

# Lifelong learning for sustainable development - student's perspective

---

**Mlađenović, Jasmina**

*Source / Izvornik:* **Vallis Aurea, 2023, 9, 39 - 52**

**Journal article, Published version**

**Rad u časopisu, Objavljena verzija rada (izdavačev PDF)**

<https://doi.org/10.2507/IJVA.9.2.4.105>

*Permanent link / Trajna poveznica:* <https://um.nsk.hr/um:nbn:hr:277:682463>

*Rights / Prava:* [Attribution-NonCommercial-NoDerivatives 4.0 International/Imenovanje-Nekomercijalno-Bez prerada 4.0 međunarodna](#)

*Download date / Datum preuzimanja:* **2024-09-08**



*Repository / Repozitorij:*

[FTRR Repository - Repository of Faculty Tourism and Rural Development Požega](#)



UDC 374:502.131.1-057.875  
Preliminary Communication  
<https://doi.org/10.2507/IJVA.9.2.4.105>



Received: November 3, 2023  
Accepted for publishing: December 18, 2023

## LIFELONG LEARNING FOR SUSTAINABLE DEVELOPMENT – STUDENT'S PERSPECTIVE

Mladenović, Jasmina, *LLM, PhD Student, University of Rijeka, Faculty of Tourism and Hospitality Management, Naselje Ika, Primorska 46, HR – 51410 Opatija, orcid: orcid.org/0000-0002-8069-3710, Faculty of Tourism and Rural Development in Pozega, Croatia, jmladenovic@ftrr.hr.*

### **Abstract:**

**Purpose** – The purpose of this paper is to determine the knowledge, views and opinions of students about sustainable development and lifelong learning as a part of education for sustainable development.

**Design** – The empirical part of the paper consists of the results of a primary research conducted among students of higher education institutions.

**Methodology** - An online questionnaire was distributed among students using convenience and snowball sampling to select students from different backgrounds, who then completed standardized instruments. The research was conducted using the survey questionnaire technique. For analysing the data, descriptive statistics were used.

**Approach** - Quantitative method of research.

**Findings** - Results of the empirical research of students' knowledge, views and opinions on sustainable development and lifelong learning for sustainable development are presented. The research shows which learning outcomes, techniques and topics students found most valuable to achieve sustainable development.

**Originality of the research** – There is a lot of research on sustainable development, education for sustainable development as well as lifelong learning but a very small number connects all of the above. Most studies on education for sustainable development focus on higher education. This paper contributes to the discussion of the concept of education for sustainable development in the context of lifelong learning.

**Keywords:** sustainable development, education, lifelong learning, students

## 1. Introduction

The primary notion of sustainability goes back many centuries, but it appeared on the international political agenda just recently because of the recognition of the fact that the human ecological pressure on the planet is much greater than what nature can renew or compensate for (Leal Filho et al., 2018: 131). The importance of sustainable development (SD) was first brought to the public in 1987, when the UN's World Commission on Environment and Development issued a report called "Our Common Future". A need for global action appeared with problems such as hunger, poverty, health issues, ecological devastation, etc. International cooperation and global partnership are necessary for development to be sustainable. In September 2015, a plan to achieve a better future for everyone in the next fifteen years called the "UN Program for Sustainable Development 2030 (Agenda 2030)"

was adopted. It offers a new path to sustainability with Sustainable Development Goals (SDGs). They are taking into account social, environmental and economic well-being while opening a door to equality, justice and prosperity. Particular attention is paid to education as a tool to achieve all the SDGs (Zhang et al., 2020). Recognising the importance of education for sustainable development led to the adoption of the Strategy for Education for Sustainable Development in 2005 and the Incheon Declaration and Framework for Action for the implementation of Sustainable Development Goal 4 in 2015. The latter emphasises education as a key driver of all 17 goals of the Agenda 2030. „Education for Sustainable Development (ESD) is a concept that evolves in line with emerging sustainability issues. In the 2030 Agenda for Sustainable Development, ESD is embraced in Goal 4, Target 4.7, and reflected in other Goals and Targets. The approach towards the 2030 Agenda is important, not only because of the crucial role that education will play in the implementation of the Goals, but also in increasing its impact by orienting towards the emerging sustainability challenges“ (Shulla et al., 2020: 458). The objective of this paper is to review the theoretical background of sustainable development, education for sustainable development and lifelong learning for sustainable development. This paper will also determine the students' knowledge, views and opinions on SD in general, the way they learn, key learning outcomes to engage in SD and the most necessary topics of a lifelong learning program in connection to SD. An online questionnaire, using Google Forms, was distributed among students via e-mail and for analysing the data, descriptive statistics was used. The main goals of this research are to find out the level of knowledge about sustainable development among higher education students in Croatia, their attitudes on the importance of sustainable development for the future of humanity and key factors in achieving it, most useful learning and teaching methods, learning outcomes and lifelong learning program in connection to sustainable development. The hypotheses that will be tested with this research are:

H1 Students believe that education is the most important factor for achieving sustainable development. With this hypothesis the intention was to explore if students understand the importance of education in achieving sustainability.

H2 Students will recognise the importance of participatory, process- and solution-oriented educational methods.

This hypothesis is meant to explore if students recognise the importance of new learning and teaching methods.

H3 Students connect sustainable development mostly with environmental issues.

Since a lot of authors claim that education for sustainable development is about ecology and the environment, this hypothesis tries to establish if the students share the same opinion.

