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**«TECHNOLOGY OF LANDSCAPING EDUCATIONAL INSTITUTIONS»  
PROJECT AS A BASIS FOR ENVIRONMENTAL EDUCATION  
OF PHYSICS TEACHERS DURING THEIR FUNDAMENTAL TRAINING:  
ISRAELI EXPERIENCE**

**ABSTRACT**

*This article addresses the pressing issue of fundamental training for future physics teachers, emphasizing the need to bridge theory and practice, integrate natural sciences with environmental education, and develop students' research and environmental competencies. The focus is on the importance of collaborative project activities between educators and future physics teachers as a cornerstone of comprehensive training. The author introduces the project "Technology of Landscaping Educational Institutions" as a key method for environmental education during the fundamental training of physics teachers at a pedagogical university. Key project tasks included: 1) identifying ecological foundations for creating green spaces in educational institutions; 2) describing functional zones within the institution for potential improvements; 3) substantiating the roles of green spaces in the educational yard; 4) developing landscaping technology for the institution's courtyard; and 5) exploring international landscaping practices through the example of Ariel University in Israel. The project was carried out through partnership pedagogy, cross-cultural communication, and inter-university cooperation between V.G. Korolenko Poltava National Pedagogical University and Ariel University. During the project, students, who are future physics teachers from V.G. Korolenko Poltava National Pedagogical University, engaged with scientific sources and the website of Ariel University. They participated in virtual tours of Ariel University's campus and attended online consultations to assist with project tasks. As a result, Ukrainian students developed and presented reports on the technology of environmentalization for educational institutions and proposed their own landscape design concepts for the Poltava National Pedagogical University's grounds.*

*The project "Technology of Landscaping Educational Institutions" is a paragon of partnership pedagogy, cross-cultural communication, and inter-university collaboration. Knowing the nature, students become harmoniously developed and comprehensively aware personalities, which is an important element of modern educational process.*

**Keywords:** *project, fundamental training, future physics teachers, environmental education, technology of landscaping educational institutions, pedagogical university, integration, Israeli experience.*

**ПРОЄКТ «ТЕХНОЛОГІЯ ЕКОЛОГІЗАЦІЇ НАВЧАЛЬНОГО ЗАКЛАДУ»  
ЯК ОСНОВА ЕКОЛОГІЧНОГО ВИХОВАННЯ МАЙБУТНІХ УЧИТЕЛІВ ФІЗИКИ  
У ПРОЦЕСІ ФУНДАМЕНТАЛЬНОЇ ПІДГОТОВКИ: ІЗРАЇЛЬСЬКИЙ ДОСВІД**

**АНОТАЦІЯ**

*У статті розглядається актуальна проблема фундаментальної підготовки майбутніх учителів фізики в університетах, яка спрямована на розширення зв'язків*



між теорією та практикою, інтеграцію природничих наук та екологічної освіти, фахових дисциплін та екологічного виховання, на формування дослідницької, природничо-наукової та екологічної компетентності студентів. Зазначено, що для вирішення вище зазначених завдань слід приділяти увагу спільній проєктній діяльності викладачів навчальних закладів та майбутніх учителів фізики, яка виступає основою фундаментальної підготовки студентів. Автором презентовано проєкт «Технологія екологізації навчального закладу» як один із засобів екологічної освіти майбутніх учителів фізики під час фундаментальної підготовки в педагогічному університеті. Особливу увагу приділено завданням проєкту: 1) визначити екологічні основи створення зелених насаджень у навчальних закладах; 2) описати функціональні зони у навчальному закладі для здійснення їх благоустрою; 3) обґрунтувати функції зелених насаджень у дворі навчального закладу; 4) розробити технологію озеленення двору навчального закладу; 5) дослідити міжнародний досвід озеленення двору Аріельського університету (Ізраїль). Проєкт реалізовувався на засадах педагогіки партнерства, кроскультурної комунікації, мережевої міжвузівської співпраці Полтавського національного педагогічного університету імені В. Г. Короленка та Аріельського університету.

