The ecological situation of the metropolis: introduction from region to region

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Abstract. The article is revealed the main stages and results of the project "Plant wealth of Russia: from region to region". The project aim is to develop the environmental competence and the overall environmental culture of students of higher and secondary professional educational organizations, young scientists. The project is focused on the study of the practical application, conservation and protection of plants in the regions of Russia. Each stage of the project is designed to expand the target audience. In the future, the author plans to implement the project in the format of all-Russian festivals in different regions.

Key words: introduction, environmental competence, project activities, environmental culture.

1. Introduction

There is no uniform definition of environmental competence in the scientific literature. The environmental competence is the basis for the development of the environmental culture of the individual [5]. The content of environmental competence includes the following formulations [3, 4]: theoretical and practical human readiness to relate to the environment; the ability to apply environmental knowledge in practical, professional activities; the ability to assess the results of their activities in terms of causing harm to nature.

The environmental competence consists of value, cognitive and activity components [1, 2, 6].

The formation and the development of environmental competence is the carried out in the process of educational and extracurricular activities.

In order to implement clause 9 the formation of environmental culture, environmental education and upbringing, "Fundamentals of state policy in the field of environmental development of the Russian Federation for the period up to 2030" [7], of the program "Continuous environmental education and enlightenment of the population of the Tomsk region for 2016-2020" [8-10] and the development of environmental competencies among young people, the project "Plant wealth of Russia: from region to region" was implemented. The project consists of three stages: the project at the local level "Plant resources of the ecosystem of the region as the main source of healthy nutrition", the regional forum "The life in the Eco style" and the All-Russian festival "Plant" ornament "of Russia", which is planned in late 2020 - early 2021 of the year. Project implementation period: 3 years (2018-2021).

2. Methodology of the project "Plant wealth of Russia: from region to region"

Project goal: development of environmental competence and general environmental culture of students of higher and secondary professional educational organizations, young scientists.
Project objectives:
- development of environmental competence of students and young scientists;
- formation of the ecological culture of the individual;
- involvement of the younger generation in activities for the protection and preservation of plants, the revival of natural objects;
- development of design and research, communication and entrepreneurial skills.

Target audience: students of higher and secondary professional educational institutions, young scientists.

Expected results:
At the level of practical importance of the project: development of the ecological culture of students, young scientists; raising awareness among young people of the benefits of plants for human health and the need to protect and conserve natural resources.

At the organizational level: organizing of classroom and extracurricular activities in order to get acquainted with plant resources, chemical composition, the presence of useful substances, methods of their use, conservation and protection.

At the level of educational activity: development of environmental competence of students; formation of students' motivation to study and preserve regional resources as the main sources of healthy nutrition.

Forms of project implementation: classroom work: lectures, seminars, consultations; extracurricular work: independent work, organization of extracurricular activities (forum, festival).

Methods used in the process of project implementation: analysis; observation; collection of information, work with literature, Internet sources; presentation.

3. Content of the project "Plant wealth of Russia: from region to region"

3.1. Stage 1. Approbation
Organization - developer: "College of food industry, trade and services" Orenburg city; All-Russian Research Institute of Physiopathology Moscow region.

At the first stage, the project “Plant resources of the region's ecosystem as the main source of healthy nutrition” was implemented on the basis of the “College of the food industry, trade and services” Orenburg city. College students took part in the project.

Project leader: Nikolina N.V., Candidate of Philosophical Sciences.

Project goal: study and practical application of the plant resource of the ecosystem of the Tomsk region for the production of healthy food.

Project objectives:
- the use of modern information technologies for the search and processing of information about plant species of the Tomsk region by college students in order to develop professional knowledge and skills;
- development of a business idea for the application of the knowledge gained about plants in the Tomsk region [10].

Object: plant resources of the ecosystem of the Tomsk region.

Subject: a business idea for the use of the plant resource of the ecosystem of the Tomsk region for the production of healthy food.

Project stages:
- Stage I - analytical.
- Form of work: classroom.
- Working methods: analysis, observation.
- Stage II - organizational.
- Form of work: classroom.
- Working methods: analysis, organizing.
- Stage III - practical.
Form of work: extracurricular.
Methods of work: collecting information, working with literature, Internet sources; processing the collected information; development of a business idea.
IV stage - presentation.
Form of work: classroom.
Working methods: presentation of a business idea.
At the fourth stage, students present projects of business ideas on the use of plants of the Tomsk region for the production of healthy food, an analysis of the submitted works is carried out, and the provisions are adjusted.
Project results.
At the level of practical importance of the project: students developed and presented business projects on the use of plant resources of the region in food production.
At the level of educational activity: organization of educational and extracurricular activities of students using design and research technologies; development of environmental, entrepreneurial and communicative competencies of students.
At the level of research activities: participation in the competition “International project “Ecological culture. World and harmony” with the result: a silver certificate [11]; as a result of the project, the article “Environmental educational project as a way of forming a healthy food culture: experience of the Tomsk region” was published in the journal “IOP Conference Series: Earth and Environmental Science”, which is included in the leading foreign databases [12].

