Reflections on the learning objectives for sustainable development in the higher education curricula – three cases from the University of Belgrade

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Abstract

Purpose – This paper aims to explore the integration of the sustainable development concept and goals into the curriculum of higher education studies, using the example of three faculties of the University of Belgrade.

Design/methodology/approach – A qualitative content analysis has been applied on two levels: 1) the evaluation of the sustainability of courses starting from the criteria defined by the Sustainability Tracking, Assessment & Rating System (ASHE, 2017), and 2) the analysis of the outcomes defined in the curricula of subjects within the three faculties, using the UNESCO learning objectives (LO) related to selected SDGs as a criteria.

Findings – While the largest number of courses were analyzed from the Faculty of Architecture, the highest proportion of sustainability courses was found in the Faculty of Security Studies. Both study areas reflect a stronger interdisciplinary orientation, while it should be strengthened in the case of the Andragogy study program. Based on the experience of the Faculty of Architecture, the courses implemented by linking theory and practice, may significantly contribute to achieving the LO and to implementing the ESD. At the University of Belgrade, strategic documents are missing that would encourage and oblige the faculties to apply the concept of sustainability.

Originality/value – This is the first study to apply this kind of curricula analysis at the University of Belgrade. It is performed by teachers from the University, coming from different disciplinary fields but oriented towards an interdisciplinary perspective. Although performed in three specific study areas within a single University, the identified gaps and trends may be useful

for planning interventions towards accelerating the implementation of SDGs in the higher education curricula.

Keywords - learning objectives, ESD, SDGs, higher education curricula, teachers, University of Belgrade

Paper category: Research Paper

1. Introduction

The integration of the concept and principles of sustainable development (SD) and education for sustainable development (ESD) into the higher education (HE) curricula is considered to be one of the organic dimensions of sustainability at universities. Other dimensions or usually recognized domains in which HEI can apply the concept of sustainability are research, facilities or campus operations, community outreach and the institutional framework (Leal Filho *et al.*, 2017). Though all those are inseparable, they are not always analyzed holistically, or in terms of their interrelations (Leal Filho *et al*., 2015).

The aim of this study is to explore the integration of the sustainable development concept and goals into the curriculum of higher education studies, using the examples of three faculties of the University of Belgrade. Although particular attention is given to curricular issues, the relation to institutional policy, context and the teachers' orientation towards sustainability was also analyzed.

Following the UNESCO approach in defining sustainability competences and learning objectives, the analysis of the outcomes of courses in this paper has been focused on in implementing ESD, which is seen as a holistic concept "that addresses learning content and outcomes, pedagogy and the learning environment" (UNESCO, 2017, p.7). Thus, the process is not only about integrating contents related to SD, but also about a teaching strategy which requires "a shift from teaching to learning" (Ibid.) in enabling the learning environment. As stressed by several authors, ESD requires a holistic approach applied not only at the level of the curriculum, but also of institutions and organizations (Tillbury, 2011), touching "every aspect of education including planning, policy development, programme implementation, finance, curricula, teaching, learning, assessment, administration" (McKeown *et al*., 2002, p.33).

The research interest in the teaching approach and strategies in integrating sustainability in HE is growing with the requirements to implement SDGs, with focus on the role of teacher (White, 2015) in the application of specific learning and teaching methodologies (Concina, 2019; Gaffney and O'Neil, 2019; Horbacauskiene, 2019; Buil-Fabregá *et al*., 2019; Maruna *et al*., 2018). This includes the necessity for a critical reflection upon the concept and the goals (Kopnina,2017) and an understanding of the transformative role of learning and education for sustainability (Leal Filho *et al.*, 2018). While there is the obvious struggle of HEI to overcome traditional fragmentation and other barriers, it is argued that the adoption of SDGs creates not

another obstacle, but, on the contrary, a new opportunity to take advantage of integrating the SDGs into teaching (Leal Filho *et al.,*2019).

1.1. Approaches and barriers in the integration of SD into the curricula

In light of the responsibility of HE in developing the competences of future highly active citizens, the role of university teachers in reorienting university curriculums is considered particularly significant and delicate, as it is supposed to include "the many and complex facets of sustainability" (UNESCO, 2006, p.17).

One of the wide-spread debates running among the authors in this field involves the old question of the cross-curricular approach versus the development of stand-alone courses dealing with sustainable development issues when implementing the ESD principles. Some argue that for teachers educated in disciplinary traditions, it is natural to develop curriculum "from *within* disciplines where an appropriate framework of ideas already exists, and where teachers can explore such issues for themselves with some professional confidence" (Scott, 2002, p.10). Others remind that sustainable development is not "just another topic to be considered in the curriculum" (Barth and Rieckmann, 2012, p.15), as well as that "working with ESD requires broader knowledge than specific subject-related knowledge" (Medsen, 2013, p.3777).

Considering the development in recent curriculum changes towards sustainability, these authors recognize two trends: horizontal integration – when SD is incorporated into different courses, or vertical integration – the development of separate SD courses (Ceulemans and de Prins, 2009). As distinguished by Lozano, there are four different strategies in integrating SD in curricula: 1) infusing some environmental issues into an existing course; 2) developing a separate SD course; 3) integrating the SD concept into each course; or 4) providing specialization in SD within the faculty curricula. Among those, the third has been considered to be "the most promising approach for students to integrate SD and its principles in their future professional lives" (Ceulemans and de Prins, 2009, p.1).

Sterling and Thomas recognize four models – from curriculums with no change, through education about sustainability ("bolt-on" approaches), towards education for sustainability ("built-in" approaches) and the redesign of the whole curriculum – or sustainable education – as the most demanding process, requiring the transformation of "a university's entire educational mission" (Sterling and Thomas, according to Barth and Rieckmann, 2012, p.4).