Висвітлено особливості використання зарубіжних підходів (досвід Аріельського університету) до організації проєктної діяльності майбутніх вчителів фізики Полтавського національного педагогічного університету імені В. Г. Короленка. Зазначено, що для українських студентів проводилися онлайн-консультації для вирішення завдань проєкту, студенти працювали з науковими джерелами, сайтом Аріельського університету та відвідували віртуальні екскурсії по території Аріельського університету. У результаті роботи над проєктом українські студенти презентували доповіді-презентації щодо технології екологізації навчального закладу та пропонували власні розробки ландшафтної дизайну для території Полтавського національного педагогічного університету імені В. Г. Короленка.

**Ключові слова:** проєкт, фундаментальна підготовка, майбутні вчителі фізики, екологічна освіта, технологія екологізації навчального закладу, педагогічний університет, фундаменталізація, інтеграція, досвід Ізраїлю.

#### INTRODUCTION

The issue of landscaping is especially relevant for educational institutions, which in modern conditions provide not only education but also upbringing, which is an integral part of environmental education.

Environmental education is an organized and purposeful process of forming a system of scientific knowledge about nature and society, views and beliefs that ensure the formation of young people's responsible attitude to nature, a real indicator of which is the practical actions of students in relation to the environment, meeting the standards of human morality (Kurniak, 2010).

Ecological education is a set of ecological knowledge, ecological thinking, ecological outlook, ecological ethics, and ecological culture. The main purpose of environmental education is to acquire scientific knowledge of the environment, understand complex interconnections in nature that have developed over a long historical development; to develop knowledge and research skills aimed at the development of intelligence, creative and business activity; to understand contemporary environmental problems and be aware of their relevance to oneself; to develop ecological consciousness and personality culture, self-awareness of oneself as a part of nature (Kontseptsiya ekolohichnoyi osvity Ukrainy, 2001).



Ecologically oriented pedagogy is the basis of students' ecological education. It covers the principle of nature, the ecology of social environment, the ecology of the human inner world, the greening of education and upbringing (Grynyova & Velychko, 2020).

#### **THE AIM OF THE STUDY**

The purpose of the article is to present the project "Technology of landscaping educational institutions»; to determine the ecological principles of green space creation in educational establishments; to describe functional zones in educational establishments for the implementation of their landscaping; to justify the functions of green spaces in the courtyard of educational establishments; to develop technology of landscaping educational establishments; to study international experience of greening the backyard of an Ariel University (Israel).

#### **THEORETICAL FRAMEWORK AND RESEARCH METHODS**

The founders of ecological education of young people were I. Suravegina, O. Zakhlebnyi, I. Zvyryev, who substantiated theoretical foundations, developed conceptual provisions and laid the foundation of environmental education. V. Krysachenko, I. Pavlenko, G. Pustovit, L. Simonova, S. Skrypyk and others were engaged in fundamental research in the field of ecological education.

The theoretical basis of modern research on the problems of younger generation's upbringing is the theory of continuous ecological education (G. Karova, M. Kiselev, M. Mammadov); ideas of ecological education of children and young people and their application in pedagogical researches (L. Bilyk, L. Lukyanova, G. Marchenko, O. Plakhotnik, N. Pustovit, A. Stepanyuk, etc.).

Ecological education, which partly reflects the methodological, organizational and technological aspects of the implementation of nature conservation measures, was addressed by N. Kazanishena, N. Kot, L. Lukyanova, N. Lysenko, R. Naumenko, Z. Plohiy, M. Sonnova and others.

Under the improvement of the territory, we understand its arrangement – the arrangement of sidewalks, access roads, flowerbeds, lawns, outdoor lighting, fencing of the territory, planting trees, shrubs etc.

Landscaping is cultivation of plants in the areas to improve the quality of the environment. Landscaping is a large set of works aimed at improving the appearance of the site, giving it an attractive view in terms of landscape design, improving the level of comfort and appearance.

