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Make It Happen: Our Nature Our Future¹

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Article History

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Abstract

The aim of this study is to draw attention to the global problems in the world and to gain ecological awareness by integrating the self-consciousness with education. Activities that will enable students to better understand the Sustainable Development Goals were implemented with project-based education method with using Web.2 Tools. Each teacher has integrated their course achievements with project activities into the curriculum and their students' learning outcomes have increased. This study is an eTwinning Project. It lasted five months. It was conducted with 25 teachers and 186 secondary school students from Turkey, Romania, Lithuania, Spain and Portugal. The aims and objectives of the study matched up with the 2023 year vision and 21st century skills of our Ministry of National Education. By creating student teams in accordance with the SDGs, posters, the logo competition, games, e-books, word clouds, story writing, interviews, the song, the poem, cultivation, water and carbon footprint measurements, personality test were prepared and applied. After the student-centered work, they were informed and about the monthly activities with the Project-based education method and the results were evaluated. Process-oriented evaluations were made individually at the teachers and students meetings every month. Before the study, pre-surveys were applied to measure the readiness of teachers and students. Activities were shaped according to the data obtained. According to the results of the study, teachers and students gained awareness about recognizing the SDGs, having information about the work done in the world and taking responsibility individually. It has been seen that they realize that the change begins with us.

Keywords: Sustainable development goals, environmental education, environmental responsibility.

1. Introduction

Western countries started to look for new ways of searching in development, upon the understanding that the relative increase in welfare throughout the world with the industrialization process has serious environmental costs over time. The total GDP of the countries in the world for the year 2020 is around 84 trillion dollars (<https://tr.wikipedia.org>, 2022), which gives us important information about the pollution of natural resources in the world. With industrialization, the rapid spread of polluting technologies around the world and the consequent pollution of the seas, the melting of glaciers, the destruction of forests, and the reduction of biological diversity have turned into a global environmental problem in a short time. Moreover, when the population increase in the world is added to this, the size and severity of environmental problems have increased. When it was understood that the savage development approach followed in western countries and the developing countries that followed it could not be sustained, western countries started to seek a new way of development with the effect of rising social reactions against environmental degradation that started after the 1960s. The idea of sustainable development has emerged as an alternative thought and a new hope to the idea of wild development in the face of the rapid pollution of nature and the danger of resource depletion in Western countries. In the emergence of sustainable development, the strengthening of the symptoms of the irreversible deterioration of the relationship between the environment and the economy in West has been effective (Kılıç, 2012: 204).

Table 1. Sustainable development goals

Goal 1: No Poverty	Goal 10: Reduced Inequality
Goal 2: Zero Hunger	Goal 11: Sustainable Cities and Communities
Goal 3: Good Health and Well-being	Goal 12: Responsible Consumption and Production
Goal 4: Quality Education	Goal 13: Climate Action

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Table 1 (continued)

Goal 5: Gender Quality	Goal 14: Life Below Water
Goal 6: Clean Water and Sanitation	Goal 15: Life On Land
Goal 7: Affordable and Clean Energy	Goal 16: Peace, Justice and Strong Institutions
Goal 8: Desent Work and Economic Growth	Goal 17: Partnerships for the Goals
Goal 9: Industry, Innovatioan and Infrastructure	

Source: <https://www.tr.undp.org/content/turkey/tr/home/sustainable-development-goals.html>

Şahinöz, who defends that current natural resources do not belong only to current generations, but that future generations have the right to do so, although there is a very large literature in the background regarding the historical development of the concept of sustainable development, the concept was recognized worldwide with the report called *Our Common Future*, published by the UN in 1987 (2019: 79) In the definition of the study, also known as the Brundlant Report, sustainable development is defined as “meeting the needs of the present without compromising the needs of future generations”. Although sustainable development emerged as a very limited and theoretical approach, it is seen that the concept started to materialize over time and became a concept used in many areas from environmental policies to EIA applications. In fact, sustainable development has three pillars: human, environment and economy (Unesco, 2007) and it is a development approach that aims at the most ideal harmony with another or fusion of the environment, society and economy as a whole (Özmehmet, 2008: 4). 17 sustainable development goals have been determined based on these three pillars. Thus, solutions were sought for global environmental problems, economic and social problems inevitably.