## **2. Theoretical and conceptual background**

### *2.1. Defining sustainable development*

The term sustainable development is used in many areas of life and determines the direction of progress of every society. It implies economic development with consideration of environmental principles. The goal of SD is accomplished through a dynamic process of enhancing the technical and technological work basis, the increase of social wealth and quality of life without disregarding the need for environmental protection, as well as preserving resources for future generations (Popović et al., 2019). The Lexicon of Sustainable Development mentions the definition of SD that is the most well-known and most frequently used. It was published in the report “Our Common Future” by the UN World Commission on Environment and Development in 1987. According to that definition, SD is a “development that meets the needs of the present without compromising the ability of future generations to meet their own needs“. It can also be defined as a process of changes

aimed at increasing the ability to meet needs and aspirations, through mutual coordination of the use of natural, cultural and all other resources, investments, technological development and institutional changes and their preservation for future generations (Angelevska-Najdeska & Rakicevik, 2021: 210; Smolčić Jurdana, 2018: 244). Sustainable development addresses humanity's aspiration for a better life while observing the limitations imposed by nature (Fonseca, Domingues & Dima, 2020: 1). It is a deviation from the static perception of the existing situation because of its focus on the process of changes over a longer period. The use of natural resources, the direction of investments in technological development and the development of institutions are adapted to the needs of current and future generations (Korošec, Smolčić Jurdana, 2013: 608). We think of sustainable development as an ongoing learning process that explores questions and dilemmas, where appropriate responses and solutions may change as our experience increases based on knowledge, understanding, attitudes, skills and values (Vujičić, 2008: 126). SD includes economic vitality, equity, social cohesion, environmental protection and sustainable management of natural resources. It should be understood as creating innovative economies that focus on people and take into account their skills, needs and expectations respecting the dynamically changing world (Szopik-Depczyńska et al., 2018). SD is the only alternative development model constructed so far. It has been a notion without a significant long-term substitute for almost thirty years (Matešić, 2020: 153). Sustainable development must be acknowledged as a decision-making strategy by all stakeholders from the local to the global level in order to advance in the societal transition and to become entirely operational (Waas et al., 2014: 5526).

Current ideas of SD can be traced to a variety of antecedents. Western environmental and conservation movements, international organisations and conferences such as the 1972 UN Stockholm Conference on the Human Environment and the 1980 World Conservation Strategy are frequently mentioned. Influential publications such as Carson's *Silent Spring* (1962) and Hardin's *Tragedy of the Commons* (1968) should also be mentioned. By accentuating the relationship between human beings and our use of nature, they have successfully constructed the links between the environment and development, which are central to current concepts of sustainable development (Liburd, 2010: 2). With the United Nations Conference on Environment and Development (UNCED), Rio de Janeiro (Brazil) in 1992, the necessity of sustainable development received global recognition. The Declaration formulated a comprehensive explanation of sustainability for the first time. But the most important of all was the adoption of Agenda 21, a comprehensive action program for sustainable development in the 21st century. The United Nations Conference on Sustainable Development (UNCSD), abbreviated as Rio+20, held in 2012 in Rio de Janeiro (Brazil) resulted in the agreement of the member countries to initiate the process for the development of a series of Sustainable Development Goals (SDGs), which will represent the global development agenda for the period after 2015. In September 2015, all 193 member states of the United Nations adopted a plan to achieve a better future for everyone in the next fifteen years called "Transforming our world: the 2030 Agenda for Sustainable Development" (Agenda 2030). At the heart of the mentioned Agenda are 17 linked development goals that integrate and balance the three dimensions of sustainable development (Zmijanović, 2018: 24). Their role is to enable easier implementation of SD (Vukobratović, Rončević 2020: 98, 99). Agenda 2030 puts a greater emphasis on the integration and balance among the dimensions of SD than the previous policy documents (Sinakou, Boeve-de Pauw & Van Petegem, 2017: 4).

Croatia has been involved in global and European processes of discussion and planning of sustainable development from the beginning and supports the key documents in the field of sustainable development (Ministry of Foreign and European Affairs, 2019 in Vukelić, 2021: 22). Croatia supported Agenda 21 and the Action Plan adopted at the 1992 UN Conference on Environment and Development. At the 'Rio+20' conference on sustainable development in 2012, Croatia supported the final document

“Future we want“ (Zmijanović, 2018: 24; Meštrović, 2022: 20). National Council for Sustainable Development was established in 2018. Its main purpose is to propose measures and activities and to monitor, coordinate and analyse the implementation of the goals of the Agenda 2030 (Ministry of Foreign and European Affairs, 2019 in Vukelić, 2021: 22). Next steps towards achieving the SDGs were the publication of the Voluntary National Review of the UN 2030 Agenda for Sustainable Development Implementation in 2019, and the National Development Strategy in 2021, with four priority strategic development directions: Sustainable economy and society, Strengthening resilience to crises, Green and digital transition, and Balanced regional development (NN 13/21).

## *2.2. Education for sustainable development*

The concept of education for sustainable development was created in the 1990s with the aim of using education as a means to achieve sustainability (Mrnjauš, 2008 in Bulić, 2018: 27). The beginning of the idea of Education for Sustainable Development occurs within Agenda 21 in Chapter 36 – “Promoting Education, Public Awareness, and Training“. Leaning on the Agenda, the United Nations Economic Commission for Europe (UNECE) adopted the Strategy for Education for Sustainable Development in March 2005. The aim was to encourage UNECE member states to establish and incorporate ESD into their formal education systems but also in non-formal and informal education. The Strategy accentuates that the meaning of sustainable development is evolving and that the development of a sustainable society should be seen as a continuous learning process. It claims that learning targets for ESD should include knowledge, skills, understanding, attitudes and values. ESD demands a reorientation to handling problems and identifying possible solutions in such a way that retains its traditional focus on individual subjects but also enables multidisciplinary and interdisciplinary examination of actual situations that influence curriculum structure and teaching methods. Rončević (2011: 20) believes that it is necessary to increase awareness and knowledge about the ways of practical realisation of SD in everyday life. Following the UN Decade on ESD (2005–2014), the Global Action Programme on ESD (2015–2019) was adopted with the aim of encouraging concrete ESD activities (UNESCO, 2014). Currently, the active framework is Education for Sustainable Development: Towards achieving the SDGs (ESD for 2030) for the period 2020 - 2030. The Incheon Declaration for Education 2030 was adopted in May 2015. The Declaration states that education is at the heart of the Agenda 2030 and key to the success of all sustainable development goals (Incheon Declaration and Framework for Action for the Implementation of Sustainable Development Goal 4, 2015: 7).