Many scientists describe in their works ways of landscaping the territory of educational establishments, plants that can be used for it, ways of their cultivation and care. In recent years, a number of scientists have been engaged in the study of green spaces in general and the greening of educational institutions, as noted in the works of V. Bilous, V. Cherniak, O. Kalinichenko, V. Kucheryavyyi, L. Rubtsov.

O. Kolesnikov describes in detail the natural decorative properties of trees and shrubs (structure and shape of the crown, ornament of leaves, shape and color of flowers and fruits) that can be used for landscaping the courtyard of the educational establishment. V. Bunin provides examples of determining the range of flowering and ornamental-deciduous plants of the open soil. L. Romancha elucidates the basic principles and methods of landscaping the yard of the educational establishment, gives a brief description and assortment of species and forms of plants for landscaping. L. Kirilchuk tells about new methods and ways of landscaping with ornamental plants. Z. Ivanova introduces the assortment of woody plants for landscaping and cites the characteristics of different species



and forms of trees, shrubs, and vines. S. Sovhira points out that when greening the territory of educational establishments, the content of poisonous substances in plants must be considered.

During the project, the following research methods were employed:

Theoretical Methods:

1. Analysis and synthesis: used to examine and integrate information from various sources.
2. Analogy in combination with induction: applied to draw comparisons and derive conclusions based on specific instances.
3. Comparison and generalization: utilized to analyze normative sources and scientific literature to determine ecological foundations for creating green spaces, describe functional zones for improvement, and develop landscaping technology.
4. Substantiation: focused on justifying the roles of green spaces and the functions of the educational institution's yard.
5. Research of international experience: used to examine landscaping practices at Ariel University in Israel.

Empirical Methods:

1. Conversation and discussion: engaged with stakeholders to gather qualitative data and insights.
2. Video observation: used to study and analyze the greening practices and landscaping strategies implemented at Ariel University.

These methods collectively provided a comprehensive approach to understanding and enhancing the greening of educational institutions.

### **RESULTS**

Taking into account the above considerations, collaborative project work between educational institution teachers and future natural science and physics teachers is crucial for basic student training. The fundamentalization of professional training for competitive physics teachers is a pressing issue in contemporary higher pedagogical education. This process aims to bridge theory and practice, integrate natural sciences with environmental education, and enhance students' research, scientific, and environmental competencies.

A prime example of such collaborative project activity is the project "Technology of Landscaping Educational Institutions." This project serves as a foundation for environmental education of future physics teachers during their fundamental training.

During the project, future physics teachers from V. G. Korolenko Poltava National Pedagogical University (Ukraine) engaged with scientific sources, explored the Ariel University website, and participated in virtual tours of Ariel University. Online consultations were also conducted to assist students with project tasks. As a result, the Ukrainian students delivered reports and presentations on the technology of environmentalization for educational institutions and proposed their own landscape design developments for the grounds of V. G. Korolenko Poltava National Pedagogical University (Ukraine).

According to state building codes, the location and size of land plots for educational institutions must adhere to city building regulations. Educational buildings should be situated no closer than 25 meters from the property line. However, if the institution is located in a community center of a village, this distance can be reduced to 10 meters, provided that all sanitary and hygienic standards are met. Additionally, the distance from the boundaries of educational institution plots to residential buildings with entrances and windows should be at least 10 meters. Distances to other residential and



public buildings should comply with norms related to sunlight, noise, and natural ventilation. During reconstruction, it is permissible to reduce the distance from the street if noise protection measures are implemented (Budyanky ta sporudy shkil'nykh zakladiv: Derzhavni budivel'ni normy Ukrayiny (DBN V.2.2-4-97), 2011).

The perimeter of the educational institution's land plot should feature a protective green strip, consisting of trees, shrubs, and lawn, with a minimum width of 1.5 meters, and at least 3 meters from the streets. In residential areas, hedges made of bushes at least 1 meter high can be used (Blahoustriy terytoriyi: Derzhavni budivel'ni normy Ukrayiny (DBN B.2.2-5:2011), 2011).