The concept of sustainable development, contrary to those who advocate zero growth, did not exclude the human element. Even in the 1970s, it was understood that the developing countries did not look at the environmental protection issue because of the hunger and poverty problems in their countries. In fact, the words that best reflect the perspectives of developing countries on environmental protection are undoubtedly Indira Gandhi's words "The biggest environmental pollution is poverty" (Şahinöz, 2019: 96). It is an action plan that aims to unite all humanity on a common ground in the protection of an environment that includes peace and prosperity, which aims to eradicate poverty worldwide by protecting the environment. Because today, world resources, especially fossil fuels, are consumed unconsciously, and as a result, environmental pollution leads to irreversible environmental destruction. In order to combat environmental pollution, everyone from seven to seventy has important duties and responsibilities. It has been understood that only making legal arrangements and using intensive technology are not sufficient to combat problems such as climate change, which is one of the most threatening developments in the world ecosystem among environmental problems today. First of all, there is a need for a radical change in the behavior of individuals, in other words, human behavior. However, the change of positive attitudes and behaviors towards the environment depends on an education that will ensure the change in consciousness and value judgments of people (Şeker & Hacıeminoğlu, 2021: 5; Tekin, 2021: 19). Due to the well-known role of education in the change of individual behaviors, all aspects of education programs should be changed in terms of purpose and content to be compatible with the foundations of sustainable (Tekin, 2021: 32).

It is seen that some studies on education and sustainable development goals also support this subject. According to the results of the studies on it, it has been concluded that the adoption of the concept of sustainable development by teachers and students in the education system is a fundamental phenomenon. In a sense, education has become the most important building block of the idea of sustainable development. Because the adoption of this by current generations and the achievement of goals means a better social life, a better environment and a better economy for future generations (Eser, 2018: 404-417; Tekin 2021: 19-32).

One of the most important elements holding the society together is the existence of a structure based on common values undoubtedly. In order for this structure to maintain its existence for a long time, it depends on the fact that individual interests can be ignored in the face of social interests. It is a value that can only be gained in the school environment that the individual has to maintain a balance between social interests and individual interests. The awareness that environmental values are the common value of all humanity and the idea that they should be strictly protected can of course be gained through education in the best way.

Environmental protection and education are among the topics that come to the fore from time to time in various international meetings. One of the important meetings dealing with sustainable development and education is undoubtedly the United Nations Sustainable Development Summit held in New York between 25-27 September 2015. At this summit, the article "*Providing quality education that covers everyone and provides equal quality education to everyone and providing lifelong education to everyone*", which is included in the 2030 Sustainable Development Goals, is important in terms of supporting quality and lifelong learning opportunities, and this decision has become one of the main issues of the UNESCO education sector (UNESCO, 2021).

In this context, the years between 2005-2014 were named as the "Decade of Education for Sustainable Development by the United Nations ". By this means, the organization emphasized that everyone should receive education regarding sustainable development within ten years and in this context, it tried to instill in societies how important education is (Bulut & Özgül, 2019: 35; MEB, 2022).

The most effective method for achieving sustainable development goals, protecting the environment and raising individuals with high environmental awareness can be achieved with a intensive inclusive education given to individuals at a very early age. The success of these trainings depends on the quality of the training as well as the quantity. The success of these trainings depends on the quality of the training as well as the quantity. For this reason, the content of the education given should always cover topics and values such as "environmental literacy", "critical thinking", "empathy", "problem solving", "social participation", "perceiving time and chronology" and "working in groups". These values, which will be brought to individuals, will not only help individuals to perceive and solve environmental problems, but also to solve other problems they encounter in the social arena.

2. Goals and Subgoals

- The priority of the project is to draw attention to the global problems in the world, to realize the importance of sustainable development and to gain the awareness of individual responsibility by integrating it with education.
 - It is aimed to raise environmentalist individuals who know that students should accept nature as a living being and live in harmony with nature.
 - It is aimed to use Web 2.0 tools effectively in education and to develop foreign language skills.
 - It is aimed to ensure the safe use of technologies such as computers and mobile phones.
 - The aims and objectives of the study coincide with the 2023 vision and 21st century skills of our Ministry of National Education.
 - With an interdisciplinary approach, permanent learning was aimed by integrating the achievements suitable for each teacher's branch in the project with the project activities.

3. Method

With this study, qualitative and quantitative analyzes, especially project-based teaching methods and techniques, were used to determine whether students and teachers adopt an environmentalist lifestyle, whether they are aware of global environmental problems and whether they are ready to take individual responsibility for the solution of these problems. Within the scope of action-oriented research, a literature review was conducted on this field. In this context, it was decided to conduct a survey to measure the environmentalist attitudes of students and teachers and questions were prepared in this direction. In the study, student-centered, doing-living, group work, collaborative teaching methods and techniques were also used within the scope of the project. The results of the questionnaires applied to the students and teachers were evaluated using a fivefold Likert and the article was shaped in line with the information obtained from it (Table 2).