Croatian Sustainable Development Strategy adopted in 2009 directed Croatia towards sustainable development and is based on various general principles, among which is education for sustainable development. The key challenges of achieving SD in Croatia were based on eight main areas. In each of them, it was required to fulfill certain assumptions, including raising the educational level of all citizens and building a knowledge society (Vrbanec, Garašić, & Pašalić, 2011: 25). Action plan for education for sustainable development was adopted in 2011. It was an instrument for the implementation of the Sustainable Development Strategy, and the promotion of sustainable development in education. ESD has a special place in the strategic documents of sustainable development planning in force in Croatia. The National development strategy, adopted in 2021, in its strategic goal 2. named “Educated and employed people”, states that education plays a key role in preparing future adults for life in the community, primarily through instilling common values and accepted norms of behaviour (National development strategy 2030, NN 13/21).

Education and training for sustainable development imply radical changes in the cultural and educational sphere because they strive for a different approach to the adoption and application of knowledge, skills, and behaviour of individuals, and communities, based on new values (Rončević,



2011: 28). Education can change behavior and inform citizens on key competencies to achieve sustainable development. Education for sustainable development should be implemented at three levels:

1. formal education in teaching institutions,
2. outside the usual educational institutions, for example through non-profit activities organisations (informal education),
3. through the media (newspapers, television, radio) so that education for sustainable development would be an integral part of everyday life (informal education) (Bačun, Matešić, Omazić, 2012: 188).

The Handbook for ESD states that education for sustainable development is education for life, for everyday behavior and action. Other than knowledge, it is necessary to develop a willingness to get involved and act according to one's own beliefs and principles (Education for sustainable development, Handbook for primary and secondary schools, 2011: 19). Such education includes recent knowledge from different fields of science. It also accentuates the development of different skills and habits that are necessary to contribute to a more sustainable world (Egaña del Sol, 2020: 1; Rončević & Lončarić, 2021: 116). UNESCO's definition of ESD states that "Education for Sustainable Development empowers learners to make informed decisions and responsible actions for environmental integrity, economic viability and a just society for present and future generations while respecting cultural diversity" (UNESCO, 2009 in Shulla et al., 2020: 5).

ESD is primarily transformative education aimed at building capacity to deal with the challenges of sustainable development, but also a method of teaching aimed at developing awareness, competence, knowledge, skills and attitudes in such a way that each activity related to its operation supports the satisfaction of the needs of future generations (Vukelić, 2020: 17; Zwolińska, Lorenc & Pomykała, 2022). It is an evolving concept aimed at providing an understanding of the relationship between sustainable development issues and the development of knowledge, skills, perspectives and values, which will enable people of all ages to commit themselves to creating a sustainable future. ESD's motivation for achieving a sustainable future is the change in individual behaviour and motivating collective action (Frisk, Larson, 2011). The quality of learning, partnership and cooperation in a pleasant and stimulating environment needs to be improved in order to implement sustainable development in education (Močinić, Čatić & Tatković, 2008: 346). Education is no longer seen as an end in itself but rather as a key instrument for bringing about the changes in knowledge, values, behavior and lifestyles required to achieve sustainability (Stanef, Manole & Militaru, 2012: 4508). The discussion on the goals of sustainable development and aspects of sustainable development is extremely complex and layered. This can be explained by the fact that the purpose of SDGs is to solve all the problems of today's world and share the responsibility for a better and more sustainable future among all people and economies around the world. In order to contribute to sustainable development, individuals must learn to understand the complex world in which they live and must be able to collaborate, speak up and act for positive change. Education is recognised as a key driver of increasing awareness, enabling better management, critical thinking, and the development of new methods and tools for a safer and healthier world. The only way to raise individuals with sustainable development awareness is education (Aydoğan, 2010 in Atmaca, Kiray, Pehlivan, 2019: 82). Education serves as the most effective way of constituting a social and intellectual basis for the implementation of sustainable development principles and coevolution ideas. The need for ESD continues to grow as a result of the rising problems related to sustainable development. ESD is regarded as a way of forming of new consciousness and behaviour through which human development course should be adjusted (Nasibulina, 2015: 1077). The goal of education for sustainable development is to create

a contribution to environmental awareness and raise the level of awareness of the reality of the world we live in as well as encourage contributions to achieve justice and equality and respect for human rights (Meštrović, 2022: 47). Education for sustainable development should be an imperative of contemporary teaching practice in the context of broader globalisation and social changes. Careful design and continuous implementation of education for a healthy and sustainable life lay the foundation for lifelong training and proper sustainable functioning of each individual (Bulić, 2018: 27, 30).