The land plots must also include access for fire trucks, allow for detours around buildings, and provide open areas for parking vehicles, including spaces for specialized transport for disabled persons. Building entrances should be paved, and pedestrian and vehicle traffic should be clearly separated.

During the project, several functional zones were identified on the educational institution's premises:

- Educational Zone: includes training buildings and their adjacent areas.
- Educational-Production Zone: comprises buildings with workshops, laboratories, training grounds, and study sites.
- Physical-Sports Zone: features indoor and outdoor sports facilities and playgrounds (measures should be taken to mitigate noise from these areas, such as landscaping and terrain management, to protect adjacent educational and library spaces).
- Recreation Area: contains spaces for both active and quiet recreation. Active recreation areas should be near entrances and exits to the street, while quiet rest areas are best integrated with landscaping.
- Economic Zone: involves areas related to the institution's operational needs.
- Residential Zone: includes housing for staff or students, if applicable.

The landscaping of the educational institution is crucial for creating a visually appealing and functional environment. The landscaped area should cover 45–50 % of the total land area, including rest areas, vegetable and berry gardens, and protective strips of shrubs around the perimeter. If the institution is adjacent to existing green spaces (such as parks or gardens), or located in rural areas, the green space requirement can be reduced by up to 30 %. Tall trees should be planted at least 10 meters away from educational buildings' windows, and shrubs should be positioned at least 5 meters away.

The landscaping should be diverse and aesthetically pleasing, incorporating a variety of trees beyond just birch and poplar, such as linden, rowan, willow, chestnut, oak, and ash. For larger areas, a small coniferous forest with spruce, pine, or fir can be established, which is both educational and beneficial for health due to the volatile compounds these trees emit that combat pathogens.

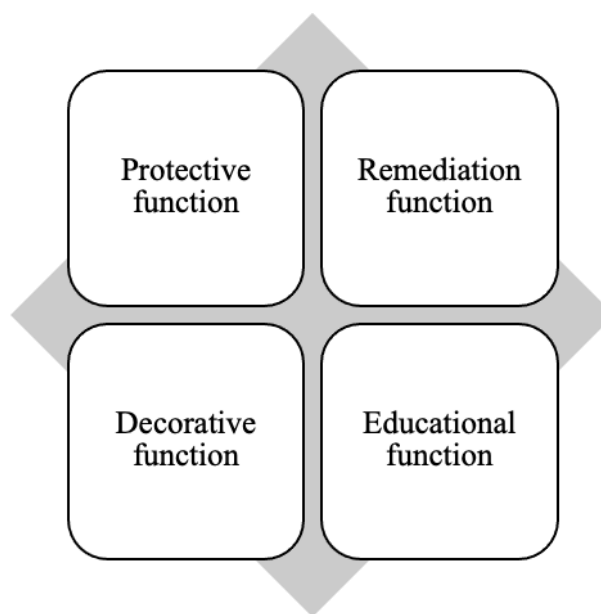
Floral design should be concentrated at the entrance to the site and in front of the building facade. Students can place annual flowerbeds along paths for easy watering and maintenance, while perennials should be situated farther from paths on lawns in free-form clusters. Flowerbeds can occupy up to 2% of the total plot area and should include flowers that bloom throughout the growing season and are easy to care for (Bunin, 1988).

Perennials can grow in different places in the yard. Near the central entrance and along the main paths, it is better to plant such perennials as irises, lilies, peonies, phlox. It is advisable to plant perennials separately in group areas – students will grow seedlings, plant them in the soil, and then monitor the development of plants before ripening and seed



collection. Plants should be simple to care for and long-flowered (Sovhira et al., 2011). Vertical landscaping is also important – walls and fences can be covered with wild grapes; there can be installed gazebos on the playgrounds; fragrant peas and decorative beans look great. In the presence of properly organized landscaping, the green area can create a new type of “ecological space”.

