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INTEGRATED PEDAGOGICAL APPROACH ON TEACHING AND LEARNING FOR SUSTAINABLE DEVELOPMENT GOALS (SDGs) ²

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***Abstract:** In the middle of the severe pandemic of 21 century is an understatement to say that higher education system is looking for new approaches to enrich and adapt its teaching methods to the new environment. Establishing an Educational Laboratory for innovative and integrated pedagogical approach on teaching and learning for Sustainable Development Goals (SDGs) was a blessing in disguise under the new circumstances. Through stimulating social, civic and intercultural skills of our HE students and teachers we've managed to improve our curriculum in subject like Corporate Social Responsibility, Social policy, etc. This paper aims to analyse the result obtained from empirical research held between Oct-2020 to Jan-2021 based on our work in the Educational Laboratory and to propose valuable recommendations from the lessons learnt from cross-border exchange and knowledge transfer towards sustainable development growth in academia.*

***Key words:** Educational Laboratory, Corporate Social Responsibility, Sustainable Development Goals (SDGs)*

INTRODUCTION

The last two years have been demanding for all fields of our ecosystem. The COVID-19 pandemic has just added additional emphasis on our surge for new teaching methods that correspond to the new environment (Popova, A., 2020). The study presented in this paper aims to extract and analyse the result obtained from empirical research held between Oct-2020 to Jan-2021 based on our work in the Educational Laboratory and to propose valuable recommendations from the lessons learnt from cross-border exchange and knowledge transfer towards sustainable development growth in academia.

Secondly, the Educational Laboratory work enabled thoroughly testing, implementing, and improving the innovative Joint Learning Curricula for teaching and learning SDGs, several scientists works have been thoroughly researched in this direction (Dimitrov, M., & Venelinova, N., 2019); (Gueorguiev, T., Kokalarov, M., & Sakakushev, B., 2020); (Fleacă, E., & Maiduc, S., 2019). The study further depicts the analysis of feedback collected from students throughout the series of Educational Laboratory work going similteniusly in four European universities: UNIVERSITY POLITEHNICA OF BUCHAREST- Romania; UNIVERSITY OF LODZ – Poland; University of Brno – Czech Republic and University of Ruse "Angel Kanchev" (URAK).

EduLab session 1 for HE students from the University of Ruse "Angel Kanchev" was carried out between October-20 to January-21.

EXPOSITION

The results from an empirical study

The feedback questionnaires have been completed and submitted online by the students of University of Ruse "Angel Kanchev" at the end of EduLab session 1 though the platform of the project. The actual EduLab session 1 for HE students of University of Ruse was carried out between Oct-2020 to Jan-2021. The participants in the first EduLab session were 21 students from bachelor level mainly from Business and Management specialization see Fig. 1. From all the participants in the course we received feedback from 11 students.

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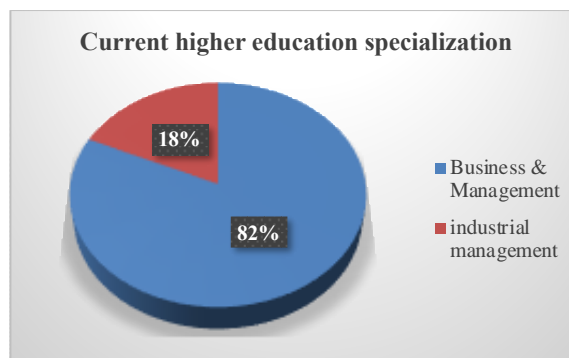


Fig. 1. Area of specialization of URAK students

The chosen topics for constructing the educational materials are the following:

Economic performance:

The students participating in the survey have chosen as their priority (these goals were least known): Goals - SDG1 No poverty; SDG8 Decent work and economic growth and SDG9 Industry, Innovation and Infrastructure as a result of their choice the following subjects were included in the Curriculum: Innovation & product responsibility; Social entrepreneurship; Green business, green finance and investments. The materials were developed based on some previous studies of our colleagues (Antonova, D., 1999); (Kunev, S., 2010).

Environmental performance

Here the students have been offered the following subjects in connection with the SDGs (SDG7. Affordable and clean energy; SDG12. Responsible consumption and production): Circular economy – green productions and waste to resources – secondary raw materials and water reuse, etc.

Social performance

The students participating in the survey have shown little knowledge about (SDGs numbers - SDG10.Reduced inequalities; SDG11. Sustainable cities and communities; SDG16. Peace, justice and string institutions; SDG17. Partnerships for the goals (unknown by 57.14 % of respondents) and as a result have been offered the following subjects: Sustainable lifestyle and education; Occupational health and safety; Social and labour protection (Bratoeva-Vasileva, E., 2021); (Ruskova, S., 2012).