Table 2. Project working process and monthly themes

October	1- Preparatory work 2- Creating a Project Working Plan 3- Choosing the Logo 4- Pre-surveys for Teachers and Students 5- First Collaborative Product “ What is The Most Important Environmental Problem In Your Area?”
November	1- Second Collaborative Product “What are the Sustainable Development Goals?” 2- Mixed International Teams 1.Team: Goal 2,3 2.Team: Goal 6,14,15 3.Team: Goal 7.11 4.Team: Goal 12,13 3- Mixed School Team Meetings (A team will meet each day to exchange ideas about group work) 4- Student presentations (Canva, Google presentation, Prezi or Emaze)
December	1- Evaluation (Student,Teacher Mid-Project Evaluations) 2- We celebrate the New Year with the Wishes of the Realization of teh SDG. 3- We Interview about SDG. 4- “Common Product” Our New Year Song 5- Sponsor a Penguin
January	1- Preparing a New Year’s Calender (Common Product) 2- Writing the “Our Future Beautiful, Sustainable, Together” with Bookmarks (Common Product) 3- Calculate Carbon Footprint, Water Footprint and Make Decisions to Reduce the Footprints

Table 2 (continued)

	4- Make It Happen: "Our Nature Our Future" Acrostic Poem (Common Product)
	5- Preparing a Personality Test on Environmental Awareness with the APESTER Program
February	1- Project Final Survey
	2- Safer Internet Day – Mind Map (Collaborative Product)
	3- Our Second Home- Around Our School
	4- Final Product (Story)
	5- Virtual Exhibition
	6- Project First and Last Survey Comparison and Project Final Report
	7- Student ans Teacher Project Evaluations

3.1. Working Group

It was conducted with 25 teachers and 186 high school students from Turkey, Romania, Spain, Lithuania and Portugal.

3.2. Data Collection Tool

In order to collect data in the research, the scale applied in the literature review in the article The environmental attitudes inventory: A valid and reliable measure to assess the structure of environmental attitudes by Taciano L. Milfont and John Duckitt was used. In order to test the structural validity of the scale, the Cronbach Alpha reliability test was used and the coefficient of 80 found is within the reliability limits (Milfont ve Duckitt, 2006).

4. Result

4.1. Student Pre-Survey –Last-Survey Analysis

In the pre-survey applied to the students about what an environmentally sustainable society means, the rate of those who said that it would not harm natural resources was 8.9% and the rate of those who said that it would protect resources for future generations was 15.2%, these rates increased to 13.6% and 18.4%, respectively after the study (Table 3).

Table 3. An environmentally sustainable society

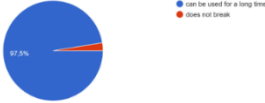
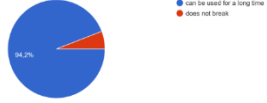
Pre-survey	Last-survey
<p>1. An environmentally sustainable society 60 / 79 öğrenci yanıtladı</p> <p>does not damage its natural resources: 7 (11.7%) saves resources for future generations: 12 (20%) ✓ All of the above: 60 (100%)</p>	<p>1. An environmentally sustainable society 70 / 103 öğrenci yanıtladı</p> <p>does not damage its natural resources: 14 (20%) saves resources for future generations: 19 (27.1%) ✓ All of the above: 70 (100%)</p>
<p>Sources that do not harm their naturalness % 8.9 Protects resources for future generations % 15.2 All of the above % 75.9</p>	<p>Sources that do not harm their naturalness % 13.6 Protects resources for future generations % 18.4 All of the above % 68</p>

Students were asked whether they had heard about the sustainable development goals before, 65.8% of the rate in the pre-survey stated that they had heard about it before, but this rate increased to 76.7% in the survey conducted at the end of the study (Table 4).

Table 4. Have you heard about "Sustainable Development Goals" before?

