

Global Warming” Perceptions of Primary Education 7th Grade Students in Turkey

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Abstract: The objective of present research is by employing phenomenographic research method to define and explain the way Primary Education 7th Grade students in Turkey perceive “Global Warming” concept. Study group of research consists of 553 primary education 7th grade students studying in Turkey. Research data have been compiled through collecting the sentences of primary education 7th grade students: “*In my opinion global warming is....*”. At the end of phenomenographic analysis, “10 dissimilar global warming description categories” have been set. 11% of participant primary education 7th grade students have defined global warming as “*increase in global temperature*”, 8% described it as “*retreat of glaciers*”, 4% as “*change of climates and seasons*”, 9% as “*drought and desertation*”, 18% as “*a disaster caused by humans*”, 13% “*ozone layer depletion*”, 5% as “*spoil of the natural balance of the earth*”, 10% as “*end of the world and humanity*”, 5% as “*a disaster calling for immediate measurements*” and 16% as “*a disaster caused by greenhouse gases*”. At the end of research it has been suggested that in primary education course schedules, global warming subject should be sufficiently studied and an effective environmental education should be provided to primary education students.

Key words: Primary education • Global warming • Phenomenography • Environmental education

INTRODUCTION

Environmental problems are related to the environmental exploitation of selfish humanity discarding common benefits and values of society to gain personal benefits [1]. The underlying cause of environmental problems is the phenomenon of industry having started in 17th century and rapidly developed during the 19th century. Rapid population increase, the pressure put before the resources and ecological system on earth, challenges in nutrition, habitation, education and health services, decreasing living species, increasing pollution, climate changes, fast urbanization and unsanitary industrialization brought about the greatest environmental challenges our world faces in this 21st century [2-4].

Currently one of the biggest environmental problems in the world is global warming. Global warming is the process of an artificial increase in atmosphere layers near the earth and solid earth due to an increase in the concentration of certain gases known as “greenhouse gases” which emerge as an outcome of several human activities. The majority of latest researches have put forth that global heat increases and retreat of glaciers in huge masses point to the emergence of global warming. There

are several causes accounting for the occurrence of global warming [5]:

- As an effect of fossil fuel burning, abnormal concentrations of greenhouse gases, carbon dioxide in particular, in the atmosphere,
- Damaging vegetative cover, deforestation
- Rapid and unplanned urbanization
- Rapid industrialization

Lately in the whole world environmental disasters caused by global warming started to be a concern for everyone and these threats started to push all nations, developed states in particular, to take certain measurements. The foremost way to fight against global warming and other environmental problems is a conscious and organized environmental education. The main objective of environmental education is to inform all the people in society about environment, gain positive and permanent behavioral changes and enable active participation. Environmental education should be a life-long training starting from pre-school period and continuing in all formal and non-formal education stages of life [6-8].

In literature scanning, it is possible to come across qualitative and quantitative studies analyzing global warming perceptions of students from different educational levels. Some of these researches are: [9-25].

The Purpose of the Research: If people gain a consciousness about the definition of global warming which is a universal issue, its causes and projected outcomes and the measurements to take against global warming then the next generations shall be raised as more sensitive towards environment. Consequently offering environmental education to students becomes even more critical at this point. Conducting researches that put forth global warming perceptions of students shall gain a general perspective and approach to scientists, governments and educational program planners [3]. To eliminate environmental problems, provide lasting solutions and raise more sensitive generations, the necessity of environmental education at schools bears greater importance. The studies on environmental education underline the necessity to start this education in pre-school period.

The environmental consciousness is critical in furnishing primary education students with sufficient data on global warming and guiding them to put these thoughts into actions for the purpose of leaving a better future for the youth. Since there is no other research putting forth global warming perceptions of primary education 7th grade students in Turkey, through a *phenomenographic research pattern*, present study is deemed significant in the field of environmental education. From this perspective this study is a vanguard in both leading the field and researchers. Within that framework, the objective of present research is to learn about the definitions of global warming stated by primary education 7th grade students and to prepare categories based on their own knowledge and experiences.

Method

Research Pattern: In this research a qualitative research method, phenomenography has been used. Phenomenography is a qualitative research approach that investigates qualitatively different ways in which people experience something or think about something [26]. As data gathering method for phenomenographic research face-to-face interviews, group interviews, surveys and written responses are used amidst the subjects [27]. In phenomenography there is not a standard data analysis method. Data need to be checked repeatedly from the naming stage to classification stage. Phenomenography attempts to make generalizations from

objects and the way perceptions on events turns into expression; in other terms it tries to form description categories. Description categories represent base meanings of concepts showing the similarities and differences of naming and crudely indicate the number of qualitative ways a phenomenon can be described, analyzed and perceived [28].