### *2.3. Lifelong learning for sustainable development*

Education for sustainable development cannot be separated from the concept of lifelong learning. Lifelong learning is a process that was created and profiled at the end of the 20th century in Europe, and because of its importance, significance and influence on all other processes, especially those that occur in social life, it received the support of relevant educational and political subjects of contemporary society. This education enables the acquisition of competencies, professional skills and educational value orientations that are acquired throughout life with the aim of progress and prosperity in every respect (Dautović, 2014: 155). Emerging global changes at all levels, including education, include new concepts such as lifelong learning for sustainable development. With the help of these new concepts, it is necessary to modernise the existing teaching work in kindergartens, schools and higher education institutions, including all participants in education in the process with an emphasis on their key roles (Škugor, 2008: 166). Lifelong learning and SD are complementary terms and processes. Lifelong education is a necessary connecting term that is a prerequisite for sustainability (Kovačević, Mušanović, 2012: 337-338). In recent decades, the principle of lifelong learning has become central in the formulation of educational policies worldwide. In the 2030 Agenda for Sustainable Development, lifelong learning has been identified as crucial for achieving sustainable development and quality education. By embodying the need to promote lifelong learning opportunities for all, policymakers have recognised that education should reach beyond formal education (Webb et al. 2019: 237). In the Agenda 2030, education is emphasised as a means to achieve all 17 goals, but it is stressed that one of the goals is to develop and provide inclusive and quality education and the promotion of lifelong learning opportunities (Vukelić, 2020: 142). Sustainable Development Goal 4 calls on us to „ensure inclusive and equitable quality education and promote lifelong learning opportunities for all“ (UNESCO 2021: 114). ESD is considered within the United Nations as a conceptual approach that includes aggregate components such as education that gives students the opportunity to acquire the skills, ability to act, perceptions, and knowledge necessary to ensure sustainable development, education with the aim of forming socially responsible citizens and strengthening democracy, in which individual citizens or their associations exercise their rights while fulfilling their civic responsibilities and lifelong learning (Zhang et al. 2020). ESD's central mandate of creating responsible, global citizens is predicated on the ability to cultivate communities which embrace and practice lifelong learning (Stiglitz, Greenwald, 2014 in Egana Del Sol, 2019: 8). It is a lifetime process going beyond the limits of formal education and existing in a form of lifelong learning (Nasibulina, 2015: 1078). Education and learning are changing due to today's dynamics of economy and living provided by the easy access to the internet. Business and education are often interconnected in order to deliver the most efficient learning programs. If e-learning provides the core elements that bring satisfaction to users it is considered a sustainable lifelong solution for both academic and business areas. Through proper design and content of the virtual platform, e-learning becomes an effective and efficient alternative for continuous learning (Pamfilie et al., 2012: 4029, 4030). Flexible learning environments are vital for creating a sustainable lifelong learning process (Sangiuliano Intra et al., 2023: 9). Educational technologies have brought about fundamental

differences in the teaching-learning environment in schools. They introduce some newer redefined responsibilities for teachers of being more than mere instructors to becoming facilitators and co-creators of the learning environment (Kurian, Ramanathan, Andrić, 2018: 6)

Lifelong learning, which in its interior incorporates cognition and knowledge, requires the investment of all available resources of human capital and physical capital for the sake of success and sustainable development (Dautović, 2014: 153). Considering the enormity of problems the international community is facing, including climate change and the growing precarity of employment, the re-emergence of lifelong learning may lead to educational reforms that will improve people's lives. There is optimism that policymakers will develop greater awareness of the need to think outside of the box in order to effectively deal with global problems (Elfert, 2019: 551). Lifelong learning is one of the most important tasks facing the countries under the Sustainable Development Goals 2030, since possession of innovative knowledge and qualification, the ability to study throughout life is one of the modern variables in the world (Kuzior et al., 2013: 10).

### **3. Methodology**

#### *3.1. Methods*

The methods used in this paper are inductive, method of analysis and synthesis and descriptive method. The methods applied encompass general and logical analysis, and comparative and generalization methods. For the purposes of collecting empirical data on the selected variables, a network survey procedure was used, and as an instrument, a multiple questionnaire structured from several different content-construct units. Primary research was conducted in 2022 among 142 students of Croatian higher education institutions. The research was conducted online, using the survey questionnaire technique distributed to the students via e-mail.

#### *3.2. Sample profile*

For analysing the sample profile, descriptive statistics were used. The majority of the respondents were between 20 and 29 years of age (77,5%) and the least were those younger than 20 (5,6%). Most of them live in bigger cities (40,8%) or in the country (39,4%) and only 19,7% live in small cities.

### **4. Results**

Students assessed their current knowledge of sustainable development as average. 64,8% claim to know the most important subjects but 29,6% say that their knowledge is little or negligible. Still, 70% of the respondents believe that SD is very important for the future of humanity. When it comes to key factors in achieving SD, 86,6 % of students believe it's education.

Students consider that workplace experiences are the most useful learning and teaching method (Graph 1.). They also find discussions and problem solving useful. Surveys are the least useful learning and teaching method, according to them.

When it comes to learning outcomes students believe that creative thinking, overcoming obstacles or problem solving and cooperation or teamwork are key to engaging in SD (Graph 2.). They find that negotiating and building consensus isn't very important for sustainable development.

Students find that the most necessary topics of a lifelong learning program in connection to sustainable development are environmental protection and waste management but they find other topics such as energy efficiency and corporate management very important as well (Graph 3.).

Students think that sustainable development is practiced very little in our country (Graph 4.).



