

## RESEARCH PROJECTS AS AN EFFECTIVE PRACTICE OF TEACHING ECOLOGICAL THINKING THROUGH SECOND LANGUAGE

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### ABSTRACT

Nowadays higher education institutions are oriented to train professionals able to generate technological advances and innovations and think outside of the box. But the development of science and technology not based on moral imperatives can lead the world to disaster. Thus, one of the main purposes of higher education today is to inspire students to percept themselves as a part of the planet, in other words, to teach them thinking ecologically. It is particularly important for the students studying Ecological and Environmental Sciences as future environmentalists.

The aim of the paper is to demonstrate the effective pedagogical approaches, such as project based learning, in developing ecological thinking through second language teaching. Due to its nature, second language is considered as an important tool in the development of social core competencies. The use of environmental projects in second language teaching practice develops creativity and has a positive impact on mastering academic and general communication skills.

This paper contains student research projects description and the results of pedagogical experiment.

**Keywords:** education, student, language, teaching, learning, ecological, environment, project, thinking, creative

### INTRODUCTION

Modern civilization is undergoing profound and multifaceted crisis. It is not yet able to resolve many of the existing problems such as military conflicts and terrorist attacks in different parts of the world. But there is another global threat and it is a treat of total destruction of the entire people living environment: pollution of air, water and soil, loss of biodiversity, natural resource depletion, global warming. All these problems which are common to the whole mankind are closely related to education. It is education that provides knowledge to people and is able to influence morality and ethics [1].

‘The task of creating professionals for main spheres of human activity becomes really trending nowadays. Ethic, cultural and linguistic basis are needed to ensure the high scale of professionalism. Professionals must combine core competences and high foreign language knowledge level. University graduate must be not only educated in the terms of professional knowledge but have a set of personal qualities’ [2].

The current research was carried out in the Institute of Environmental Sciences of Kazan Volga region Federal University, for several reasons. Firstly, as mentioned above, the theme of ecology is now as relevant as never before. ‘The 2017 year is announced by the President of the Russian Federation Vladimir Putin as the Year of Ecology and the Year of Specially Protected Natural Areas in Russia in order to attract public’s attention to the preservation of natural heritage’ [3,4].

Environmental thinking is one of the key professional and socially important core competencies of future environmentalists. In this paper under the ecological thinking we mean such thinking when people not simply try to care more about nature but they make their arguments and act realizing that they are parts of the planet [5].

In the process of second language teaching (French) we accumulated large experience in the field of professionally oriented projects. The applicability of the project based learning in developing students environmental thinking has been confirmed by the results of pedagogical experiment.

## **MATERIALS AND METHODS**

The research method used in this study is a mixed-method research consisting of scientific and methodical literature analysis and summarizing, student research projects description, pedagogical experiment and testing.

In recent years the ecological thinking has become a quite popular idea in Russia and abroad. Several researchers have studied the psychological and pedagogical aspects of environmental education [6, 7], while others have examined environmental consciousness in the context of philosophy [8, 9], or suggested the necessity of continuous environmental education in achieving sustainable development [10], referring to the numerous national and international documents and resolutions in this field, including UNESCO and the United Nations [11].

Some researchers investigating different approaches to developing ecological thinking opine that to ensure effective environmental education one needs to use the methods and techniques based on the action research methodology [12]. The implementation of the method of environmental projects in teaching process creates an innovative learning environment. Students work independently using their creativity in conducting environmental researches. The project based learning is based on the development of cognitive and research activities of students [13]. ‘The use of student-centred techniques facilitated a strong social context for learning, and provided students with a common experiential framework in which they explore all technical aspects of the curriculum’ [14].

Thus the second language teaching is the most effective way to unleash students' creative potential, and the project-based method is a great educational solution for environmental thinking development. ‘Project-based instruction is a valuable way to promote the simultaneous acquisition of language, content, and skills’ [15]. The range of project activities is very diverse and may include a lot of specific techniques such as case study, problem based learning, work in groups, role-play, presentations, interviewing.

## **THE RESULTS AND DISCUSSIONS**

During their studies students learning French as the second language have to carry out a large number of different types of research and creative projects. The use of authentic materials gives the opportunity for students to explore the best world practices of environmental protection and ecological thinking. In addition to ecological thinking, project work contributes to the development of communicative skills, linguistic and intercultural competence that have been taken into account in this paper.

### **«Ecological opinion poll»**

This project is elaborated for the first-year students, acquiring the fundamental skills in French vocabulary and grammar.