A number of barriers to embed sustainability in universities around the World, including the challenges in integration of ESD into curricula, have been frequently reported by authors over the last years. Recent research conducted by an international team, based on estimations of more than 300 respondents from all continents, recognizes that the greatest obstacles lie in the administration and management operation of HEIs, followed by a lack of concern over sustainability issues, as well as the lack of structural units (committees, centers, etc.) within universities (Leal Filho *et al*., 2017, p.94). According to estimations made by teachers from the

University of Belgrade, the main barriers for the integration of SD into the curriculum, research and collaboration with communities, are found in their lack of time and capacities to meet all the demands, as well as in missing institutional strategies and awareness of the importance to embed sustainability. (Orlovic Lovren, 2017)

The results obtained through the studies, derived not only from the perspective of teachers, clearly reveal that teachers are assigned a huge responsibility in introducing SD into their courses (Ceulemans and De Prins, 2009; Barth and Rieckmann, 2012), which demands the provision of lifelong opportunities for their professional development in this field, helping them not only in enhancing their teaching competences, but, as noted, in offering "a meaningful reason for individual reflection on how ESD might be best implemented (Barth and Rieckmann, 2012, p.5). As recently underlined in an official statement of the European University Continuing Education Network (EUCEN, 2019), the "challenges of SDGs cannot be successfully addressed and answered without university lifelong learning"[i], which includes the responsibility to provide teachers with professional development programs in support to their efforts to develop competences for the sustainability not only of their students, but of citizens and communities as well.
Learning objectives for the integration of ESD towards achieving the SDGs were published with the aim to "support policy-makers, curriculum developers and educators in designing strategies, curricula and courses to promote learning for the SDGs" (UNESCO, 2017, p.8) at all levels, including higher education.

While there are a number of authors focusing on competences for SD and ESD in relation to teaching approaches, teachers' education or teachers' perspectives (Rieckman, 2018; Bürgener and Barth, 2018; Kalsoom, 2019; Mitranic, Miskeljin and Pavlovic Breneselovic, 2019; Vukelic, Roncevic and Vinkovic, 2019), there is a paucity of studies meeting "an urgent need to move from researching and developing SD integration objectives or aims to their actual integration in university curricula." (Lozano *et al*., 2017, p.10). Moving towards that end, this paper attempts to identify gaps in the integration of sustainability principles and learning objectives into HE courses at three faculties of one university – using the UNESCO framework of competences for sustainability. Analyzing the gaps within the specific institutional and social context, the paper looks at the needs and opportunities for improvements - not only in teachers' competences for ESD, but also in building and enabling an institutional and policy climate to accelerate the implementation of SDGs – within and outside the boundaries of the respective university.

2. The context –University of Belgrade

The University of Belgrade is the largest and oldest public university in Serbia. It consists of 31 faculties, which are divided into groups for the social sciences and humanities, medicine, and science and technology[ii].

The Faculty of Philosophy is comprised of nine departments with ten study programs: the Department of Philosophy, Department of Classics, Department of History, Department of Art

History, Department of Archeology, Department of Ethnology and Anthropology, Department of Sociology, Department of Psychology and the Department of Pedagogy and Andragogy[iii]. The Faculty of Security Studies within its study programs incorporates a wide range of major theoretical, political, legal, economic, ethical, humanitarian and civilian-military aspects of security studies, namely, the studies of security, defense, civil defense, environmental protection, and human and social resource management[iv]. The Faculty offers the following levels and types of study programs: Security Studies (undergraduate and graduate levels); Disaster Risk Management Studies (master's level) as well as specialist professional study programs in Security Management Studies and Forensic Management. In the Faculty of Architecture, in addition to general training for architects (Undergraduate studies of Architecture, Master's studies of Architecture and five years integrated studies of Architecture), the Bologna system has allowed greater diversification, primarily at the graduate level, where the Faculty has set up two master's programs, a) Integrated Urbanism, and b) Interior Architecture, and three specialist courses, a) Urban Renewal, b) Energy-Efficient and Green Architecture, and c) Design and Heritage[v].

According to the previous analyses of the study programs of faculties belonging to the University, (Loncar, 2011; Nadic, 2011), changes in the curriculum towards introducing the concept of sustainable development are found not only in science and technology, but also in the social sciences and humanities. Along with that positive trend, as noted, changes in curriculum are "rarely accompanied by other aspects of University sustainability" (Orlovic Lovren, 2015, p.318) such as institutional strategies, organized training of staff, incorporation of sustainability into continuing education and extension, as well as the mobilization of students and professors – which are all considered indicators for assessing the level of integration of this concept into the entire HE institution (Leal Filho, 2009).
Two steps that were recently taken by the University of Belgrade – joining the network of universities under the Inter University Sustainable Development Research Program (IUSDRP) in 2016 and the European Sustainability Science and Research School (ESSSR) in 2019, open new windows of cooperation between the faculties of the University, as well as between the University of Belgrade and other members, towards more effective and integrated inclusion of sustainable development in all the aspects of its functioning.

The very idea of the authors of this research to initiate an analysis of the curricula of their departments as an aspect of sustainability of faculties within the University of Belgrade was also born thanks to processes inspired by that membership and the activities of the Coordination Council of IUSDRP/ESSSR.

3. Methodology

This research has been undertaken within the framework of qualitative methodology. The data on courses and its sustainability have been analyzed on two levels:

1. The selection of "sustainability courses" and "courses that include sustainability" from the curricula of respective departments of the faculties within the University of Belgrade. This analysis was performed starting from the criteria defined by the Sustainability Tracking, Assessment & Rating System (STARS), developed by the Association for the Advancement of Sustainability in Higher Education (ASHE, 2017).

According to those guidelines, sustainability courses are "courses in which the *primary and explicit* focus is on sustainability and/or on understanding or solving one or more major sustainability challenge:

A. Foundational courses in which the primary and explicit focus is on sustainability as an integrated concept having social, economic, and environmental dimensions.

B. Courses in which the primary and explicit focus is on the application of sustainability within a field. As sustainability is an interdisciplinary topic, such courses generally incorporate insights from multiple disciplines.

C. Courses in which the primary focus is on providing skills and/or knowledge *directly* connected to understanding or solving one or more major sustainability challenge (ASHE, 2017, p.36).

Following the same methodological tool, *Courses That Include Sustainability* is defined as "primarily focused on a topic other than sustainability, but incorporates a unit or module on sustainability or a sustainability challenge, includes one or more sustainability-focused activity, or integrates sustainability issues throughout the course. To count, these units/modules, activities or issues should be documented in course descriptions or syllabi" (ASHE, 2017, p.37).