Green spaces improve the microclimate of the territories, create good conditions for outdoor recreation, protect against excessive overheating of soil, walls of houses and sidewalks. Green spaces should be positioned based on the functions they perform – protective, remediation, decorative, educational (Fig. 1):



**Fig. 1. Functions of green spaces in the courtyard of the educational establishment.**

**Protective function.** Under the influence of green space, the wind speed decreases. Greenery significantly reduces solar radiation (direct and scattered). According to the comparison with the open area, direct and scattered radiation in leafy green areas is 30 %.

**Remediation function.** Green space plays important role in the purification of ambient air. An average tree in 24 hours recovers as much oxygen as it needs to breathe for three people at the same time, and this is especially true given the increasing trend of oxygen consumption by vehicles and industrial enterprises. Of great importance is the phytoncides of green spaces – the ability to secrete specific volatile organic compounds that kill pathogenic bacteria or delay their development. Volatile selection of trees and shrubs have special volatile properties. Coniferous breeds differ in woody plants with high phytoncides. Green spaces enrich the air with oxygen and volatiles, which in turn helps to improve the environmental conditions of the educational establishment (Volodarets, 2012).

Green spaces have a significant impact on the temperature of the educational establishment’s yard. In summer, the air temperature in the plantations is 7–10 °C lower than in open areas, the soil temperature in the plantations is 17–24 °C lower than in non-



green areas. The relative humidity of the plantings on hot days is 7–40 % higher than in open areas. The role of green space in the prevention of air pollution by dust and industrial emissions is large. By holding down solid and gaseous formations, they serve as a filter to purify the atmosphere. Dust, picking up the downward streams of air, settles on the leaves. One hectare of coniferous trees holds up to 40 tons of dust a year, while deciduous trees retain about 100 tons. Coniferous breeds, whose dustproof properties are stored throughout the year, precipitate dust 1.5 times more per unit mass of leaves than hardwood (Grynyova & Velychko, 2019). The most important sanitary function of green spaces is their ability to reduce noise. Well-developed trees and shrubs reduce noise by 17–23 dB (Cherniak, 2010).

**Decorative function.** This function is provided by the use of vegetation, which has a great variety of shapes, colors and textures. For example, pyramidal, spherical, weeping and many other forms of trees and shrubs, the richest color palette of leaves, flowers, fruits and trunks, with a hard, smooth, shiny or matt texture will be the decoration of the courtyard of the educational establishment.

**Educational function.** Green spaces in the courtyards of educational institutions are successfully used in the educational process of students through cognition of nature and caring after it. This can be achieved if students are introduced to its secrets, shown how interesting the life of plants and animals is, taught to enjoy the aesthetics of nature. The perception of nature helps to develop such qualities as cheerfulness, emotionality, attentive attitude towards everything living.

Planned, landscaped and tidy courtyard of the educational establishment promotes the acquisition of practical skills in indoor and outdoor landscaping; deepens the knowledge of students about open and closed flower gardening, dendrology and horticulture; contributes to the aesthetic education of students. In addition, floral ornamental plants in the courtyard of the educational establishment is a convenient object for the organization of research (Grynyova & Velychko, 2019).

The technology of landscaping the courtyard of the educational institution is associated with the overall positive impact of plants, especially trees, on the microclimate of the territory and its “improvement”. Plants create a barrier against impurities of air, dust, smoke, exhaust gases, enrich the air with oxygen and reduce carbon dioxide. At times the noise load decreases. The amplitude of temperature fluctuations is reduced (especially in hot weather). Trees and tall shrubs create shadows, increase air humidity and ionize it. Such properties of plantations have a positive effect on the well-being of students at different times of the year (Bairak & Cherniak, 2009).