As a first step students were shown an educational video named «In the park» from French learning website Adomania<sup>1</sup>. In the film, French college students ask passers-bys in a public park questions about ecology. In the classrooms, students were divided into small groups and were asked to express the opinion on the following questions: ‘What do you like in nature most of all? What do you think we need to protect first? What is pollution for you?’ and others.

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<sup>1</sup> <http://enseigner.tv5monde.com/collection/adomania>

After the vocabulary working off in the classroom, students get their homework - to hold an ecological opinion poll among their friends asking the above mentioned questions and to show the survey results in the PowerPoint presentation.

Throughout this project, students discuss with their friends environmental problems, pollution, endangered species, relationship between man and nature. Thus, informal communication between peers promotes students' environmental awareness and responsibility, which is one of the key components of ecological thinking. In the course of the presentation of the final project results in the classroom, the discussion about the ability of young people in Russia and France to express their opinion and social attitude was of particular interest. The answers of Russian and French students were compared also by their sensitivity to environmental challenges.

### **«Save animals»**

This project is a follow-up to the above-described project. To start, students were shown the most powerful advertising campaigns for animals protection, followed by the discussion, about the threat to endangered species, the causes, potential solutions, and potentially disastrous effects to the world and humanity if this species were to die off and leave the world forever.<sup>2</sup> Various types of grammatical constructions were discussed for creating a slogan such as 'Aidez le lion à survivre', 'Stop aux animaux sauvages dans les cirques' and so on.

Students were asked to remember the names of endangered species they know and were shown the photos of animals included in the Red Data Book of Russian Federation with basic facts about them, the Red List of endangered species in France and the IUCN (International Union for Conservation of Nature) Red List of threatened species.

After the vocabulary working off students in small groups were required to do general research at home on the topic of endangered species and choose one or more endangered animals and create a colorful, interesting, and informative poster that could be exhibited in the institute to draw attention to environmental issues and endangered species of animals. In addition students filled in an endangered species profile. These profiles included not only basic information about the animals but also some recommendations on effective ways to attract the world's attention to this dying species.

The final stage of this creative research project was a presentation of posters in the class. The purpose of this project was to raise awareness about endangered species, make students rethink their lifestyle and real causes of the globe's ongoing endangerment, their attitude towards the wild world. This experience is very helpful in development of ecological thinking.

The second-year students deepen their language skills through extended career-oriented vocabulary reading original materials such as editorials, analytic essays, critical articles on the environment, pollution, climate change and observing environmental news broadcasts. They are taught to make research on professional topics and how to present the results. After studying the most of the environmental topics, students have to do individual or team final project work.

### **«Guide to the Natural Heritage of Tatarstan»**

It should be noted here that the specific character of this project is that Kazan State University is situated in the Republic of Tatarstan (the federal subject of the Russian Federation). The project works were made on the bases of the local natural heritage.

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<sup>2</sup> <http://sciencenetlinks.com/student-teacher-sheets/save-our-animals-project/>

The Republic of Tatarstan is rich in beautiful landscapes, wood, rivers and lakes such as Nizhnyaya Kama National Park, Volga-Kama Nature Reserve, Blue Lakes, Aktash karst hole, Raifa dendrosad, rivers Volga, Sviaga, Kama, Zai and many other picturesque monuments of nature. Compiling a guidebook is a complicated task as there are very few materials on this theme presented in French. During this stage students applied knowledge accumulated from different professional subjects (geography, biology, zoology etc.) into the real-life situations. The students presented their own information, translating materials into French for the guidebook. The implementation of the project required constant teacher's consultations and help at all stages.

Studying the natural heritage of their homeland and the rich experience of preservation of the environment in other countries in the world, students learnt to appreciate the beauty and richness of their native land. They became more sensitive to ecology and environmental protection issues and more aware of the social responsibility of their future profession.

Ecological thinking developing during the French lessons was carried out through a number of other professional-oriented projects such as 'Ecotourism development in the Republic of Tatarstan', 'Ecological problems of the Republic of Tatarstan', 'New solutions of existing problems' and so on. It is impossible to describe them all in one paper.

The final experiment was held with the students from the Institute of Environmental Sciences (110 people).

The students were divided into control and experimental groups. In control group traditional methods of SL teaching were used according to educational program. The project-based learning was widely used in experimental group.

At the beginning and at the end of the experiment we used testing methodology of Kirillov A.V. and Panov V.I. with some adoptions [16, 17].