Three types of data have been used as units for the analysis of the curricula developed by departments of the respective faculties:1) the course title, 2) formulation of the course level learning outcome, as well as 3) short descriptions of the content.

2. *The qualitative content analysis of the course level learning outcomes.* This segment of the analysis was conducted by comparing the content of those outcomes, as formulated by the curricula developers, with the content of the learning objectives formulated under the UNESCO framework, for each sustainable development goal (UNESCO, 2017). Learning outcomes are understood here in terms of the definition used in the STARS manual and provided again by UNESCO, as "statements of what a learner is expected to know, understand, and be able to demonstrate after completion of a process of learning as well as the specific intellectual and practical skills gained and demonstrated by the successful completion of a unit, course, or programme" (ASHE, 2017, p.44).

The publication "Learning Objectives for Sustainable Development Goals" (UNESCO, 2017) contains learning objectives, topics and learning activities for each SDG, within the framework of the key sustainability competencies. As underlined, "the document is not prescriptive in any way, but provides guidance and offers suggestions for learning topics and objectives that educators can select and adapt to fit concrete learning contexts" (UNESCO, 2017, p.8).

Each of three researchers, coming from different faculties, selected the most relevant SDG - having in mind the scope of the study at the respective Faculty: SDG 4 "Equitable, quality education and LLL for All" for the Faculty of Philosophy, Andragogy study group; SDG 16 "Peace, Justice and Strong Institutions" for the Faculty of Security Studies/SS, HSRM, CP and SDG 11 "Sustainable Cities and Communities" for the Faculty of Architecture/Architecture module. They then used the relevant formulations of the learning objectives from the publication, for comparison with the course learning outcomes formulated by the departments.

The analysis was conducted between April 15 and May 15, 2019, with multiple consultations performed between the researchers in order to harmonize the understanding and interpretation of data using the same criteria, based on the standards incorporated into methodological tools (ASHE, 2017) and the Guidelines (UNESCO, 2017), while respecting the particular disciplinary and institutional origin of the selected courses.

The interpretation of the findings was also made according to the specific context of each of the faculties, as seen from the point of view of the researchers teaching there. It is based on their overall insights as well as on the information from the available documents from each of the institutions, describing the strategic aims and quality assessment of the work of each one, as well as containing the syllabi of all the analyzed courses (Regulation on scientific, artistic, and technical sub-fields of scientific and artistic fields of study, 2017; Statute of the University of Belgrade – Faculty of Security Studies, 2018; Statute of the University of Belgrade - Faculty of Architecture, 2018; The Strategy for Ensuring Quality of Faculty of Security Studies, 2012; Quality Assurance and Improvement Strategy, 2008).

4. Results and Discussion

4.1. Limitations of the Study

One of the limitations of this study is its sample size. It is small - three faculties of a single University. In addition to that, it reflects the intention to cover different scientific fields – Andragogy, Architecture, Security, but doesn't cover all the scientific groups within the University of Belgrade – such as medical studies and science. Following the field of study at respective faculties, and the methodology design, the study was also limited to only a few SDGs, e.g. to the learning objectives formulated for each of them.

Although conceptually approaching the issues from the perspective of ESD, which underlines not only the content, but also teaching strategies for sustainability, the analysis is limited to the content of course outcomes in relation to Learning objectives, very briefly touching the short

descriptions of syllabi. An analysis of teaching strategies and methods and its implications on students' competences would require additional methodological procedures, as well as time, which would exceed the frame of this research.

A future study with a larger sample within this university, and a potential comparison with others, would contribute to a better understanding of existing gaps and needs for improvements in this field.

4.2 Integration of sustainability into the analyzed courses

As described above, the first segment of the analyses comprised the distribution of courses from the three Faculties, following the STARS criteria.

Table 1: Distribution of courses analyzed by faculties, study levels and sustainability

Faculties-departments	**UG courses (BA)**		**PG courses (MA)**		**PG courses (PhD)**		**Total**
	Core	**Elective**	**Core**	**Elective**	**Core**	**Elective**	
Faculty of Philosophy/ Study group Andragogy	24	13	1	17	2	14	71
Sustainability courses		1				1	2
Courses that include sustainability	9	5		4		6	24
Faculty of Security studies/ SS, HSRM, CP	32	32	8	4	7	9	92
Sustainability courses	1	2		1		2	6
Courses that include sustainability	9	7	1	1		1	19
Faculty of Architecture/ Architecture module	59	17	3	89	21	12	201
Sustainability courses	1	1		3		1	6
Courses that include sustainability	6	4	1	13	3	4	31

Out of 71 courses analyzed within the Andragogy study program, only two were selected as "sustainable," following the criteria embedded into the STARS Methodology. Based on the course titles, it couldn't be concluded that, applying the STARS vocabulary, these have an "explicit focus" on sustainability. However, keeping in mind the description of the content of those courses, as well as their outcomes, we consider they may be put into the STARS category 1.C, which refers to courses that "do not necessarily cover 'sustainability' as a concept, but should address more than one of the three dimensions of sustainability (i.e., social wellbeing, economic prosperity, and environmental health)" (ASHE, 2017, p.36). Its learning outcomes and descriptions clearly show that both address the interrelations between humans and the environment, studying issues of environmental challenges and educational solutions through a holistic approach to the social, environmental and economic aspects of those interconnections,

thus relying on the concept of sustainability. Fourteen courses (out of 37) from the undergraduate studies, 4 (out of 18) from the graduate master's level, and 6 (out of 16) from the curricula of graduate PhD studies of andragogy were selected as "courses that include sustainability." Most of the selected courses touch upon adult education and lifelong learning research and practice in the context of social and economic policy and development, globalization, human rights, citizenship, interculturalism, poverty reduction, literacy and quality education.

Out of a total of 92 courses analyzed from the Faculty of Security Studies program, 6 were selected as "sustainability" courses. Based on course descriptions, these correspond most closely to the STARS category 1C, as in the case of andragogy studies. They comprise segments such as, for example, creating development strategies for human security, developing a methodology of risk management and environmental crises and so on. According to STARS criteria, 16 (out of 64) courses of the Undergraduate Study Program, 1 (out of 12) of the Master's Degree Study Program, and 2 (out of 16) of the Doctoral Degree Study Program were selected as "courses that include sustainability."