There are numbers of rules for creating green spaces in the backyard of an educational institution. Trees are picked not tall, deciduous or with ornamental needles or crowns, beautifully flowering with a pleasant but not sharp odor (Sovhira et al., 2010). The term “assortment of plants” is understood as a list of species and varieties of plants and has an appropriate systematic approach. We offer to expand the assortment of woody plants by introducing the following species into the landscaping of the educational establishment: maple-pointed (*Acer platanoides* L.), riverine (*Acer ginnala* (Maxim.) Maxim.), tatar (*Acer tataricum* L.), French maple (*Acer monspessulanum* L.) and sugar maple (*Acer saccharophorum* K.Koch), broadleaf linden (*Tilia platyphyllos* Scop.), furry birch (*Betula pubescens* Ehrh.), warty (*Betula pendula* Roth.), and spiny spruce (*Risea pungens* Engelm, Engelm, Engelm, Engelm). Common ash (*Sorbus aucuparia* L.), oak (*Quercus*), and ash (*Fraxinus*) species should be included instead of the poplar pyramidal species (*Populus simonii* Ca rriere). The Canadian and European (*Cercis canadensis* L., *C. siliquastrum* L.),



Pissard plum (*Prunus cerasifera* Ehrh. Var. *Pissardii* (Carriere) LH Bailey), and common mackerel (*Cotinus coggygia* Scop.) should be actively introduced into landscaping. The evergreen (*Buxus sempervirens* L.) and semi-evergreen shrubs of *Cotoneaster horizontalis* Decne should be included as well.

Shrubs should include common lilac (*Syringa vulgaris*) and Hungarian (*Syringa Josikaea*), garden jasmine (*Philadelphus* L.) or chubushnik. Different types of spiraea (*Spiraea*), silkworm (*Elaeagnus argentea* Pursh), yellow acacia (*Caragana arborescens* Lam.), beuclet warty (*Euonymus verrucosus* Scop.), common viburnum (*Viburnum opulus*), forsythia (*Forsythia ovata* Nakai), hydrangea (*Hydrangea*), viburnum common (*Viburnum opulus*) are considered to be the most valuable decorative species of shrubs. In shaded areas, it is recommended to plant shade-resistant breeds of shrubs – *Euonymus verrucosus* scop.

Widely spread are representatives of gymnosperms such as Lawson cypress (*Chamaecyparis lawsoniana* (A. Murray bis) Parl.) and Cypress nuts (*Chamaecyparis pisifera* (Siebold & Zucc.) Endl.), *Ginkgo biloba* (*Ginkgoaens* L. Engelm) and a particularly decorative pigeon shape ornamental *Thuja* L. and *Juniperus*.

Increasing the number of evergreen gymnosperms in the backyard of the educational establishment will not only saturate the air with volatiles, but will also give an attractive appearance to the green zone at all seasons of the year.

Lawns play a significant role in the landscaping of educational institutions. The lawn has an important sanitary and hygienic value – green color calms the nervous system, reduces fatigue, and increases efficiency. The lawn is also of aesthetic importance as it is the basis for creating a composition of flowers, trees and shrubs. Single or group plantings of park roses, tea-hybrid roses, forsythia, vantage spire, hydrangea, barberry and various coniferous species look very good on the lawn. Perennial and biennial flowers are planted in the foreground of the lawn. Among them are castor, iris malicious, peony, phlox hairy, dolphin, perennial poppy, bearded iris, and digitalis. The plantations of perennial and biennial flowers are complemented by late-flowering annual flowers, which create a bright color spot on the lawn throughout the growing season – prunes, salvia, petunia and many more from a wide variety of annuals.

Flowerbeds are an integral part of the landscaping of a schoolyard. They have great power of emotional influence, create the main accents in the color design of the site. The arrangement of the flowers must be subordinated to the only artistic design of the landscaping. There are many requirements for education in flower establishments, but the main one is that flowering should last throughout the growing season. This can be achieved through flowering ornamental plants (Bilous, 2005).

Therefore, modern-style courtyard gardening technology is intended to become one of the links in the overall environmental education system for students.