The students were estimated according to 3 factors:

- ability to reveal and estimate an ecological problem;
- ability to think ecologically to make an effective plan to solve the problem and to elaborate the measures to avoid such problems in the future;
- ability to organize efficient activities within a group to solve the problem.

In order to estimate the results the following criteria were used:

5 points – an estimation of an ecological problem didn't demand additional time and consultations with teacher; all the aspects of solving an ecological problem are considered;

4 points – an estimation of an ecological problem was made in time but the consultations with teacher were necessary; all the aspects of solving an ecological problem are considered;

3 points – an estimation of an ecological problem was made with the help of some information sources and after consulting with teacher; all the aspects of solving an ecological problem are considered;

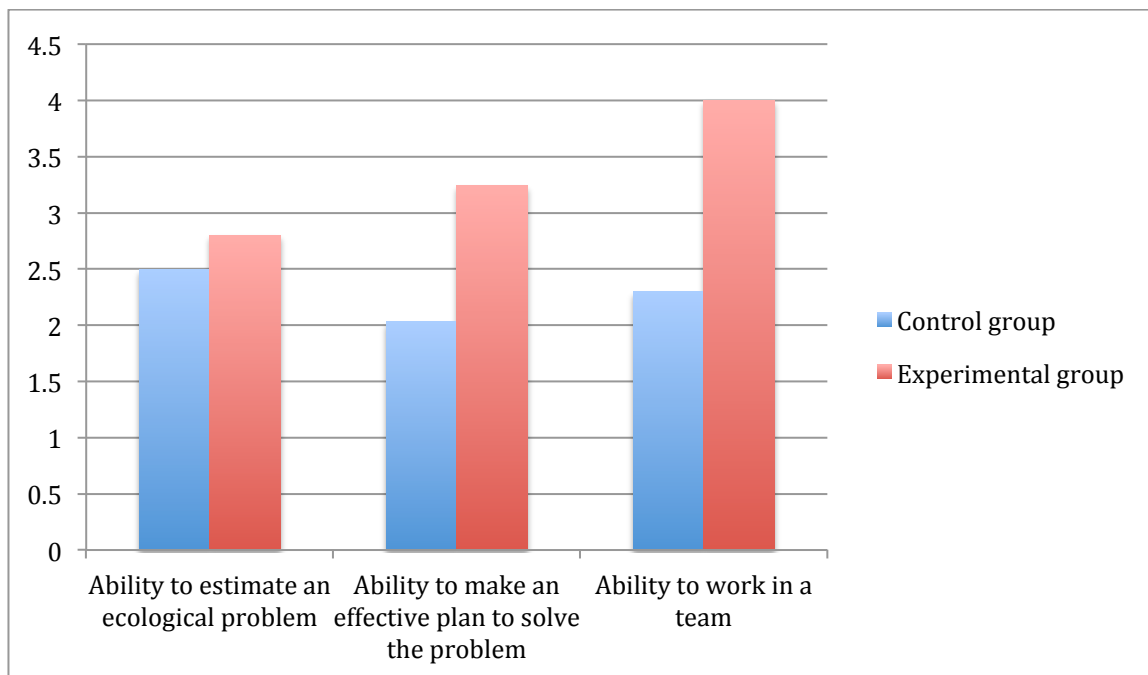
2 points – students had some consultations with teacher and had to search for additional information on the problem and couldn't find out all the aspects of solving the problem;

1 point – difficulties with an objective estimation of the problem and the revealed picture is not full; the estimation of its separate fragments is given, activity content is not determined clearly.

Initial results didn't reveal considerable differences in the level of students' ecological thinking in control and experimental groups ( $p>0,05$ ).

Final research results analysis showed that there were some improvements in both groups and it was interpreted by us as a global positive educational effect of SL learning irrespective of basic or experimental course of study. In the experimental group the level of ecological thinking was considerably higher. With the initial results of objective estimation of ecological problem and using ecological thinking to solve it in the control group  $1,87\pm0,1$  points to the end of the experiment the results increased to 8% ( $p>0,05$ ); in the experimental group the initial results were  $2,43\pm0,2$  points and the increase was up to 25% ( $p>0,05$ ).

**Tab. 1** Comparative results in control and experimental groups



As has already been indicated, the project activity has a positive impact not only on ecological thinking development but also on mastering academic and general communication skills and developing professionally relevant language skills (e.g., certain grammar structures such as inversion for oral presentations or participle constructions for reading and translation), as well as communication skills (public speaking, debating) and the ability to work independently and in teams during the project works.

