A Training Needs Assessment for Teaching and Educating Sustainability

Anca DRAGHICI
Politehnica University of Timisoara, Romania
anca.draghici@upt.ro

Gabriela MIRCEA
West University of Timisoara, Romania
gabriela.mircea@e-uvt.ro

Larisa IVASCU
Politehnica University of Timisoara, Romania
larisa.ivascu@upt.ro

Diana Florina ROBESCU
Politehnica University of Timisoara, Romania
robescu.diana@gmail.com

ABSTRACT

Education for sustainable development (ESD) is a strong debate subject that push education stakeholders of all levels to consider actual challenges of sustainability. The main objective is to re-shape the young generation behavior into an active and participatory one in order to face the actual challenges of climate change, scarce resources use, consumption efficiency, lifecycle thinking, social equity and other topics related to sustainable development dimensions and objectives. In this context, the article aims to present the research for the training needs assessment (survey based on a questionnaire applied internationally in Romania, Hungary, Slovenia and Portugal) that has contributed to the TeachSUS project development and implementation. The research results have been considered as valuable information for the innovative solution of the training programme design, in the context of the TeachSUS project.

Keywords: Education, sustainable development, training needs, assessment, TeachSUS.

1. INTRODUCTION IN THE EDUCATION FOR SUSTAINABLE DEVELOPMENT

The research and organizations’ practice have proved that the concept of sustainable development has gained global importance over the last 15 years. From the education providers perspective, the main problem is HOW the education process should inform and train learners to approach and solve the sustainable development questions (reflecting our Common Future regarding environment, social and economic dimensions of our life) imbedded in political and ethical interpretations (Draghici, 2019). The content and main objectives of education for sustainable development (ESD) are very well reflected by the United Nations Decade for Sustainable Development (2004-2014, www.unesco.org). “The overall goal of the UN Decade of Education for Sustainable Development is to integrate the principles, values and practices of sustainable development into all aspects of education and learning. This educational effort will encourage changes in behavior that will create a
more sustainable future in terms of environmental integrity, economic viability and a just society for present and future generations”.

Furthermore, ESD must be accompanied by a positive perspective and view of mankind and planet future and it should be supported by a broad consensus of the population, including all categories of educators. ESD involves provoking respect for life, caring for the planet and caring for the whole life community. These aspects are closely related to the sharing of fundamental values, as well as the life ethical principles and knowledge in the field of sustainable development (respect for the planet Earth and life in all its diversity, care for the life community with understanding, compassion and love, building democratic societies that are just, participative, sustainable and peaceful). The ESD should be a focal point for the future of the entire educational system (Gadotti, 2008).

Generally accepted in scientific literature, the community of practitioners and policymakers, ESD focuses on developing and strengthening individual competencies, which facilitates the individual's positive intention, contribution, and active participation in various sustainable development processes. It is clear from this statement that all types of skills and competences, including basic skills such as reading, writing, mathematics, are included. Therefore, ESD is about educating for a sustainable lifestyle, being fundamental to sustainable development and creating a more sustainable future for all. In accordance to the above mention consideration of (Gadotti, 2008) he considered that the most important topics to be taught for ESD are those described in Figure 1. In terms of the level of education, there must be adopted different strategies for the ESD as depicted in Figure 2.

**Figure 1: Topics to be taught for ESD (Gadotti, 2008).**

**The new energetic paradigm**
- The new economic and social model based on new values, on multiple sources of energy and on the association of small producers instead of a few gigantic energy companies

**The new consumption standards**
- Change energy consumption and distribution habits (saving water, non-use of plastic cups etc.) and change our current habits of consumption in order to reduce wastefulness and irresponsible consumption

