CPUD '22

VII. INTERNATIONAL CONFERENCE ON CITY PLANNING AND URBAN DESIGN PROCEEDINGS





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INTRODUCING THE STUDENTS' PARTICIPATION, UPGRADING THE CURRICULUM: THE CASE OF THE COURSE SUSTAINABLE CITY, UNIVERSITY OF BELGRADE - FACULTY OF ARCHITECTURE

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ABSTRACT

This paper describes the process applied in the course named Sustainable City (University of Belgrade - Faculty of Architecture, 1st year of master studies) which directly influences its design and further upgrading. By introducing the students' participation, the curriculum supports their research work which is divided into two phases: reflexive and creative.

The first, reflexive phase is focused on the problem analysis targeting the sustainable urban transformation processes. Through the examples selected by students a number of specific urban problems related to different aspects of sustainability are identified and described, as a practical contribution. The second, creative phase introduces the students' proposals and recommendations for improving the urban environment, tested through a development of a small pilot project (representing the final outcome - exam). Through these two phases students verify their ability for preparing proposals for various research projects and grants, aiming at the desirable transformations of cities via affordable solutions.

The design of the course curriculum also enables students to understand the genesis and an impact of sustainable processes on urban development, creating the basis for the knowledge application in both urban planning and design. Simultaneously, this participative approach influences the elaboration of an iterative process in which students provide inputs, i.e. the desirable research topics for curriculum improvement, later included into an updated and upgraded version of the course, implemented in the following school year. The results suggest that through an inclusive learning process, a culture of proactively envisioning a sustainable alternative future is emerging. Most importantly, student participants show their commitment as the agents of potential change to create alternative environmental values and sustainable behavior.

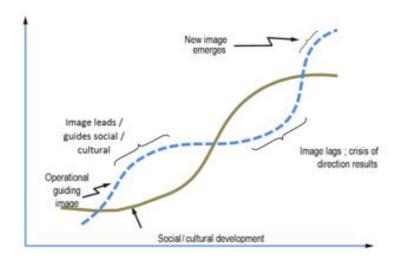
INTRODUCTION

Recently, Serbia and other SE European countries have experienced the unpleasant periods of socio-economical underdevelopment. In other words, the creation of wealth did not enable a shift from the basic economic needs to other intangible priorities. The environment of urban regions in Serbia already exceeds its capacity to absorb waste and this trend needs to be reversed. Hence, the main question is whether it would be possible to change the current perception of dominant values, especially through educational process. The World Values Survey, developed by Inglehart and Baker (2000), shows that changes in values are not random and are caused by the continuous socialization of urban neighborhoods, in the context of an economic and environmental security (Carmona, 2018). During the recent decades, so-called post-materialism has emphasized individual autonomy, self-expression, and environmental stability at the expense of city development and economic goals. Consequently, the economic activities gradually rise the assessment of survival and environmental security (Dalton & Welzel, 2014; Inglehart & Baker, 2000-2014; Welzel & Inglehart, 2010).

Tibbs (2011) recognizes that the current form of urbanization is unsustainable and must change significantly, while changes of social/cultural values could contribute to achieving the overall sustainability. To predict, create or drive any change, the younger generations of students need to develop their deeper understanding, including the new issues that specifically characterize recent city transformations. Sterling (2001) briefly states that sustainable education integrates values and skills into a "reflexive and participatory process". It is also a transformative learning reaction. Novy, Smith, and Katrnak (2017) underline that post-materialist values are inversely correlated with age since younger respondents are less materialistic than older respondents. Therefore, university education now promotes environmental values and supports their hypothesis that existential security is important in supporting post-materialist goals (McNamara, 2010). In line with this, the university lecturers may assume that the participation approach to city environmental themes and values could make a positive contribution to an alternative sustainable urban future in Serbia.

Following the sustainable and environmentally conscious educational agenda conducted at the University of Belgrade - Faculty of Architecture, the course Sustainable City is meant to adapt to a sustainable future. Introducing the students' participation in the curriculum design can be explained by a concept devised by Markley and Harman in 1982. Their study was the first known formal study conducted by Thomas S. Kuhn's idea of a "paradigm shift" for a society as a whole, envisioning a change of a model of economic growth into a more sustainable one. Related to the society, it demonstrates a so-called "magnetic attraction" in the future (Polak, 1973), influencing the social decisions which could make it possible (see Figure 1).

