

EDU WORLD 2022**Edu World International Conference Education Facing Contemporary World Issues****NON-FORMAL ACTIVITIES IN THE WILD GARDEN**

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Abstract

The purpose of the research presented in this article was to highlight the opinion of primary school teachers at Alexandru Davila Secondary School in Pitesti, Romania, involved in the Erasmus + project entitled Wild! The wild garden for learning and development, regarding the possibility of carrying out non-informal activities in the wild garden, taking into account the proposed activity models. The questionnaire was the research method applied to the 12 professors participating in the implementation of the project, in order to achieve the proposed goal. After analysing the answers of the respondents, we found that the teachers carried out non-formal outdoor activities with students from all classes of the primary cycle, among which we mention the following: sowing or planting some plant species in the wild garden, observing the life cycle of different plant species, observing the external composition of different species of invertebrates and vertebrates, carrying out experiments and building herbariums or collections of variously coloured leaves in the specific colours of autumn. From the models of activities proposed in the project, the teachers mentioned that they selected only some activities for students in a certain class, and will repeat or perform other non-formal activities in the wild garden in the coming school years.

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1. Introduction

The wild garden arranged on a smaller or larger area in the school yard can be a wonderful place for students to get to know the local and cultivated local plants, as well as the animals that populate or visit it.

1.1. Wild school gardens worldwide

Globally, there are many schools that have such wild gardens where students discover nature and learn to protect it. We only mention the achievements of schools in North America and the United Kingdom. There are also national associations and networks, affiliated with other international organizations concerned with the creation of Wild Gardens for outdoor study. Thus, the Royal Society for Horticulture (RHS) encourages the creation of habitats favourable to wildlife (birds, beetles and butterflies) in the school garden. It also offers didactic suggestions for school gardening. The non-profit organization Willows Hedgehog Rescue is involved in rescuing, treating, and subsequently releasing hedgehogs found injured and conducting awareness and education campaigns for schools. The National Wildlife Federation, which operates in the United States, has helped schools create wildlife habitats in the school yard. He has offered outdoor classrooms for study at more than 5,000 schools. The Canadian Wildlife Federation is promoting a pollinator conservation program in Canada, encouraging schools to set up school gardens to study these insects. The Maryland Association for Environmental and Outdoor Education (MAEOE) in the United States aims to raise public awareness of environmental issues, and through the Maryland Green Schools program, encourages schools to include environmental education in their curricula.

1.2. The wild school garden in Pitești

At *Alexandru Davila* Secondary School in Pitești, the teachers together with the students arranged a wild garden in the school yard, within the implementation of the Erasmus+ project *Wild! The wild garden for learning and development* (<https://www.wildgardenschool.eu/en/>, <https://www.facebook.com/pg/WildGardenSchool/posts/>). The entrance to the garden is marked by a gate, and the green space where different species of plants have been sown or planted has areas exposed all day to the sun and areas where the sun's rays reach only a few hours a day. The plants were distributed randomly, taking into account their light preferences. Veronica (*Veronica* spp.), honeysuckle (*Lonicera caprifolium*), aster novi (*Aster novi belgii*), iris (*Iris* spp.), strawberry (*Fragaria viridis*), lavender (*Lavandula* spp.), salvia (*Salvia* spp.), white water lily (*Nymphaea alba*), forget-me-nots (*Myosotis* spp.), verbena (*Verbena* spp.), are some of the herbaceous plants that will provide food for insects that visit the wild garden. Among the shrubs that can be admired and studied by students in the wild garden we mention the following: hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), wild privet (*Ligustrum vulgare*), horn (*Cornus mas*), rose hip (*Rosa canina*), elderberry (*Sambucus nigra*), bay (*Laurus nobilis*), etc. Several species of trees have also been planted, such as willow (*Salix Alba*), silver fir (*Abies alba*), yew (*Taxus baccata*), and thuja (*Thuja orientalis*). Particular attention was paid to aromatic plants which, by their irresistible scent attract many pollinating insects. Plants such as mint