**Use of renewable sources of energy**
- To save energy and re-think our lifestyle

**Figure 2: ESD at different levels of education (Draghici, 2019).**

Most of the research studies in the literature and international organizations initiatives in the field of ESD have underlined the importance of transferring the existing needs and frameworks (as competencies maps, skill cards, curricula etc.) into practice by trying to adapt them to the local context (Johnston, 2013; Marcus et al., 2015; Soini et al., 2018; Tejedor et al., 2018; Backman et al., 2019). Furthermore, the debate in the literature has proved that there is a diversity of contexts where
ESD takes place but there has been recognized the “power of experience” (life experiences as site visits, internships and service learning in communities, project-based learning, place-based learning, field trip and experience) is of great impact and efficiency (Medrick, 2013; Perlstein et al., 2017; Draghici, 2019). The most frequently found issues in the ESD programmes are related to climate change, the use of natural resources, justice, human rights and democracy, lifecycle thinking. Usually, after the ESD programme, the knowledge acquisition should allow trainees to act in the future with respect to the sustainable principles and values (Annan-Diab and Molinari, 2017; Mirccea et al., 2019). A broad and interdisciplinary obligation is mention frequently in the frame of sustainable development teaching and learning approaches (Scott and Gough, 2003).

Considering these brief aspects presented above there have been created the basis of the TeachSUS project development (TeachSUS_2018-1-RO01-KA204-049253) which is the context of the article, too. The paper refers to two main topics (after the introduction part): (1) the presentation of the TeachSUS project and (2) the description and the research results for the training needs assessment in the field of ESD.

2. TEACHSUS PROJECT DESCRIPTION

The general objective of the TeachSUS project is to create a common new non-formal education structure for sustainable development to enable professional development of institution and organizations involved in education and adult training, from all over Europe to plan learning experiences that empower their trainees to develop and evaluate alternative visions of a sustainable future and to work creatively with major stakeholders from economic sector in order to assure the practical link between education for sustainability and real economy and the community needs. The proposed partnership has the appropriate mix of competencies and networks to design and implement a new teaching model for teaching and educating sustainability in the case of lower level institutions than universities (pre-university area) and to establish a coherent practical oriented structure for Sustainable Excellence Centers (SEC) in Romania, Hungary and Portugal (TeachSUS, 2018). The excellence centers will create a country/region customized structure to sustain collaboration between stakeholders from various fields of sustainability. Each center will provide information, guidance, coaching and counseling activities made with trainers and tutors coming from private company areas and NGO’s. Sustainability Centers will organize LivingLab (von Geibler et al., 2014; Mirccea et al., 2018) events on sustainability issues and presentations of new technologies and green businesses examples together with live training for new learners (TeachSUS, 2018).

The specific objectives and results of the TeachSUS project are (according with them the project activities are defined and schedule from 1st of December 2018 to 30th of November 2020) (TeachSUS, 2018):

- A new learning methodology for sustainability, developed through cooperation and exchange of practice between teachers/trainers and the staff responsible to support services at different educational levels, in that way that suite the most for the market needs, made available as open, digital resource;
- A new course, and related learning materials and tools for adult learners, that will bring more insights for those which train sustainability or only specific concepts thought their education series in English languages for broad dissemination (translated in Romanian, Slovenian, Hungarian and Portuguese); more than 60 trainees will be trained online during the project implementation period;
- Creation of flexible digital resource, which could add value to any type of training in the field that took place in universities or high schools (pre-university level) and which should integrate topics about sustainability;
- Capacity of project partners to address education for sustainability increased through train of trainer’s common session, with 20 beneficiaries;

400
A network of tree SEC created in Romania, Hungary and Portugal, where coaching methods and tools for adult learners will be brought into a suitable place for the non-formal education by experts coming from private companies to coach, tutor other trainers from other institutions/organization;

- More than 15000 persons informed using broad dissemination of project vision/objectives and future results assured at local, national and European level through different media (web-based, conferences, interviews, social medias, events etc.) and more than 20 company representatives involved in the first SEC workshop.

The considered target groups to which TeachSUS project activities are addressed are: (1) Adults - teachers, trainers, mentors - from institutions/organizations involved in education, in adult / professional / youth training – they need a larger perspective about education, to understand the simplicity and complexity of sustainability; (2) Students from universities who aims to become teachers, human resources (HR) specialists/managers; they need new methodology /tools to help them become in future efficient professionals in education and HR/ management professions; (3) Employees from non-governmental organizations (NGOs).

In the context of TeachSUS project there have been adopted a coherent working methodology (associated with the project work packages) in order to achieve the proposed objectives. Figure 3 shows the main steps adopted to develop the TeachSUS training programme (training materials and the examination pool of questions).

