

Development of university students ethical and sustainable thinking for the implementation of sustainable development goals

Marina Shavrovskaya¹, Anastasiya Pesh^{1,*}, and Marina Nikolaeva²

¹Ural State University of Economics, 8 Marta, 62, 620144 Ekaterinburg, Russia

²Ural State Pedagogical University, 620012 Ekaterinburg, Russia

Abstract. The role of universities in the development of ecological thinking of young people is increasing. Environmental thinking is a competence in educational standards which is taken into account during teaching students. In this paper, we present the results of an empirical analysis of the development of ethical and sustainable thinking of students in the field of training "Human resource management". The conclusions obtained as a result of the study indicate an average and sufficient level of development of competencies in the field of sustainable environmental thinking. The authors emphasize the need to strengthen the attention of teachers and university administration in relation to the formation of environmental thinking of future specialists.

1 Introduction

Environmental issues are not new, but recently they have become more and more popular among the general population, and a number of companies develop environmental thinking of employees at the level of corporate culture through the creation of appropriate values and training programs. Russia has adopted an Environmental Safety Strategy for the period up to 2025" (Presidential Decree No. 176 of April 19, 2017). Of course, one of the key roles in the field of ecology is played by the younger generation, it is important to instill environmental thinking, and, of course, a university can provide significant assistance in this direction.

In 2018, the International Labor Organization conducted its second study on the skills needed for a "green economy". The ILO study involved 32 countries. Based on the results, a set of key skills was identified, including environmental awareness and environmental protection [1, p.30]. In the Atlas of New Professions, environmental thinking is one of the supra-professional skills of a specialist [2, p. 23-25; 3].

In the structure of the transversal competencies proposed in 2015, a whole group of "global citizenship" stands out, which implies, in addition to openness and responsibility, tolerance and respect for diversity, and others, the presence of respect for the environment, national identity and a sense of belonging [4, p. 4]. Code L. contrasts environmental

* Corresponding author: myrabota2011@gmail.com

thinking with linear thinking, indicating that the key characteristics of the first reflexivity and self-organization. He also writes that the main ecological principles are "interaction in the sense of interdependence and inter-relatedness between different components of the world, both natural and social [5, p. 19].

Global research points to the importance in the structure of modern human competence the skills that are relevant to environmental thinking, responsible attitude to nature and society as a whole [6, 7, 8]. At the same time, there is no clear understanding of the methods of their development in the universities, and the practice of evaluating these competencies of students is still taking the first steps in its formation [8]. Some scientists study the role of teachers in the development of students' ecological thinking. O. Alvarez-García and his colleagues conclude that teachers with prior training in environmental thinking have insufficient environmental knowledge, but have a positive and responsible attitude to environmental problems and actions to protect it [7]. In the practice of Russian universities, scientists note the lack of pronounced indicators that can be used to assess the environmental thinking of students [9]. However, despite this remark, attempts are still being made in Russian universities to organize work on the formation of environmental thinking. For example, O. N. Volkova describes eight types of popular eco-professions in the nearest future. In this research, the author emphasizes that the ecological thinking of mankind should be understood as a factor determining its further economic and social development [10]. R S.-E. Yushaeva describes issues related to the education of students' ecological thinking through the implementation of environmental initiatives, for example, conducting eco-practices or the work of an eco-club [11].

The purpose of this work is to present the results of an empirical study of the indicators of competence "ethical and sustainable thinking" when testing students of the training direction "Personnel Management".

2 Materials and Methods

As part of the empirical study, we used the results of the assessment of students' entrepreneurial competencies according to the author's methodology "Development of the students' entrepreneurial competencies" (Pesha A.V., Shavrovskaya M. N.) [12]. There are three clusters of competencies are evaluated within the framework of this methodology, among which one cluster "ideas and opportunities" includes competence in the field of ethical and sustainable thinking. The competence "ethical and sustainable thinking" implies the reflection of knowledge, skills, attitudes to the impact of actions and inaction on the environment, economy and society in the behavior of a person when implementing initiatives.

Data collection method: online testing using the service onlinetestpad.com. The invitation was sent to the participants via ICT. Each participant received the results immediately after passing the test.

The assessment of the development of the competence presented above was carried out on the basis of 4 questions.

Scale: The scale consists of 7 levels (Table 1).

Table 1. Competency assessment scale.