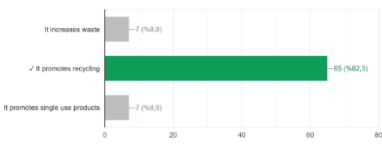
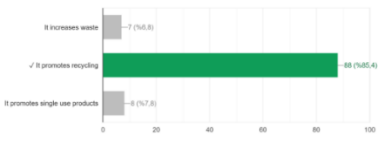
Pre-survey	Last-survey
<p>2. Have you heard about "Sustainable Development Goals" before? 79 / 79 öğrenci yanıtladı</p> <p>✓ Yes: 52 (65.8%) ✓ No: 27 (34.2%)</p>	<p>2. "Sürdürülebilir Kalkınma Hedefleri"ni daha önce duydunuz mu? 103 / 103 öğrenci yanıtladı</p> <p>✓ Yes: 79 (76.7%) ✓ No: 24 (23.3%)</p>
<p>Yes % 65.8, No % 34.2</p>	<p>Yes % 76.7, No % 23.3</p>

Table 5. A sustainable product is one that

Pre-survey	Last-survey
<p>3. A sustainable product is one that 79 yanı</p>  <p>Can be used for a long time % 97.5 Unbreakable % 2.5</p>	<p>3. A sustainable product is one that 103 yanı</p>  <p>Can be used for a long time % 94.2 Unbreakable % 5.8</p>

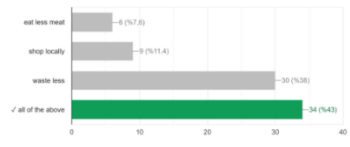
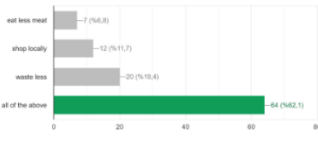
The students were asked what a sustainable product is, the rate of those who said it could be used for a long time in the pre-survey was 97.5%, and 94.2% in the last survey. However, due to the fact that the problem was not fully understood by the students, it was concluded that there was such a result. In fact, what is meant by sustainable product in this question is products that are renewable and do not harm the nature (Table 5).

Table 6. How does circular economy promote sustainability?

Pre-survey	Last-survey
<p>4. How does circular economy promote sustainability? 65 / 79 değı yanı</p>  <p>Increases waste % 8.9 It encourages recycling % 82.3 Promotes disposable products % 8.9</p>	<p>4. How does circular economy promote sustainability? 88 / 103 değı yanı</p>  <p>Increases waste % 6.8 It encourages % 85.4 Promotes disposable products % 8.7</p>

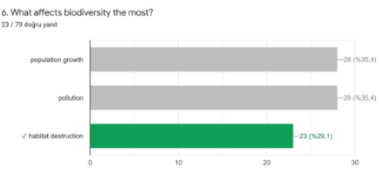
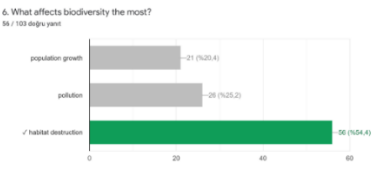
The question of how a circular economy supports sustainability was asked to the students; 82.3% of the students participating in the first survey encourage recycling and 8.9% increase waste. In the second survey, these rates were 85.4% and 6.8% respectively (Table 6).

Table 7. What are ways to eat more sustainably?

Pre-survey	Last-survey
<p>5. What are ways to eat more sustainably? 34 / 79 değı yanı</p>  <p>Eat less meat % 7.6 Do the shopping locally % 11.4 Waste less % 38, All of the above % 43</p>	<p>5. What are ways to eat more sustainably? 64 / 103 değı yanı</p>  <p>Eat less meat % 6.8 Do the shopping locally % 11.7 Waste less % 19.4, All of the above % 62.1</p>

The students were asked what the ways of a more sustainable diet are, and 43% of the students answered positively to the total of the options such as *consuming less meat, do the shopping locally, and wasting less* in the first survey, while this rate increased to 62.1% in the last-survey (Table 7).

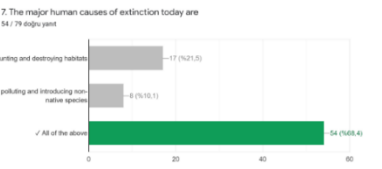
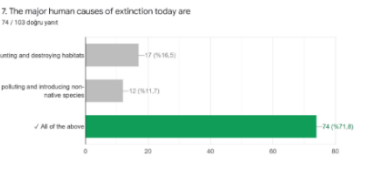
Table 8. What affects biodiversity the most?