The peculiarity of the project work is that students having the opportunity to choose the theme of the project always choose what they are really interested in, and it is the strongest motivation to learn the second language.

However, a positive result of the project activities can be achieved only if the students realise opportunities of participating in such projects for their future educational and professional activities. Only in this case students make every effort to maximize the quality of the projects and thus the core competencies, including ecological thinking are formed.

## CONCLUSION

The received data proved that research projects contribute to the development of students core competencies and qualities such as humanity, respect for the world around us, the responsibility for their

actions, self-discipline. All these qualities are necessary for the formation of future professional ecologists and their ecological thinking.

The elaborated core qualities and skills are the essence of ecological thinking, the formation of which is one of the most important tasks of language education. The practical and experimental work demonstrated that research projects promote development of ecological thinking of students and their communicative skills. The positive dynamics of proposed criteria and indicators proved the rise of ecological consciousness and thinking.

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## REFERENCES

- Smirnova E.E. The sociology of education. – St. Petersburg: Intersocis, 2006. - 192 p.
- Ilduganova G.M., Tikhonova N.V. Development of students' moral and cultural qualities through ESL // SGEM 2016, BK 1: psychology and psychiatry, sociology and healthcare, education conference proceedings, vol III. - 2016. - Vol., Is. - P.195-201.
- Decree of the President of the Russian Federation of 01.08.2015 No. 392 "On holding the Year of Specially Protected Natural Territories in the Russian Federation" <http://www.kremlin.ru/acts/bank/39976>
- Decree of the President of the Russian Federation No. 7 of January 5, 2016 "On holding the Year of Ecology in the Russian Federation" <http://kremlin.ru/events/president/news/51142>
- Panov V.I. Ecological Thinking, Consciousness, Responsibility Procedia - Social and Behavioral Sciences. Volume 86, 10 October 2013, Pages 379-383.
- Deryabo S.D., Yasvin V.A. Ecological pedagogy and psychology. Rostov-on-Don, 1996.
- Alekseev S.P. Experience of continuous environmental education in Saint Petersburg // Ecology and Life. 1999. № 3. p.23–26.
- Rafikova N.H. Formation of ecological consciousness in the conditions of modern socio-natural development. The author's abstract of the dissertation on philosophy, specialty of the Higher Attestation Commission of the Russian Federation 09.00.11. Ufa, 2010.
- Dominique Bourg, Augustin Fragnière La pensée écologique. Une anthologie // Presses universitaires de France - PUF (22 janvier 2014), 1088 pages.
- Boulet, M and Reid, A and Emery, S and Hill, A, New perspectives on research in environmental and sustainability education, Proceedings of the 8th World Environmental Education Congress, 29 June - 2 July 2015, Gothenburg, Sweden, pp. 159.
- Transforming our world: the 2030 Agenda for Sustainable Development A/RES/70/1 / Resolution adopted by the General Assembly on 25 September 2015.
- Vasilyeva V.N. Formation of ecological thinking in the process of education // Innovations and education: Sat. Materials of conf. Ser. "Symposium". Issue. 29. St. Petersburg: St. Petersburg. Philos. 2003, pp. 273-287.
- Galyas A.V. The method of ecological projects, as a way of forming ecological thinking in practical classes on general ecology. Materials of the regional interuniversity scientific-practical conference with the participation of teachers and students of KSMU, KSU, KSTU, November 5, 2009. - Kursk, 2009. - P. 143-150.
- Barraket, J., Teaching Research Method Using a Student-Centred Approach? Critical Reflections on Practice, Journal of University Teaching & Learning Practice, 2(2), 2005.
- Beckett, G. H., & Slater, T. (2005). The Project Framework: A tool for language, content, and skills integration. ELT Journal, 59(2), 108–116. doi:10.1093/eltj/ccj024
- Kirillov A.V., Ikonnikova M.A., Nazarenko A.V. Factors, Determining The Effectiveness Of Ecological Upbringing. The Russian Journal of Physical Education and Sport. Volume 10 №4, 2015. DOI: 10.14526/01\_1111\_57

Panov V.I., Mdivani M.O., Khisambeev R.Sh., E.V. Lidskaya The Development of the Questionnaire for Investigation of Ecological Consciousness of Townspeople in Russia // Procedia - Social and Behavioral Sciences. Volume 86, 2013, Pages 384-389.