![Diagram showing the main steps of the TeachSUS training programme development](image)

**Figure 3. The main steps of the TeachSUS training programme development.**

The core of the TeachSUS training is the skill card (learning units and elements with performance criteria), which clearly fit the competencies required for becoming an efficient and effective trainer/teacher for ESD. The preliminary work done by the members of the international partnership has been considered as the basis for the methodology design, including the questionnaire that has been developed to collect potential trainees’ opinions on their training needs in the field of ESD and pedagogical methods to be used during the training sessions (in class and on-line).

**3. RESULTS AND DEBATE ON THE TRAINING NEEDS ASSESSMENT**

The preliminary research that has been conducted in January – February 2018, when the TeachSUS project has been developed, refers to the training needs assessment in the field of ESD. The
following sections will present the research methodology and the results together with a debate on lessons learned that have been considered for the TeachSUS project implementation.

3.1. Methodological aspects

For the training needs identification there have been developed a survey based on an on-line questionnaire. Based on the process of the data collection from the potential trainees (investigated subjects included in the target group) there have been created a global image on the training needs in the field of ESD. The research sample has been defined together with the creation of a database with potential persons of the projects target group (name, address, phone, e-mail). Subjects in the database have registered themselves on-line using the TeachSUS project web page facilities (https://www.teachsus.eu/). Snowball principle was applied in order to enlarge the research sample (and project’s target group); a series of news were sent to the target group via social media (https://www.facebook.com/teachsus/) and the project’s web page to touch potential trainees that have been asked to answer the questionnaire, too. Finally, the sample (demography shown in Figure 4), consists of 111 subjects mainly from Romania, Hungary, Slovenia and Portugal.

![Figure 4. Demographic aspects of the sample characterization.](image)

The designed questionnaire structure consists of three parts. First part was dedicated to collect opinions about several suggested training topics and their implications for ESD; the opinions were collected using a Likert scale of 5 points. In the second part, subjects have been asked about the most suitable train the trainers’ method to be exploited in the TeachSUS project. The third part was dedicated to the collection of the demographic variable of the sample. The questionnaire was distributed on-line in Romania, Hungary, Slovenia and Portugal and the responses were processes using the Excel software application.

3.2. Research results and comments

The cumulative research results are shown in Table 1. As can be seen most of the respondents have been expressed their strong and very strong needs for all the statements in the questionnaire. There is a concern of all respondents about ESD and the future of our Planet. Consequently, they saw TeachSUS programme as an opportunity for improve their skills on ESD.
Table 1: Cummulative research results (first part of the questionnaire used)

| Question related to ESD aspect that has been assessed                                                                 | Responses distribution (using Likert scale) |
|----------------------------------------------------------------------------------------------------------------------|------------------------------------------|
|                                                                                                                       | 1 | 2  | 3   | 4  | 5  |                      |
|                                                                                                                       | No need | Weak need | Average need | Strong need | Very strong need |
| 1. How important is for schools to cover sustainability topics?                                                         | 1 | 2  | 11 | 30 | 67 | (60.40%)            |
| 2. Do you think that teachers in schools need proper knowledge and understanding of today’s challenges?                | 0 | 1  | 6  | 26 | 78 | (70.30%)            |
| 3. Do you think that changing attitudes and growing new skills to shape new characters for youngers could drive a better future? | 0 | 0  | 4  | 24 | 83 | (75.88%)            |
| 4. What kind of knowledge are missing in ESD:                                                                           |  |    |    |    |    |                      |
| 5. Do you think that teachers need to adapt the trainings in an innovative way, to assure better understanding and acceptance of new information? | 0 | 2  | 8  | 34 | 67 | (60.40%)            |
| 6. Would you appreciate the creating a non-formal education center for sustainability?                                | 2 | 1  | 13 | 34 | 61 | (55.00%)            |
| 7. Do you think that international knowledge transfer from other experienced organizations is beneficial to increase consistency in the sustainability topic trainings? | 1 | 2  | 13 | 38 | 57 | (51.40%)            |
| 8. Do you think that sustainability topics must be addressed in trainings in close relation with the economic interest, environmental and social impact? | 2 | 1  | 19 | 33 | 56 | (50.50%)            |
| 9. Do you think that the economic sector would improve if we address sustainability topics in early schools’ classes?    | 2 | 1  | 10 | 33 | 55 | (49.50%)            |

