

Innovative Approach for Studying Sustainable Development and Environmental Economics

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Abstract. Article is devoted to the analysis of application of different methods suitable for teaching sustainable development and environmental economics. The authors discuss the necessity to broaden meaning of several terms often used in mainstream economics, to encourage students not only to study sustainable development, but also implement the main ideas in everyday life as well as apply new technologies in the study process.

Keywords: Education, environmental economics, sustainable development, study process.

I. INTRODUCTION

"A human being is part of the whole called by us the "Universe," a part limited in time and space. He experiences himself, his thoughts and feelings as something separated from the rest – a kind of optical delusion of his consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest to us. Our task must be to free ourselves from this prison by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty." – Albert Einstein. [1]

Sustainable development and environmental economics have gained stable position in the study process. Technological possibilities and the creativity of teaching staff allow combining diverse methods, enabling the students to obtain not only theoretical knowledge, but also convince of the necessity to pursue an environmentally friendly lifestyle and introduce green principles into entrepreneurship. The original approach to the study process is of vital importance for optimal results. Teaching sustainable development opens wide possibilities for creative work, actively involving students in study process. What is environmental economics?

Economics is a body of knowledge (a science) that has certain theories, values, methods, and assumptions. One goal of economists is to understand how to produce goods for society in the most efficient manner. This is achieved by having a better understanding of human activities in a market system. [2]

Environmental economics is a distinct branch of economics that acknowledges the value of both the environment and economic activity and makes choices based on those values. The goal is to balance the economic activity and the environmental impacts by taking into account all the costs and benefits. The theories are designed to take into account pollution and natural resource depletion, which the current model of market systems fails

to do. This "failure" needs to be addressed by correcting prices so they take into account "external" costs.[3]

Sustainable development is defined by the world commission on the Environment and Development (in the Brundtland Report) as "development that meets the needs of the present without compromising the ability of the future generations to meet their own needs".[4]

The authors of the article are sharing their teaching experience, presenting conclusions and practical samples for perfecting one's knowledge, hoping that this experience will be of use for their colleagues.

II. TEACHING METHODS

For teaching sustainable development it is of vital importance to apply different methods in order the students would not only acquire theoretical knowledge, but also strengthen their confidence about environmentally friendly lifestyle and eco – efficiency principles in business, as well as encourage active involvement in sustainable development processes. [5] An Economic View of the Environment is shown Figure 1.



Fig. 1. An Economic View of the Environment [6]

Environmental education is a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address these challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action.

There are five categories of Environmental Education Objectives by UNESCO/UNEP (1978) [7]:

- 1) **Awareness:** to help social groups and individuals acquire an awareness of the total environment and its problems;
- 2) **Attitudes:** to help social groups and individuals acquire a set of values and feelings of concern for the environment, and the motivation for actively participating in environmental improvement and protection;
- 3) **Participation:** to provide social groups and individuals with an opportunity to be actively involved at all levels in working toward resolution of environmental problems;
- 4) **Knowledge:** to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of the environment and its associated problems;
- 5) **Skills:** to help social groups and individuals acquire the skills for identifying and solving environmental problems.

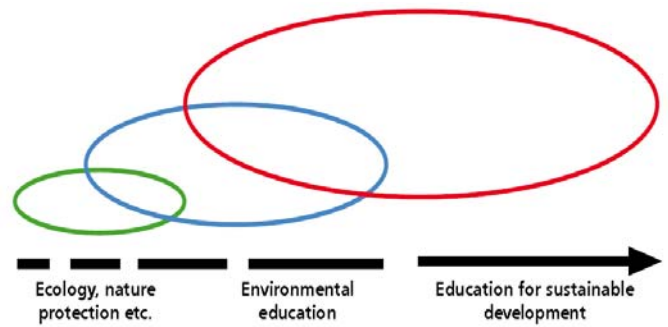


Fig. 2. Development of concepts of education [7]

Development of concepts of education – mission of environmental education, by Blewitt and Cullingford (2004), shown in Figure 2.