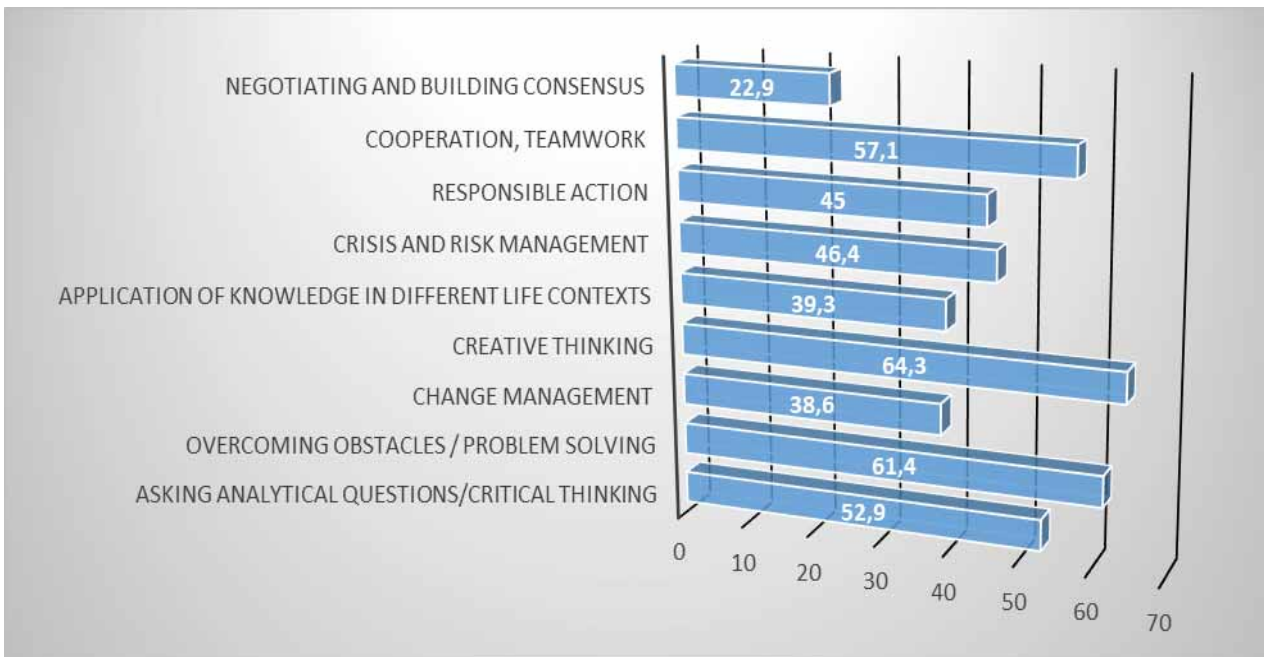
Most students believe that there is no universal recipe for sustainable development but recognise that some good examples from other countries can be used in Croatia (Graph 5.).

