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"We are All the Same in Nature" Tübitak 4008 Project Evaluation

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Abstract

Target audience; Our study, which included 10 special education teachers and 10 students with mild mental disabilities, was conducted in out-of-school learning environments with activities based on nature experience. Teachers selected from different provinces and students selected from different schools constituted the participants. Our project, supported by Tübitak as project number 222B080, was completed between 12-16 June 2023, under the Nizip District Directorate of National Education. Purpose of the study; to assimilate activities based on nature experience with an interdisciplinary approach in out-of-school learning environments. The study consists of 16 activities in the disciplines of Astronomy, Science, English, Math, Music, Robotics, Art, Sports, History, Turkish Language and Creative Drama. Project implementation was completed in 5 days. The method of the study was chosen as a pretest-post experimental design. Qualitative measurement tools were used in the project. Pre and post-test results were compared and interpreted. After the project, there was an increase in the environmental awareness of the participants.

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Introduction

Individuals have different developmental characteristics, and they shape their lives according to their developmental characteristics. Cognitive development areas in human development; It includes language development, social-emotional development, and movement development (Baykoç Dönmez, 2015). Individuals with special needs also

continue their development in a similar process and direction. Individuals with special needs need help in supporting the development of their abilities. For individuals with developmental differences; Definitions such as "those with special needs", "those with developmental differences", "those with learning differences", "individuals requiring special education" and similar definitions are used (Baykoç Dönmez, 2015). It seems that the definition of individual with special needs is the most common use recently. Among the individuals with special needs, students with mild mental disabilities; In the Ministry of National Education Special Education Services Regulation (2018), it is defined as an individual who needs special education and support training at a limited level due to mild deficiencies in mental functions and conceptual, social and practical adaptation skills.

According to the Eleventh Development Plan; Social services provided to disabled people have been diversified and expanded, and policies regarding the participation of disabled people in education, social life and the labor market have been maintained. When we look from this perspective, nature-based projects are needed for individuals with mild mental disabilities to integrate with society and meet the environment in out-of-school environments. Environmental education in out-of-school environments is important in order to eliminate the factors that will bring about the end of our planet (Erten, 2006). Gaining environmental awareness and turning it into behavior is an element that needs to be taken into consideration for nature. The aim of environmental education is to equip people with the necessary information and correctly affect the environment in which they will live, while at the same time providing society with the ability to discuss the future of the environment and its behavior towards the environment (Akkurt, 2020). Environmental awareness is of great importance in nature-based practices. Out-of-school environments include suitable venues for the implementation of nature-based practices. While education is becoming more concrete, saving students from becoming more concrete reveals the necessity of out-of-school learning environments. New approaches in learning and teaching processes suggest that students should take responsibility in the learning process, act independently in line with the decisions they make, and be raised as individuals who can use the scientific method when thinking critically, researching and finding solutions to problems. It is thought that, in addition to the learning experiences spent in schools, the experiences provided in out-of-school learning environments will provide significant contributions to students (Bozdoğan, 2016; Ertaş, Şen, & Parmaksızoğlu, 2011; Tatar & Bağrıyanık, 2012). Out-of-school learning environments are considered important in gaining affective characteristics such as motivation, interest, curiosity, enthusiasm and willingness to learn (Pedretti, 2002; Ramey-Gassert, Walberg & Walberg, 1994).

Activities carried out in out-of-school learning environments help each individual acquire knowledge at their own pace, encourage learning, and support education at school (Melber & Abraham, 1999; Gerber, Marek & Cavallo, 2001). Out-of-school learning; It provides environments for self-management, creativity, teamwork, problem solving, and developing and experiencing communication skills (Bianci & Feasey, 2011).

Method

In the study; The project, which will create environmental awareness with an interdisciplinary perspective that will enable nature, environment and sustainable ecological balance to be achieved, has planned nature education activities in different disciplines. The We Are All the Same in Nature project was created from 16 nature-based workshops, considering the basic disciplines together. Workshops include perspectives on Astronomy, Science, English, Mathematics, Music, Robotics, Art, Sports, History, Turkish and Creative Drama. The outcomes obtained from these events were exhibited at Nizip District Directorate of National Education in September 2023. Come on everyone to Mother Nature! In the project based on the theme; It was ensured that the participants showed positive attitudes towards science and nature in an educational environment that was as fun as it was information-filled. Based on this theme, activities were designed in out-of-school environments. Events; It was carried out in the zoo,

Erikçe Forest, Dülükbaba Forest, Zeugma Ancient City, Saklıbahçe Recreation Area and Karpuzatan Recreation Area regions.

The population of the research consists of mildly mentally disabled students between the ages of 11-15 studying in special education practice schools in Gaziantep and special education teachers throughout the country. The sample consists of 10 students and 10 teachers.

Within the scope of the project, different surveys were administered to teachers and students. In this context, (T1) a nature metaphors survey and (T2) project process opinion survey were prepared for teachers; (S1) nature metaphors survey, (S2) open-ended nature survey and (S3) draw a nature picture application were prepared for the students. All surveys and applications prepared for teachers and students were applied at the beginning and end of the project. Since quantitative analysis of the applied surveys was not possible, opinions were examined using the content analysis method and frequency frequencies (f) were given. The opinions of students and teachers were examined in detail and codes were extracted. To avoid confusion, the codes were arranged to collect the opinions of teachers and students with similar views under similar headings. In line with the obtained codes, a general perspective was presented for the (partial) pre-test and post-test application, based on teacher and student opinions, and various inferences were made regarding the effectiveness of the project.