The first major part of this feedback analysis deals with the general students satisfaction from their participation in the first EduLab Session.

Regarding the student’s satisfaction from the course, we’ve received the following result from the assessment form divided in Tables 1;2 and 3.

In the first part of this assessment regarding the general structure of the course we could state that judging of the responses we have a very high percent of the student’s appreciation. Only 9,1% of responses have reserves concerning “Relationship and team work during the learning activities” this could be explained by the lack of face-to-face activities as we worked in heavily restrict environment due to COVID-19 pandemic (see Tabl. 1).

Table 1. URAK Student’s Appreciation the following aspects of EduLab

Elements	Scale	1 - Strong disagreement	2 - Disagreement	3 - Neither agree nor disagree	4 - Agreement	5 - Strong agreement
The relevance of <i>Sustainable Development Goals (SDGs)</i> topics against your learning needs		-	-	-	3; 27,3%	8; 72,7%
The usefulness of objectives of the courses		-	-	-	2; 18,2%	9; 81,8%
The structure of the courses for the whole period		-	-	-	5; 45,5%	6; 54,5%
Communication with participants		-	-	-	2; 18,2%	9; 81,8%

The organization of activities, in general	-	-	-	1; 9,1%	10; 90,9%
Announcement/promotion of the course	-	-	-	3; 27,3%	8; 72,7%
Information on objectives of the course	-	-	-	1; 9,1%	10; 90,9%
Quality of course and learning material	-	-	-	3; 27,3%	8; 72,7%
Visual aids used during the courses	-	-	-	1; 9,1%	10; 90,9%
Availability of course material	-	-	-	3; 27,3%	8; 72,7%
Relationship and team work during the learning activities	-	-	1; 9,1%	4; 36,3%	6; 54,5

In the second part of this assessment regarding the content of the course we could state that judging of the responses we have again a very high percent of the student's appreciation. Regarding the "Teaching material and learning resources" in all 3 fields (Economic; Social and Environmental performance) it varies between 90,9 % and 100% (see Tabl. 2). There is a very small percent 18,2 % of "Unsatisfaction" for "Practical exercises and applications" in Economic and Social performance. Despite the small number it needs to be addressed and corrected in the next EduLab sessions. Judging by students' responses – 100% consider that the "The volume of information exposed during the event" is enough.

Table 2. Student's Appreciation the following aspects of EduLab

	1 - Unsatisfactory	2 - Satisfactory	3 - Don't know	4 - Good	5 - Excellent
Teaching material and learning resources for Economic performance	-	-	-	3; 27,3%	8; 72,7%
Teaching material and learning resources for Social performance	-	1; 9,1%	-	2; 18,2%	8; 72,7%
Teaching material and learning resources for Environmental performance	-	-	1; 9,1%	1; 9,1%	9; 81,8%
Practical exercises and applications on Economic performance	1; 9,1%	1; 9,1%	-	-	9; 81,8%
Practical exercises and applications on Social performance	-	2; 18,2%	-	-	9; 81,8%
Practical exercises and applications on Environment	1; 9,1%	-	1; 9,1%	1; 9,1%	8; 72,7%
The volume of information exposed during the event	-	-	-	1; 9,1%	10; 90,9%
The workload of learning activities	-	1; 9,1%	1; 9,1%	2; 18,2%	7; 63,6%
The level of complexity for the topics presented	-	1; 9,1%	-	3; 27,3%	7; 63,6%

In the third part of this assessment regarding the learning outcomes of the course we could state that judging of the responses we have a very high percent of the student's appreciation. Regarding the "Gain new insights on Sustainable Development Goals – SDGs"; "Learn new techniques to solve sustainability issues and problems"; "Solve problems in teams" we have incredibly high results of students' appreciation varying 90,9% -100%. This result corresponds to some previous works in this field (Gueorguiev, T., & Krasteva, M., 2014). The negative response concerning "Exercise entrepreneurship and develop digital and civic skills" is small 9,1% but it still needs to be taken into consideration in the future work, obviously we could include meetings with entrepreneurs when doing interactive exercises.

