**Grade 8**

**Lesson 10: Expressing Conditions**

**Environment Issues: Climate Change Part 1**

*(Seema was absent for a week because she had typhoid. She missed a whole lesson on climate change. It is their break now. She is sitting with her teacher on the ground with hernotebook to discuss the chapter.)*

Separate slides with animations for climate change phenomenon, global warming, green house effects as per discussion.

Slide 1:

Seema: What is climate change, Miss?

Teacher: You seem to be very excited about the lesson.

Well, climate change means change in the measures of climate for an extended period of time.

For example, when there is change in temperature, wind pattern, the amount of rainfall for a long period of time, the condition is called climate change.

 The environmentalists say that climate change is the phenomenon due to emission of greenhouse gases from fuel combustion, deforestation, urbanization and industrialization.

Slide 2:

Seema: I have heard people talking about global warming and climate change.

Do they mean the same, Miss?

Teacher: Oh no! They do not mean the same.

Climate change is broader in meaning than global warming and green house effects.

Seema: How is climate change broader in meaning?

Teacher: Well, global warming means increase in temperature on the earth’s surface.

It is an aspect of climate change.

When temperature increases, it is one of the changes in climate.

Seema: Climate change includes other changes also.

So climate change is broader in meaning.

Am I right, Miss?

Teacher: Yes. You are right.

But do you know anything about greenhouse gases and green house effects?

Slide 3: SVG

Seema: I heard on the radio that greenhouses gases cause greenhouse effects and greenhouse gases make the earth warm.

Without the greenhouse gases, the temperature of the earth’s surface would be only 6o C which is too cold for us to live.

Teacher: You are right.

But if there is increase in greenhouse gases in the atmosphere, the temperature of the earth increases which is called global warming.

Rise in sea level, ice melting, glacier lake outburst flood, drought and desertification are some of the effects of global warming.

Similarly, warming causes extreme weather conditions like hurricane, storm, tornado etc.

Seema: Oh! Global warming also causes natural disasters.

Slide 4:

Seema: Miss, people say water vapour also increases greenhouse effects. Is that true?

Teacher: That is true.

Along with water vapour; carbon dioxide, methane and nitrous oxide are the major gases that cause greenhouse effects.

 By the way, do you know what greenhouse effect means?

Seema: I think I know a little about it.

When heat cannot escape from the earth, it is called greenhouse effect.

Teacher: You are right. The sunlight falls on the earth’s surface in the form of radiation.

The earth absorbs the heat and reflects back some of the radiation.

But when the reflected radiation cannot escape out of the atmosphere,the temperature on the earth rises.

This state is known as greenhouse effect.

Slide 5:

Seema: Are there any effects of climate change in Nepal too, Miss?

Teacher: Of course, there are.

One of the effects of climate change is late monsoon.

In the past, in Kathmandu, monsoon began in Jestha and Aashad but now it has shifted to Shrawan and Bhadra. ( you can use image from the story Ghum)

We are experiencing unusual rainfall and the rainy days have decreased.

Glacier melting is another effect of climate change.

It has been found that glacier melting is occurring at the rate of 50 feet per year.

Similarly, extreme fog is observed in Terai region, so Teraiis colder than it used to be in the past.

For Terai – you can use image from KabikoMayur.

Slide 6:

Seema: My grandmother says that there are more mosquitoes these days.

Is this also an effect of climate change?

Teacher: That’s right.

Previously, there were mosquitoes only in Terai and mid- hills but now we find mosquitoes in high hills as well.

Seema: You said that we experience late monsoon and unusual rainfall.

It must have affected rice production because we plant rice in monsoon.

Has climate change affected other aspects of agriculture too, Miss?

Teacher: Definitely climate change has affected agriculture of Nepal.

Cold waves have reduced the production of the winter crops like potatoes, sarson, rayo, toriya, lentil and chickpeas. (real images)

Some of the varieties of paddy, wheat and maize are no longer in use because of the shift of climatic zones. (real images)

However, increase in temperature has caused early maturity of the crops, which helps to grow more crops in the same crop cycle.

Similarly, certain varieties of vegetables, which were grown in a particular season in the past, are found throughout the year these days.

Slide 7:

Seema: Climate change seems to have more adverse effects than benefits.

 How can we reduce climate change, miss?

Teacher: Actually, people know very less about climate change and its consequences.

~~Even though the information is made public, it is very difficult for general people to understand what it means.~~

~~The information comes in a complex form.~~

Therefore, we need to make the information clearer and simple so that everyone understands.

Seema: You said Landslide is also one of the causes of climate change.

We need to discourage deforestation and encourage plantation.

We can use biogas to cook food so that we do not need to cut down the trees to make firewood.

Most of the people in our village use biogas to cook food.

~~My father said an organization had given us some money to set up a biogas plant.~~

If biogas is used everywhere instead of firewood, we can definitely save a lot of forests.

(real images)

Slide 8:

Teacher: You are absolutely right.

Deforestation can be discouraged through community forestry too.

You have seen people in your village conserving the forest, haven’t you?

Seema: Yes, I know. Our forest is also a community forest.

We use the forest but we work for its conservationas well.

What are the sources of energy that we can use, Miss?

Teacher: We should use solar power and hydroelectricityespecially in sectors where a lot of energy is used.

It helps reduce dependence on forest resource for energy as well as helps maintain natural resources.

Seema: Perhaps we need to change the way we are farming to reduce the effects of climate change.

Teacher: We need to practice better agricultural technologies.

We need to start farming of the crops that are drought- tolerant.

Similarly we need to use less chemical fertilizer, insecticides and pesticides.

We should useorganic fertilizers instead.

I have seen your mother using cow- dung in your fields.

It is good for the environment, and also for the well being of people.

 *(The bell rings. So they stop the discussion and go to their classes.)*