Level	Description	Score
Foundation.	Competence is not expressed.	0-2,0
Intermediate 1	Awareness of the impact of choices and actions on the environment and social processes.	2,1-3,0
Intermediate 2	Willingness to accept and share responsibility for their actions in relation to society and the environment.	3,1-3,9

Table 1. Continued		
Advanced 1	Accepting responsibility. Ethical and sustainable behavior.	4,1-4,9
Advanced 2	Taking responsibility for making decisions and working with others regarding environmental behavior and etiquette.	5,1-5,9
Expert 1	Taking responsibility for engaging in complex developments in a specific area to ensure that ethical and sustainable development goals are met.	6,1-6,9
Expert 2	Making a significant contribution to development in the area of ensuring the achievement of ethical and sustainable development goals.	7,1-8

3 Results and discussion

The empirical part of the study involved 309 students of the bachelor's and master's degree program "Human resource management" from 4 Russian universities: USUE (Yekaterinburg), OmSU (Omsk), MIDiS (Chelyabinsk) and UrFU (Yekaterinburg). Minimum number of survey participants from each university: 20 people. 17.8% are men, the rest are women. 53% of part-time students, 5.2% of full-time and part-time students. The sample population is also represented by master's and postgraduate students, whose number was 6.15% and 1.6% of the total number of participants, respectively.

The results obtained generally show the Advanced 1 level of development of entrepreneurial competencies of sustainable development of students in the sample population. The final average score scored by the participants was 4.7. Students possess knowledge and skills in the field of sustainable development, show ethical attitudes and beliefs in relation to society and the environment in their behavior. If we consider the results for the three clusters of competencies, the difference in the final values is insignificant. The average final score in the cluster "ideas and opportunities" was 4.6 points, in the cluster "resources" 4.7 points, in the cluster "actions" 4.9 points. The third cluster received the highest scores, most likely due to the fact that competencies are related to a person's personal self-expression, and not to interaction with others, society, and social processes.

In connection with the purpose of this work, we are most interested in the results obtained from the self-assessment of the competencies of the cluster "ideas and opportunities". There are 5 competencies in the cluster and the final average scores for them are shown in Figure 1. The results of the self-assessment of the five competencies presented in Figure 1 do not show significant differences in the final grades, but show the difference between the interquartile range and the minimum and maximum values of the average grades. The range of observations on the competencies of the region ranges from 1.3 to 8 points, which reflects the wide range of self-assessments of respondents in this area of competence. The highest IQR was 3 points for the competence "Valuing ideas". The outlier is only 1, 7.6 points in the competence "Vision". The data obtained, despite the proximity of the average scores for competencies, show the heterogeneity of the sample population in terms of competencies in the field of sustainable development in general and environmental thinking in particular.

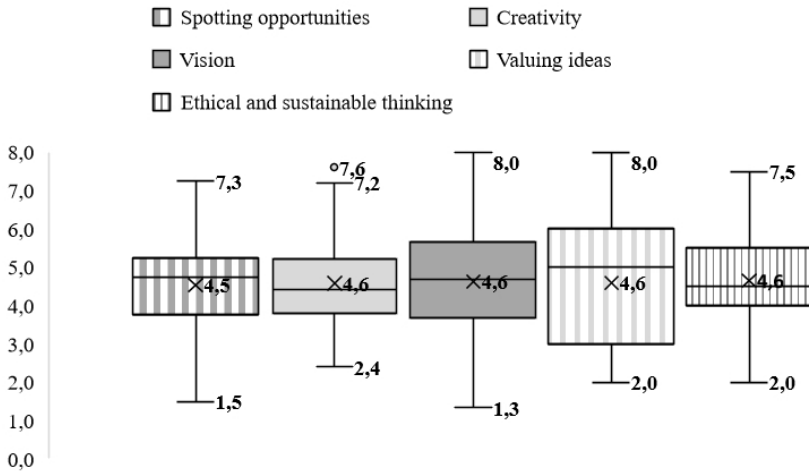


Fig. 1. Results of the assessment of the competencies of the cluster "Ideas and Opportunities" (on an 8-point rating scale)

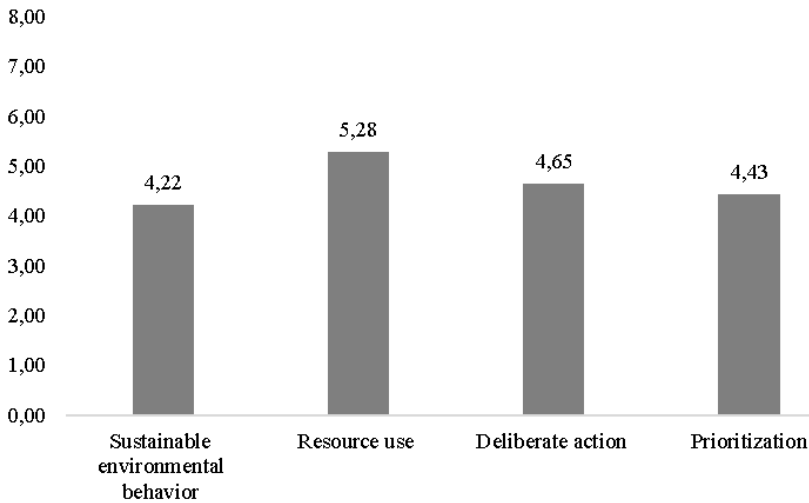


Fig. 2. The results of the assessment of the competence "Ethical and sustainable thinking" (according to 4 indicators and an 8-point rating scale)