(*Mentha* spp.), Oregano (*Origanum vulgare*), thyme (*Thymus* spp.) Basil (*Ocimum basilicum*), and rosemary (*Rosmarinus officinalis*), have been sown in layers so as to attract students' attention and curiosity with their special smell. The alleys that allow teachers and students to move to any corner of the garden were made of sectioned logs and placed from place to place in the ground. A few larger logs were placed in groups in several study places in the wild garden, to serve as chairs for students during their study. The artificial nests or nest boxes, made by the students according to the models presented in the project, were placed in trees in order to provide them with shelter in unfavourable conditions. A pond was built in one part of the wild garden to study aquatic organisms. The richness of plant and animal species in the ecosystem realized at the *Alexandru Davila* Secondary School in Pitești was the starting point in carrying out the non-formal activities with the students involved in the project.

2. Problem Statement

Non-formal education, also referred to as extracurricular education, at the beginning of the twentieth century, complements formal education. It refers to “all educational activities carried out outside the institutionalized program, activities that are optional or facultative” (Momanu & Cozma, 2008, p. 93). Thus, it can be stated that people participate for "their own reasons" in activities carried out in a non-formal setting, realizing an intentional non-formal learning (Tudor, 2013).

Also known as "extramural education", non-formal education is also "an alternative education or out-of-school education in flexibility" that benefits students due to the lack of information they receive from formal schools" (Manurung et al., 2021). Widodo and Nusantara (2020) consider that "Non-formal Education functions like addition and supplement to formal education through extra-curricular programs and outing school programs". This form of education "can function as a substitute, complement, addition, and developer of formal and informal education" (Musa et al., 2022; Wahyudin, 2007).

It includes a diverse range of educational activities, organized during students' spare time by the community representatives from local museums, libraries, “non-governmental organizations or other institutions whose mission is related to education and culture” (Velea, 2007, p. 1).

Non-formal education is centered on the learner, whether child or adult, that is, on the learning process, not on the teaching process. And as mentioned by Harahap et al. (2022), most non-formal learning activities take place face-to-face, especially those aimed at developing students' motor skills.

These activities have an important role in developing and strengthening collegial relationships between students, as well as those between teachers and students (Roman & Coșarvă, 2020).

The organization of the activities takes into account the various interests of the students, who are involved in their design and implementation (Cucuș, 2014, p. 60). Thus, in the case of non-formal education, as mentioned by Dib (1988), educational processes have "flexible curricula and methodology, capable of adapting to the needs and interests of students".

Non-formal education includes outdoor education, both of which can be successfully integrated into formal education in order to maximize the effects of the learning process.

Outdoor education responds both to the basic needs of the individual and to those who specialize in the group to which he belongs. These include: the need to be respected, the need to be responsible, the need to be active, the need to be socially included and the need to feel safe.

Outdoor activities should be planned and organized in such a way that they are related to the school content, and the environment should provide a way to apply, test or experiment with some knowledge stipulated in the school curriculum.

Educational researchers have emphasized in published articles that outdoor learning is beneficial for the physical and mental health of school-age children (Mann et al., 2022; Mygind et al., 2019), for their development, well-being and personal growth (Mann et al., 2021) and can help promote their social and emotional development (Molyneux et al., 2022). According to Mann et al. (2022) "nature-specific outdoor learning should be incorporated into every child's school" because it has many measurable benefits, such as socio-emotional, academic and well-being.

In primary education, outdoor education can take place in the form of themed trips, hikes, picnics, forays into the real world: park, forest, neighbourhood, shopping centre, botanical garden; observations in kind; participation in ecological projects; outdoor creative workshops (painting, drawing, dancing, pottery, etc.). Also, in thematic projects carried out throughout the school year, various outdoor activities can be carried out, such as the following: observing vegetables, flowers, fruits, animals or some farms of domestic animals or some households.

Thus, in the preparatory class, within the thematic project autumn in colours - the leaves in the park, the students, accompanied by the teacher, can take a walk in the park near the school in order to observe the transformations in nature. Students may be tasked with choosing and grouping leaves by color and size, for example, yellow leaves, large and small.