Findings

For the pre-test application, teachers (T1, T2) and students (S1, S2, S3) were given approximately 60 minutes to carry out the application. After this period expired, the opinions of the teachers (teacher = 10) and students (teacher = 10) who carried out all the applications were analyzed to be evaluated.

For the pre-test application, a survey was administered to teachers to reveal metaphorical perceptions about nature, researching about nature, protecting nature and living in nature. Regarding this, teachers were asked about the first simulation object that came to mind regarding the subject and the reason for comparing it. In the relevant context, teachers' metaphorical analogies regarding nature are given in the tables below (Table 1, Table 2, Table 3, Table 4):

Table 1: Frequency table of teacher nature metaphors for pre-test

Metaphor	*f* (%)
House	1 (%10)
Eye	1 (%10)
Life/Living	2 (%20)
Inner world	1 (%10)
Human	1 (%10)
Breath	2 (%20)
Teacher	1 (%10)
Water	1 (%10)
Total	10

Regarding nature, it was observed that teachers mostly associated nature with life in the context of positive and negative experiences. Similarly, by associating the breathing metaphor with relaxation, calming, unwinding and healing, they stated that nature contains similar positive properties. There is also a teacher who uses this metaphor by associating the teacher teaching his students to struggle with the nature of nature that involves struggle. Apart from this, there is also a teacher who relates the living space at home and nature life by comparing them to each other. In their metaphor justifications, teachers generally tried to associate nature with the situations they encountered in real life.

Table 2: Frequency table for teacher nature research metaphors for pre-test

Metaphor	*f* (%)
Spying	1 (%10)
Atmosphere	1 (%10)
Sun	1 (%10)
Discovery	4 (%40)
Journey	1 (%10)
Guiding	1 (%10)
Questioning existence	1 (%10)
Total	10

Among the metaphors presented by teachers regarding researching nature, the metaphors of "*scien-*

tific and careful studies", "*understanding life*" and "*seeing the facts in their purity*" were combined under the metaphor of "*discovery*", taking into account the reasons for the metaphor. Since the relevant reasons were listed as "*getting to know other living things and beings in nature*" and "*seeing the reason, reality and purity of the things that give us comfort*", the opinions of these teachers were combined under the metaphor of discovery under the justification of "*understanding new things about nature and their reasons*". Teachers' metaphorical views are generally in this direction. Apart from this, they used the metaphors of guidance by highlighting the survival struggle of natural creatures, agency by highlighting the careful examination of details, the sun by emphasizing people's research curiosity, and journey metaphors by highlighting surprises and unexpected situations to be encountered for the first time.

Table 3: Frequency table of teacher nature conservation metaphors for pre-test

Metaphor	*f* (%)
Baby raising	1 (%10)
Values	1 (%10)
Protecting the future	1 (%10)
Protecting people	4 (%40)
Book	1 (%10)
Privacy	1 (%10)
Clean house	1 (%10)
Total	10

Regarding the protection of nature, among the metaphors presented by the teachers, the metaphors "*self-protection/protecting ourselves*", "*protecting the future*" and "*sustaining life*" and the "*protecting people*" metaphor were written for similar reasons, so these metaphors were combined under the metaphor of protecting people. In the relevant context, the protection of nature, the importance of protecting people's physical and mental health are associated with the continuity and continuity of life. Apart from this, protecting private and clean areas and preventing them from being damaged has been associated with metaphors such as "privacy" and "*clean house*". In addition, the sensitivity and care of raising and raising babies is associated with the act of protecting nature. The metaphors of "*book*" and "*values*" were used, making associations with the subjects that this is a value, transferring it to future generations and learning by gaining knowledge.

Table 4: Frequency table regarding teacher metaphors of living in nature for the pre-test

Metaphor	*f* (%)
Living at home	2 (%20)
Freedom	2 (%20)
Peace	2 (%10)
Pearl Grain	1 (%10)
Water	1 (%10)
Space	1 (%10)
Difficult Living Conditions	1 (%10)
Total	10

Regarding living in nature, among the metaphors presented by teachers, "living at your own home" and "living at home" are written for the same reasons and have the same content, and the metaphors of "real freedom" and "freedom" and the metaphors of "peace" and "purity" are interconnected within themselves. Since they are very similar and almost identical, they have been combined under the same headings. Teachers identified the process of living in nature with living at home and emphasized the importance of happiness, peace and comfort, and emphasized cleanliness. In addition, they chose to use freedom as a metaphor for life in nature, stating that living in nature brings freedom for all individuals and that one can explore nature whenever they want. There is a teacher who uses the explorable aspects of space as a metaphor by adapting it to nature. In addition, there is a teacher who likens living in nature to "hard living conditions" on the grounds that life in nature is difficult and scary.

Within the scope of pre-test applications, 8 open-ended items were asked to teachers regarding their expectations from the project. Teachers responded to the items in writing within the relevant framework. The codes obtained from the content analysis for the items are given in the tables 5.