The territory of Ariel University is greened by the creation of vertical green fields. At the heart of the green walls is a strong and lightweight construction that moves on a modular principle that allows you to vary the height and the total area. The standard modules are rectangular parts of size 30x40 cm, which in turn consist of smaller cells of size 6x15 cm. The modules are made of particularly durable plastic. Plants are planted tightly, which saves not only the area, but also the flow of water, which, thanks to a special drainage system, penetrates from cell to cell without losing moisture. Water supply is strictly controlled, as water in the southern latitudes is of great value.

Vertical fields save space, which is quite important in the conditions of shortage of agricultural land and urban landscaping. A green wall of 1,000 square meters occupies





about 60-70 centimeters of soil surface. Vertical fields enhance and beautify modern urban environment, because 800 square meters of green space can absorb about 400 tons of harmful gases per year, offset the harmful effects of two kilograms of heavy metals, produce enough oxygen for consumption by 500 people per year, and absorb 450 vehicles. Every two quadrants of a vertical green wall correspond to a 15-meter tree by its productivity. When greening the territory of an educational establishment, it is necessary to create an aesthetically attractive, socially comfortable environment. The courtyard is decorated with sculptures, flowerbeds, and fountains (Grynyov et al., 2020; Wehe et al., 2011).

Ariel University was originally blessed with the help of planted shrubs and trees with illumination. It is recommended to plant trees that have a long or year-round decorative effect. These can be pines and spruce.

You can also use beautiful flowering trees and bushes – cypress, ficus sycamore, tamarisk, oleander and pistachio. Concrete ledges serve as benches for rest. The landscaped design creates a seating area where students can spend their free time between classes. Concrete ledges for benches, which are surrounded by greenery, are perfectly combined with the concrete buildings of the university. Lighting in the dark creates a bright green color and makes the school attractive, creating environmentally friendly environment favorable for the education and upbringing of students (Levin et al., 2007).

Functional zones of educational establishments for the realization of their landscaping are defined: educational, educational-production, educational-research, physical-sports, rest, economic, residential. The landscaping area of the land must be 45-50% of the total land area (including landscaped rest areas, vegetable and berry growing areas, protection strips and shrubs planted around the perimeter of the area). The landscaping of the backyard of the educational institution must be diverse and aesthetically pleasing, creating a favorable visual environment. Floral decoration should be concentrated at the entrance to the courtyard, in front of the building facade.

#### **CONCLUSIONS AND PROSPECTS OF FURTHER RESEARCH**

Thus, the project “**Technology of Landscaping Educational Institutions**” was carried out through a framework of partnership pedagogy, cross-cultural communication, and inter-university collaboration between Poltava National Pedagogical University named after V. G. Korolenko and Ariel University. During the project, students-future physics teachers from V. G. Korolenko Poltava National Pedagogical University (Ukraine) engaged with scientific literature, explored Ariel University’s website, and participated in virtual tours of the Ariel University campus. Online consultations were also organized to assist Ukrainian students in addressing the project tasks. As a result of their work, Ukrainian students delivered presentations on the technology of environmentalization for educational institutions and proposed their own landscape design solutions for the grounds of V. G. Korolenko Poltava National Pedagogical University.

The functions of green space in the courtyard of the educational establishment are substantiated: protective, sanitizing, decorative, and educational. The usefulness of landscaping is the rational use of volatile, tonic, air-purifying properties of vegetation. All this in a complex creates a healthy and aesthetic environment. Knowing the nature, students become harmoniously developed and comprehensively aware personalities, which is an important element of modern educational process.

The project has developed a comprehensive technology for landscaping the educational institution’s yard, incorporating a diverse selection of trees, shrubs, and flowering plants. This approach aims to enhance the aesthetic appeal of the yard, its functionality, and environmental quality.



Additionally, the project examines international practices in landscaping educational institutions by analyzing the example of Ariel University in Israel. This exploration provides valuable insights and best practices that can be adapted to improve the landscaping strategies at the local educational institution.

We see the prospects for further research in the expansion of the range of projects in the context of environmental education for the fundamental training of future physics teachers in universities; the determination of didactic conditions for the formation of students' environmental competence; and the strengthening of international cooperation of universities to improve the quality of future physics teachers' education.

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