Pre-survey	Last-survey
 <p>6. What affects biodiversity the most? 23 / 79 deŋru yant</p> <p>population growth 20 (26.6) pollution 20 (26.6) ✓ habitat destruction 23 (29.1)</p>	 <p>6. What affects biodiversity the most? 56 / 103 deŋru yant</p> <p>population growth 21 (20.4) pollution 25 (24.2) ✓ habitat destruction 50 (48.4)</p>
<p>Population growth % 35.4, Pollution % 35.4 Habitat destruction % 29.1</p>	<p>Population growth % 20.4, Pollution % 25.2 Habitat destruction % 54.4</p>

The students were asked what affects biodiversity the most; While 29.1% of the students in the pre-survey said habitat destruction, this rate increased to 54.4% in the last-survey (Table 8).

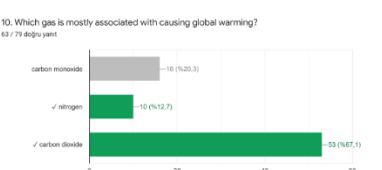
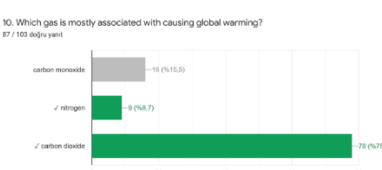
The students were asked what the reasons for the decrease in biodiversity are in the world. In the pre-survey, 68.4% of the students answered as hunting, pollution of nature, intervention in wildlife, while this rate was 71.8% in the last-survey (Table 9).

Table 9. The major human causes of extinction today are

Pre-survey	Last-survey
 <p>7. The major human causes of extinction today are 54 / 79 deŋru yant</p> <p>Hunting and destroying habitats 17 (21.5) polluting and introducing non-native species 8 (10.1) ✓ All of the above 54 (68.4)</p>	 <p>7. The major human causes of extinction today are 74 / 103 deŋru yant</p> <p>Hunting and destroying habitats 17 (16.5) polluting and introducing non-native species 12 (11.7) ✓ All of the above 74 (71.8)</p>
<p>Hunting and destroying habitats % 21.5 Introduce polluting and non-native species % 10.1 All of the above % 68.4</p>	<p>Hunting and destroying habitats % 16.5 Introduce polluting and non-native species % 11.7 All of the above % 71.8</p>

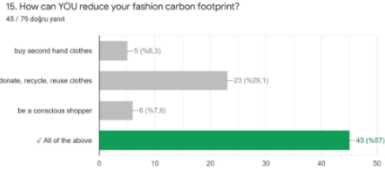
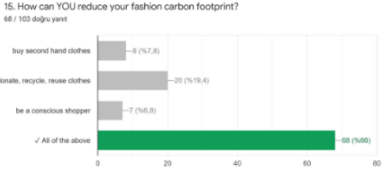
The students were asked about the gases that cause global warming in the atmosphere, while the rate of those who said carbon dioxide in the first survey was 67.1%, this rate reached 75.7% in the second survey (Table 10).

Table 10. Which gas is mostly associated with causing global warming?

Pre-survey	Last-survey
 <p>10. Which gas is mostly associated with causing global warming? 63 / 79 deŋru yant</p> <p>carbon monoxide 16 (20.3) ✓ nitrogen 10 (12.7) ✓ carbon dioxide 53 (67.1)</p>	 <p>10. Which gas is mostly associated with causing global warming? 87 / 103 deŋru yant</p> <p>carbon monoxide 15 (14.5) ✓ nitrogen 8 (7.7) ✓ carbon dioxide 78 (75.7)</p>
<p>Carbon monoxide % 20.3, Nitrogen % 12.7 Carbon dioxide % 67.1</p>	<p>Carbon monoxide % 15.5, Nitrogen % 8.7 Carbon dioxide % 75.7</p>

The students were asked what should be done to reduce their carbon footprint. In the first survey, 57% of the students answered as evaluating second-hand clothes and being a conscious consumer, while this rate increased to 66% in the second survey (Table 11).

Table 11. How can you reduce your fashion carbon footprint?

Pre-survey	Last-survey
 <p>15. How can YOU reduce your fashion carbon footprint? 45 / 79 doğru yanıt</p> <p>buy second hand clothes 5 (%6,3) donate, recycle, reuse clothes 23 (%29,1) be a conscious shopper 6 (%7,6) ✓ All of the above 15 (%37,7)</p>	 <p>15. How can YOU reduce your fashion carbon footprint? 66 / 103 doğru yanıt</p> <p>buy second hand clothes 8 (%7,8) donate, recycle, reuse clothes 20 (%19,4) be a conscious shopper 7 (%6,8) ✓ All of the above 29 (%28)</p>
<p>Buy second hand clothes % 6.3 Donate, recycle, reuse clothes % 29.1 Be a conscious consumer % 7.6 All of the above % 57</p>	<p>Buy second hand clothes % 7.8 Donate, recycle, reuse clothes % 19.4 Be a conscious consumer % 6.8 All of the above % 66</p>

Students were asked whether they had heard about the sustainable development goals before, 65.8% of the rate in the pre-survey stated that they had heard about it before, but this rate increased to 76.7% in the survey conducted at the end of the study.