People who organize and carry out non-formal activities may have a qualification in different fields of activity, and sometimes they may also have a teaching qualification. Realizing a psycho-pedagogical portrait of the teacher who successfully carries out non-formal activities, Blândul (2016) appreciates that it should include: "Expertise and thorough knowledge of the general culture, ability to create authentic learning situations, ability to practically apply the theoretical knowledge acquired, ability to assume responsibility for their work, respect pupil and his its values and psycho-pedagogical qualities".

Christidou et al. (2022), consider that teachers to carry out non-formal activities aimed at learning science would be indicated to have skills "regarding (i) the teaching of content, particularly for science teaching which requires deep understanding of the concepts, as well as knowledge of the didactics of science (Hira et al., 2014), (ii) the group facilitation and interactions, (iii) the development of a community culture, and (iv) the participants' engagement and motivation".

In designing and carrying out non-formal activities, teachers may encounter certain difficulties, as highlighted by Christidou et al. (2022), considering the opinion of 22 teachers involved in various science learning activities in different non-formal settings. The non-formal science learning practitioners covered in the research came from seven European countries: Finland, Greece, Malta, the Netherlands, Norway, Spain and the UK. Analyzing the interviews conducted, the authors of the article identified a diverse range of obstacles and challenges faced by the practitioners related to the management and organization aspects of the activities, the competencies of the practitioners and the attitudes of parents, students and teachers to the activity.

3. Research Questions

In order to carry out the present research, we considered the following questions:

- i. What non-formal activities can be done with students in grades 0-4 in the wilderness?
- ii. Which of the models of non-formal activities, presented within the WILD! The wild garden for learning and development Erasmus+ project, were selected and implemented by primary school teachers at Alexandru Davila Secondary School in Pitești?
- iii. What were the observations made by the teachers about the non-formal activities they implemented with the students in the wild garden?

4. Purpose of the Study

The aim of the research was to highlight the opinion of primary school teachers in Alexandru Davila Secondary School in Pitesti, who implemented the products of the WILD Erasmus+ project, regarding the possibility of carrying out non-formal activities in the wild garden, taking into account the activity models presented in the projects' Intellectual Outputs.

The objectives were as follows:

- i. A Selective presentation of models of non-formal activities developed within the WILD, for students in grades 0-4.
- ii. Highlight the non-formal activities carried out in the wild garden with students in Alexandru Davila Secondary School from Pitești.
- iii. Identify the teachers' point of view regarding the results reached by the students following their participation in various non-formal activities in the green space of the school and the possibility of carrying out such activities in the following school years.

The research was based on the following hypothesis: if primary school teachers appreciate that the models of non-formal activities developed and applied in the wild garden during the implementation of the WILD have contributed to a better understanding and acquisition of knowledge about plants and animals by students, then they will continue to carry out such outdoor activities with students.

5. Research Methods

The questionnaire was the research method we used to achieve the proposed goal and objectives. Twelve primary school teachers from Alexandru Davila Secondary School from Pitești, who carried out formal and non-formal activities in the wild garden within the WILD project, answered to our survey. The questions referred to the class level where they teach, the type of activities they carried out with the students, what form of observation they applied in the activity, what plants they observed, what animals they observed, what results the students had regarding the acquisition of certain knowledge about plants, what results did the students have regarding the acquisition of certain knowledge about animals, what practical works did the students do in the wild garden, what experiments did they perform, and what activities will they want to do in the future with the students in the wild garden.

6. Findings

Within the WILD! The Wild Garden for Learning and Development, project No. 2019-1-IT02-KA201-063227, implemented under the Erasmus+ Program - Call 2019 - Key Action 2 Strategic Partnership – KA201, the group of researchers from the Faculty of Educational sciences, Social sciences and Psychology, University of Pitești – a partner in this project, produced, in collaboration with the Italian and Polish partners, the Intellectual Output No.2, called Teach in the Wild Garden, a methodological handbook which aims to provide a complete training to the primary school teachers to better face the didactic activity in the Wild Garden. In chapter 2 - The pedagogy of nature, 2.2. Suitable teaching methods to be used in activities with ecosystems arranged and cared for by students, a diverse set of formal and non-formal teaching activities was presented, describing how to apply different teaching methods, such as the following: the observation, the practical work, the experiment, the conversation, the demonstration, the problem-solving method, and the investigation. In order to achieve them, the level of knowledge regarding plants and animals mentioned in the content of the school curricula, as well as the age peculiarities of the students were taken into account. Some activities were designed for small groups, 8-12 students, and may involve children with various special needs, and others for the whole class. Below, we will exemplify some of the proposed activities. All the activities are thoroughly presented and explained, as well as accompanied by work sheets/ cue-cards/images on the website dedicated to the WILD project <https://www.wildgardenschool.eu/>, where they can also be downloaded freely.