Of the 201 courses from the Architecture Module, 6 are considered "sustainable" following the criteria embedded in the STARS methodology. Course titles and outcomes reveal that 5 (2 BA, 2 MA, and 1 PhD) have an "explicit focus" on sustainability as an integrated concept, and as such may be placed into the STARS Category 1.A. Of these, one is a core course and the remaining are electives. All the courses listed in the table directly link architecture with the concept of sustainable development. One elective MA course falls into Category 1.B as it has an "explicit focus on the application of sustainability." This course adopts an inter-disciplinary approach as it "incorporates insights from multiple disciplines" and is devoted to integrated urban development (ASHE, 2017, p.36). Tellingly, only one core course belongs to the "sustainability courses" category, and it is offered at the undergraduate level. Most sustainability courses are elective and available at the MA level, which is to be expected as there are a total of three core master's courses. All six courses focus on urbanism, a sub-field of architecture.

Ten undergraduate courses (of 76), 14 graduate master's courses (of 92), and 7 (of 33) graduate PhD courses have been selected as "courses that include sustainability," using criteria defined by STARS. Of these, the core group comprises six undergraduate, one master's, and three PhD courses. All undergraduate courses are offered in the two sub-fields of Urbanism and Architectural Technology. The sole core course at the master's level is Sociology and Space. As at the undergraduate level, elective courses are also to be found in the sub-fields of Urbanism and Architectural Technology. Doctoral studies offer courses with general names, indicating that the highest level of studies covers the most advanced concepts in various areas, which inevitably includes principles of "sustainability."

While the largest number of courses were analyzed from the Faculty of Architecture, the highest proportion of sustainability courses was found in the Faculty of Security Studies. Both study areas reflect a stronger interdisciplinary orientation in comparison with the Andragogy study

program of the Faculty of Philosophy, where, considering the total number of courses, there is a relatively high proportion of "courses that include sustainability," mostly thanks to its relation to issues of poverty, social wellbeing, and environmental protection.

4.3. Analysis of the compatibility between the course learning outcomes and learning objectives for SDGs

As previously explained, this analysis comprises the evaluation of the course learning outcomes formulated by the curricula developers in the three analyzed faculties/departments using the content of the learning objectives for integrating ESD into all levels of teaching - towards implementation of SDGs, suggested by UNESCO (2017).

Following the framework of the key sustainability competences defined by UNESCO as attributes which include "cognitive, affective, volitional and motivational elements" (UNESCO, 2017, p.10), the learning objectives are described in the following domains:

- the cognitive, comprising the "knowledge and thinking skills necessary to better understand the SDGs",
- the socio-emotional, including the "social skills that enable learners to collaborate, negotiate and communicate to promote the SDGs as well as self-reflection skills, values, attitudes and motivations that enable learners to develop themselves." (UNESCO, 2017, p.11).
- the behavioral – referring to action competencies (UNESCO, 2017).

The content of the learning outcomes of all the analyzed courses is therefore compared with the issues incorporated in the formulations of the learning objectives for the selected SDGs (4, 11, or 16) at all three domains.

4.3.1 The Andragogy study program, Department for Pedagogy and Andragogy, Faculty of Philosophy

Because the main focus of studies at this Department is adult education research and practice, SDG4 has been chosen as the closest to this area of expertise. Out of the seven targets of this goal, as noted, those closely related to adult education are in particular the following: 4.3 (to ensure access to technical, vocational and tertiary education); 4.4 (to provide more people with the skills they need to find decent jobs); 4.5 (to eliminate gender disparities in education); 4.6 (to ensure that all youth and a substantial proportion of adults achieve literacy and numeracy); and 4.7 (education for sustainable development, human rights, gender equality, peace, and global citizenship) (UIL,2016). Under the framework of UNESCO competences and learning objectives, target 4.7 is seen as the one that most directly reflects ESD, as the approach which has central place in their guidelines, since it "enables all individuals to contribute to achieving the SDGs by equipping them with the knowledge and competencies they need, not only to understand what the SDGs are about, but to engage as informed citizens in bringing about the necessary transformation" (UNESCO, 2017, p.8).

A. Sustainability courses (SC)

Table 2: Sustainability courses at the Faculty of Philosophy, Study group Andragogy

Learning objectives for SDG 4 "Equitable, quality education and LLL for All" Courses at the Faculty of Philosophy/ Study group Andragogy			
Title	Cognitive LO (5)	Socio-emotional LO (5)	Behavioral LO (5)
Undergraduate			
Environmental Adult Education	1,2,3,4,5	1,2,3,4,5	1,2,3,/5
Master			
PhD			
Ecological Andragogy	1,2,3,4,5	1,2,3,4,5	1,2,3/5

Looking at the table above, it can be seen that the outcomes and the content of the syllabi of the two courses selected as "sustainable," cover almost all the learning objectives for SDG4. The only exception is behavioral objective 4, related to the empowerment of young people. That is not surprising, since andragogy studies are naturally focused on the target group of adults. Approaching issues of the interrelation between the environment and other sustainability pillars, citizens' rights and capacities, as well as the ecology of learning – in terms of interaction between adults and different learning environments – those courses relate well to all the learning objectives, interwoven by the ideas of human rights to education, equity, development and contribution to peace and sustainability.