Table 5: Pre-test teacher frequency table regarding gaining a different perspective on nature

Code	*f* (%)
Environmental Sensitivity and Awareness	4 (%33)
Benefit Society	1 (~%8,3)
Importance of Nature	1 (~%8,3)
Getting Away from Stressors and Chaos	1 (~%8,3)
Being at Peace and Calming Down	1 (~%8,3)
Learning by Doing	1 (~%8,3)
New Experiences	1 (~%8,3)
Inclusive education	1 (~%8,3)
Interaction	1 (~%8,3)
Total	12

Teachers' opinions about differentiating students' perspectives on nature during the project process are collected in 9 codes in Table 5. In this context, it has been determined that the majority of teachers have expectations that the project process will help students gain environmental sensitivity and awareness. Apart from this, it is noteworthy that students emphasize that students can gain a different perspective on nature from areas such as benefiting society, emphasizing the importance of nature, getting away from stress and chaos/crowd, being peaceful and calm, learning by doing, gaining new experiences, and interaction. Additionally, there is a teacher who states that providing the content of the project to students in a comprehensive manner can give students a different perspective on nature.

Table 6: Pre-test teacher frequency table regarding behaviors towards nature and attitudes towards the environment

Code	*f* (%)
Positive/Conscious Attitude	3 (~%17,65)
Conscious Behavior	1 (~%5,88)
Protect Nature	1 (~%5,88)
Happiness	2 (~%11,76)
Stimulate the environment	4 (~%23,53)
Sensitivity	2 (~%11,76)
Fun Attitude	1 (~%5,88)
Care	1 (~%5,88)
Naturism	1 (~%5,88)
Awareness	1 (~%5,88)
Total	17

Teachers' opinions about students' attitudes towards the environment and their behavior towards nature during the project process are collected under 10 codes in Table 6. In this context, teachers stated that they especially expected students to develop more positive and conscious attitudes towards their environment, to warn their environment about nature, and to have a more sensitive relationship with nature. In addition, they stated that they would behave more attentively towards nature, that love for nature would be seen as a behavior, and that they would put their awareness of nature into action.

Table 7: Pre-test teacher frequency table regarding sensitivity in nature

Code	*f* (%)
Integration Into Life	1 (~%11,11)
Feel Comfortable	2 (~%22,22)
Awareness	1 (~%11,11)
Embodiment	1 (~%11,11)
Different Perspective	1 (~%11,11)
New Experiences	1 (~%11,11)
Apply Events	1 (~%11,11)
Sensibility	1 (~%11,11)
Total	9

Teachers stated that within the scope of the project process, students will integrate the process of being sensitive to nature into their lives, they will be more sensitive to living things and the environment, and their sensitivity to nature and vitality will increase as they will approach it in a concrete way. In addition, they emphasized that individual students will have different perspectives about nature and will be more sensitive to nature by gaining new experiences through activities.

Teachers expect that students will acquire skills such as planting and watering trees and exploring nature during the project process. At the same time, they stated that nature provides permanent learning and that they will put these skills into practice when they practice learning by doing. Apart from this,

Table 8: Pre-test teacher frequency table regarding life skills

Code	*f* (%)
Planting and Watering Trees	1 (%10)
Adapting To the New Situation	1 (%10)z
Permanent Learning	1 (%10)
To Wonder	1 (%10)
Diagnosis	1 (%10)
Time and Application Limitation	1 (%10)
Richness of Events	1 (%10)
Exploring Nature	1 (%10)
Awareness In Living Their Lives	1 (%10)
Learning By Doing	1 (%10)
Total	10

teachers reported that they will gain various skills such as adapting to the new situation, permanent learning, curiosity, and awareness in sustaining life. On the other hand, there are also teachers who state that these skills cannot be acquired regarding the diagnoses students receive in special education, that these activities are insufficient in terms of time and duration, and that the intensity on this subject should be increased.

Table 9: Pre-test teacher frequency table regarding nature-based research

Code	*f* (%)
Awareness	2 (~%16,67)
Curiosity and interest	2 (~%16,67)
Permanent learning	1 (~%8,33)
To be careful	1 (~%8,33)
Good structuring of education	1 (~%8,33)
Motivation	1 (~%8,33)
Richness of life	1 (~%8,33)
Exploring nature	1 (~%8,33)
Learning by doing	1 (~%8,33)
Long process requirement	1 (~%8,33)
Total	12

Regarding nature-based research during the project process, teachers stated that students' awareness, curiosity and interest in nature-based research will be increased, the project process will have a positive impact on nature-based research, their curiosity and interest in exploring nature will increase, and they will be more careful in the motivational research process. Apart from this, they reported that students' motivation regarding nature-oriented research would also increase. On the other hand, some teachers also stated that a long process was required for nature-based research and that education should be well structured.

Table 10: General evaluation pre-test teacher frequency table

Code	*f* (%)
Positive	3 (~%27,27)
Active participation of students	2 (~%18,18)
Mutual benefit	1 (~%9,1)
Suitability for student level	1 (~%9,1)
Collective process	1 (~%9,1)
Insufficient activities	1 (~%9,1)
Learning by doing	1 (~%9,1)
Future benefit	1 (~%9,1)
Total	11

Teachers think that the project will have positive results in general. It is expected that students will actively participate in the project process. There is a teacher who states that the importance of special education for society will be ensured and that special education students will become aware of objects related to nature, and mutual benefit will be provided within this framework. There is a teacher who expects the project to be suitable for the student's level. In addition, there are teachers who state that this project will be beneficial for the future and that collective learning by doing and living in nature, in student-teacher unity, will be positive for the benefit of the student. On the other hand, there is a teacher who expects that the activities are weak, but that special individuals will be active in the process.