Table 3. URAK Student’s Appreciation the following aspects of EduLab regarding learning outcomes

	1 - Not at all achieved	2-Not achieved	3- Somewhat extent	4- Achieved	5-Fully achieved
Gain new insights on <i>Sustainable Development Goals – SDGs</i>	-	-	1; 9,1%	3; 27,3%	7; 63,6%
Learn new techniques to solve sustainability issues and problems	-	-	-	3; 27,3%	8; 72,7%
Improve the learning skills	-	-	-	2; 18,2%	9; 81,8%
Solve problems in teams	-	1; 9,1%	-	5; 45,5%	5; 45,5%
Combine knowledge and draw up conclusions on sustainability-related directions	-	1; 9,1%	-	5; 45,5%	5; 45,5%
Gain new experience	-	-	2; 18,2%	1; 9,1%	8; 72,7%
Improve self-confidence, motivation and initiatives	-	-	-	3; 27,3%	8; 72,7%
Exercise entrepreneurship and develop digital and civic skills	1; 9,1%	-	2; 18,2%	-	8; 72,7%
Learn to innovatively resolve responsibility issues in doing business	-	-	2; 18,2%	3; 27,3%	6; 54,5%

The second major part of this feedback analysis tackles the issues with Respondents’ Evaluation of Values.

In the first part of this assessment regarding the Respondents’ Evaluation of Values of the course we could state that judging of the responses we have a very high percent of the student’s awareness. Regarding “Valuing cultural diversity” – (90,9%-very important and 9,1 rather important) and “The respect for fundamental EU freedoms (i.e. free movement of goods, capital, services, and labor)” we receive a 100% positive feedback from our students as important for them (63,6% - very important and 36,4% rather important, See Tabl. 4). Judging by student’s responses we could state that only 9,1 % show some form of indifference of these important values. As a whole this result brings huge level of satisfaction among the teaching staff because it’s much easier to upgrade when you have a good base of value foundation.

Table 4. URAK student’s (Respondents) Evaluation of Values

	1-Not at all important	2 - Rather not important	3- Indif-ferent	4 - Rather important	5-Very important
The respect for human rights and freedoms (i.e. dignity, equality, solidarity, justice, citizen's rights, etc.)	-	-	1; 9,1%	2; 18,2%	8; 72,7%
The respect for fundamental EU freedoms (i.e. free movement of goods, capital, services, and labor)	-	-	-	4; 36,4%	7; 63,6%
Valuing cultural diversity	-	-	-	1; 9,1%	10; 90,9%
Democracy in the society	-	-	1; 9,1%	1; 9,1%	9; 81,8%
Social justice	-	-	1; 9,1%	2; 18,2%	8; 72,7%
Fairness of educational/working systems	-	-	1; 9,1%	1; 9,1%	9; 81,8%
The principles of equality and solidarity	-	-	1; 9,1%	2; 18,2%	8; 72,7%
Gender equality	-	-	1; 9,1%	3; 27,3%	7; 63,6%
The rule of law	-	-	1; 9,1%	4; 36,4%	6; 54,5%

In the second part of this assessment regarding the Awareness about SDGs achieved during the course we could state that judging of the responses we have also a very high percent of the student's awareness. Judging by student's responses we could state that six of UN Sustainable Development Goals are completely recognisable (100% have chosen "Rather known" of respondents, See Tab. 5). It is strange the SDG 1. and SDG 2 are still rather unknown for 27,3% of respondents for the first and 18,2% for the later considering the time spent for them. We could conclude that a better visualisation of some of materials might help in increasing the awareness of these goals. As a whole the results are very positive because the level of awareness about SDGs has improved a lot in comparison with the initial results. As the only factor being changed in students' s education during the last year, we could say that this outcome is a results of the introduction of EduLab in their curriculum.

Table 5. URAK student's Awareness about SDGs

UN Sustainable Development Goals – SDGs	Rather unknown	Rather known
SDG1. No poverty (end poverty in all its form everywhere)	3; 27,3%	8; 72,7%
SDG2. Zero hunger (achieve food security, improve nutrition and sustainable agriculture)	2; 18,2%	9; 81,8%
SDG3. Good health and well-being (healthy lives for all at all ages)	-	11
SDG4. Quality education (inclusive and equitable quality education and lifelong learning opportunities for all)	-	11
SDG5. Gender equality (achieve gender equality and empower all women and girls)	1; 9,1%	10; 90,9%
SDG6. Clean water and sanitation (ensure availability and sustainable management of water and sanitation for all)	1; 9,1%	10; 90,9%
SDG7. Affordable and clean energy (ensure access to affordable, reliable, sustainable and modern energy for all)	1; 9,1%	10; 90,9%
SDG8. Decent work and economic growth (sustainable economic growth, full and productive employment and decent work for all)	1; 9,1%	10; 90,9%
SDG9. Industry, innovation and infrastructure (build resilient infrastructure, promote sustainable industrialization and foster innovation)	-	11
SDG 10. Reduced inequalities (reduce inequalities within and among countries)	2; 18,2%	9; 81,8%
SDG11. Sustainable cities and communities (make cities and human settlements inclusive, safe, resilient and sustainable)	1; 9,1%	10; 90,9%
SDG12. Responsible consumption and production (ensure sustainable consumption and production patterns)		11
SDG13. Climate action (take urgent action to combat climate change and its impacts)	-	11
SDG14. Life below water (conserve and sustainable use the oceans, seas and marine resources)	1; 9,1%	10; 90,9%
SDG15. Life on land (protect and sustainable use terrestrial ecosystems, forests, etc.)	-	11
SDG16. Peace, justice and strong institutions (peaceful and inclusive societies, access to justice for all, build effective, accountable and inclusive institutions at all levels)	2; 18,2%	9; 81,8%
SDG17. Partnerships for the Goals (strengthen the means of implementation and revitalize the global partnership for Sustainable Development)	1; 9,1%	10; 90,9%