B. Courses that include sustainability (CIS)

Table 3: Courses that include sustainability, Faculty of Philosophy/ Study group Andragogy

Learning objectives for SDG 4 "Equitable, quality education and LLL for All" Courses at the Faculty of Philosophy/ Study group Andragogy			
Title	Cognitive LO (5)	Socio-emotional LO (5)	Behavioral LO (5)
Undergraduate			
General Andragogy	1,2,3//	1,/3,4/	1,2///
Policy and system of adult education	1,2,3//	1/3,4/	/2,3//
Economic aspects of adult education	1/3//	///4/	/2,3//
Adult education, activism of citizen and human rights	1,2,3//	1,2,3//	/2,3//
Intercultural adult education	/2,3,4/	1,2,3//	/2,3//
Social Andragogy	/2,3//	1,2,3//	/2,3,4/
Education of elders	1,2,3//	1,2,3,//	1,2,3//
Functional literacy and key competences	1,2,3//	1,2,3//	1,2,3//
Strategies of learning and methods of	1,2,3/5	1,2,3,4/	1,2,3/5

teaching adults			
Comparative andragogy	1,2,3/5	1/3//	1,2,3//
Andragogy of work	1,2,3//	1,2,3,4/	1///5
Career guidance and development	1,2,3//	1,2,3,4/	1/3,4,5
Education and communication skills of adults	1,2///	1,2,3//	1///5
Psychology of lifelong development	1/3,4/	1/3//	/2,3/5
Master			
Transformative learning	1,2/4/	1,2,3,4/	1/3/5
Education and skills needs analysis	1/3//	//3,4/	1/3//
Adult education in social care	1,2,3//	1/3//	1,2,3//
PhD			
Vocational adult education and training	1////	/2,3,4/	1/3//
Globalization and adult education	1,2,3/5	1,2,3//	1,2,3//
Lifelong learning – concepts and conceptions	1,2,3//	1,2,3//	1/3//
Adult education and social policy	1,2,3/5	1,2///	1,2,3//
Research and development of education policies	1,2,3//	1////	/2,3//
Economy of knowledge and adult education	1,2,3/5	1/3,4/	//3//

Core course / Elective course

Generally, there is relatively strong linkage between the course outcomes of this study program and the learning objectives prepared by UNESCO, in particular at the cognitive domain. Links are found not only within the formulations of the learning objectives, but, naturally, within the definitions of the key competences for sustainability (UNESCO, 2017), and the course outcomes here, in particular when the concept of LLL, the human rights based approach, and the humanistic orientation to learning and development are considered. Much weaker connections are found with those LOs that refer more directly to sustainability and putting education, skills, competences or the actions of learners in that particular function. Except for the courses categorized as "sustainable," there are no other examples of courses where sustainability is even mentioned or referred to in the formulations of course learning outcomes. This gap clearly points to connections which should be made stronger in the further development of curricula, if there is willingness to contribute to sustainability. According to the strategic orientation of the Faculty, its curricula fosters development of "creative, critical thinking and autonomous reasoning within the teaching process at all the study levels" (Report on the results of self-evaluation, Faculty of Philosophy, 2011, p.18[vi]). In accordance with that, studies of andragogy are oriented towards

development of "understanding, critical analysis and assessment of andragogic phenomena, knowledge and ideas," respecting "ethical and professional norms in practice and an adequate attitude towards the development of one's own profession[vii] (Faculty of Philosophy, Competences of the Curricula of Study Program Andragogy). Those intentions are obviously compatible with some of the key elements of the UNESCO Framework of competences for sustainability, as well as with the aims of the ESD concept. However, when it comes to its interrelation with sustainable development and SDGs, as shown in the above analysis, it appears to be still in its early phases and to require significant improvement.

Among the first steps on that path, the general climate within the Faculty should be changed to better enable curricula development that meets the principles of sustainability and the targets of SDGs. That would require incorporating such an orientation into the strategic documents of the Faculty, which doesn't exist at the moment. While some departments within the Faculty, in addition to the Department of Pedagogy and Andragogy and the Department of Sociology, include courses at the undergraduate level (Environmental Sociology) as well as during master's studies (Sustainable local development) which relate explicitly to the concept of SD and ESD, there is no general orientation of the faculty departments towards the incorporation of these components into the study programs they develop.

4.3.2 Faculty of Security Studies, University of Belgrade

Although the Faculty of Security Studies boasts a long, 44-year history, it is only in the last 15 years that it has started incorporating topics from the fields of ecology, environmental protection and sustainable development into its curricula. Since 2000, the Faculty has made extensive modifications to its previous curriculum, bringing the changes to these documents to a total of five. While the Faculty of Security Studies does not explicitly and clearly declare for SDGs in its strategic documents or in its approach to curriculum planning, the concept of sustainable development has been integrated into several courses, from its undergraduate through its doctoral study programs (Foundations of Ecology, Theory and Organization of Education, Protection Monitoring, Environmental Protection, Human Security, Ecological Security, and so on), so that it is possible to identify, albeit more on the basis of the course content/teaching units than the learning objectives and outcomes, a number of elements from the following sustainable development goals: SDG1, SDG3, SDG4, SDG6, SDG11, SDG13 and SDG16. For the purposes of this paper, authors have chosen to espouse SDG16 as it seems to correspond most closely to the core activity of the Faculty of Security Studies and the qualifications of the students.

A. Sustainability courses (SC)

Table 4: Sustainability courses at the Faculty of Security studies/ SS, HSRM, CP, EP, DS

Learning objectives for SDG 16 "Peace, Justice and Strong Institutions"			
Courses at the Faculty of Security studies/ SS, HSRM, CP, EP, DS			
Title	Cognitive LO (5)	Socio-emotional LO 5)	Behavioral LO (5)
Undergraduate			

Human Security	1,2,3,4,5	1,2,3,4,5	1,2,3,4,/
Ecological Security	1,2,/,4,5	1,2,3,4,/	1,/,3,4,5
Environmental Protection	1,2,3,4,5	1,2,3,4,/	1,/,3,4,5
Master			
Globalization and Environmental Protection	1,2,3,4,5	1,2,3,4,/	1,2,3,4,5
PhD			
Environmental Risk and Disaster Management	1,2,3,4,5	1,2,3,4,/	1,2,3,/,5
Development, Conflicts and Environment	1,2,3,4,5	1,2,3,4/	1,2,3,4,5

Core course / Elective course

The learning objectives and curriculum contents of "sustainability" courses cover almost all the learning objectives for SDG 16: "Peace, Justice and Strong Institutions." There is a noticeable absence of the goal's socio-emotional dimension that concerns the following: "The learner is able to reflect on their own personal belonging to diverse groups (gender, social, economic, political, ethnical, national, ability, sexual orientation etc.), their access to justice and their shared sense of humanity" (UNESCO, 2017, p.47). This is also evident in courses that include sustainability.