We recommend using lectures, workshops, simulation games, watching of environmental issues related films and subsequent discussions thereof, likewise carrying out research on implementation of environmental management projects in particular enterprises; encouraging students not only to participate in various environmental campaigns, but also organize their own and implement Green projects in their faculty, university, city or county.

Some sample topics for each teaching and learning activity are provided in Figure 3.

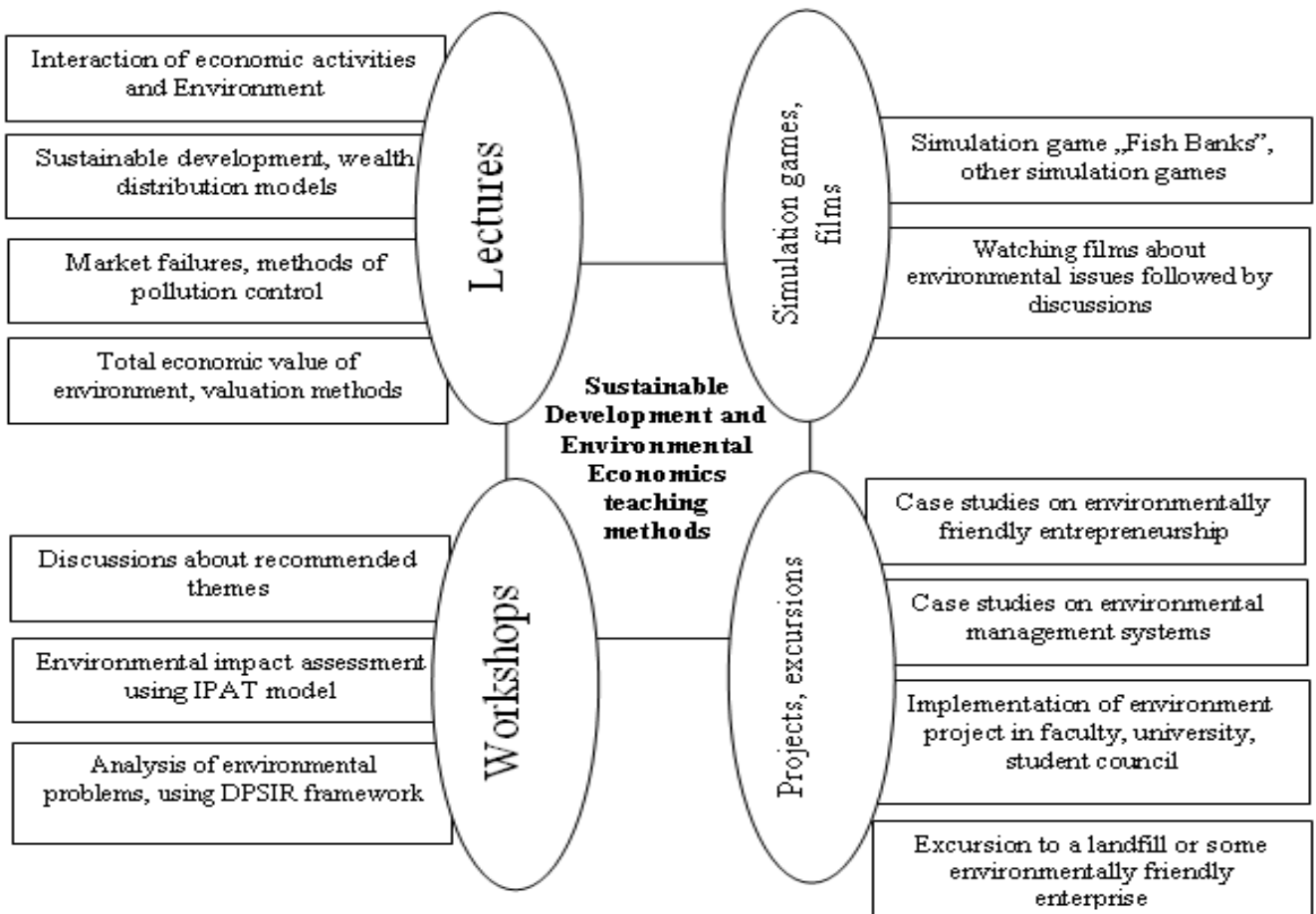


Fig. 3. Teaching methods and sample themes

III. ECONOMICS TEACHING METHODS AND SAMPLE THEMES

As many young people would prefer using the Internet, we recommend online lectures of such excellent speakers as: Tim Jackson, David Korten or Allan AtKisson followed by a discussion on the issues raised. For example, Alan AtKisson has composed and sings a number of songs about environmental issues, sustainability and other topical issues (such as GDP, exponential growth and systemic thinking). Such a study aid might revitalize the lecturing process and help students involve emotionally. [8]

For teaching sustainable development we can also use models developed by other related disciplines, like Ecological Economics and Environmental Economics. For example IPAT [9] equation which means

$$\text{Impact} = \text{Population} \times \text{Affluence} \times \text{Technology}$$

can be used for analysing different consumption and production patterns. Whereas for the purpose of analysing environmental problems, the Drivers–Pressures–State–Impact–Response (DPSIR) framework could help group indicators and other information in a logic pattern.[10]

IV. CLARIFICATION OF TERMS

The study process should involve explanation of various terms used in environmental economics. Exploration of the vocabulary could be started with understanding what is meant by environment in economic theory. Environment is not just nature! Environment in the broader sense can be described using the following aspects.

Environmental aspects:	Good environment means:
• social	• clean air, water and soil
• political	• security
• economic	• mutual respect
• religious	• peace
• culture	• friendship
• ecological	• partnership
• legal	• culture
• ethnic	• etc.
• technological	

Business strategic planning usually begins with the analysis of all these environmental aspects and their trends as well as decision-making on how to use opportunities provided by the external environment and how to overcome threats. Various environmental aspects affect individuals' satisfaction with their lives and decisions. Discussions among students should reveal which aspects are considered the most important. Particular attention could be paid to