Study Group: Study group of research consists of total 553 primary education 7th grade students receiving education during 2009-2010 academic year in 4 cities in Turkey (Ankara, Adana, Antalya and Karabük). Of all the participant primary education 7th grade students 282 are girls and 271 are boys. In other words, 51% of study group is girls and 49% is boys.

Data Gathering and Evaluation: In order to detect global warming perceptions of primary education 7th grade students participating in research group, they have been asked to answer a semi-structured form enclosing short and open ended questions. In this form, there are expressions like "*I think Global warming means ...*", "*In my opinion global warming is...*". Sufficient amount of time has been given to primary education 7th grade students to state their opinions on global warming. Descriptions students wrote in their own hand writing constituted the main data source of research.

Subsequently data gathered from students have been studied via phenomenographic analysis method data analysis technique. In this analysis, at first all the responses given to global warming concepts were read aloud quickly in one session. Later the same responses were read quickly for a second and third time. After the third reading some temporary pre categories were set generally and these pre-categories served as a foundation in future readings. In other words these categories were tested against student responses. Advanced readings were used the verification of categories and similar responses were placed in certain categories. By classifying the responses of primary education 7th grade students certain description categories were formed. In situations when a student's response occupied two or more categories it was included into the hierarchically highest category. At the end of analysis, 10 different global warming concepts have been obtained.

Findings: As the descriptions given by primary education 7th grade students to global warming have been analyzed, 10 dissimilar qualitative global warming concepts have been determined. These description categories have been placed in a hierarchical order from the simplest (concept 1) to the complex and comprehensive one (concept 10).

Although the initial 4 description categories of primary education 7th grade students are composed of general expressions on global warming in the last 6 description categories, students focus on impact of humanity on global warming and responsibilities of humanity against this disaster.

Below are given conceptual categories comprising expressions of primary education 7th grade students:

Concept 1. Global Warming Is the Increase of Heat in the World: This definition has been made by 64 students. In description category 1, primary education 7th grade students generally defined global warming as “heat increase”. The expressions placed in this category are given in Table 1.

As indicated in Table 1, 11.3 % (64 students) of participant primary education 7th grade students defined global warming as global heat increase.

Concept 2. Global Warming Is the Retreat of Glaciers: This definition has been given by 43 students. In description category 2, primary education 7th grade students defined global warming as the retreat of glaciers caused by heat increase. The expressions within this category are as indicated in Table 2.

As illustrated in Table 2, 7.8% (43 students) of participant primary education 7th grade students defined global warming as “retreat of glaciers due to global increase of heat”.

Concept 3. Global Warming Is the Change of Climates and Seasons: 20 students have given this description. In description category 3, primary education 7th grade students defined global warming as the change of climates and seasons. The expressions of this category are as shown in Table 3.

As shown in Table 3, 3.6% (20 students) of participant primary education 7th grade students defined global warming as “global change of climates and seasons”.

Concept 4. Global Warming Is the Expression of Drought and Desertation: 49 students have made this definition. In description category 4, primary education 7th grade students underlined the global drought, water scarcity and desertation to define global warming. The expressions of this category are as shown in Table 4.

As Table 4 illustrates 8.9% (49 students) of participant primary education 7th grade students defined global warming briefly as “drought”.

Table 1: Expressions of Concept 1

Description category	Expressions	N	%
Global warming is the heat increase in the world.	It is the heat increase in the world.	25	4.5
	It is the higher warming of sun lights.	2	0.4
	It is the increase of global heat over normal values.	8	1.4
	It is general increase of heat.	9	1.6
	Global warming is the increase in heat due to effects like factory disposals, fossil fuels etc.	19	3.4
	Total	64	11.3

Table 2: Expressions of Concept 2

Description category	Expressions	N	%
Global warming is retreat of glaciers.	Global warming is the retreat of glaciers.	15	2.7
	Global warming is heat increase and retreat of glaciers.	9	1.6
	Global warming is retreat of glaciers and increase in water level.	17	3.1
	Global warming is retreat of glaciers and extinction of some types of animals.	2	0.4
	Total	43	7.8

Table 3: Expressions of Concept 3

Description category	Expressions	N	%
Global warming is the change of climates and seasons.	Global warming is the change of climates.	9	1.6
	Global warming is the change of seasons.	9	1.6
	It is the change of seasons due to retreat of glaciers.	2	0.4
	Total	20	3.6

