Assessment of university students' need to acquire knowledge about ecology

Yuliya Timkina¹*, Yuliya Mikhaylova¹

¹Perm National Research Polytechnic University, Foreign Languages and Public Relations Department, 614990 Perm, Russia

Abstract. The article discusses the necessity and possibility of including an integrated module of environmental education and foreign language in the training of bachelors at the university. It is noted that the inclusion of environmental education in a foreign language course contributes to the expansion of knowledge acquired earlier, reduces the burden on students, meets the needs of society and the individual. To design an integrated module, it is necessary to determine the readiness and desire of students for environmental education. The authors developed a questionnaire consisting of four blocks aimed at determining previous environmental education in various forms, students' involvement in personal environmental practices, knowledge and attitude towards measures to improve the environment; students' needs in environmental education. It is established that a minority of students are involved in personal practices of pollution reduction, students show pessimism in the use of modern technologies, are focused on state measures and control in the field of environmental protection. On the one hand, respondents note the need for knowledge on environmental issues; on the other hand, they believe that only special disciplines are able to provide this data, given that such disciplines are not included in the curriculum at non-core faculties. The data obtained confirm the relevance of the integrated course, allow us to identify topics that are designed to provide students with new knowledge and strengthen confidence in the technological solution of many environmental problems, as well as support students in applying personal practices that reduce environmental harm.

1 Introduction

The curriculum in a Russian university at the Bachelor's level is a set of disciplines that should prepare students to perform professional activities. It consists of compulsory disciplines prescribed by the state educational standard of higher education and variable disciplines chosen by the student based on personal needs and interests. The compulsory part includes foreign language. Mastering a foreign language is aimed at preparing students for intercultural communication when solving future professional tasks. The curriculum of the discipline “Foreign Language” is compiled on the basis of an exemplary program

* Corresponding author: timkinaj@mail.ru

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developed by leading scientists in the field of teaching foreign languages. In accordance with the recommended communication situations and established target competencies, each university independently develops a program, determining the content, principles and means of teaching. Being a discipline for which language and speech design are of greater importance than the subject of discussion, communication topics are selected based on the needs of professional activity, as well as current contemporary problems of humanity, the solution of which is part of the activities of modern specialists. A significant place in the program is occupied by discussions of ecology and problems faced by the world's population. The problem of ecology is an international one, and without any doubt, learning the words, phrases, functional grammatical structures of a foreign language necessary for discussing it and finding solutions is essential for the training of a modern bachelor. In addition, the Foreign Language discipline may include various texts presenting new scientifically based information, or texts with different points of view, which, on the one hand, give new knowledge, on the other hand, contribute to the involvement of students in an active discussion, i.e. speech activity in a foreign language, thus ensuring that they gain the necessary experience.

It should be noted that the topic of ecology is not new when learning a foreign language. This is present in foreign language textbooks for secondary schools. Textbooks for different classes discuss the problems of environmental pollution (air, water, soil pollution), climate change, as well as ways to solve them related to the personal practice of each person and the measures taken by society to protect the environment. Thus, it is necessary to take into account the existing knowledge of students and offer them topics that expand their knowledge and skills both in the field of language and in the field of ecology. To fill the content of the topic Ecology in the framework of the discipline Foreign Language, common to all first-year university students, with the selection of texts and communication situations that meet the needs and interests of students and the needs of society, it is necessary to form students' interest in this topic, determine their involvement in environmental practice and outline a range of issues that contribute to the development of knowledge and skills. The purpose of this work is to establish the students need to study the topic "Ecology" within the framework of learning a foreign language, to ensure the continuity of environmental education in the school – university chain, to develop a topic corresponding to the current state of knowledge on the problem and meeting the needs of the individual and society.

2 Background

Research on an interdisciplinary approach to teaching a foreign language and environmental education [1, 2, 3] shows the significant potential of the “Foreign Language” discipline in shaping the global thinking of students necessary for life in a modern society. A global thinking includes the ability to interact respectfully with diverse members, perform professional tasks in a manner that promotes collective well-being [3], take action to improve the environment, and be environmentally responsible [4].

Environmental education includes knowledge of the basics of ecology as a science, knowledge of the causes and consequences of environmental disasters, environmental safety, technologies that help improve the environmental situation [5], and knowledge of a special terminological dictionary [6, 7]. Interdisciplinary courses, including environmental education, are aimed at promoting healthy lifestyles and environmentally conscious behavior [8]. Approaches to environmental education include information about the current situation, knowledge about environmental processes, and the formation of environmental values, environmental behavior skills, and providing experience in solving problems [9]. Informing students about modern developments, ideas for improving the environment is important for their subsequent introduction into world practice, exposing myths that make it
difficult to solve problems [10]. The construction of an interdisciplinary block is based on personal value content, which provides an emotional incentive to communicate in a foreign language [11], the manifestation of a person’s social inclination to communicate when solving significant problems [12]. The dynamics of the educational process are established through consistent content and the use of optimal educational technologies aimed at simultaneous mastery of the subject of study and linguistic means, the growth of new knowledge and skills, high-quality assimilation of knowledge, and the acquisition of experience [13], as well as openness when interacting with the educational environment, information resources and participants in the educational process [14].