differences between these environmental aspects in various cultures and what could be learned from others.

In environmental economics it is important to stress that the word “economy” originates from the ancient Greek words “*oikos*” – a house or a home and “*nomos*” – order. It means that economics is a science helping achieve order at home, making people feel good there. What is this “home” today? It is not just a building where we live, although it is certainly an essential part of the home. A variety of economic (or home order) levels should be discussed in the study process. The primary home of a person is the body and the spirit, which is located in it. If there is no order in this home, the person will consider the order in rest of homes non-essential. Human is a social being and that is why the second home is the family – the smallest social group that manages a common household. The third home is the state – a bigger social group where people with shared ethnic roots, common culture, history, religion and geographical location have united. The fourth home is the whole world that is becoming smaller and smaller nowadays. [11] Up to 20th century there were actually several worlds where the mode of thinking differed a lot; it is still noticeable in some manifestations. However, today it is possible to travel around the globe in one day. The extensive information exchange provides news spread in increasingly shorter period of time. To have a good life it is necessary to maintain order in all four homes. What should be done to reach the goal? – and this is exactly what the complicated and important science called “economics” is studying.

When we are born our world is very small. What we identify with begins at a personal level? We identify with our own physical body, property, and ideas. We may be hurt when they are criticized, and react strongly to defend them.

We also learn to identify on a collective level. Identification with our family, clan, and race are extensions of identifying with our body. The city, state, and nation become extensions of our property. A person's philosophy, religion, and ideology are extensions of one's ideas.

This natural process of expanding identification cannot stop there. If our sphere of identification is limited, then anything outside is a potential enemy? When the enemy is perceived as too threatening, we may justify killing. Wars result from identification that is too limited, confined to the collective and individual level.