Teachers consider the scope of the project to be intertwined with nature and to raise awareness among students within the scope of positive expectations. On the other hand, the project is expected to be in a stress-free and relaxed environment. It should provide the opportunity to learn by doing projects.

Table 11: Positive expectations pre-test teacher frequency table

Code	*f* (%)
Intertwined With Nature	3 (~%27,27)
Awareness	2 (~%18,18)
Comfortable	1 (~%9,1)
Collaboration	1 (~%9,1)
Learning By Doing	1 (~%9,1)
Travel-observation	1 (~%9,1)
New Experiences	1 (~%9,1)
Participation From Different Locations	1 (~%9,1)
Total	11

The project should be in the form of travel-observation and allow new experiences. The project should include awareness. The positive aspects of the project are that students and teachers participating from different cities carry out the activities in cooperation.

Table 12: Pre-test teacher frequency table of areas open to improvement

Code	*f* (%)
Increasing interaction with nature	1 (~%11,11)
Holding the opening event in nature	1 (~%11,11)
All activities should be held outdoors	1 (~%11,11)
Event planning should be focused on the outdoor environment	1 (~%11,11)
Planning and information	2 (~%22,22)
Increasing travel and visual experiences	1 (~%11,11)
To provide similar gains to students with different diagnoses	1 (~%11,11)
Increasing social-cultural activities	1 (~%11,11)
Total	9

In the context of developing the project scope, teachers stated that the number of nature-related interactions and activities should be increased, all project activities should be carried out in open areas and focused on outdoor areas, more detailed information should be given regarding process planning, and similar outcomes should be targeted for students with different diagnoses. In addition, they stated that arrangements could be made to increase the intensity of socializing and cultural activities and to increase sightseeing experiences.

For the pre-test application, students were asked to draw a picture about nature. In this context, the objects in the pictures drawn by the students are given in the table below, along with the frequency of drawing:

Table 13: Preliminary nature drawing application objects

Object	*f* (%)
Cloud	4 (%16)
Tree(s)	3 (%12)
Flower(s)	3 (%12)
Sun	3 (%12)
Student(s)	3 (%12)
House	2 (%8)
Moon	1 (%4)
Sky	1 (%4)
Soccer field	1 (%4)
Bee	1 (%4)
zero waste boxes	1 (%4)
Flying balloon(s)	1 (%4)
Rain	1 (%4)
Sheep(s)	1 (%4)
Shepherd (s)	1 (%4)
Total	25

In the relevant context, it was observed that the 7 students who completed the drawing application mostly used objects such as clouds, trees, flowers and the Sun in their paintings, and they frequently used students depicting themselves or their friends and household objects. Apart from this, it can be said that they drew other objects individually, such as the moon, sky, soccer field, bee, zero waste boxes, balloons, sheep and shepherds.

A survey was administered to students to reveal metaphorical perceptions about nature, researching about nature, protecting nature and living in nature. Regarding this, teachers were asked about the first simulation object that came to mind regarding the

subject and the reason for comparing it. In the relevant context, teachers' metaphorical analogies regarding nature are given in the tables below (Table 12, Table 13, Table 14, Table 15):

Table 14: Frequency table of student nature metaphors for pre-test

Metaphor	*f* (%)
Tree	2 (~%22,22)
Cloud	1 (~%11,11)
To travel	1 (~%11,11)
Flower	1 (~%11,11)
Bird	1 (~%11,11)
Lion	1 (~%11,11)
Clean Air	1 (~%11,11)
Water	1 (~%11,11)
Total	9

It was observed that the students metaphorized nature in this way by associating the color green with the tree, those who chose this metaphor by associating the sky and cloud, and those who used living things and objects they encountered in nature, such as flowers, birds, and lions, instead of metaphors.

Table 15: Frequency table for student nature research metaphors for the pre-test

Metaphor	*f* (%)
Strawberry	1 (~%14,29)
Bird	1 (~%14,29)
Tree	1 (~%14,29)
Moon	1 (~%14,29)
Star	1 (~%14,29)
Air	2 (~%28,57)
Total	7

The metaphors used by students in the context of researching nature are listed as strawberry, bird, tree, moon, star and air. Sufficient data could not be obtained in terms of justification.

In the context of protecting nature, students mostly expressed their opinions within the framework of throwing garbage into the trash can. One student, making justifications other than metaphor, stated that he throws garbage into the trash can, loves animals and waters flowers; He emphasized that he warned his friends to protect nature. On the other hand, one student referenced a divine power in the context of metaphor, but did not provide justification.

Table 16: Frequency table for student nature conservation metaphors for pre-test

Metaphor	*f* (%)
Water	1 (~%14,29)
Trash can	4 (~%57,14)
God	1 (~%14,29)
Total	7

Table 17: Frequency table regarding students' life metaphors for the pre-test

Metaphor	*f* (%)
Tent	2 (%40)
Bird	1 (%20)
Forest	1 (%20)
Park	1 (%20)
Total	5

Students used the metaphors of tent, bird, forest and park in the context of living in nature. Those who used the tent metaphor stated that they used this metaphor because they lived in tents. In addition, the student, who provided justification without specifying the metaphor, associated picnicking, playing ball, and rope jumping with life in nature; He also evaluated overcoming difficulties by encountering all kinds of situations in the same context.

