

Education for Sustainable Development as a Factor in the Formation of Environmental Competencies of Future Specialists

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Abstract - The article aims at studying the role of education in the implementation of the goals of sustainable development of the state. It has been determined that education plays a decisive role. It has been found out that the current pace of implementation of the course of education for the sustainable development of the state is slow. It is concluded that higher education should become the center for the introduction of education for sustainable development.

Keywords - *sustainable development, level of education, values, competence, environmentalization, strategy.*

I. INTRODUCTION

The formation of a way of life that would be the basis of a long-term, economically harmonious development of mankind is an urgent need of the 21st century. Scientific and technological progress and new technologies cannot overcome the threats that the humanity now faces. We require a new philosophy that would profess a system of values in which the protection and preservation of nature, the care of people, their lives, and the observance of their rights are as important as life itself. It is on this basis that the concept of sustainable development has been formed. Sustainable development expresses the following idea: it is necessary to achieve harmony between people on the one hand and society and nature on the other.

Despite the obvious successes of the Millennium Development Goals in the world, many global and national problems in the development of human potential have remained and even aggravated. At the UN Summit in September 2015, the Millennium Development Goals (MDGs) were finalized and the Sustainable Development Goals (SDGs) adopted for the period of 2016-2030 [1]. These Goals and their global action program for the next 15 years are characterized by the UN as a kind of charter of people and the planet in the twenty-first century. The goals of sustainable development of the United Nations

are universal and are intended for all countries. They are important and interesting for our country, which takes steps towards a more developed society. Among the 17 SDGs, the most important are improving the well-being of the population, overcoming impoverishment by 2030 and creating conditions for healthy life, education, and observance of the rights of women and children. The purpose of the 4th SDG is to provide comprehensive and equitable education and to promote lifelong learning for the milestones. Under such conditions, the sphere of education of the state which is entrusted with the achievement of this goal deserves considerable attention.

At the beginning of the last century, a great thinker, founder of the noosphere theory V. Vernadskyi emphasized that "human personality is the key to everything [2]". From the point of view of the formation of the personality and its development, education itself plays an essential role. It positively affects the various aspects of human life – significantly expands the opportunities for knowledge, forms the ability to use it, affects the state of health, social activity, etc. The level of education is one of the three components of the human development index (together with GDP per capita and average life expectancy). According to research materials, in 2017 Ukraine ranked 88th in the ranking of 189 countries. However, such an indicator still allowed the country to enter the highest category of human development. In 2017, Ukraine gained an HDI value of 0.751, which is below the average for countries with a high Human Development Index of 0.775 and lower than the average for the countries of Europe and Central Asia, which is 0.771 [3]. The abovementioned things point to the fact that the need for education for the sustainable development of Ukraine is of particular relevance in today's conditions.

II. ANALYSIS OF MAIN ACHIEVEMENTS

The Law of Ukraine on Education [4] defines education as the basis for the intellectual, spiritual, physical and cultural development of the individual, his/her successful socialization, economic well-being, the key to the development of society, united by common values and culture. Study materials suggest that education is a key factor in economic growth, contributes to increased productivity, job creation, innovation and competitiveness [5], [6]. Education is the industry that must first feel the changes in society, because it prompts people to make changes in their behavior. Through the transformation of their own behavior individuals, all together contribute to sustainable development [7]. Education provides the knowledge that people can use to develop new opportunities [8]. In the education system, reforms are often carried out. They are associated with institutional changes that set the trajectory of development, where the consistency of this set of institutions is determined by the additional characteristics of the institutions themselves. This property of complementarity is of fundamental importance for determining the coherence, structure and development of the economic system [9].

From the point of view of sustainable development, the economic system of the state is considered in the context of quantitative and qualitative changes. In this connection, three interrelated spheres of social development are distinguished: economic, environmental and social, which must develop in a balanced manner and ensure economic growth. As economic growth becomes more dependent on high-technology industries universities get function of main source of the R&D-based growth. Scientists [10] argue that the university acts as a transmission channel that promotes economic and social development through its numerous missions in the field of teaching, research and entrepreneurship. Studies [11] focus on the potential of universities. They have shown that the economic development of countries and regions is based on the knowledge that education provides. The capital created by universities is the most important factor in economic development at all stages of development of states. There are a number of ways how the university education influences economic performance: First, the university provides a greater supply of educated workforce which is important for economic growth [12],[13]. Second, universities deliver more innovations including managerial innovations [14] and, possibly, new economic subjects such as spin-off firms. Third, universities increase the demand for certain goods and services. Last but not least, universities provide institutions which support democratic and economy-related values [15]. The quality of education depends on resource support. Problems of financial resources, lack of standards and proper infrastructure have been addressed in works [16], [17], [18].