Our survival depends on expanding our identification to include the largest frame of reference, the whole of humankind, even our “enemies.” Realizing that we are neighbors forever with a shared, yet diverse, humanity, we can begin building our common future. [1]

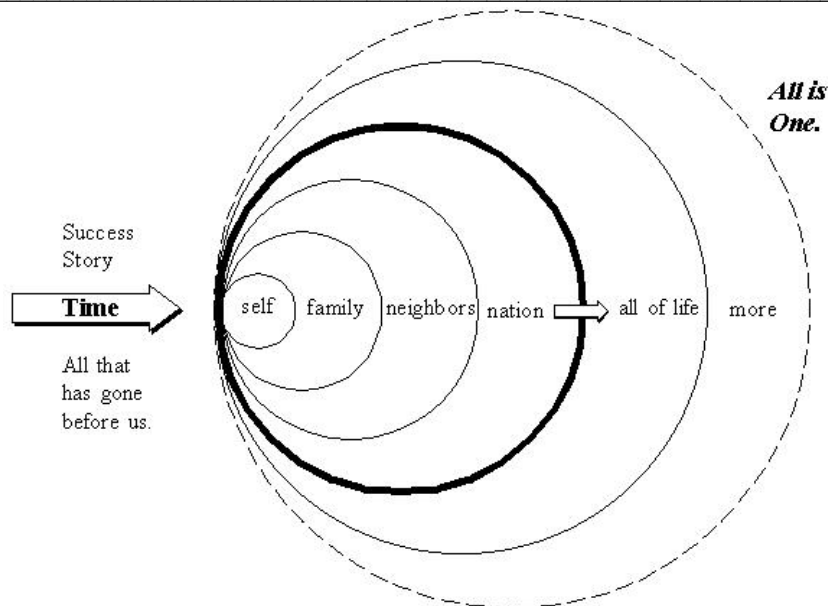


Fig. 4. Expanding Identification [1]

A discussion about the opportunity to travel, learn about other cultures, visit other countries and build economic ties between countries affects the possible ways of life organization. Can industrialized countries serve as an example to increase the material well-being or should we learn from economically relatively less developed countries to reduce material consumption however, still retaining satisfaction with our lives? Practical exercise could be visualization of how we would live in a planet with 9 billion people that is the approximate forecast for 2050! What would be better than today and what worse? [12] What new activities or businesses could appear and what disappear?

V. GOALS OF THE ECONOMY

It is also important to understand the main purpose of economy. After acquainting with various national economic development reports, we can conclude that governments usually focus on such goals as growth of the gross domestic product (GDP) per capita, employment and international trade balance, thus there are also a number of welfare objectives [11] (see Fig. 3).

It is important to emphasize that people and governments are striving towards economic growth and increasing consumption, without paying due attention to the impact of this process on the environment and ecosystem quality, and already has and is leading to deterioration of human well-being and life satisfaction. For sustainable development it is not enough with reaching such traditional goals. The production and consumption associated pollution is constantly increasing and has a negative impact on human health, what, on its turn, causes increase of the so-called defense spending - health and property insurance, security and alarm services, accident elimination expenses etc. [13] Thus, such measures are not improving the quality of life but are only eliminating negative effects. Therefore, many scientists and civil society organizations stress the necessity

to use alternative indicators that illustrate also social and environmental factors and demonstrate development and are not limited to the commonly used GDP, unemployment and other macroeconomic indicators. For example, the Happy Planet Index, used for measuring well – being of people, based upon subjective life satisfaction, life expectancy and ecological footprint indicators, is the highest in Costa Rica, which is not a prosperous and economically highly developed country. Also other studies suggest that life satisfaction is highly influenced by family and friends, colleagues, neighbours, sense of belonging and self-realization, as noted by the American psychologist Abraham Maslow in the middle of 20th the century. And vice versa, increasing material consumption makes a person work harder and longer, motivates to borrow, causing larger stress at work and in everyday life. In this situation, relations with relatives suffer, and matters causing real satisfaction remain neglected.[5]

It should be noted that, especially in periods of economic downturn, governments in their agendas tend to concentrate primary on the traditional macroeconomic indicators. One of the first European leaders who began to criticize this approach was French President Nicolas Sarkozy. An interesting example is the Bolivian President Evo Morales, who introduced the principle of "living well" ("buenos vivir") and not to live better in Bolivia's discourse. "In short, the concept of "living well" means having all of one's basic needs met, while existing in harmony with the natural world, as opposed to "living better" by seeking to amass more and more material goods at the expense of others and the environment". [14] The concept of "living well" provides for biodiversity conservation, prudent use of resources for the needs of indigenous people, not for profit, economical use of water resources, which should not be privatized. These principles are embedded in the Bolivian Constitution.

