economic and social aspects.. In Japan especially, geographical education tends to emphasize the environmental aspects. The investigation of circumstances from diversified viewpoints helps to analyse the society scientifically and generates? the qualities of a global citizenship toward a sustainable society. And ESD aims at creating the values of sustainability, which is necessary for a global citizenship. In this context, I have developed the lesson plan of ESD in Geography at a secondary level..

Can advanced technologies foster sustainable development? The presentation shows the advanced technology-generated products and analyses the merits and failures with their effects on the global society. The examples of these products are hybrid cars and mobile phones.

Cars are necessary for the mobility of our widespread modern society. On the other hand, it is also true that environmental pollution is becoming more serious by the increasing number of cars. We usually assume that economic development and environmental protection are contradictory. But hybrid cars which are coming to world attention now, have good gas mileage compared with normal cars, so they can conserve energy and cut down on the amount of exhaust at the same time.

Mobile phones are necessary in business situations, as a tool that helps to communicate while moving. In addition, mobile phones are means that support the life of people living in sparsely populated areas like in Northern Europe. Here, we can curb costs for transmission facilities that were needed otherwise.

There is one thing that underlies these advanced technology-generated products such as hybrid cars and mobile phones. The resource that makes the hybrid car technology and the miniaturization of mobile phones possible: rare metals. Quite an amount of them are needed to produce a hybrid car. There are, however, few metals in Japanese mines. As a result, Japanese companies have to import these metals from overseas like China or the USA. It means that Japanese car companies would not be able to produce their cars if these countries which produce rare metals refused to export to Japan. To avoid such a condition, Japan tries to establish good relationships with countries exporting resources. In order to build mobile phones, we need tantalum which is used to produce capacitors to miniaturize them. The main producing country of tantalum is the Democratic Republic of Congo. Congo is one of the countries suffering from a civil war now. Some armed groups mine tantalum illegally; it has become their main source of income. The civil war is quite convenient for this illegal mining. We as consumers must seriously consider the use of such electronic devices.

The lesson plan for ESD in Geography on the issue of the rare metals, is meant to develop the value of sustainability and helps to build a sustainable society at multi scale levels.