III. STUDY METHODS AND RESULTS

The research uses the following general scientific and special methods: analysis, synthesis and comparison. The concept of "Education for Sustainable Development" was first introduced in UN documents in the second half of the

twentieth century. For example, the United Nations Conference on Environment and Development (Earth Summit, Rio de Janeiro, 1992) contributed to the debate on the role of education, training and awareness-raising activities in achieving sustainable development. During the World Summit on Sustainable Development (Johannesburg Summit, Rio + 10, 2002), the proposal to hold the Decade of Education for Sustainable Development was considered. The UN General Assembly, at its 57th session in December 2002, adopted a resolution on the start of the 2005 Decade of Education for Sustainable Development. On March 23, 2005, the European Economic Commission (DESD) issued the document "Education Strategy for Sustainable Development", which included education for sustainable development at all levels, including vocational education, teacher training and continuing education for professionals and managers. Ukraine, as a member of the European Economic Commission, has committed itself to implementing the European Education Strategy for Sustainable Development in due time.

An important step towards the development of education for sustainable development in Ukraine was the adoption of the National Strategy for the Development of Education in Ukraine for the period up to 2021 in 2013 [19] and the Law of Ukraine "On Education" [4] in 2017. These documents created the legislative basis for environmental education, and outlined the prospective tasks. Among them, we focus on updating the goals and content of education based on a competent approach and personal orientation, taking into account world experience and principles of sustainable development. Teachers and educational institutions are given greater freedom in choosing the content and forms of education aimed at achieving the goals of sustainable development.

Let's consider the main indicators and trends of the development of education in Ukraine during the period of 2000-2018. (Table 1). Study materials indicate that during the studied period almost all the indicators chosen for the analysis have a declining character. The positive dynamics can be observed only in the number of colleges, technical schools, specialized schools (the number of institutions increased by 42.3%, and the number of students by 55.3%). According to our calculations, more than 7 million people studied in 2018/19. It should be noted that in educational institutions of Ukraine of all levels, from kindergartens and general education schools to higher educational institutions, special courses which familiarize students with the principles of sustainable development are introduced into the curriculum. Thus, in the pre-school educational institutions the program "Education for Sustainable Development for preschoolers" is being implemented. More than 700 preschool educational institutions of Ukraine (and this is less than 5% of the existing institutions) teach children according to this program. Secondary schools are a more powerful source of information on sustainable development. According to the Organization for Economic Cooperation and Development (OECD), students begin understanding most environmental problems at school. There is also evidence of widespread

emphasis on environmental sustainability in teaching and school practice in some countries. The level of acknowledgement of environmental issues differs substantially by educational attainment. In Finland, Italy,

Lithuania, Mexico and Slovenia more than 70% of schoolchildren participate in environmental sustainability measures.

TABLE I. DYNAMICS OF THE MAIN INDICATORS OF THE DEVELOPMENT OF EDUCATION IN UKRAINE

Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018
Pre-school educational institutions, ths. units	15.5	15.6	16.1	16.4	16.7	15.0	14.8	14.9	14.9
Pre-school educational institutions (number of children, ths. persons)	1214	1273	1354	1428	1471	1295	1291	1300	1141
Secondary schools, ths. units.	20.6	20.3	19.9	19.7	19.2	17.6	17.3	16.8	16.2
Secondary schools (number of pupils, ths. persons)	4495	4299	4292	4222	4204	3757	3783	3846	3922
Vocational educational institutions, units.	975	976	976	972	968	814	798	787	756
Vocational educational institutions (number of pupils, ths. persons)	424	434	409	423	391	316	304	286	269.4
Higher education institutions, incl.									
Colleges, technical schools, specialized schools, units	370	371	387	478	489	501	505	511	528
A number of students, thousands of people	199.9	208.6	217.3	230.1	251.3	329	345.2	356.8	361.5
Universities, academies, institutes, units.	349	345	334	325	277	288	287	289	282
A number of students, thousands of people	1824.9	1723.7	1824.9	1723.7	1438.0	1375.2	1369.4	1330.0	1322.3
A number of postgraduate students, persons	34115	34192	33640	31482	27622	28487	25963	24786	22829
A number of doctoral students, persons	1561	1631	1814	1931	1759	1821	1792	1646	1145

Source: based on [20].