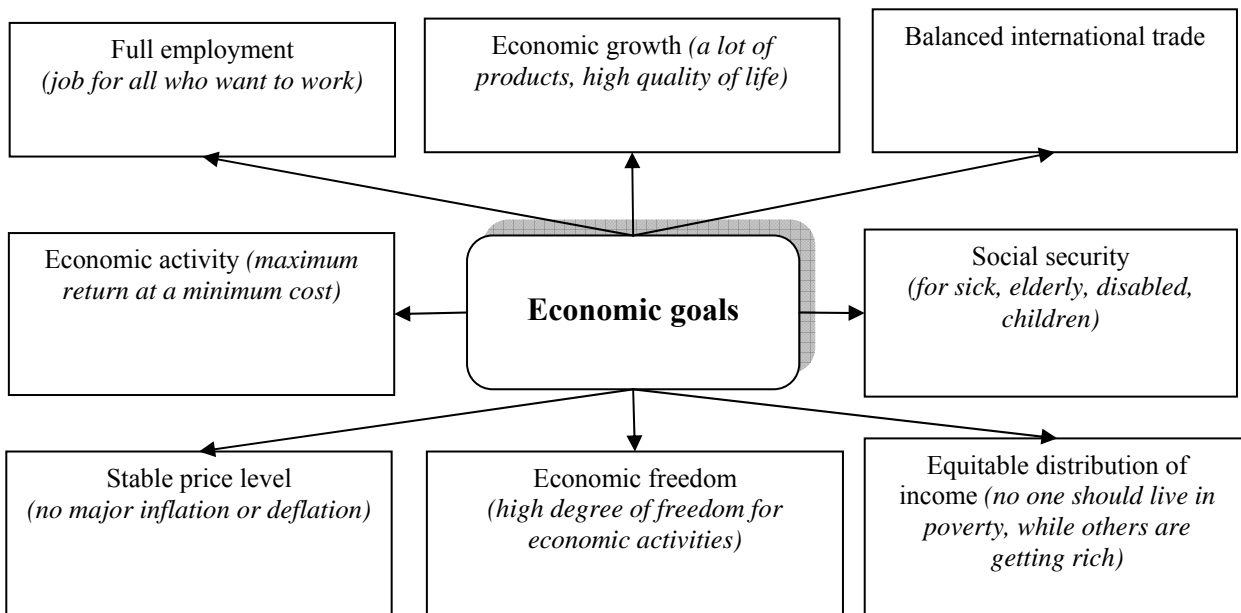


Fig. 5. Traditional economic goals [5]

VI. USE OF SIMULATION GAMES

Simulation games could be very valuable for teaching sustainable development and environmental economics, since they provide the students with the opportunity to emotionally experience the consequences of their decisions. For example, teachers can use the simulation game "Fish Banks" developed by Dennis Meadows in which student teams build their ship fleet and make decisions where to go fishing. [15] The result of the game usually is the same – the fish resource is completely depleted and teams stay with a huge number of vessels to be placed in scrap metal. Such an emotional experience – even I was not thinking about long-term consequences of continuous fleet building, developing better understanding of the causes of resource depletion and the need to use variety of instruments to prevent common resource depletion. Further pedagogic challenge is to develop new simulation games, according to the specific situation of the particular country and current topical events.

VII. CONCLUSIONS

The 21st century offers new technological opportunities for organizing creative study process. Movies, games, databases and the Internet set preconditions for reaching a good study result and illustrating theoretical information with factual examples.