Phase



Time

Figure 1. Hypothetic time/phase relationship between ideas and social/cultural development (Markley and Harman, 1982)

Figure 1 shows correlation between new ideas and delayed social/cultural development. Liu and Lin (2016) also state that many students want to see a policy-based future that incorporates greater environmental awareness and technological progress into urban development. In addition, their research shows that students think that city users desire better environmental quality (e.g. clean air and water), the presence of nature, and harmonious techniques for promoting comfort and the quality of life (e.g. green energy, underground transportation systems). It includes a positive attitude towards environmental factors such as trees on buildings, the awareness of global warming and alternative energy sources. Liu (2019) concludes that the integration of future thinking into science and environmental education is relatively unstudied and that further research in this direction is needed to provide the basis for university curricula and instructional development. Consequently, educational institutions, including universities, respond to leadership requirements by launching different environmental research programs. McNamara (2010) conducted a detailed research project at 86 universities in the United States that are implementing sustainability initiatives. This research ended with a list of recommended strategies and suggested methods for their implementation. Two of them are particularly relevant to this survey: building strong student involvement and engaging more people. However, scholars and students have conflicting perceptions about incorporating Education for Sustainable Development (ESD) into their programs (Jones, Trier & Richards, 2008). The results revealed general support for embedding ESD in curriculums, but also showed a significant level of uncertainty regarding the ways of implementation.

THE CURRICULUM DESIGN OF THE COURSE SUSTAINABLE CITY

The course Sustainable city (University of Belgrade - Faculty of Architecture, 1st year of master studies) represents research polygon for curriculum design and further upgrading. This curriculum tends to apply predictive learning and future design approaches to educational interventions in order to study the potential impact of changes in environmental values for the students. Through the examples selected by students, a number of specific urban problems related to different aspects of sustainability are identified and described.

Chen and Hoffman (2017) successfully applied experimental and innovative game-based curriculum design to enhance college students' ability to study the urban surrounding. Kelly (2006, 2010) provided insights in reflexive thinking and journaling as an important educational method.

Sustainable City is an elective general education course and its focus is to provide an insight into the students'desired futures of cities, as well as to discover options and opportunities via linking foresight techniques with the long-term socio-cultural potentials of urban communities. Accordingly, this path turned into a designed academic intervention to assess the results of environmentally shaped and future-oriented thinking, overcoming a gap between different environmental attitudes and ecological behaviors (Stupar, Mihajlov & Simic, 2017). By introducing the students' participation, the curriculum directly supports their research divided into two main phases: reflexive and creative. Considering this, those items are introduced during 14 weeks of the course:

- 1. Thematic discussions on rising issues of urban ecology, urban population, resources, energy, air, water and waste systems, transportation, vegetation, local surrounding, etc. (time horizon 2030). This education section aimes to increase students` environmental consciousness.
- 2. <u>Reflexive thinking.</u> Students write down reflexive impressions, addressing numerous questions related to: a) problems which might trigger their reaction/intellectual response; b) images/discussions which challenged their viewpoints/perspectives; c) methods for improving the sustainability of cities; d) their willingness to study the local environment in situ.
- 3. Case study. Students are requested to focus on sustainable urban transformation processes. Through the examples selected by them, a number of specific urban problems related to different aspects of sustainability are identified and described, as a practical contribution (Figure 3).
- 4. <u>Creative phase (exam)</u> introduces the students' proposals and recommendations for improving the urban environment, tested through a development of a small pilot project the final outcome exam (public innovations, tactical urbanism, urban revitalization, adaptation to climate change, business-driven sustainable solutions, etc.). Through this phase students verify their ability for preparing proposals for various research grants, aiming at the desirable urban transformations via affordable solutions with a precise ecological purpose (e.g. tree planting, useful resource recycling, waste discount and reuse, urban green infrastructure preservation, defensive mangrove forest, experiencing vegetarianism, business start up programs etc.) (Figure 4).

The process of education on the course may be explained by Kolb's learning cycle (Kolb, 1984) (Figure 2).

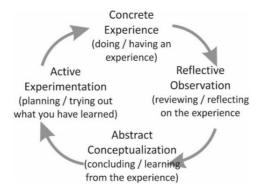
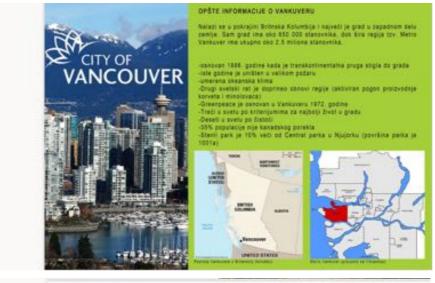


Figure 2. Kolb's learning cycle in the context of reflexive thinking (Kolb, 1984) adapted in the context of Sustainable city course



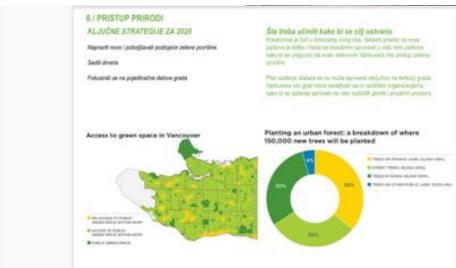




Figure 3. City of Vancouver Case study analyzed by students Dunja Putic, Milan Miljkovic and Irena Pavlovic focusing on accessibility to urban green infrastructure (urban gardening expansion).