Figure 2 shows the results of the students' self-assessment of the indicators of competence of ethical and sustainable development. The results visualize the possession of a sufficiently high level of ethical and environmental thinking by students when making decisions and in actions to achieve goals. Questions and indicators of the manifestation of this competence in the behavior of 4: sustainable environmental behavior, resource use, conscious action, prioritization. The students received the highest marks on the indicator "resource use", 5.28 points out of 8, which shows their understanding of the difference between data on resource use and the impact of personal actions and inaction on stakeholders and the environment. The overall average level of development of this competence is sufficient, however, it is possible to draw the attention of students to the development of knowledge, skills and the formation of attitudes and attitudes of sustainable environmental thinking.

4 Conclusion

In the article, the authors investigated "ethical and sustainable thinking", which implies a combination of knowledge, skills, attitudes and attitudes related to the impact of actions and inaction on the environment, economy and society. Research in this area also includes competencies related to environmental thinking, responsible attitude to nature and society as a whole, not limited only to caring for nature [2, 4, 5].

We present the results of students' self-assessment. Of course, this is only the first step in assessing the competencies of sustainable development, it is necessary to develop tools for more reliable and reasonable measurement of them [8].

We agree with the point of view of the author's team of S. Y. Narcissova, who believe that ecological consciousness, educational programs in the field of ecology can solve the problems associated with the aggressive transformation of nature, the unreasonable use of its resources, the immoral attitude to living organisms and the destruction of ecosystems [13]. We also support the ideas of G. Trencher, S. Vincent, K. Bahr, and others, who point out the importance of building sustainable development competencies through real training projects with external stakeholders [14].

Based on the theoretical and practical conclusions of the study, we have proposed a number of recommendations for universities: to adopt responsible management eco-decisions; to develop environmental thinking and environmental awareness among young people through increasing and expanding environmental knowledge; to promote the development of student environmental initiatives, for example, the creation of interested youth eco-communities, the purpose of which will be the formation and development of eco-culture and ethics in the university and beyond; to update the problems associated with the environmental education of modern students; use modern educational and information technologies, as well as digital resources that will help to engage and activate students in this direction (ecopractices, ecoquest, environmental workshops, etc.).

In the future, the authors plan to develop the assessment of environmental thinking using the assessment center as one of the objective methods, comparing the results of students in dynamics (for example, the first year of study with the last) and reflecting them in the portfolio.

The study was carried out with the financial support of the Russian Foundation for Basic Research in the framework of scientific project No. 19-29-07435

References

1. International Labour Office. *Skills and Employability Branch. Skills for a greener future: key findings* (2019)
2. D. Varlamova, D. Sudakov, Atlas of New Professions 3.0 (2020)
3. Sh. Kahharov, *Organizational Psychology*, **4**, 103 (2014)
4. UNESCO, *Assessment of Transversal Competencies for Use in Education Settings*, (2015)
5. L. Code, *Ecological thinking: The politics of epistemic location* (2006)
6. C. A. Gryaznov, *Psychology of man and society*, **1(30)**, 24 (2021)
7. O. Alvarez-García, J. Sureda-Negre, R. Comas-Forgas, *International Journal of Sustainability in Higher Education*, **19(1)**, 15, (2018)
8. A. Redman, A. Wiek, M. Barth. *Sustainability Science*, **16(1)**, 117 (2021)

9. T. V. Kugusheva, *Organizational and pedagogical conditions for the formation of ecological thinking of university students* (2012)
10. O. N. Volkova, *Ecosystems*, **25**, 125 (2021)
11. R. S.-E. Yuutyasheva L. A. Yayandarbieva M. Sh. Abdulkhanov, *Fundamental principles of innovative development of science and technological education*, 117 (2020)
12. A. Pesha, M. Shavrovskaya, Z. Caha Z., SHS Web of Conferences. EDP Sciences, 90, 02007 (2021)
13. S. Y. Narcissova, et al., *Sustainable development, ecological consciousness and law: monograph* (2021)
14. G. Trencher, S. Vincent, K. Bahr, S. Kudo, K. Markham, Y.Yamanaka, *Journal of Cleaner Production*, **181**, 829 (2018)