B. Courses that include sustainability (CIS)

Table 5: Courses that include sustainability, Faculty of Security studies/ SS, HSRM, CP, EP, DS

Learning objectives for SDG 16 "Peace, Justice and Strong Institutions"			
Courses at the Faculty of Security studies/ SS, HSRM, CP, EP, DS			
Title	Cognitive LO (5)	Socio-emotional LO(5)	Behavioral LO (5)
Undergraduate			
Legal Basis of Security	1,2,3,4,5	1,2,3,4,/	1,2,/,/,5
Criminal Law	1,2,/,4,/	/,/,3,4,/	1,2,3,/,/,
Criminology	1,/,/,4,5	1,2,3,4,/	1,2,3,/,/
International Public Law	1,2,3,4,5	1,2,3,4,/	1,2,3,/,/
Right of Defense	1,2,3,4,5	1,2,/,4,/	1,2,/,/,5
Peace Missions and Conflict Resolution	1,2,3,4,5	1,2,3,4,5	1,2,3,4,5
Criminal Procedural Law	1,2,3,4,5	1,2,/,4,/	/,2,3,/,/
Management in Protective Systems	/,2,/,4,/	1,2,3,/,/	/,2,3,4,/
Victimology and Penology	1,2,3,4,5	1,2,3,4,/	1,2,3,4,/
Etics of War	1,2,3,4,5	1,2,3,4,/	1,2,3,/,5
Basic of Security	1,2,3,4,5	1,2,3,4,5	1,2,3,4,5
Theory of Conflict	1,2,3,4,5	1,2,3,4, /	1, /,3,4,5
Systems of Security	/,2,3,/,5	1,2,/4,/	1,2,/,4,/
National Security System of Serbia	/,2,/,4,/	1,/,/,4,/	/,2,/4,5
Defense Systems	1,2,3,4,5	1,2,3,4,5	1,2,3,4,5

Sociology of Politics	1,2,3,4,5	1,2,3,4,/	1,2,/,/,5
Master			
Management of National and Human Security	1,2,3,4,5	/,2,3,/,/	/,2,/,4,5
PhD			
Contemporary Security Studies with the Security Systems Theory	1,2,3,4,5	1,2,3,4,/	1,2,/,/,5
Security Policy and Security Strategy Studies	1,2,3,4,5	1,2,/,4,/	/,2,/,4,5

Core course / Elective course

In light of the findings that authors came across during the analysis, the general impression is that there is an important linkage between the learning outcomes of courses at the Faculty of Security Studies and the learning objectives prepared by UNESCO. Given that in the intervening period several modifications to the curriculum were made, that new strategic documents were adopted (for example, the Faculty Statute, the Strategy for Ensuring the Quality of Academic and Professional Higher Education, hereinafter: the Strategy of Ensuring Quality) and that a new Master's Degree Study Program was accredited in 2017, a number of positive changes can be seen to have taken place (which implies greater inclusion of the concept of sustainable development), albeit still not to a sufficient extent.

Bearing in mind the lecturers' individual activities and work on professional improvement, their participation in organizing and carrying out programs, projects and conferences focused on the topic of sustainable development or the implementation of sustainable development goals, authors firmly believe that, when the Faculty next applies for accreditation renewal in 2020, it will be more dedicated and receptive to the concept of sustainable development, education for sustainable development and the promotion of sustainable development goals, specifically SDG3, SDG4, SDG11 and SDG13. For example, there is a joint activity between the Faculty of Security Studies and the Faculty of Architecture – the organization of The First Academic Conference on Urban Security and Urban Development in 2017, which was established precisely in reference to SDG11 in order to "create cities and human populations inclusive, secure and sustainable." (Stanarević and Djukić, 2017,p.7). The Strategy for Ensuring Quality highlights that a high level of quality should be ensured in the most important spheres of activity, with a special emphasis on the quality of the study programs as well as on the teaching, educational, scholarly and research activities of the Faculty, so it is only reasonable to expect a consistently higher degree of dedication to sustainable development, a fact that will be given special consideration in the process of formulating learning objectives and results for the next accreditation.

4.3.3 The Faculty of Architecture, University of Belgrade

Architecture as a discipline, in the broadest sense, studies the built environment, and as such directly affects the quality of life of people and their environment. In this context, SDG 11, "Make cities and human settlements inclusive, safe, resilient and sustainable," corresponds the most closely to this area of expertise. Of the ten targets of this goal, seven of them are closely related to architectural education (UN HABITAT, 2016). All of these targets are also recognized under the suggested topics for SDG 11, "Sustainable Cities and Communities," in the UNESCO framework competences and learning objectives (UNESCO, 2017, p.33). This is aligned with the recommended specific cognitive, socio-emotional and behavioral learning outcomes that enable individuals to deal with the challenges of SDG 11.

A. Sustainability courses (SC)

Table 6: Sustainability courses, Faculty of Architecture/ Architecture module

Learning objectives for SDG 11 "Sustainable Cities and Communities"			
Courses at the Faculty of Architecture/ Architecture module			
Title	Cognitive LO (5)	Socio-emotional LO (5)	Behavioural LO (5)
Undergraduate			
Sustainable Urban Communities - Design Project	1, 2, 3, 4, /	1, 2, 3, 4, 5	/, 2, 3, 4, 5
Towards a Sustainable City	1, 2, 3, 4, /	1, /, 3, 4, 5	/, 2, 3, 4, 5
Master			
Theoretical Basics of Sustainable Development	1, 2, 3, 4, 5	1, 2, 3, 4, 5	/, 2, 3, 4, 5
Integrated Urban Development Strategy	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5
Architects and Civic Initiatives for Sustainable Development	1, 2, 3, 4, 5	1, 2, 3, 4, 5	/, 2, 3, 4, 5
PhD			
Research Processes of Urban Planning for Sustainable Development	1, 2, 3, 4, 5	1, 2, 3, 4, 5	/, 2, 3, 4, 5

Core course / Elective course

The table above shows that the outcomes and the content of the syllabi of the six courses selected as "sustainable" cover almost all the learning objectives for SDG 11. Tellingly, at the BA level there is an absence of CLO 5 related to understanding the role of local decision-makers and participatory governance in planning and policy development. One possible reason for this is the remoteness of basic architect training from issues of policymaking. A similar explanation can be given for the absence of SELO 2, related to connection with local community groups in developing a sustainable future, as well as for BLO 1 related to the ability to plan, implement and evaluate community-based sustainability projects. At the same time, all this points to a lack

of understanding of the importance of cooperation between architects and the local community in developing a living environment. Most courses at the MA and PhD levels meet the recommended LOs, with the sole exception, once again, of BLO 1, which can be explained (in addition to the considerations cited above) by the absence of links between the education process and specific issues faced by the local community.