3 Methods

Students’ needs were identified and assessed based on quantitative and qualitative data obtained through a Google Forms questionnaire. Responses were automatically processed and then interpreted based on the purpose of the question. The survey involved first-year students of the Faculty of Chemical Technologies, Industrial Ecology and Biotechnology, Aerospace Faculty and Faculty of Humanities of the Perm National Research Polytechnic University, the largest technical university in the Perm region of Russia.

The questionnaire consisted of four blocks: the first block was aimed at establishing general information about place of residence, previous education and the availability of environmental education in various forms; the second set of questions made it possible to determine students’ involvement in personal environmental practices; the third block concerned the identification of knowledge and attitudes towards measures to improve the environment; the fourth block is aimed at identifying the needs of students in environmental education at the university (table Questionnaire Content).

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<td>Hometown</td>
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<td>Education</td>
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<td>Environmental education</td>
<td>Plastics reduction</td>
<td>Modern technologies</td>
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4 Results

The questionnaire was compiled to obtain data on students’ involvement in environmental issues. The total number of survey participants was 139 people.

There was an assumption that environmental education is given more attention in cities where environmental problems are visible, in settlements of agricultural areas environmental problems are not so visible and schools discuss ecology less. This assumption was not confirmed. Dependence on the place of residence was not found. The presence of environmental education in secondary school or vocational schools was noted by 59% of respondents, 41% did not study environmental problems, among them residents of cities and settlements, in approximately equal proportion. 20% of students before entering the university studied in secondary school, and then in vocational school, the
answers of these students do not stand out from the general picture, do not show much involvement.

The second set of questions is aimed at identifying students' personal involvement in environmental practices. It includes questions about sorting rubbish, saving electricity and reducing the use of plastic. The question about sorting rubbish was answered positively by 41.7% of respondents. When leaving home, 58% of respondents unplug chargers and other electrical appliances. Rarely use plastic bags 30.2% of the students, frequently (50.4%) and every time while buying groceries 19.4% of the respondents. Thus, awareness and involvement in personal environmental protection practices among students is not high, elementary environmental practices are not accepted by all students. It should be noted that separate waste collection is carried out at the university, on each floor in all buildings there are containers for a certain type of waste, thus, students sort rubbish at least in the place of study, but do not pay attention to it, do not transfer this practice to home conditions.

The third block of the questionnaire is devoted to establishing students' attitudes towards measures taken to protect the environment. 91% of students responded positively to the question about the importance of each person's contribution to improving the environment. The respondents attributed the reduction of emissions from enterprises and transport under state control (54%), personal environmental practices (26.6%), and the use of new technologies aimed at improving the environment (15%) to effective measures. These answers show that students are more focused on the work of the state to improve the environment, only one third of respondents agree with the need for personal participation, there is also technological pessimism in the actualisation of the development and implementation of technologies that contribute to environmental improvement.

In the fourth block, it was found that, in general, students are aware of the ongoing climate change (92% of respondents), agree with the need to take serious measures (92.1%), although 5% of students showed pessimism about environmental protection, responding that nothing can be changed, everything will go on as it is. Technologies that could provide meaningful environmental improvements included: recycling (26 people), eco-transport such as electric cars (11 people), using eco-materials (1 person), hydrogen fuel (1 person), planting trees (1 person), new types of energy (1 person), saving energy (1 person), nuclear power (1 person), reducing the use of plastic (1 person). When asked about the lack of knowledge about ecology, 82% of respondents answered positively, only 3% said they did not need this knowledge. To study ecology problems at university is considered necessary by 54% of students, 21% of respondents believe that it is not necessary to study ecology and 23% answered "don't know". Thus, 44% of students do not believe that studying environmental issues at university is necessary and important. To the disciplines that help to learn more about ecology, the respondents referred ecology, biology, physics, medicine, genetics, technosphere safety, chemistry, i.e. those disciplines that are studied only at specialised faculties and which are not in the curriculum of training programmes, for example, at the Faculty of Humanities. When asked about the personal significance of environmental problems, 72.3% of respondents answered positively, 19.7% of students said that they do not pay attention to the changes taking place in the environment.

Responses to the survey did not take a long time, the survey did not cause irritation and unnecessarily. Most students demonstrated readiness to take the survey and share their knowledge about environmental issues, but there were also comments and judgments about the uselessness of environmental protection measures, disappointment in the application of personal practices and lack of support from other people, the state. At the same time, students actively shared their personal experience of participation in various educational environmental activities and personal practices of environmental protection.
5 Discussion

The survey data show the demand for environmental education at the university, but also the students' concern about the Ecology course, which will be declarative and without practical significance. Regardless of the direction of undergraduate training, students show interest in environmental problems and desire to learn more information. The survey revealed that students lack information and knowledge of modern technologies, have a certain pessimism and some prejudices about the use of nuclear energy, are oriented towards state measures for environmental protection, and need informational, and not only, support in applying personal environmental practices.

The generalisation of the obtained data allows us to conclude that it is advisable to introduce an integrated module of ecology and a foreign language. When selecting topics, it is necessary to exclude the topics of human impact on nature, waste disposal, pollution of enterprises and transport and pay more attention to technologies that allow reducing the impact on the environment, for example, nuclear energy, developments in agriculture and food industry aimed at reducing environmental damage, measures to prevent environmental disasters, for example, oil spills, measures to create specially protected areas of land and ocean.

References

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