For the short-term observation of the plants in the wild garden, the model of didactic activity called spring / summer / autumn perfume in the wild garden was presented in two versions. The first is addressed to students in 1st and 2nd grades and is intended to observe one plant or two flowering plants, and the second is for students in grades 3 and 4, following the observation of several flowering plants. The models of activities are accompanied by worksheets and can be done both formally and informally.

The teaching activity model entitled Are all plants transient? Was proposed for the purpose of long-term observation (4-5 months) of various annual and perennial plants in the landscaped green space. Three variants of the activity have been designed and are addressed to students in 1st and 2nd grades. By completing the worksheets, students will highlight the transformations that take place in the appearance of a plant, as a result of its growth and development processes.

Short-term observation of wildlife animals can be done by primary school students, both during a formal and non-formal activity. In order for the students to acquire knowledge about the living environment of the earthworm and its component parts, the model of didactic activity entitled Animals from the wild garden was proposed.

For the long-term observation of sedentary or migratory bird species visiting the wild garden, the model of non-formal didactic activity entitled Trills in the wild garden was proposed for the students of the 3rd and 4th grades. The observations made during 7 months will be completed by the students in the worksheets. They will record the date when they noticed the bird, its popular name and data on the colour of its plumage. To help students identify different species of birds, worksheets contain pictures of them.

The model of didactic activity entitled Explosion of colours in the wild garden proposed the realization of practical works for sowing, planting and caring for two species of plants, basil and verbena. By going through the steps mentioned in this model, primary school students will learn how to sow potted

plants, how to thin them out, how to plant them in pots, and later in the wild garden and how to water them, as needed. The model can be applied as a formal or non-formal activity.

Collection of dried herbs from grass is a model of activity that proposed the creation of herbariums by students in grades 0-4. According to this model, after observing certain plant species, students will harvest the leaves of the analysed plants, press them, stick them on a thin cardboard, and next to them will place the drawing or picture of the plant to which it belongs. They will complete a label, writing the popular name of the species, the place and date of collection. The making up of the herbarium can be done in a formal or non-formal activity.

The plants obtained from the practical work could be used for the experiment proposed in the activity model entitled why plants do not bloom. By placing the same plant species in places with different brightness in the wild garden, students will be able to study in a formal or informal activity the importance of light for the development of a plant.

During the implementation phase of the project, primary school teachers were free to choose certain activity models to be carried out with their students.

After analysing the answers of the surveyed teachers, it was found that during the school year 2021-2022, there were three teachers carrying out activities in the 0th grade, the 1st grade and the 4th grade, one teacher in the 2nd grade, and two teachers in the 3rd grade.

Regarding the type of activities carried out in the wild garden, 33.33% of the teachers mentioned that they only carried out non-formal activities with the students, and 66.66% of the teachers did both formal and non-formal activities.

All teachers opted for the application of short-term observation during the non-formal activities carried out. Long-term observation was largely used by 66.66% of teachers, to some extent by 8.3% of teachers, to a very small extent by 66.66% of teachers and never by 8.3% among teachers. Among the observations made, the teachers mentioned the following: observing the different plants in the garden, observing the component parts of certain plants, observing the plant forget-me-not in different seasons, observing the different animals present at a given time in the garden, observing the living environment of earthworm and its external composition, etc.

Regarding the species of plants observed by students in the wild garden, all teachers said that the students observed mint, basil and fir. A slightly lower percentage, respectively 83.33% of the teachers mentioned that the students also observed lavender, sage, verbena, black shock and forget-me-not. The students also observed other plants, such as white water lily, mentioned by 50% of teachers, thyme, strawberry and blackberry, mentioned by 66.66% of teachers and rosemary, strawberry and hazelnut, specified by 8.33% of the respondents.