The third major part of this feedback analysis report is about Respondents' learning expectations.

In this section of the analysis, we're elaborating on the learning expectations of URAK students related to SDGs. Seeing the processed data, we could certainly state that URAK students' show desire to be part in company's life in topics concerning sustainability issues – 90,9 % of respondents show their willingness in that direction, only 9,1 % have shown an indifference (See Tabl. 6). The same results were obtained for "Learning through study cases solved in teamwork", this approach of study cases solved in teamwork shows that students are aware of the presented opportunities to improve their critical thinking and communication skill at once. The students also

show high expectation on developing their autonomous learning by marking “Learning through study cases solved individual” with 72,7% of respondents choosing “Certainly prefer” and 27,3% “Rather prefer”. Again, respondent’s answers concerning “Attending to workshops with practitioners”, confirm more practical oriented approach with the high scores – 63,6% of students choosing “Certainly prefer” and 36,4% “Rather prefer”. Obviously, some of the students are not quite certain in their ability of “Self-learning through content research on best practices in sustainability-related subjects” – 18,2 % of respondents have chosen “Rather not”. Understandably, having in mind the target group we have received very high scores of 90,9 % of respondents for “Self-learning through content research on best practices in sustainability-related subjects”, which once again puts the focus on the importance of developing set of skills like communication, adaptability, flexibility, etc.

Table 6. URAK Student’s learning expectations

	1 - Absolutel y not	2- Rather not	3 - Indifferent	4 - Rather prefer	5 - Certainly prefer
Being involved in companies’ internships on the topics of sustainability	-	-	1; 9,1%	2; 18,2%	8; 72,7%
Learning through project-based collaborative work with other students	-	-	1; 9,1%	3; 27,3%	7; 63,6%
Learning through study cases solved in teamwork	-	-	1; 9,1%	2; 18,2%	8; 72,7%
Learning through study cases solved individual	-	-	-	3; 27,3%	8; 72,7%
Attending to workshops with practitioners on different sustainability-related subjects	-	-	-	4; 36,4%	7; 63,6%
Attending to debates on different sustainability-related subjects	-	1; 9,1%	2; 18,2%	2; 18,2%	6; 54,5%
Self-learning through content research on best practices in sustainability-related subjects	-	2; 18,2%	-	1; 9,1%	8; 72,7%
Exchange of experience and transnational teaching and learning activities with other students on different sustainability-related subjects	-	-	1; 9,1%	3; 27,3%	7; 63,6%

CONCLUSION

At the end of the first EduLab session we could state that we as teachers have gained a lot of experience that definitely is going to improve the quality in our future EduLab sessions but also our other activities as teachers as well. After analysing the feedback given by the students, we have another point of view that is also going to enrich our curriculum in sustainability-related directions. As in every first step we also have noticed a few weaknesses and the following remarks and recommendations are aiming to improve the quality of our work even higher for students and teachers benefit.

- Some students have reserves concerning “Relationship and team work during the learning activities” this could be explained by the lack of face-to-face activities as we worked in heavily restrict environment due to COVID-19 pandemic;

- Some students would prefer more “Practical exercises and applications” in Economic and Social performance to be included in the sessions;

- We could include meetings with entrepreneurs when doing interactive exercises.

- From the studying of the human nature, we know that it is very difficult to force some significant changes in values and attitudes for such short period of time. But the results from our feedback data are very encouraging with very high percent of respondents (over 90%) supporting the core human values offered in our work and the processed data correspond with the results from previous researches (Ruskova, S., & Ruseva, I., 2018);

- Level of Awareness about SDGs has also improved significantly. As a whole the results are very positive because the level of awareness about SDGs has improved a lot in comparison with the

initial results. As the only factor being changed in students' s education during the last year, we could say that this outcome is a results of the introduction of EduLab in their curriculum.

• In regards of students learning expectations concerning the level of knowledge related to SDGs we could state that respondent's preferences once again put the focus on the importance of developing set of skills like analytical and critical thinking; communication and cooperation, adaptability, flexibility, etc.

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