For the pre-test application, an open-ended opinion survey was applied to the students, asking their opinions about nature. In this context; Students were asked what they were most curious about nature, what knowledge they had to research these, and what they individually did to protect nature. Regarding this, the frequency of repetition of the answers is given in the tables 18.

In the article in which students answered their curiosity about nature, students stated that in the context of their curiosity about nature, they are most curious about animals (*such as cats, dogs, lions, birds, monkeys, rabbits, etc.*), trees and forests, and what

Table 18: Frequency table of pre-test students' opinions of curiosity about nature

Opinion	*f* (%)
Tree/forest	3 (~%23,07)
Animals	6 (~%30,76)
Sun, moon and starts	2 (~%15,38)
Seasons	1 (~%7,69)
Sky/cloud	1 (~%7,69)
Total	13

their life cycles are like. Apart from this, there are also students who state that they are curious about various planets and stars, the formation of seasons and natural events, and the sky.

Table 19: Frequency table of pre-test student research opinions on nature

Opinion	f (%)
Internet	2 (~%15,38)
Video	1 (~%7,69)
By observing	4 (~%30,77)
By asking	1 (~%7,69)
Total	13

In the item where students answered how they could do research on nature or what topics they could research, they stated that they mostly did their research by observing, examining and looking. Apart from this, there are students who state that they can access information by searching through media sources such as the internet and video. One student stated that he could do research about nature by asking around.

Table 20: Frequency table of pre-test student opinions on protecting nature

Opinion	*f* (%)
Planting a tree	2 (%14,29)
Not throwing garbage	5 (~%35,71)
Not to pollute	1 (~%7,14)
To water	2 (%14,29)
Protect animals	1 (~%7,14)
Cleaning	3 (~%21,43)
Total	14

Most of the students' opinions on protecting nature include not throwing garbage, planting trees (or flowers) and cleaning the environment. Apart from this, students also emphasized the importance of watering trees and the environment and the importance of protecting animals.

Teachers (T1, T2) were given 30 minutes and students (S1, S2, S3) were given 45 minutes to complete the post-test application. After the completion of the surveys and applications, the opinions of teachers (*n*teacher = 12) and students (*n*student = 3) were analyzed for evaluation.

For the post-test application, the same metaphorical perception survey presented to the teachers was administered at the end of the project implementation. Relevant metaphors and their justifications are presented in the tables below (*Table 21, Table 22, Table 23, Table 24*):

Table 21: Frequency table for post-test teacher nature metaphors

Metaphor	*f* (%)
Blood	1 (~%8,33)
Mirror	1 (~%8,33)
Mother	2 (~%16,66)
Living/life	3 (~%24,99)
Breath	1 (~%8,33)
Peace	1 (~%8,33)
Sea	1 (~%8,33)
Teacher	1 (~%8,33)
Sky	1 (~%8,33)
Total	12

After the project, teachers most likened nature to mother and life metaphors. They compared the living beings in nature to the mother, justifying that their food resources are given free of charge and that it is production, and they also likened nature to life and the sky, citing the rich diversity. Apart from this, there was also a teacher who related the indispensability of nature and expressed his opinion in this direction, citing blood as the indispensable source of human life. There is a teacher who uses metaphors in this direction by associating nature with the teacher who teaches how to survive and

struggle despite the struggle. Apart from this, there is a teacher who uses the mirror metaphor and states that treating nature will return to humans.

Table 22: Frequency table for teacher nature research metaphors for the post-test

Metaphor	*f* (%)
Discovery	4 (%33,32)
Music	1 (~%8,33)
Amazed	1 (~%8,33)
Journey	2 (~%16,66)
Telescope	1 (~%8,33)
Microscope	1 (~%8,33)
Detective work	1 (~%8,33)
Truth	1 (~%8,33)
Total	12

An attempt was made to examine teachers' metaphorical perceptions of conducting nature research after the project. In this context, the metaphor of "*learning new things*" presented by the teacher was replaced with the metaphor of "*discovery*", and the metaphor of "*an exciting journey*" was replaced with "*journey*". In the relevant context, the majority of teachers associated nature research with discovering new and mysterious objects and things in nature, and stated that investigating the underlying order and making new discoveries about nature is exciting and astonishing. Apart from this, they associated the order in nature with music and stated that there is a harmonious and orderly life. There are teachers who use the metaphors of telescope and microscope to indicate the subtleties and order in nature. Additionally, a teacher who stated that nature is a riddle used the detective metaphor, stating that the truth can be reached through research and that this is like a kind of detective work.

Table 23. Frequency table of teacher nature conservation metaphors for post-test

Metaphor	*f* (%)
Protecting our child	1 (~%4,17)
Holding on to the past	1 (~%4,17)
Thanks	1 (~%4,17)
Pregnancy	2 (~%8,33)
Protecting the future	2 (~%8,33)
Water	2 (~%8,33)
protecting ourselves	1 (~%4,17)
conscious person	1 (~%4,17)
Teacher	1 (~%4,17)
Total	12

Teachers used different metaphors regarding protecting nature. Generally, different metaphors were used individually. Metaphors such as taking care of the past and the child, protecting it, protecting and securing the future, and pregnancy are associated with protecting nature, developing it carefully, and approaching it meticulously, as if protecting one's own part, in the context of justification.