Table 4: Expressions of Concept 4

Description category	Expressions	N	%
Global warming is the expression of drought and desertation.	Global warming means drought.	26	4,7
	It is the desertation of the world.	6	1,1
	Due to global warming, glaciers retreat, lakes dry and water becomes scarce.	17	3,1
	Total	49	8,9

Table 5: Expressions of Concept 5

Description category	Expressions	N	%
Global warming is an environmental problem caused by irresponsible actions of humans.	Global warming is caused by humans.	16	2,9
	Global warming is caused due to irresponsible acts of humans.	44	7,9
	Global warming is caused due to the harms given to nature by humans.	8	1,4
	Global warming is caused due to human errors, people need to be aware.	22	4,0
	Global warming is caused due to the polluting of people on nature and environment.	10	1,8
	Total	100	18,0

Table 6: Expressions of Concept 6

Description category	Expressions	N	%
Global warming is caused by the depletion in ozone layer arising out of several reasons.	It is the spoil of ozone layer.	1	0,2
	It is the depletion of ozone layer.	24	4,4
	It is the depletion of ozone layer due to irresponsible actions of humans.	21	3,8
	It is the excessive heating of the world due to ozone layer depletion.	27	4,8
	Total	73	13,2

Table 7: Expressions of Concept 7

Description category	Expressions	N	%
Global warming is the spoil of the natural balance of earth.	It is the spoil of the natural balance of earth.	17	3,1
	It is the loss of biological diversity and living spaces.	9	1,6
	Total	26	4,7

Table 8: Expressions of Concept 8

Description category	Expressions	N	%
Global warming is the end of the world.	It is the gradual disappearance of the world.	22	4,0
	Global warming is the extinction of a number of plants and animal species.	11	2,0
	It is the end of the world (depletion of water resources, forest fires and extinction of living species.)	20	3,6
	It is the end of humanity	1	0,2
	Total	54	9,8

Table 9: Expressions of Concept 9

Description category	Expressions	N	%
Global warming is a disaster calling for immediate measurements.	Against the impacts of global warming, we have to learn to be thrifty.	7	1,3
	It is a disaster calling for immediate measurements (forestation, environmental protection, ban on perfume etc.).	19	3,4
	Environmental education should be provided	3	0,5
	Total	29	5,2

Table 10: Expressions of Concept 10

Description category	Expressions	N	%
Global warming is the excessive heating of the earth due to an increase in gases known as “greenhouse gases”. layer because of cosmetic products,	It is the heat increase caused by the depletion of ozone	27	4,8
	plant smokes, fossil fuels etc.	28	5,0
	Plant smokes, exhaust wastes, deodorants etc. rise in the atmosphere and create a fog hence prevents the turn of sun lights and in the end the world gets warmer.		
	Depletion of ozone layer; increase in heat and retreat of glaciers due to greenhouse effect	33	6,0
Total		88	15,8

Concept 5. Global Warming Is an Environmental Problem Caused by Irresponsible Actions of Humans:

100 students have given this definition. In description category 5, primary education 7th grade students foregrounded “human” factor in global warming. Expressions of this category are indicated in Table 5.

As shown in Table 5, around 18% (100 students) of participant primary education 7th grade students attributed the causes of global warming to the unconscious and irresponsible actions of humans.

Concept 6. Global Warming Is the Depletion of Ozone Layer Due to Certain Reasons:

73 students have made this description. In description category 6, primary education 7th grade students defined global warming as the depletion or spoil of ozone layer. Expressions of this category are stated in Table 6.

As stated in Table 6 about 13.2% (73 students) of participant primary education 7th grade students expressed that global warming is caused due to ozone layer depletion.

Concept 7. Global Warming Is the Spoil of Natural Balance (Ecosystem) of Earth:

26 students provided this definition. In description category 7, primary education 7th grade students focused on the disturbing effects of global warming on natural balance. Expressions of this category are given in Table 7.

As indicated in Table 7, around 4.7% (26 students) of participant primary education 7th grade students defined global warming as the spoil of ecosystem.

Concept 8. Global Warming Is the End of the World with its Consequences and Impacts:

54 students made this definition. In description category 8, primary education 7th grade students described global warming as the end of the world. Expressions of this category are as given in Table 8.

As Table 8 indicates, about 9.8% (54 students) of participant primary education 7th grade students stated that with the impacts of global warming, the end of world shall come.