3.2. Stage 2. Organization of the regional ecological event "Forum" Eco Life.
At the second stage of the project, a regional forum was organized, in which students of higher and secondary professional educational organizations of Tomsk and the Tomsk region took part.
The purpose of the event: activation of the ecological education of the young generation, the formation of a general ecological culture of students, the education of the personality of a citizen capable of taking an active life position in solving ecological problems.
Tasks of the event: formation of the ecological culture of the individual; involvement of Forum participants in activities aimed at preserving rare plants and animals, preserving and reviving natural sites, and increasing forest plantations.
Organization of the forum:
The opening of the forum was attended by invited speakers: the leading ecologist of the Regional State Budgetary Institution "Ooblkompriroda" and a nutritionist with a lecture-conversation on healthy eating "Food Garbage".
After the opening, the intellectually entertaining game "Life in Eco Style" and themed master classes were held for the students. An exhibition of art objects made from recycled materials was organized within the framework of the forum.
In order to demonstrate the practical use of recyclable materials, a competition of design projects "Fashion from Waste" was organized within the framework of the forum in two nominations: applied art and fashion accessories in the "Eco" style and ethnic motives in modern clothes.
Project results:
At the level of practical significance: students got acquainted with the methods of using recyclable materials for household and aesthetic purposes; development of the ecological culture of youth.
At the level of educational activity: organization of extracurricular activities of students using design and research technologies; development of environmental, entrepreneurial and communicative competencies of students; development of creativity and aesthetic taste in the integration of design solutions and the use of environmentally friendly materials.
At the level of research activities: development of research activities of students in the field of use and conservation of biodiversity of the region.
3.3. Stage 3. Organization of the All-Russian festival "Floral" ornament" of Russia" 
At the third stage of the project, it is planned to organize an all-Russian festival for participation in which students of higher and secondary professional educational organizations, young scientists are invited.

The purpose of the event: creation of a platform for the exchange of theoretical and practical experience in the use, conservation and protection of plant resources in the regions.

Expected results:
On a practical level: increasing the level of understanding among young people of the need to preserve and protect the plant resources of the region by creating conditions for the exchange of experience in theoretical and practical activities in the field of environmental education and training; development of ecological culture of youth.

At the level of educational activity: organization of extracurricular activities of students using design and research technologies; development of environmental, design and research and communication competencies of students; development of creativity and professional self-determination.

At the level of research activities: development of research activities of students in the field of use and conservation of plant resources in the region.

Event organization:
The following events are planned within the framework of the festival:
1. Discussion platforms on topics:
   "The use of plant resources of the region in food and cosmetic products";
   "Methods of plant protection and preservation of biodiversity in the region" [19-26];
   “Development of ecological competencies and ecological culture through extracurricular activities (eco-volunteer teams, ecological actions and projects, social advertising)”;
   "Research activities in the field of plant protection: prospects and results" (for young scientists, employees of research institutes) [14-18].

Participants of discussion platforms: students of higher and secondary professional educational organizations, young scientists.

Participation format: report with presentation and discussion.

2. Exhibition-fair of food products, cosmetics and jewelry made from plant materials of the region.

Participant: large manufacturers of food products, cosmetics and textiles, representatives of medium and small businesses.

In order to implement the national program "Digital Economy of the Russian Federation" [13], a single information resource will be presented at the exhibition, the main task of which is to collect and process information about regional goods, useful properties, manufacturing methods and other characteristics. In the future, it is planned to license this information resource as an online store.

3. Competition of video clips “Russia is my “living home”.

4. It is planned to publish a collection of materials on the results of the festival, which will include abstracts of reports from discussion platforms.

At the end of the festival, a model of the "Plant" ornament "of Russia" will be presented, depicting the variety of plant resources of the regions participating in the festival.

4. Conclusion
The spherical powder obtained by gas atomization has defects in the form of satellites, which can affect the fluidity of the powder. Increased oxygen and nitrogen content in all samples may reduce the corrosion resistance and formation various defects in final product. Application spherical stainless powder will require determination the correlations between the properties of the powders and the properties of final products.

In the conditions of the ecological crisis, it becomes necessary to develop and form the ecological culture of the individual, primarily the young generation. Environmental culture is formed in the course of educational and extracurricular activities of participants in the educational process. The main criterion
for the development of an individual’s ecological culture is the formation of ecological competence. The presented project contributes to the solution of the strategic tasks set in the projects and programs of the Government of the Russian Federation for the development of ecological education, the digital economy and the preservation of the ecological. The activities of the project are planned taking into account the application of design and research educational technology. The use of design and research technology, in this case, allows not only to present theoretical results, but also to offer options for solving ecological problems that arise in the process of research.

The presented project is focused on the study of the practical application, conservation and protection of plants in the regions of Russia [18-20]. Each stage of the project is designed to expand the target audience. In the future, it is planned to continue the implementation of the project in the format of all-Russian festivals on the territory of other regions with the clarification and change of topics reflecting urgent ecological problems.

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