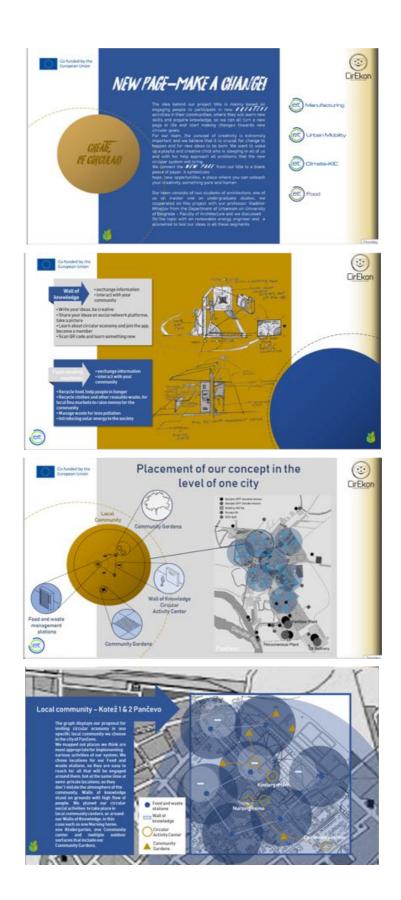


Figure 3. The proposal for improving sustainability of the urban environment in Pancevo, tested by developing a small pilot project: students Emilija Drndarski and Sara Brkic (1st award at the CirEkon and EIT Food Competition for Engaging Citizens in Circular Economy)

THE RESULTS - CHANGE OF ENVIRONMENTAL ATTITUDES, CHANGE OF CURRICULUM EXPERIENCE

The curriculum design, aimed at discovering feasible alterations of attitudes and roles via pedagogical stimulus targeting a sustainable foresight, generated four principal questions for the involved lecturers:

- 1. What are the preferred attitudes of students regarding the surrounding and sustainable futures?
- 2. Do their attitudes alternate drastically when exposed to a pedagogical stimulus related to a sustainable foresight?
- 3. What are the pictures and eventualities in their desired/anticipated environments?
- 4. Do the interventions described in pilot projects have an impact on their own environmental awareness and future actions?

The analysis of the curriculum and its results revealed that students` environmental awareness and the ability to envision the sustainable futures was increased after attending the course. Furthermore, the course layout additionally sought to probe students` attitudes in their favored/anticipated environments in a qualitative mode, exploring the increase of their awareness, as well as the responsibilities and effects they could have on the environment. This improvement of their general attitude was influenced by the introduction of reflexive thinking and workshop discussions. The participating students summarized their course experience through 4 dimensions:

- 1. **Curriculum experience** as a catalyst for expanding the research beyond the limitations of a classroom, enabling the closer insight into the real urban and natural features of a city;
- 2. **Linking motivation with reflexive thinking** in order to interconnect technological, cultural, spiritual, ecological aspects of the environment, as well as to increase environmental consciousness;
- 3. **Ability to act in a social responsible manner** which implies that in the anticipated ecological future change is possible. Upgrading the curriculum by stimulating the participation of students represents a strong and positive momentum for a radical change, supporting the hypothesis which claims that the ability to act can be enhanced through future-oriented educational interventions.
- 4. **Visions of a future urban society** students are constantly encouraged to question their empirical views and the nature of cities, as well as the dominant paradigms, looking at the connections between the outside and the inside world.

CONCLUSION

The application of a participatory approach in a course curriculum enables a multifold environmental experiences and activities, reflexive thinking and workshops directing students toward a higher environmental awareness and better understanding of sustainability. The course design also provides an effective insight into the genesis and impact of various sustainable processes on urban development, creating a solid basis for knowledge application in both urban planning and design. Simultaneously, the participative approach influences the elaboration of an iterative process in which students provide inputs, i.e. the desirable research topics for curriculum improvement, later included into an updated and upgraded version of the course, implemented in the following school year. Furthermore, the students` engagement regarding the sustainable futures also directs their possible actions toward healthier cities and society, as well as their connection to nature and its resources.

Due to that, the younger generations of future professionals could embrace a set of post-materialist values which would guide the articulation of their visions incorporated in the next year curriculum, based on a higher level of sustainability and environmental awareness.

The model of partnership learning certainly emphasizes the role and importance of students, their thoughts and ideas. Since the traditional models of education do not provide a sufficient level of interaction and real-world experiences, the flexible pedagogical styles are necessary to respond to the dynamism of contemporary cities and their problems, disruptive changes and future surprises. This approach also opens new possibilities for co-creation of sustainable solutions through small pilot projects, which could often excel our expectations and provide an innovative insight into the future.

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