**Graph 1. Which learning and teaching methods do you find most useful?**



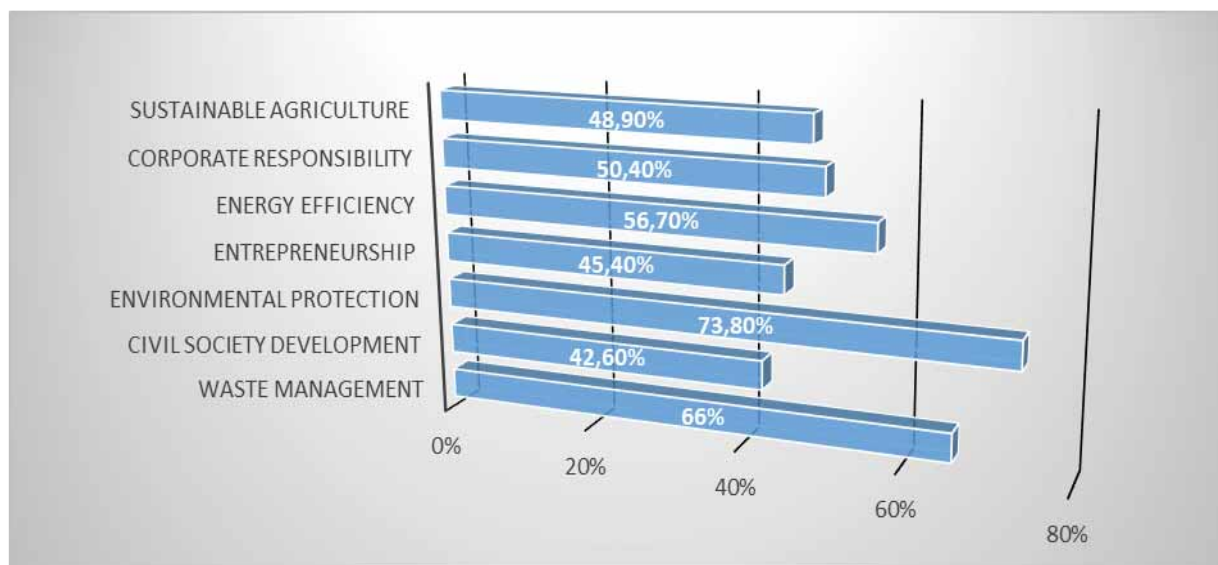
Source: Author

**Graph 2. What learning outcomes do you consider key to engaging in sustainable development?**



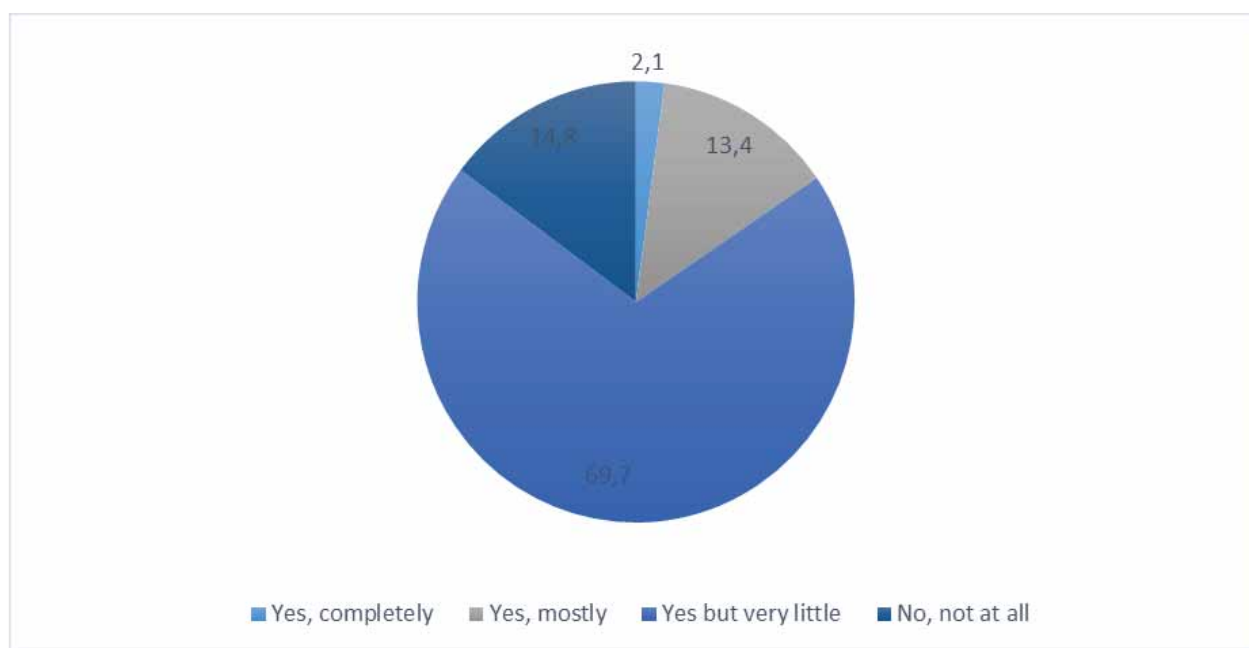
Source: Author

**Graph 3. Which topics of a lifelong learning program in connection to sustainable development do you consider the most necessary?**



Source: Author

**Graph 4. Do you think that sustainable development “lives” in practice in the Republic of Croatia?**



Source: Author

### Graph 5. Do you think that there is a universal recipe for sustainable development?



Source: Author

## 5. Discussion

The goal of this research was to find out the level of knowledge about sustainable development among higher education students in Croatia, their attitudes on the importance of sustainable development for the future of humanity and key factors in achieving it. The students were asked for their opinions on the most useful learning and teaching methods recommended by the UNECE Strategy For Education For Sustainable Development as participatory, process- and solution-oriented educational methods tailored to the learner. Also, their opinions on the importance of the learning outcomes stated in the Appendix 1 (b) of the Format for reporting on the implementation of the UNECE Strategy for Education for Sustainable Development and the Incheon declaration and lifelong learning programs in connection to sustainable development.

The hypothesis was that students believe that education is the most important factor for achieving sustainable development. This hypothesis was confirmed. Another hypothesis was that students would recognise the importance of participatory, process- and solution-oriented educational methods. This hypothesis was partially confirmed. The hypothesis that students connect sustainable development mostly with environmental issues was confirmed.

## 6. CONCLUSION

Educators and researchers need a solid reflective process regarding ESD in general and Goal 4.7 in particular. This reflection needs to be questioned, adopted and included in further development of the intentions and facilitation of ESD. The pursuit of sustainable development is dynamic therefore reflection, learning, and adaptive learning processes and actions are required (Giangrande et al., 2019: 3). The implementation of sustainable development in everyday life will be possible only at the moment when awareness and sense of responsibility increase, i.e. at the moment when people acquire new knowledge and skills about the ways of practical realisation of this paradigm, and therefore the education system has a great responsibility in achieving this goal (Rončević, 2011: 40). Education for sustainable development is gradually increasing its influence on educational and educational

processes, but it is still not generally accepted or even generally welcomed (Blewitt, 2017). As our economies and societies change, lifelong learning will need to extend far beyond labour market purposes. Opportunities for career change and reskilling need to connect to a broader reform of all education systems that emphasizes the creation of multiple, flexible pathways. Like education in all domains, lifelong learning needs to be reconceptualised around learning that is truly transformative (UNESCO, 2021: 114, 115). On one hand, the development of the knowledge society could contribute to the realisation of the intellectual ambition that is the basis of sustainable development. On the other hand, we can build hope in the possibility of solving current and future problems on the assumption of the development of creative abilities, empathy and readiness to act of young generations. Therefore, it is unusually important to carefully and systematically build, encourage and promote togetherness and quality communication, reflection, discussion, discussion, as one of the possible ways to achieve sustainable development (Vujičić, 2008: 130). This research shows that the student population does not fully understand the true concept and importance of sustainable development in everyday life and the future of society. A large number of students believe that education is the key factor for achieving sustainable development. Still, students connect sustainable development mostly with environmental protection and a responsible economy but don't fully recognise the importance of society, which includes education, as the 3rd pillar of sustainable development. The connection between the three is what enables sustainability and education is the key to achieving that connection. Future research should include more participants, especially those who finished their formal education in order to recognise which skills they need in their everyday life to work and live more sustainably. The research topics could lean on previous research for comparison but also be broadened with other important factors that conceptualise lifelong learning.

## References

1. Angelevska-Najdeska, K., Rakicevik, G. (2012) Planning of Sustainable Tourism Development. *Procedia - Social and Behavioral Sciences*. 44. pp 210–220 doi: 10.1016/j.sbspro.2012.05.022
2. Atmaca, A. C., Kiray, S. A. & Pehlivan, M. (2019) Development of a Measurement Tool for Sustainable Development Awareness. *International Journal of Assessment Tools in Education 2019*, Vol. 6, No. 1, pp 80–91. <https://dx.doi.org/10.21449/ijate.518099>
3. Bačun, D., Matešić, M. & Omazić, M.A. (2012) *Lexicon of sustainable development*. Zagreb: Hrvatski poslovni savjet za održivi razvoj.
4. Blewitt, J. (2017) *Understanding sustainable development*. Zagreb: Naklada Jesenski i Turk.
5. Bulić, M. (2018) *E-learning systems in promoting education for a healthy and sustainable life*. Doctoral thesis. Split: Sveučilište u Splitu
6. Dautović, M. (2014) Knowledge as a fundamental determinant of human capital and a key factor of sustainable development. *Časopis za ekonomiju i tržišne komunikacije*. Godina IV, broj I, pp 153-162. <https://doi.org/10.7251/EMC1401153D>
7. Egaña del Sol, P. A. (2020) Education for Sustainable Development: Strategies and Key Issues. E: Leal Filho W. et al., ed. *Quality Education. Encyclopedia of the UN Sustainable Development Goals*. Springer, Cham, pp 258-272. [https://doi.org/10.1007/978-3-319-95870-5\\_3](https://doi.org/10.1007/978-3-319-95870-5_3)
8. Elfert, M. (2019) Lifelong learning in Sustainable Development Goal 4: What does it mean for UNESCO's rights-based approach to adult learning and education? *International Review of Education*, 65:537–556. <https://doi.org/10.1007/s11159-019-09788-z>
9. Fonseca, L. M., Domingues, J. P. & Dima, A. M. (2020) Mapping the Sustainable Development Goals Relationships. *Sustainability* 2020, 12, 3359. <https://doi.org/10.3390/su12083359>