B. Courses that include sustainability (CIS)

Table 7: Courses that include sustainability, Faculty of Architecture/ Architecture module

Learning objectives for SDG 11 "Sustainable Cities and Communities"			
Courses at the Faculty of Architecture/ Architecture module			
Title	Cognitive LO (5)	Socio-emotional LO (5)	Behavioural LO (5)
Undergraduate			
The City: Forms and Processes	1, 2, 3, /, /	/, /, 3, 4, 5	/, /, /, /, /
Urban Infrastructure	1, 2, 3, 4, /	/, /, /, 4, 5	/, /, /, 4, 5
Urban Analysis and Planning	1, /, 3, 4, 5	1, 2, 3, 4, 5	/, 2, 3, /, /
Urban Renewal	1, /, 3, 4, /	/, /, 3, 4, 5	/, /, /, 4, /
Specific Themes of Urban Space Design: Recreation	1, 2, 3, 4, /	/, /, 3, 4, 5	/, 2, 3, 4, 5
Traffic and Social Infrastructure	1, 2, /, 4, /	1, /, 3, 4, 5	/, /, /, 4, 5
Environmental Aspects of Design and Construction	1, 2, 3, 4, /	/, /, 3, 4, 5	/, /, /, 4, 5
Green Architecture	1, 2, 3, 4, /	/, /, 3, 4, 5	/, /, /, 4, 5
Urban Open Spaces	1, /, 2, 4, /	/, /, 3, 4, 5	/, /, /, 4, /
Urban Mobility	1, 2, /, 4, 5	/, /, /, 4, 5	1, /, /, 4, /
Master			
Sociology and Space	/, /, /, /, 5	1, 2, 3, 4, 5	/, 2, 3, /, 5
Informal Urban Growth	1, 2, 3, 4, 5	/, 2, 3, 4, 5	/, /, /, 4, /
Urban Oasis	1, 2, 3, 4, /	/, /, 3, 4, 5	/, /, /, /, 5
Evaluation of the environmental characteristics of buildings	1, 2, /, 4, /	/, /, /, 4, 5	/, /, /, /, 5
Building's physics: energy in buildings	1, 2, /, /, /	/, /, /, 4, 5	/, /, /, /, 5
Green building – learning from the past	1, 2, 3, 4, /	/, /, 3, 4, 5	/, /, /, /, 5
Smart recycling	1, /, 3, 4, /	/, /, 3, 4, 5	/, /, /, /, 5
LEED and Environmental Aspects of Architectural Practice	1, /, /, 4, /	/, /, /, /, 5	/, /, /, /, 5
Urban Recreation	1, 2, 3, 4, /	/, /, 3, 4, 5	/, 2, 3, 4, 5
Climate-Compliant Design and Construction	1, 2, 3, /, /	/, /, 3, 4, 5	/, /, /, 4, 5
Contemporary Facades and Roofs	1, 2, /, 4, /	/, /, /, 4, 5	/, /, /, /, 5
Elements of Spatial	1, 2, 3, 4, 5	1, /, /, 4, 5	1, 2, /, /, /

Planning			
Trends in Urban Infrastructure	1, 2, /, 4, /	/, /, /, 4, /	/, /, /, 4, /
Building Renovation in the Context of Sustainable Architecture	1, 2, 3, 4, 5	/, /, 3, /, 5	/, /, /, /, 5
PhD			
Contemporary Context of Architecture, Urban Planning and Construction	1, /, 3, 4, /	/, /, 3, 4, 5	/, /, /, 4, /
Discourse Research: Sociology	/, /, /, /, 5	1, 2, 3, 4, 5	/, 2, 3, /, 5
Discourse Research: Economics	/, /, 3, 4, 5	1, /, /, 4, 5	/, /, /, /, /
Architecture, Technology, and the Environment	1, 2, /, 4, /	/, /, 3, 4, 5	/, /, /, 4, 5
Green and Energy Efficient Architecture	1, 2, 3, 4, 5	/, /, 3, /, 5	/, /, /, /, 5
Urban Patterns	1, /, 3, 4, /	/, /, 3, 4, 5	/, /, /, 4, /
Modern Treatment of Materials in Architecture	1, 2, /, 4, /	/, /, /, 4, 5	/, /, /, /, 5

Core course / Elective course

Relationships between the learning outcomes of courses offered as part of the Architecture module at the Faculty of Architecture are fairly well connected with UNESCO's Learning Objectives. The closest links exist in the cognitive domain, which is oriented towards the knowledge and opinions necessary to understand SDGs, and the likely reason for this is the inter-disciplinary nature of architecture, which integrates knowledge in engineering, natural sciences, humanities, social sciences, and the arts. A broad base of scientific and artistic fields, and the attendant orientation towards the various adjacent topics, allows the acquisition of key sustainability competences as defined by UNESCO (2017). However, a deeper analysis of the connection between learning objectives and learning outcomes of courses offered in the Architecture module at the Faculty of Architecture and the concept of sustainability indicates that as few as six of those courses are categorized as "sustainable" at all three levels of studies. The category of courses that include sustainability comprises relatively few courses, mainly elective ones. A review of these clearly shows the absence of a systemic approach to sustainability in educating students. There is a lack of understanding of the significance of architectural designing in accordance with the needs, abilities, and potentials of the local context, including its inherited cultural, natural, and human resources. There is also an obvious need to focus more on project implementation knowledge and skills, pointing to a requirement to shift in emphasis from creating architectural projects to understanding and creating processes.