Table 24: Frequency table regarding teacher metaphors of living in nature for the post-test

Metaphor	***f* (%)**
Peace	2 (~%16,66)
Kite	1 (~%8,33)
Table	1 (~%8,33)
Take root	1 (~%8,33)
Feeling yourself	1 (~%8,33)
Robinson Crusoe	1 (~%8,33)
Sea	1 (~%8,33)
House	1 (~%8,33)
Holiday	1 (~%8,33)
Table	1 (~%8,33)
Breath	1 (~%8,33)
Total	12

Teachers used different metaphors regarding the skills of living in nature, but they did not concentrate on one of the metaphors they used. In relevant contexts, living in nature was associated with the effort and effort spent on making and flying kites, and a metaphor was used in this context. In addition, it is associated with metaphors such as living in touch with nature, without breaking away from the flow of life, surviving without harming nature, feeling oneself, and taking root. Being integrated with nature, encountering new things and exploring different environments are paired with Robinson Crusoe and holiday metaphors. On the other hand,

the justification of metaphors such as breathing, home, sea, and table was made by evaluating nature, with which we constantly interact, in the context that it is actually integrated with life and it is not possible to separate it. Within the scope of post-test applications, 8 open-ended items containing their expectations from the project were asked to teachers, similar to the pre-test application. Teachers responded to the items in writing within the relevant framework. The codes obtained from the content analysis for the items are given in the tables below:

Table 25: Post-test teacher frequency table regarding gaining a different perspective on nature

Code	*f* (%)
Lack of integration with nature	1 (~%5,88)
Detailed information	4 (~%23,53)
awareness raising	2 (~%11,76)
Functionality	1 (~%5,88)
Problem with parent cooperation	1 (~%5,88)
Students' inability to actively participate	1 (~%5,88)
Awareness	1 (~%5,88)
Short-term change of perspective	1 (~%5,88)
Remarkable aspects	1 (~%5,88)
Non-compliance with the level	2 (~%11,76)
positive outlook	1 (~%5,88)
Impressiveness	1 (~%5,88)
Total	17

After the project, the teachers stated that the majority of the students were informed in detail in the activity, integration with nature was achieved, project functionality and a different perspective on nature were provided, and the activities had impressive aspects that highlighted the remarkable aspects of nature. They stated that students were made aware of their perspective on nature, and within this framework, students' perspectives expanded. On the other hand, there are teachers who do not agree with this view and state that different perspectives are not developed or developed in a limited way.

Teachers stated that there was a positive change in behavior and attitudes after the project.

Table 26: Post-test teacher frequency table regarding behaviors towards nature and attitudes towards the environment

Code	*f* (%)
The need for systematic and interactive activity	1 (~%7,14)
Positive attitude and behavior change	5 (~%35,71)
Students not actively participating	1 (~%7,14)
nature lover	1 (~%7,14)
Awareness	1 (~%7,14)
short-term behavioral change	1 (~%7,14)
Sensitivity and curiosity towards nature	1 (~%7,14)
A new perspective	1 (~%7,14)
Insufficiency of achievement	1 (~%7,14)
Informing the surroundings	1 (~%7,14)
Total	14

They stated that the consciousness and awareness of nature love was instilled, nature sensitivity and curiosity was conveyed to special students, a new perspective was introduced, and students informed their environment about nature. In addition, it was observed that a limited number of teachers stated that a more systematic and interactive activity design should be developed, that the gains were insufficient, that behavioral and attitude changes would not occur in the future and in the long term, and that students had problems in participating in the activities.

Table 27. Post-test teacher frequency table regarding sensitivity to nature

Code	*f* (%)
Increasable benefit	1 (~%8,33)
Lack of alternative activities such as planting saplings	1 (~%8,33)
Asking questions	1 (~%8,33)
Sensibility	1 (~%8,33)
To inform	3 (~%25)
Evaluating and producing resources	1 (~%8,33)
Awareness	1 (~%8,33)
Animal love	1 (~%8,33)
Lack of gains	1 (~%8,33)
Stimulate the environment	1 (~%8,33)
Total	12

Teachers reported that significant information was provided regarding nature sensitivity during the project process, and very strong activities were carried out for situations such as sensitivity, awareness, and instilling love for animals. There is a teacher who stated that students ask questions about nature sensitivity.

Table 28: Post-test teacher frequency table regarding life skills

Code	*f* (%)
Lack of attainment and education	1 (~%7,69)
Ability to wait and queue	1 (~%7,69)
Time constraint	2 (~%15,38)
Fatigue and boredom	1 (~%7,69)
New experiences	1 (~%7,69)
Awareness	1 (~%7,69)
Lack of knowledge and experience	1 (~%7,69)
Non-compliance with level	3 (~%23,07)
Target behavior-activity mismatch	1 (~%7,69)
Learning by doing	1 (~%7,69)
Total	13

On the other hand, there are teachers who state that students have gained some skills, experienced new experiences that allow them to learn by doing, and have gained awareness about living in nature.

Table 29: Post-test teacher frequency table regarding nature-based research

Code	*f* (%)
Lack of active participation	2 (~%16,6)
Level mismatch	3 (~%24,9)
Lack of cooperation	1 (~%8,3)
Excitement to apply knowledge	1 (~%8,3)
Research on events	1 (~%8,3)
Sense of questioning and curiosity	1 (~%8,3)
Insufficient number of events	1 (~%8,3)
Insufficiency in planning the teaching process	1 (~%8,3)
Limited research based on interest and curiosity	1 (~%8,3)
Total	12

Teachers stated that at the nature-based research level, a teaching and activity design can be made in which students can actively participate and with gradually decreasing support, and that students can participate more actively in the process. On the other hand, there were students who stated that the activities for nature-based research were not designed according to the level of special education students. Apart from this, there are teachers who state that the number of activities can be increased and cooperation can be managed better. On the other hand, there were teachers who stated that children were able to conduct various research related to the activity, that they were excited when putting the newly learned knowledge into practice, and that they could expect the student to conduct research limited to his interest and curiosity.