10. Frisk, E., Larson, K. (2011) Educating for Sustainability: Competencies & Practices for Transformative Action. *Journal of Sustainability Education*, Vol. 2. ISSN: 2151-7452
11. Giangrande et al. (2019) A Competency Framework to Assess and Activate Education for Sustainable Development: Addressing the UN Sustainable Development Goals 4.7 Challenge. *Sustainability* 2019, 11, 2832. <https://doi.org/10.3390/su11102832>
12. Croatian Society for the United Nations (2018) Global goals of sustainable development in the EU and Croatia - Status and perspectives. URL: <http://www.una-croatia.org/wp-content/uploads/2018/12/GLOBALNI-CILJEVI-ODR%C5%BDIVOG-RAZVOJA-U-HRVATSKOJ-FINALNO.pdf>
13. Kovačević, S., Mušanović, L. (2012) Lifelong learning for sustainable development. *Školski Vjesnik: časopis za pedagošku teoriju i praksu*, Vol. 61. No. 3, pp 325 – 341. ISSN: 1849-532X
14. Korošec, L., Smolčić Jurdana, D. (2013) Environmental protection policy - an integral part of the concept of sustainable development of the European Union. *Ekonomski pregled : mjesečnik Hrvatskog društva ekonomista Zagreb*, 64 (2013) 6, pp 605-629. DOI: <https://doi.org/10.32910/ep>
15. Kurian, S., Ramanathan, N. H., Andrić, B. (2018) Marketing perception of educators on the mediation role of ease of use in predicting the relationship between teacher competence and use behaviour. *International Journal Vallis Aurea*, Volume 4, Number 2, pp 5-18. <https://doi.org/10.2507/IJVA.4.2.1.51>
16. Kuzior et al. (2023) Lifelong Learning as a Factor in the Country's Competitiveness and Innovative Potential within the Framework of Sustainable Development. *Sustainability* 2023, 15, 9968. <https://doi.org/10.3390/su15139968>
17. Leal Filho et al. (2018) Reinvigorating the sustainable development research agenda: the role of the sustainable development goals (SDG). *International Journal of Sustainable Development and World Ecology*, 25 (2). pp. 131-142. ISSN 1350-4509, DOI: <https://doi.org/10.1080/13504509.2017.1342103>
18. Liburd, J. (2010) Introduction to Sustainable Tourism Development. E: Liburd, J., Edwards, D., ed. *Understanding the Sustainable Development of Tourism*. Oxford: Goodfellow Publishers Limited, pp 1-18
19. Matešić, M. (2020) Eco-innovations for sustainable development. *Socijalna ekologija*, Vol. 29, No. 2, pp 153-177, <https://doi.org/10.17234/SocEkol.29.2.1>
20. Meštrović, D. (2022) *Sustainable marketing in higher education*. Doctoral thesis. Rijeka: Sveučilište u Rijeci
21. Ministry of Economy and Sustainable Development (2014) III. National report on the implementation of the UNECE Strategy for Education for Sustainable Development, URL: [https://mingor.gov.hr/UserDocsImages/NASLOVNE%20FOTOGRAFIJE%20I%20KORI%C5%A0TENI%20LOGOTIPOVI/doc/izvjescje\\_o\\_provedenom\\_savjetovanju\\_sa\\_zainteresiranom\\_javnoscu.pdf](https://mingor.gov.hr/UserDocsImages/NASLOVNE%20FOTOGRAFIJE%20I%20KORI%C5%A0TENI%20LOGOTIPOVI/doc/izvjescje_o_provedenom_savjetovanju_sa_zainteresiranom_javnoscu.pdf)
22. Močinić, S., Čatić, I., Tatković, S. (2008) Sustainable development in the context of pedagogical changes in higher education. E: Uzelac, V., Vujičić, L., ed. *Cjeloživotno učenje za održivi razvoj*. Rijeka: Sveučilište u Rijeci, Učiteljski fakultet u Rijeci, pp 341-347.
23. National development strategy 2030. (NN 13/21)