On average across countries, the higher the educational attainment, the higher the level of acknowledgement of environmental issues [21]. Thus, in countries such as Germany, France, the Netherlands, Finland, Slovenia from 81% to 90% of the adult population with university education reported that they are taking personal measures to reduce energy use. At that time, the share of people with secondary education is only

67%. Eighty percent of respondents sort waste for recycling, while those with secondary education comprise only 70% (Table 2). It becomes obvious that as the educational level grows, the environmental consciousness of citizens increases. Moreover, this means that higher education itself should ensure high environmental literacy of the population, shape the outlook of the individual from the standpoint of sustainable development.

TABLE II. PERCENTAGE OF ADULTS IN OECD COUNTRIES WHO REPORT ON TAKING PERSONAL ENVIRONMENTAL MEASURES, 2018

Measures	Tertiary	Upper secondary or post-secondary non-tertiary	Below upper secondary
Sort waste for recycling	80	74	70
Reduce energy use	47	45	45
Buy fruit and vegetables grown without pesticides or chemicals	43	37	36
Avoid buying certain products	40	34	33
Save or re-use water	38	39	44
Sign a petition	28	18	12
Cut back on driving	26	20	25
Give money to an environmental group	21	14	9
Member of group aiming to preserve or protect environment	9	5	3
Take part in a protest or demonstration	7	4	3

Source: based on [22].

Its content should vary according to socio-economic conditions, nature and state of the environment. We agree with the scientist Filipchuk who believes that education for sustainable development "must not only be continuous, but also constantly foster a person with culture, knowledge that is constantly updated with information" [23, p. 285]. Study materials show that institutions of higher education of Ukraine implement the policy of environmentalization of the educational process. In this regard, the curricula of different educational qualification levels (bachelor, specialist, master), majors and specialties include issues of environmental protection

where appropriate. In addition, students are aware of the aspects of sustainable development of society, taking into account the specialization of higher education institutions [24]. Thus, the master's course "Environmental Aspects of Sustainable Development" is taught at the National Agrarian University. At the National Technical University of Oil and Gas students majoring in "Tourism" study the master's course "Strategy of Sustainable Tourism Development", and those majoring in "Management and Administration" are taught the master's course "Strategy of Sustainable Development". A free attendee institute, where each person, regardless of age and education, can

study the chosen course has been functioning at the National University of Kyiv-Mohyla Academy. Since the Law [4] aims at shaping the environmental competence of future specialists, in our opinion, this can be achieved by: getting acquainted with objects and phenomena of nature, deepening and expansion of knowledge of evolutionary, generalizing character; the formation of a lean attitude to nature. In this approach, education focuses on the involvement of the individual in various activities that affect the subjective attitude to the environment: to observe and empathize with everything related to the environment; promotion of technologies of interaction of man with nature. The orientation of the inclusion of personality in such interaction with nature, which is aimed not only at nature conservation "in general", but can help solve the problems of a particular locality.

IV. CONCLUSIONS

Summing up the abovementioned, we can conclude that education plays a decisive role in the accomplishment of the goals of sustainable development of Ukrainian society. The study materials showed a slow pace of implementation of the education course for sustainable development. However, the implementation of the principles of sustainable development can be seen at all levels of education and in the structure of training specialists of different profiles. The organization of the educational process in educational institutions in the modern conditions includes informing the members of society about the main problems of sustainable development, formation of a worldview based on the principles of sustainability, reorientation of teaching from the transfer of knowledge to establishing a dialogue, focusing on violation and practical solution of local problems. The context of sustainable development in the process of study helps to develop students' skills and thus contributes to the process of change in society. We believe that higher education should become the center for introducing education for sustainable development. We emphasize the role of scientific and pedagogical staff. We are also convinced that every worker in education is the generator of change. The pace of the implementation of education for sustainable development will accelerate, provided that: everyone in their workplace will distribute and use positive experience in the implementation of sustainable development; students will be taught sustainable approaches to the development; research will be focused on solving sustainable development problems. Thus, sustainable development will be possible if each individual in the Ukrainian society is armed with knowledge, skills and value orientations, has a clear understanding of how to achieve such changes. These are the matters in which education plays a decisive role.

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