Studies of sustainable development logically derive from mastering the discipline of economics. Illustration of economic regularities enables more vivid demonstration of the advantages of environmental economics.

Teaching is a creative process, which allows combining latest theoretical achievements with their practical applications. The article discloses only part of the methods

used in the study process and the authors will be glad if the colleagues share their experience in teaching sustainable development and environmental economics.

REFERENCES

- [1] Expanding Identification by Rabbi Kook <http://traubman.igc.org/expandid.htm>
- [2] A Brief introduction to Environmental Economics. Authored by: Marlies Wierenga, ELAW, <http://www.elaw.org/>
- [3] The Chartered Institution of Water and Environmental Management. (CIWEM) Environmental Economics. <http://www.ciwem.org.uk>
- [4] Environment and Sustainable Development. Edited by Māris Kļaviņš, Walter Leal Filho and Jānis Zaļoksnis. Rīga : Academic Press of University of Latvia, 2010, p. 300 chapter „Economics-the environment
- [5] Mācīšanas un Mācīšanās rokasgrāmata pasniedzējiem un studentiem par vidi un ilgtspējīgu attīstību (Handbook: Teaching and Learning to students and teachers, in Latvian) and I part – Teaching: Alan Atkisson, Dzineta Dimante, Dzintra Atstāja, Ģirts Stinkulis, Andris Grīnfelds, Andris Roska. II part – Learning: Alīna Čekstere, Olīta Smirnova. Rīga : University of Latvia, (2011) CD
- [6] Environmental Economics, Volume 1: The Essentials. Environmental Literacy Council (2007) <http://www.enviroliteracy.org>
- [7] Development of environmental science study content and study materials, Norwegian Financial Mechanism Project LV0044 Rīga: Academic Press of the University of Latvia, (2010)
- [8] Vide un ekonomika. Monogrāfija (Environment and Economics, monograph in Latvian) /Dzintra Atstāja, Dzineta Dimante, Ivars Brīvers, Jānis Malzubris, Miriama Kennet, Tatjana Tamboceva, Inga Šīna, Agita Līviņa, Jānis Ieviņš, Jānis Grasis, Biruta Pūle, Anna Ābeltiņa. Rīga : University of Latvia, 2011. p. 256
- [9] P.R Ehrlich,., J.P. Holdren, Impact of Population Growth. Science, 1971. 171, pp.1212-17.
- [10] UNEP Global Environmental Outlook – 4, United Nations Environment Programme, (2007) pp. xi-xiii.
- [11] Vide un ilgtspējīga attīstība. (Environment and Sustainable Development, in Latvian) Māra Kļaviņa un Jāņa Zaļokšņa redakcijā. Rīga : Latvijas Universitātes Akadēmiskais apgāds,

2010. p. 334. chapter „Ekonomika-Vide-Augsme” pp 155-174-growth” pp 129-147.
- [12] Daly, H.E., A Steady-State Economy, Sustainable Development Commission seminar material (2008). Available at: <http://www.sd-commission.org.uk/publications.php?id=775> (accessed 10 June 2010).
- [13] T. Jackson. Prosperity without growth: Economics for a finite planet. London: Earthscan (2009).
- [14] M. Gauding Living well in Bolivia (2010), available at <http://www.occasionalplanet.org/2010/09/16/living-well-in-bolivia/> (Accessed 20 April 2011).
- [15] Fish Banks, available at <http://fb.earthednet.org/index.html> (Accessed 15 May 2011).

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Dzintra Atstāja, Džineta Dimante. Inovatīva pieeje ilgtspējīgas attīstības un vides ekonomikas studijās

Izglītības pieejamības un vienlīdzīgu izglītības iespēju nodrošināšana ir nozīmīgs faktors sekmīgai valsts un sabiedrības attīstībai kopumā. Sabiedrības sociālā noslāņošanās un atsevišķu sabiedrības grupu sociālā atstumtība rada draudus sabiedrības ilgtspējīgai attīstībai. Izglītības pieejamības problēma izpaužas kā atšķirības kvalitatīvās izglītības nodrošinājums laukos un pilsētā.