Table 30: General evaluation post-test teacher frequency table

Code	*f* (%)
Level incompatibility	5 (~%31,25)
Tiredness and boredom	1 (~%6,25)
Inefficient time management	1 (~%6,25)
Limited time	2 (~%12,5)
Raising awareness	1 (~%6,25)
Gaining new knowledge, skills and abilities	1 (~%6,25)
Limited time outdoors	1 (~%6,25)
Inclusivity	1 (~%6,25)
Future benefit	1 (~%6,25)
Insufficient number of events	1 (~%6,25)
Information and seminars	1 (~%6,25)
Total	16

On the other hand, in terms of general design and logic, the project is quite good and positive, individuals socialize by having a life intertwined with nature, information and seminars are provided by field experts in a comprehensive manner and these are quite good, in general, except for some points, the project process is positive and productive. They stated that it somehow passed.

Table 31: Positive aspects post-test teacher frequency table

Code	*f* (%)
Social environment	3 (~%20)
Theoretical basis	1 (~%6,67)
Trainers who are experts in their fields	2 (~%13,33)
Learning by doing	1 (~%6,67)
Hands-on experiences	1 (~%6,67)
Awareness	1 (~%6,67)
Interaction with nature	1 (~%6,67)
Participation from different locations	1 (~%6,67)
Planned organization	1 (~%6,67)
Productivity	1 (~%6,67)
Participation from different cultures	1 (~%6,67)
Positive affect	1 (~%6,67)
Total	15

For the positive aspects of the project process, teachers stated that the socialization and social-cultural activities were quite rich, the arrival of instructors and students who were experts in their fields and came from different cities and different cultures strengthened the project, the theoretical basis of the project was strong, and they gave students the opportunity to learn by doing and experiencing. They stated that awareness about nature was raised through practical activities, that the organization was well planned in matters such as accommodation, food and beverage, and transportation, and that it was generally a happy process for teachers, students and educators.

Table 32: Negative aspects post-test teacher frequency table

Code	*f* (%)
Incompatible teaching and activity content	1 (~%4,76)
Level mismatch	3 (~%14,28)
Inefficiency	2 (~%9,52)
Content without music	2 (~%9,52)
Lack of preliminary information	2 (~%9,52)
lack of planning	2 (~%9,52)
lack of communication	1 (~%4,76)
Limited event times	2 (~%9,52)
Time spent indoors	2 (~%9,52)
Limited event numbers	1 (~%4,76)
Few students	1 (~%4,76)
Holistic design problem	1 (~%4,76)
Lack of self/peer evaluation	1 (~%4,76)
Total	21

For the post-test application, students were asked to draw a picture about nature, similar to the pre-test application. In this context, the objects in the pictures drawn by the students are given in the table below, along with the frequency of drawing:

Table 33: Preliminary nature drawing application objects

Object	*f* (%)
School	1 (~%11,11)
Tree(s)	1 (~%11,11)
Grass	2 (~%22,22)
Sun	1 (~%11,11)
Student(s)/kid(s)	2 (~%22,22)
Cloud	1 (~%11,11)
Bus	1 (~%11,11)
Total	9

In the relevant context, it was observed that 2 students who completed the drawing application drew objects such as grass, school, trees, children representing themselves or their friends, the sun, cloud, and a sightseeing bus. In addition, in a student's drawing, two people and smiles representing "B... *Teacher*" and the student himself (B...); In addition, the phrase "B... *Teacher, I love you very much"* written on the drawing drew attention.

A survey was administered to students to reveal metaphorical perceptions about **nature, researching about nature, protecting nature and living in nature.** Regarding this, teachers were asked about the first simulation object that came to mind regarding the subject and the reason for comparing it. In the relevant

context, meaningful metaphorical feedback was received from 2 students. While one of the students used the metaphor of "school" regarding nature metaphors, the other student used the metaphor of "Dülük Baba". They did not provide any meaningful justification for the metaphors. Regarding researching about nature, one student used the metaphor of "learning" and did not provide justification for this. The other two students did not use a metaphor on this issue and did not provide justification. In the context of protecting nature, students mostly expressed their opinions within the framework of throwing garbage into the trash can. One student, making justifications other than metaphor, stated that he throws garbage into the trash can, loves animals and waters flowers; He emphasized that he warned his friends to protect nature. On the other hand, one student referenced a divine power in the context of metaphor, but did not provide justification. Students did not specify any metaphors or justifications in the context of living in nature.

Results

In this study, the opinions of the participants of the "We Are All the Same in Nature" project, carried out within the scope of TÜBİTAK 4008 Inclusive Society Practices for Individuals with Special Needs, at the end of the project and the impact of the project were tried to be revealed.

In general, the positive aspects of the project were that students participated in social-cultural activities, educators were experts in their fields, actively interacted with nature, teachers were from the field of special education, and students were able to take an active role in the majority of the activities. Apart from this, it is generally thought that the project process was designed correctly, an efficient theoretical information process was carried out with expert trainers from various scientific fields, especially the field of special education, the implementation process was carried out smoothly except for a few organizational glitches, and special education students were helped to integrate with nature in a practical way. During the research, a limited number of TÜBİTAK Science-Society Projects with code 4008 were encountered.