The pre-survey results of the students show that they are aware of the effects of climate change on the planet and how important it is to reduce our carbon footprint. In general, they know how we can live more sustainably and they try to pollute less. They believe that we are responsible for causing harm to the world as human beings.

66% of students are familiar with or at least have heard of the Sustainable Global Goals.

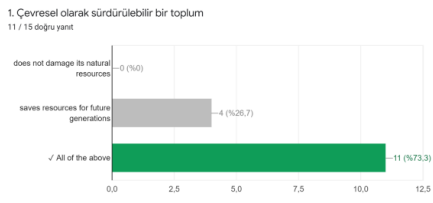
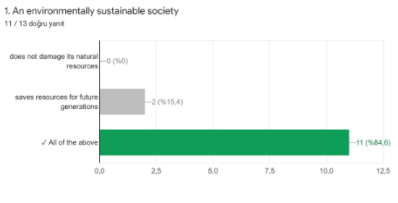
The last survey results of the students show that they became more aware of the effects of climate change on the planet after this study. They have learned to lead a more sustainable lifestyle and to respect and protect biodiversity.

77% of students are familiar with or at least heard about the Sustainable Global Goals, which is 10% more than the results of the pre-survey.

4.2. Teacher Pre-Survey –Last-Survey Analysis

In the pre-survey applied to teachers about what an environmentally sustainable society means, the rate of those who said that they do not harm natural resources, protect resources for future generations, all of them was 73.3%, while this rate increased to 84.6% in the last survey (Table 12).

Table 12. An environmentally sustainable society

Pre-survey	Last-survey
 <p>1. Çevresel olarak sürdürülebilir bir toplum 11 / 15 doğru yanıt</p> <p>does not damage its natural resources 0 (%0) saves resources for future generations 4 (%26,7) ✓ All of the above 11 (%73,3)</p>	 <p>1. An environmentally sustainable society 11 / 13 doğru yanıt</p> <p>does not damage its natural resources 0 (%0) saves resources for future generations 2 (%15,4) ✓ All of the above 11 (%84,6)</p>
<p>Sources that do not harm their naturalness % 0 Protects resources for future generations % 26.7 All of the above % 73.3</p>	<p>Sources that do not harm their naturalness % 0 Protects resources for future generations % 15.4 All of the above % 84.6</p>

The teachers were asked whether the sustainable development goals had been heard before, 93.3% of the rate of them in the pre-survey stated that they had heard it before, but this rate increased to 100% in the survey conducted at the end of the study (Table 13).

Table 13. Have you heard about "Sustainable Development Goals" before?

Pre-survey	Last-survey
<p>2. Have you heard about "Sustainable Development Goals" before? 15 / 15 (100%)</p> <p>Yes % 93.3, No % 6.7</p>	<p>2. Have you heard about "Sustainable Development Goals" before? 13 / 13 (100%)</p> <p>Yes % 100, No % 0</p>

Teachers were asked what is a sustainable product, while the rate of those who said that it can be used for a long time in the pre-survey was 86.7%, this rate increased to 100% in the last survey (Table 14).

Table 14. A sustainable product is one that

Pre-survey	Last-survey
<p>3. A sustainable product is one that 13 years</p> <p>Can be used for a long time % 86.7 Unbreakable % 13.3</p>	<p>3. A sustainable product is one that 13 years</p> <p>Can be used for a long time % 100 Unbreakable % 0</p>

The teachers were asked the question of how a circular economy supports sustainability; 100% of the them who participated in the pre-survey and the last survey answered in the way of that they encourage recycling (Table 15).

Table 15. How does circular economy promote sustainability?

Pre-survey	Last-survey
<p>4. How does circular economy promote sustainability? 15 / 15 (100%)</p> <p>Increases waste % 0 It encourages recycling % 100 Promotes disposable products % 0</p>	<p>4. How does circular economy promote sustainability? 13 / 13 (100%)</p> <p>Increases waste % 0 It encourages recycling % 100 Promotes disposable products % 0</p>

Teachers were asked what are the ways of a more sustainable diet, while 80% of the teachers answered positively to the total of the options such as *consuming less meat, shopping locally and saving money* in the pre-survey, while this rate increased to 92.3% in the last survey (Table 16).