Ilgtspējīga attīstība un vides studiju kursi turpina ieņemt stabilu vietu studiju procesā. Tehniskās iespējas un pasniedzēja izdoma ļauj apvienot dažādas metodes, lai studenti ne tikai apgūst teorētiskās zināšanas, bet nostiprina pārlicību par videi draudzīgāka dzīvesveida nepieciešamību, videi draudzīgu principu ieviešanu uzņēmējdarbībā, kā arī rosināt aktīvi iesaistīties ilgtspējīgas attīstības procesā.

Studējot ir svarīgi atrast oriģinālu pieeju, lai sasniegtu labāko rezultātu. Iesakām izmantot: lekcijas, seminārus, lietišķās spēles, ilgtspējas jautājumiem veltītu filmu skatīšanos un analīzi, kā arī studentiem veikt patstāvīgus pētījumus par vides pārvaldības ieviešanu konkrētos uzņēmumos, rosināt studentiem ne tikai piedalīties dažādās vides akcijās, bet arī noorganizēt kādu pašiem, realizēt ilgtspēju veicinošu pasākumu savā fakultātē, augstskolā, pilsētā vai novadā.

Studiju procesa mērķis ir sekmēt studentu aktīvu iesaistīšanos studiju kursa saturā apguvē, veicināt interaktīvas mācību vides veidošanos. Šim nolūkam ir paredzēti gan grupā, gan individuāli, gan pārī veicami uzdevumi. Īpaši tiek akcentēta pašu studentu, kā arī studentu un pasniedzēja aktīva sadarbība jaunu zināšanu un prasmju apguves laikā. Tā kā izglītības pamats ir prakse, tad katra teorētiskā jēdziena apguve un dziļāka tā izpratne būtu saistāma ar studentu praktisko pieredzi.

Raksta autore iepazīstina ar savu pieredzi, kura gūta strādājot ar studentiem, atziņām un praktiskiem piemēriem zināšanu nostiprināšanai. Autore cer, ka šī pieredze noderēs arī kolēģiem.

Дзинтра Атстая, Джинета Диманте. Инновационный подход к изучению устойчивого развития и экологической экономики

Доступ к образованию и равные возможности для получения образования является важным фактором в успехе государства и общества в целом. Социальное расслоение общества и отдельных социальных групп, социальная изоляция представляют угрозу для устойчивого развития общества. Проблема доступа к образованию принимает форму различия в качестве образования положение между сельскими и городами.

Устойчивое развитие и экономика окружающей среды приобрели устойчивое положение в учебном процессе. Технические возможности и изобретательность академическо-преподавательского состава позволяют сочетать различные методы, что позволяет студентам получить не только теоретические знания, но и укрепить убеждение о необходимости проводить экологически чистый образ жизни и ввести зеленые принципы в предпринимательскую деятельность. Преподавание устойчивого развития открывает широкие возможности для творческой работы, активного вовлечения студентов в учебный процесс. Мы рекомендуем использовать лекции, семинары, деловые игры, просмотр фильмов и анализ вопросов, связанных с устойчивостью, а также студентам проводить самостоятельные исследования по управлению окружающей средой на отдельных предприятиях, поощрять студентов не только участвовать в различных экологических кампаниях, но и организовать собственную, способствовать достижению устойчивых мер по укреплению своего факультета, университета, города или округа.

Цель учебного процесса - поощрение студентов в активном участии в изучении содержания курса, в целях содействия интерактивной среды обучения. Для этой цели предназначены групповые, и индивидуальные и парные работы. Особое внимание уделяется активному сотрудничеству студентов, а также студентов и преподавателей во время освоения новых знаний и получения навыков обучения. Поскольку образование является основой практики, каждая теоретическая концепция изучения и глубокого понимания, должна быть связано с практическим опытом студентов.

Авторы представляет свой опыт работы со студентами, примеры консолидации знания и практических навыков. Авторы надеется, что этот опыт будет полезным для коллег.