The education of students of Architecture in Serbia is designed to allow them to gain competencies recognized at the European level, and follows the EU Directives on the recognition of professional qualifications (2005; 2006). Since 2015, BA and MA study programs in

Architecture have been accredited by the Royal Institute of British Architects (RIBA), a professional body for architects in the UK. RIBA procedures for validation (2011) are based on the 11 outcomes taken from the UIA Charter. The defined outcomes are fully in line with the recommended UNESCO competencies, as well as with the objectives of the ESD concept. However, given the conducted analysis, it is evident that the prescribed outcomes are not fully integrated into the learning objectives and the process of teaching courses for the general education of architects. It is expected that the obligation of international study program monitoring every three years is likely to indicate the problems of conformity to learning objectives with learning outcomes defined by RIBA accreditation, and condition their resolution.

A key objective of the Quality Assurance and Enhancement Strategy for the Faculty of Architecture is the "permanent education of staff and promotion of the Faculty's culture" (2008, p.3). Nevertheless, the systemic training of teachers in teaching competencies is yet to be established at the Faculty. The conducted analysis shows that the knowledge and understanding of the concept of sustainability is fundamentally overcome by a certain number of teachers through participation in scientific projects; however, the development of teacher competencies and adequate knowledge and skills for their application in the educational process is lacking.

The same Strategy also promotes "building partnerships with institutions and organisations interested in the findings of research into architecture and urbanism" (2008, p.4). This goal is geared towards the achievement of learning objectives that relate to understanding the local context as a resource for development, the roles of local actors in policymaking, and the importance of participatory processes in making decisions about the development of communities. In this regard, some courses at the Faculty of Architecture are created through cooperation with local self-governments, and are directed towards the development of architectural projects aimed at improving local communities (Lalović and Radosavljević, 2013).

5. Conclusion

The conducted curriculum analysis within the study programs at the three faculties of the University of Belgrade highlights several key aspects of importance for improving the educational process in order to include the concept of sustainability.

a) Interdisciplinarity. It is necessary to overcome the frameworks of the formal division of scientific and educational activities of faculties towards scientific fields. It has been shown that the foundation of the scientific and educational process within several scientific fields such as in the case of the Faculty of Architecture, increases the sensitivity to interdisciplinary connection of educational content and accelerates the process of accepting new concepts. With the transition to the Bologna education system, horizontal student mobility is envisaged between faculties of the same university. In the context of including the concept of sustainability in curricula of study programs, this opportunity represents the potential for the development of interdisciplinary courses within the university as well as interdisciplinary study programs. This type of effort is fully in line with the already achieved interdisciplinary

cooperation on scientific projects in which topics from the sustainable development corpus are addressed. The pursuit of the interdisciplinary nature of study programs should certainly be accompanied by appropriate legislative support and the transformation of the institutional organization of the bodies responsible for checking the quality of teaching and teachers at both the national and university levels.

b) Teacher competencies. At the University of Belgrade level, various trainings for improving teacher competencies have been organized for several years; however, their attendance is not obligatory for teachers. Additionally, the need for continuous teacher training is one of the criteria for selecting teachers, but it also does not fall under the mandatory requirement. Teacher training is mostly focused on acquiring knowledge from scientific fields, especially in the case of disciplines oriented towards cooperation with the economy, while awareness of the need to acquire and develop teacher skills is underdeveloped. The exception is the Faculty of Philosophy, where there is a center for improvement of teachers' competences – though it doesn't explicitly include those related to sustainability. Cooperation with students or among colleagues from different faculties, such as for example in the organization of the *Urban Security and Urban Development* conference, could extend opportunities for mutual learning on sustainability. Encouraging international cooperation and exchange with universities and faculties that have a developed tradition of nurturing sustainability within their institutions and study programs would also significantly contribute to improving teacher competencies.

c) Linking theory and practice. Understanding the concept of sustainability is greatly contributed to by learning of real-life examples, in particular through communication with the local community and the perception of real problems. The experience of the Faculty of Architecture and the achieved concrete results show that the courses implemented in this way significantly contribute to overcoming the LO and to implementing the ESD. Learning modes rooted in local problems and cooperation with local institutions, develop new knowledge and skills of relevance to the concept of sustainability. This is in line with general requirements and ESD for the development of methods that foster competencies through active learning (UNESCO, 2017, p.54). It follows that the university and its faculties should foster collaboration with relevant institutions, organizations and communities in order to integrate current professional requirements and social expectations into the teaching process.

d) Institutional policies. At the University of Belgrade, strategic documents are missing that would encourage and oblige the faculties to apply the concept of sustainability in curricula. At some faculties there are strategic documents aimed at improving the quality of teaching; however, the concept of sustainability has not been promoted in them. According to UNESCO recommendations, the concept of sustainability needs to be implemented through all aspects of the educational institutions, applying a whole-institution approach. In this way, the Belgrade University and all individual faculties would be a role model for learners and learning places and experience for sustainable development (UNESCO, 2017). The adoption

of strategic documents for the sustainable development of universities and faculties should be formally accompanied by appropriate action plans defining concrete measures and tasks.

Since the analyzed curricula from all the faculties was developed within accreditation in 2013 and 2014, before the SDGs were formally adopted, the next accreditation cycle (2020-2021) might be a chance to better integrate ESD and SD issues and, hopefully, to support teachers in that effort in a more systematic way, by the improvements in policy and professional development practice. Also, the conducted research should be extended to the study programs of all faculties within the University of Belgrade. This would contribute to an integral consideration of the distribution of all SDGs within the scientific fields and the narrower scientific disciplines represented at the university and consequently to the development of missing courses as well as study programs.

The wider implications of this research may be found in the initiation of a study of this kind in other universities belonging to a similar category in terms of its level of sustainability. It might also be useful to compare these findings with findings of similar research made in institutions with an advanced sustainability level. In addition to that, it would be particularly useful to extend the analysis of UNESCO learning objectives in terms of their formulations (for example, does it reflect interlinkages between goals and targets and help apply an integrative approach in teaching), as well as its practical value for the teachers, experts' teams and bodies designing courses with sustainability in mind.

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