Table 16. What are ways to eat more sustainably?

Pre-survey	Last-survey
<p>5. What are ways to eat more sustainably? 12 / 15 doğru yanıt</p> <p>Eat less meat % 0, Do the shopping locally % 0 Waste less % 20, All of the above % 80</p>	<p>5. What are ways to eat more sustainably? 12 / 13 doğru yanıt</p> <p>Eat less meat % 0, Do the shopping locally % 0 Waste less % 7.7, All of the above % 92.3</p>

Teachers were asked what affects biodiversity the most; In the pre-survey, 40% of the teachers said habitat destruction, while in the last survey, this rate increased to 46.2% (Table 17).

Table 17. What affects biodiversity the most?

Pre-survey	Last-survey
<p>6. What affects biodiversity the most? 6 / 15 doğru yanıt</p> <p>Population growth % 26.7, Pollution % 33.3 Habitat destruction % 40</p>	<p>6. What affects biodiversity the most? 6 / 13 doğru yanıt</p> <p>Population growth % 23.1, Pollution % 30.8 Habitat destruction % 46.2</p>

The teachers were asked what the reasons for the decrease in biodiversity in the world were, in the first survey 93.3% of the teachers answered as hunting, pollution of nature, intervention in wildlife, while this rate was 100% in the last survey (Table 18).

Table 18. The major human causes of extinction today are

Pre-survey	Last-survey
<p>7. The major human causes of extinction today are 14 / 15 doğru yanıt</p> <p>Hunting and destroying habitats % 0 Introduce polluting and non-native species % 6.7 All of the above % 93.3</p>	<p>7. The major human causes of extinction today are 13 / 13 doğru yanıt</p> <p>Hunting and destroying habitats % 0 Introduce polluting and non-native species % 0 All of the above % 100</p>

Teachers were asked whether human activities have caused climate change. The rate of those who said yes was 100% in the first and last survey (Table 19).

Table 19. Human activities have caused climate change

Pre-survey	Last-survey
<p>8. Human activities have caused climate change. 15 / 15 dogru yanit</p> <p>✓ True 15 (%100) False 0 (%0)</p>	<p>8. Human activities have caused climate change. 13 / 13 dogru yanit</p> <p>✓ True 13 (%100) False 0 (%0)</p>
Yes % 100, No % 0	Yes % 100, No % 0

The teachers were asked about the gases that cause global warming in the atmosphere, while the rate of those who said carbon dioxide in the pre-survey was 73.3%, this rate reached 84.6% in the last-survey (Table 20).

Table 20. Which gas is mostly associated with causing global warming?

Pre-survey	Last-survey
<p>10. Which gas is mostly associated with causing global warming? 12 / 15 dogru yanit</p> <p>carbon monoxide 3 (%20) ✓ nitrogen 1 (%6,7) ✓ carbon dioxide 11 (%73,3)</p>	<p>10. Which gas is mostly associated with causing global warming? 11 / 13 dogru yanit</p> <p>carbon monoxide 2 (%15,4) ✓ nitrogen 0 (%0) ✓ carbon dioxide 11 (%84,6)</p>
Carbon monoxide % 20, Nitrogen % 6.7 Carbon dioxide % 73.3	Carbon monoxide % 15.4, Nitrogen % 0 Carbon dioxide % 84.6

Table 21. Which of these energy sources are non-renewable?

Pre-survey	Last-survey
<p>14. Which of these energy sources are non-renewable? 10 / 15 dogru yanit</p> <p>solar 1 (%6,7) ✓ natural gas 10 (%66,7) wind 1 (%6,7) hydropower 3 (%20)</p>	<p>14. Which of these energy sources are non-renewable? 9 / 13 dogru yanit</p> <p>solar 1 (%7,7) ✓ natural gas 9 (%69,2) wind 0 (%0) hydropower 3 (%23,1)</p>
Solar % 6.7, Natural gas % 66.7 Rwind % 6.7, Hydroelectric % 20	Solar % 7.7, Natural gas % 69.2 Rwind % 0, Hydroelectric % 23.1

The teachers were asked which non-renewable energy sources were. In the pre-survey, 66.7% of the teachers said natural gas, while this rate increased to 69.2% in the last- survey (Table 21).

Teachers were asked what should be done to reduce their carbon footprint. In the pre-survey, 86.7% of them answered as evaluating second-hand clothes and being a conscious consumer, while this rate increased to 92.3% in the last-survey (Table 22).