All the teachers mentioned that the students observed the ants. Among the teachers, 83.33% stated that the students observed the earthworm. A lower percentage of teachers 66.66% mentioned that the students observed bees, butterflies, swallows and crows. Other students observed sparrows, magpies, pigeons and various beetles, as reported by 33.33% of teachers. Only 16.66% of the teachers pointed out that the students observed bumblebees and wasps.

During the outdoor activities, students in grades 0-2 have to some extent mastered the correct popular name of the species of plants and animals observed, as stated by 50% of teachers surveyed. The

same percentage of teachers mentioned that students in the 3rd and 4th grades have largely learned the name of the organisms, in popular language.

As a result of the activities carried out, 83.33% of the teachers mentioned that the students correctly acquired knowledge about the composition of the analysed plants (herbaceous plant, shrub, tree) and about the life cycle of the plants, to a large extent. Only 16.66% of teachers stated that students learned this knowledge to some degree.

Regarding the observed animals, all the teachers pointed out that the students described to a large extent correctly the observed animals (colour, shape, size, body composition).

All the teachers pointed out that the students of the classes participating in the implementation of the project sowed or planted different species of plants in pots or in the wild garden and gathered the dried leaves. All the teachers stated that the students in each class made a herbarium with leaves of different species of plants from the wild garden. A slightly lower percentage of teachers, 83.33% pointed out that the students took care of the plants.

A very small percentage of teachers, 16.66%, mentioned that they conducted an experiment in the wild garden, planting the same plant species in a bright and shady area.

All the teachers emphasized that they want to carry out non-formal activities in the wild garden in the following school years, using the activity models developed within the WILD project (<https://www.wildgardenschool.eu/>). Some of the teachers from grade 0, grade 1 and grade 2, representing 66.66% of the respondents, mentioned that they will develop an optional (extra-curricular) course, called let's discover the wild garden, during the next school year.

7. Conclusions

The wild garden in the smaller or larger yard of a school is a wonderful green space, ideal for non-formal activities with students. The smaller groups of students participating in such activities, compared to formal activities, allows the teacher a closer supervision and guidance of students, and students have the opportunity to meet certain personal needs, such as the need to be respected, the need to be responsible, the need to be active, the need to be socially included and the need to feel safe.

The models of didactic activity elaborated within the WILD project entitled highlighted the possibility of applying a diverse range of teaching methods in non-formal activities with students. Also, the production of several activity models gave each teacher the opportunity to select and apply a certain model, depending on the age peculiarities of the students, but also on their interests for plants or animals.

During the implementation of the project, the teachers from Alexandru Davila Secondary School from Pitești carried out non-formal activities with students from grades 0-4. Thus, they applied to a large extent the short-term observation of plants and animals and to a very small extent the long-term observation. They observed a great diversity of native and cultivated plants, of which aromatic plants (e.g. mint) can be mentioned. Many students in grades 0-2 remembered the popular name of plant and animal species, and most of the students acquired knowledge about grass plants, shrubs and trees and their life cycle. They also noticed many animals in the wild garden (e.g. worm, ant). It is noteworthy that all students described correctly the animals observed.

The activity models that involve the use of practical work as a teaching method were selected and applied by teachers. Students did practical work in the classroom and in the wild garden. They also collected leaves which they pressed, making a herbarium for each class of students.

A small percentage of teachers applied the model of didactic activity that involves the application of the experiment. This can be explained in the year in which the wild garden was established, most teachers being concerned with the application of observation and practical work in non-formal work with students.

Given the students' results in acquiring knowledge about plants and animals, all the teachers mentioned that they will carry out informal activities in the wild garden.

Taking in the account all the above, it can be stated that the purpose and objectives of the research have been achieved, the models of non-formal activity carried out within the project entitled "Wild! The wild garden for learning and development" (<https://www.wildgardenschool.eu/>) and will be used as a guide for future activities in the school garden.

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