Yalçıntaş, *Özhan* and Akkaya (2023) state in their study that the science festivals of the TÜBİTAK Science-Society project coded 4008 are an important work for children with special needs.

Çoruhlu, Yaman and Dada (2022) worked with students with mild mental disabilities in their projects. At the end of the project, students stated that they expressed the activities as "fun" and "learning" and that they liked the activities in which they actively participated.

5. Suggestions

As a result of the study, the following recommendations can be made:

*It can be disseminated throughout the country, taking into account the multiplier effect on the gains achieved in the projects organized by TÜBİTAK and especially for individuals with special needs to participate in scientific activities and encourage knowledge.

*Special education teachers can organize scientific activities to help their students gain a scientific attitude.

* The number of such projects supported by TÜBİTAK can be increased. In addition; Ministry of National Education, universities and local governments can increase the number of projects that can be accepted by providing financial support to such projects.

* It may be recommended to increase the number of participants in such projects and expand them to different target groups, places and disciplines.

Conflict of Interest

The authors declare that there is no conflict of interest.

Declaration of Researchers' Contribution Rate

The researchers contributed equally to the study.

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References

1. Akkurt,N.D. (2020) 'Farklı Gözlerden Çevre İsimli TÜBİTAK 4004 Projesi Etki Analizi' *The Journal of Academic Social Science*. 8(101), 287-295. http://dx.doi.org/10.29228/ASOS.40267.
2. Baykoç Dönmez, N. (2015). Özel *Gereksinimli* Çocuklar *ve* Özel *Eğitim* (3. Baskı.) Ankara: Eğiten Kitap Yayıncılık.
3. Bianci, L. & Feasey, R. (2011). Science and Beyond The Classroom Boundaries For 7-11 Year Olds. Open University Press.
4. Bozdoğan, A.E. (2016). Okul Dışı Çevrelere Eğitim Amaçlı Gezi Düzenleyebilme Öz-Yeterlik İnancı Ölçeğinin Geliştirilmesi. *Kuramsal Eğitimbilim Dergisi*, 9(1), 111-129. http://dx.doi.org/10.5578/keg.9475.
5. Çoruhlu, T. Ş., Yaman, H., & Dada, Ş. D. "Olmazsam Olmaz" Başlıklı TÜBİTAK 4008 Projesinden Öğrenme Ortamına Yansımalar1. *Hasan KARACAN, Ph. D.*, 54.
6. Devlet Planlama Teşkilatı (2019) On Birinci Kalkınma Planı 2019-2023. Resmi Gazete: 30840 (Mükerrer) 20.06.2022 tarihinde https://www.sbb.gov.tr/wp-content/uploads/2019/07/OnbirinciKalkinmaPlani.pdf alınmıştır.
7. Ertaş, H., Şen, A.İ. & Parmasızoğlu, A. (2011). Okul dışı bilimsel etkinliklerin 9. sınıf öğrencilerinin enerji konusunu günlük hayatla ilişkilendirme düzeyine etkisi. *Necatibey Eğitim Fakültesi Elektronik Fen ve Matematik Eğitimi Dergisi*, 5(2), 178-198.
8. Erten,S. (2006): Çevre Eğitimi Ve Çevre Bilinci Nedir, Çevre Eğitimi Nasıl Olmalıdır?, Çevre *ve* İnsan *Dergisi*, Çevre ve Orman Bakanlığı Yayın Organı. Sayı 65/66. 2006/25 Ankara.
9. Gerber, B.L., Marek, E.A., & Cavallo, A.M.L. (2001). Development of an informal learning opportunities assay. *International Journal of Science Education* 23(6), 569-583.
10. Melber, L. H. & Abraham, L. M. (1999). Beyond the classroom: Linking with informal education.*Science Activities*, 36(1), 3-4.
11. Özel Eğitim Yönetmeliği, (2018). Resmi Gazete: 30471. 14.06.2022 tarihinde https://orgm.meb.gov.tr/meb_iys_dosyalar/2018_07/09101900_ozel_egitim_hizmetleri_yonetmeligi_07072018.pdf alınmıştır.
12. Pedretti, E. (2002). T. Kuhn Meets T. Rex: Critical Conversations And New Directions İn Science Centres And Museums. *Studies İn Science Education*, 37, 1-42.
13. Ramey-Gassert, L.-Walberg, H.-Walberg, H. J. 1994: "Museums As Science Learning Environments: Reexamining Connections", *Science Education*, 78 (4), 345-363.
14. Tatar, N. & Bağrıyanık, K.E. (2012). Fen ve Teknoloji Dersi Öğretmenlerinin Okul Dışı Eğitime Yönelik Görüşleri. İlköğretim *Online*, 11(4), 883-896.
15. Yalçıntaş, E. , Özhan, M. M. & Akkaya, A. (2023). Sınır Tanımayan Bilim: Özel Gereksinimli Bireylere Yönelik Bilim ve Teknoloji Şenliğinin Etkililiği . Fen Matematik Girişimcilik ve Teknoloji Eğitimi Dergisi , 6 (2) , 118-132 . Retrieved from https://dergipark.org.tr/en/pub/fmgted/issue/77818/1290629.