Table 22. How can you reduce your fashion carbon footprint?

Pre-survey	Last-survey
<p>15. How can YOU reduce your fashion carbon footprint? 13 / 15 dogru yanit</p> <p>buy second hand clothes 0 (%0) donate, recycle, reuse clothes 2 (%13,3) be a conscious shopper 0 (%0) ✓ All of the above 13 (%86,7)</p>	<p>15. How can YOU reduce your fashion carbon footprint? 12 / 13 dogru yanit</p> <p>buy second hand clothes 0 (%0) donate, recycle, reuse clothes 1 (%7,7) be a conscious shopper 0 (%0) ✓ All of the above 12 (%92,3)</p>
Buy second hand clothes % 0 Donate, recycle, reuse clothes % 13.3	Buy second hand clothes % 0 Donate, recycle, reuse clothes % 7.7

Table 22 (continued)

Be a conscious consumer % 0	Be a conscious consumer % 0
All of the above % 86.7	All of the above % 92.3

Table 23. We humans have become a threat to our own survival.

Pre-survey	Last-survey
<p>16. We humans have become a threat to our own survival. 15 / 15 doğru yanıt</p> <p>✓ True 15 (%100)</p> <p>False 0 (%0)</p>	<p>16. We humans have become a threat to our own survival. 13 / 13 doğru yanıt</p> <p>✓ True 13 (%100)</p> <p>False 0 (%0)</p>
True % 100, False % 0	True % 100, False % 0

When the teachers were asked whether *we have become a threat to our survival as humans*, 100% of the them said yes in both the first and the last survey, and it was seen that they knew that they are the creatures that cause our their destruction while harming the nature, therefore they believe that it is necessary to raise awareness of people through such studies (Table 23).

The last-survey results applied to the teachers show that there is a high awareness of the impact of climate change and what needs to be done to protect the environment and live more sustainably. Ensuring sustainability and seeing its benefits can only be achieved through education. In this direction, an education system and its most important elements that are teachers and students should be made aware in the best way (Tekin 2021:19).

In order to achieve the desired goals in education for the sustainable development, many practices have been carried out to raise awareness in both formal and non-formal education all over the world for ten years, and it has been seen that these practices have reached their goals with the measurements performed at the end of the decade. Today, the United Nations Educational, Scientific and Cultural Organization (UNESCO), the Global Program of Action in Education for Sustainable Development (GAP) and the Education Committee aim to expand successful projects in education for the sustainable development and involve more schools and institutions in these projects (Bulut ve Özgül, 2019: 43).

5. Conclusion and Recommendations

- Within this study, by drawing attention to the global problems in the world, the development of individual responsibility awareness in order to create environmental awareness and leave a more livable world to future generations was integrated into education and an environmentalist lifestyle was given to the students.
- Behavioral changes in students who realized that there is no other planet to live on and that individual measures should be taken to achieve sustainable development goals were determined by conducting the surveys.
- According to the results of the surveys applied to the students, it was seen that the students' skills of foreign language, digital competence, learning to learn ability, creativity, cooperation, recognizing different cultures were supported by these studies.
- Students and teachers have gained awareness about recognizing the Sustainable Development Goals, having information about the work done in the world and taking individual responsibility.
- Since this is an international study, English as the common language supported the students' foreign language skills.
- It was observed that the teachers were in effective communication with all the participants throughout the study and their awareness of the Sustainable Development Goals increased with the activities.
- This study has been a milestone for reviewing educational methods and ways of teaching and learning.
- An awareness study covering all segments of the society can be carried out for the dissemination of sustainable development goals.
- Sustainable Development Goals can be integrated into the curriculum at all levels.
- In order to increase social awareness, public service announcements on Sustainable Development Goals can be prepared.
- By developing project-based education methods for Sustainable Development Goals, students and teachers can learn by doing and experiencing.
- With in-service training, teachers' knowledge and awareness on sustainable development can be increased.

- In terms of education, teachers can improve themselves by following the sample education activities held in the world on the europeanschoolnetacademy. (<https://www.europeanschoolnetacademy.eu/about> website).
- Local governments and non-governmental organizations can make some arrangements to inform the public about the Sustainable Development Goals.
- Each goal of the Sustainable Development Goals can be addressed as a research topic.
- An academic article can be created by using the process and results of this study.
- Symposiums can be organized to raise awareness of Sustainable Development Goals and Environment.

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