Concept 9. Global Warming Is a Disaster Calling for Immediate Measurements:

29 students have given this definition. In description category 9, primary education 7th grade students stressed the necessity to take precautions against the impacts of global warming. Expressions of this category are shown in Table 9.

As Table 9 illustrates about 5.2% (29 students) of participant primary education 7th grade students stated the necessity to take measurements against the outcomes of global warming.

Concept 10. Global Warming Is the Excessive Heating of the Earth Due to an Increase in Gases Known as “Greenhouse Gases”:

88 students have made this definition. In description category 10, 7th grade students gave the most comprehensive description of global warming. Students defined global warming as the excessive heating of the earth due to an increase in greenhouse gases. Expressions of this category are as given in Table 10.

As noted in Table 10, around 15.8% (88 students) of participant primary education 7th grade students focused on the effect of greenhouse gases in the emergence of global warming.

Aside from all these categories, one student claimed that global warming was an exaggerated phenomenon and six students declared to have no idea about global warming.

CONCLUSION AND DISCUSSION

Specific to this research, primary education students in Turkey expressed different dimensions of global

warming, 11.3% of participant primary education 7th grade students defined global warming as “*increase in global temperature*”, 7.8% described it as “*retreat of glaciers*”, 3.6% as “*change of climates and seasons*”, 8.9% as “*drought and desertation*”, 18% as “*a disaster caused by humans*”, 13.2% as “*ozone layer depletion*”, 4.7 % as “*spoil of the natural balance of the earth*”, 9.8 % as “*end of the world and humanity*”, 5.2 % as “*a disaster calling for immediate measurements*” and 15.8% as “*a disaster caused by greenhouse gases*”.

The findings obtained in this research are supportive of studies on global warming perceptions of students from different grades. Present findings are identical to the findings obtained from Aydin (2010) and Kılınç *et al.* (2008) research on secondary education students, Demirkaya (2008)’s research on prospective class teachers, Rye *et al.* (1997) and Shepardson *et al.* (2009)’s research on primary education students.

In their definitions of global warming, primary education 7th grade students foregrounded “human” factor and irresponsible actions of humans as the cause of global warming. In the researches of Shepardson *et al.* (2009), Aydin (2010), Kılınç *et al.* (2008), Demirkaya (2008), Boyes *et al.* (2009), Boyes and Stanisstreet (1992, 1993) similar findings were obtained.

13.2% of primary education 7th grade students stated that global warming occurred due to the depletion in ozone layer. Some of the individuals in the study groups of Boyes *et al.* (2009), Demirkaya (2008), Aydin (2010) also pointed to the depletion of ozone layer for the emergence of global warming.

5.2% of primary education 7th grade students underlined the necessity to take measurements against global warming. Similar results have been obtained from other researches as well. For instance Shepardson *et al.* (2009) in a research analyzing 16 international global warming researches explained that in the formation of global warming greenhouse gases have been effective and to prevent that filters need to be installed on factories, forestation activities should be speeded, public transportation vehicles need to be preferred and savings should be made.

Present study is restricted with total 553 primary education 7th grade students studying in Turkey. Via phenomenographic research method that can be conducted amongst primary education 7th grade students from different nations and states, perceptions on environment, global warming, species under the threat of extinction and similar concepts may be analyzed. Data

obtained from students of different nations or cultures may be compared.

The superficiality of the global warming definitions given by primary education 7th grade students may be attributed to the fact that in classes primary education 7th grade students receive education, it is highly possible that teacher centered learning approaches are practiced because in teacher centered learning approaches teacher, for the aim of transferring continuous knowledge, adopts a didactic teaching model and views the students as passive receivers. In such class environments it is not possible that students acquire high-level skills like critical thinking, creative thinking, problem solving, questioning [29]. Harmonizing several scientific disciplines, environmental education should be treated in a way to cover all educational levels in and out of school and should be public oriented. In other words, it should not merely include school subjects but students should be able to transfer the knowledge and experiences they learn at school into social life. Primary education 7th grade students should be given a chance to take part in environmental education project works. During lessons, it should be emphasized that environmental issues do not merely impact one region or nation but the whole world.

Based on the findings obtained from this research some suggestions can be rendered related to primary education 7th grade program applications. A more realistic and up-to-date program on global issues may be taught to primary education 7th grade students. Before teaching concepts about near environment, teachers should bear in mind that students might have been misinformed earlier. Within that scope, global warming concepts of participant primary education 7th grade students is not that scientific. It is envisaged that description categories put forth are mostly based on students’ experiences on television, internet, news and documentaries rather than a planned course schedule at school.

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