24. Nasibulina, A. (2015) Education for Sustainable Development and Environmental Ethics. *Procedia - Social and Behavioral Sciences*, 214, pp 1077 – 1082. <https://doi.org/10.1016/j.sbspro.2015.11.708>
25. Pamfilie et al. (2012) E-learning as an alternative solution for sustainable lifelong education. *Procedia - Social and Behavioral Sciences*, 46, pp 4026 – 4030. <https://doi.org/10.1016/j.sbspro.2012.06.191>
26. Popović et al. (2019) Evaluation of Sustainable Development Management in EU Countries. *Sustainability* 2019, 11, 7140, <https://doi.org/10.3390/su11247140>
27. Rončević, N. (2011) *University and education for sustainable development: analysis of assumptions of successful implementation in basic academic activities*. Doctoral thesis. Rijeka: Sveučilište u Rijeci
28. Rončević, N., Lončarić, D. (2021) Validation of measuring instruments in the field of education for sustainable development. E: Kovač, V., Rončević, N., Gregorović Belaić, Z., ed. *U mreži paradigmi: pogled prema horizontu istraživanja u odgoju i obrazovanju: Zbornik u čast dr. sc. Branku Rafajcu, profesoru emeritus*, Rijeka: Sveučilište u Rijeci, Filozofski fakultet, pp 115-145.
29. Sangiuliano Intra et al. (2023) Flexible Learning Environments for a Sustainable Lifelong Learning Process for Teachers in the School Context. *Sustainability* **2023**, 15, 11237. <https://doi.org/10.3390/su151411237>
30. Shulla et al. (2020) Sustainable development education in the context of the 2030 Agenda for sustainable development. *International Journal of Sustainable Development and World Ecology*, 27 (5). pp 458-468. ISSN 1350-45, <https://doi.org/10.1080/13504509.2020.1721378>
31. Sinakou, E., Boeve-de Pauw, J. & Van Petegem, P. (2017) Exploring the concept of Sustainable Development within Education for Sustainable Development: implications for ESD research and practice. *Environment, development and sustainability*, ISSN 1387-585X - (2017), pp 1-14. <https://doi.org/10.1007/S10668-017-0032-8>.
32. Smolčić Jurdana, D. (2018) Strategic Planning of Tourism Development – Towards Sustainability. *Horizons. Series A. Social Sciences and Humanities*. 23 (2018), pp 239-248. <https://doi.org/10.20544/HORIZONS.A.23.2.18.P17>
33. Stanef, M., Manoleb, A. & Militaru, M. (2012) Lifelong learning a way to reduce development gaps between rural and urban areas. *Procedia - Social and Behavioral Sciences* 46 (2012), pp 4508 – 4512. <https://doi.org/10.1016/j.sbspro.2012.06.286>
34. Szopik-Depczyńska et al. (2018) Innovation in sustainable development: an investigation of the EU context using 2030 agenda indicators. *Land Use Policy* **2018**, 79, pp 251–262. <https://doi.org/10.1016/j.landusepol.2018.08.004>
35. UNECE (2005) *Strategy for Education for Sustainable Development*. URL: <https://unece.org/esd-strategy>
36. UNESCO (2014) *UNESCO Roadmap for Implementing the Global Action Programme on Education for Sustainable Development*. URL: <https://unesdoc.unesco.org/ark:/48223/pf0000230514> .
37. UNESCO (2016) *Incheon Declaration and Framework for Action for the implementation of Sustainable Development Goal 4*, URL: [http://uis.unesco.org/sites/default/files/documents/education-2030-incheon-framework-for-action-implementation-of-sdg4-2016-en\\_2.pdf](http://uis.unesco.org/sites/default/files/documents/education-2030-incheon-framework-for-action-implementation-of-sdg4-2016-en_2.pdf) .

38. UNESCO (2017) *Unpacking Sustainable Development Goal 4 Education 2030 – Guide*. URL: <https://docs.campaignforeducation.org/post2015/SDG4.pdf>
39. UNESCO (2021) *Reimagining our futures together — A new social contract for education*. URL: <https://doi.org/10.54675/ASRB4722>
40. United Nations, Department of Economic and Social Affairs Sustainable Development (1992) *Agenda 21: Programme of Action for Sustainable Development*. URL: <https://sustainabledevelopment.un.org/outcomedocuments/agenda21>
41. Vrbanec, B., Garašić, D. & Pašalić, A. (2011) *Education for sustainable development, Handbook for primary and secondary schools*. E: Mićanović, M., ed. Zagreb: Agencija za odgoj i obrazovanje
42. Vujičić, L. (2008) Lifelong learning for sustainable development from the perspective of the culture of the educational institution. *Odgoj i obrazovanje u UN desetljeću za održivi razvoj – status implementacije u Republici Hrvatskoj*, E: Uzelac, V., Vujičić, L., ed. Cjeloživotno učenje za održivi razvoj, Rijeka: Sveučilište u Rijeci, Učiteljski fakultet u Rijeci, pp 125-132.
43. Vukelić, N. (2020) Odrednice spremnosti (budućih) nastavnika na obrazovanje za održivi razvoj, *Napredak: Časopis za interdisciplinarna istraživanja u odgoju i obrazovanju*, Vol. 161, No. 1-2, pp 141-161. <https://doi.org/10.59549/n>
44. Vukelić, N. (2021) *Predictors of prospective teachers' level of intention to implement education for sustainable development*. Doctoral thesis. Rijeka: Sveučilište u Rijeci
45. Vukobratović, J., Rončević, N. (2020) Education and training for sustainable development as an educational imperative of the teaching profession: “Personal example is more important than any materials”. E: Ćulum Ilić, B., Buchberger, I., ed. *Suvremeni trendovi i izazovi nastavničke profesije, Zbornik Odsjeka za pedagogiju Filozofskog fakulteta Sveučilišta u Rijeci*, Rijeka: Sveučilište u Rijeci, Filozofski fakultet, pp 95-116.
46. Waas et al. (2014) Sustainability Assessment and Indicators: Tools in a Decision-Making Strategy for Sustainable Development. *Sustainability* **2014**, 6, pp 5512-5534; <https://doi:10.3390/su6095512>
47. Webb et al. (2019) Conceptualising lifelong learning for sustainable development and education 2030. *International Journal of Lifelong Education*, 38:3, pp 237-240. <https://doi.org/10.1080/02601370.2019.1635353>
48. Zmijanović, Lj. (2018) Sustainable integral management of protected areas. Doctoral thesis. Rijeka: Sveučilište u Rijeci
49. Zhang et al. (2020) Applied Model of E-Learning in the Framework of Education for Sustainable Development. *Sustainability* **2020**, 12, 6420; <https://doi.org/10.3390/su12166420>
50. Zwolińska, K., Lorenc, S., Pomykała, R. (2022) Sustainable Development in Education from Students' Perspective—Implementation of Sustainable Development in Curricula. *Sustainability* **2022**, 14, 3398. <https://doi.org/10.3390/su14063398>