Regarding the most suitable training method, orientation or tool that suit most to their needs, a large majority of respondents agreed that a combination of theoretical knowledge, best practices examples, multimedia/gamification and coaching-tutoring techniques suits best to ESD.
CONCLUSIONS

The research on the training needs assessment in the field of ESD has underlined several important aspects for the TeachSUS project development and implementation. Most of the respondents were under 25 years old, females, teachers and students that will be future teachers for different subjects at pre-university level of education. According to the research results, ESD is of strong need but it should be supported by very well-trained teachers/trainers; 83% of the respondents strongly agreed that changing attitudes and growing new skills to shape new characters for young generation could drive a better future.

The research has underlined a gap of teachers’ knowledge in the field of ESD. The knowledge that are most needed are (related to teacher’s skills): social dimension, lifestyle and health issues, climate change, safety protection and efficiency consumption (with respect to resources, food, energy, water etc.). 67% of the respondents strongly agreed that teachers need to adapt the trainings in an innovative way, to assure better understanding and acceptance of new information in the context of the ESD. This aspect is related to the strong expressed need for efficient and effective ESD methodologies. Furthermore, 61% of the respondents strongly agreed on the utility of a non-formal education center for sustainability. Because of the high costs involved and the need of an international network, only 57% of respondents strongly agreed that the international knowledge transfer from other experienced organizations could be beneficial to increase consistency of the ESD. In addition, 56% of the respondents strongly agreed that sustainability topics must be addressed in trainings in close relation with the economic interest, environmental and social impact (probably they do not know the dimensions of sustainable development and their inter-relation) and only 55% of the respondents strongly believe that the economic sector would improve if we address sustainability topics in early schools’ classes.

The collected opinions are limited to the research sample that consists of respondents of each partner’s region or area of interest. Future work in the field will be dedicated to the analysis of the methodologies for the ESD that could be implemented successful in each partners’ country (Romania, Slovenia, Hungary and Portugal) and the digital training resources development (training materials that should be ready to be used by teachers/trainers, case studies and lessons plan).

ACKNOWLEDGEMENT

The paper is linked with the research activities related to the project: “Teaching and Educating for Sustainability” (TeachSUS_2018-1-RO01-KA204-049253), founded with support of the European Commission. This paper and the communication reflect the views only of the authors, and the Commission cannot be held responsible for any use, which may be made of the information contained therein.
REFERENCES

Annan-Diab, F., & Molinari, C. (2017). Interdisciplinary: Practical approach to advancing education for sustainability and for the Sustainable Development Goals. *The International Journal of Management Education, 15*(1), 73-83.

Backman M., Pitt H., Marsden T., Mehmood A., Mathijs E. (2019). Experiential approaches to sustainability education: Towards learning landscapes. *International Journal of Sustainability in Higher Education, 20*(1), 139-156.

Draghici A. (2019). Education for Sustainable Development, *Proceedings of the 9th International Conference on Manufacturing Science and Education – MSE 2019 “Trends in New Industrial Revolution”,* June 5-7, 2019, Sibiu, Romania, under publication.

Gadotti, M. (2008). Education for sustainability: A critical contribution to the Decade of Education for Sustainable Development. *Green Theory & Praxis. The Journal of Ecopedagogy, 4*(1), 15-64.

von Geibler J., Erdmann L., Liedtke C., Rohn H., Stabe M., Berner S., ... Kennedy K. (2014). Exploring the potential of a German Living Lab research infrastructure for the development of low resource products and services. *Resources, 3*(3), 575-598.

Johnston L. F. (Ed.) (2013). *Higher education for sustainability: Cases, challenges, and opportunities from across the curriculum.* Routledge.

Marcus J., Coops N.C., Ellis S., Robinson J. (2015). Embedding sustainability learning pathways across the university. *Current Opinion in Environmental Sustainability, 16,* 7-13.

Mircea G., Fistis G., Draghici A., Hintay A., Rozman T., Cardoso P. (2018). Teaching and Educating for Sustainability. A Strategic Partnership for Adult Education. *Scientific Bulletin of the Politehnica University of Timisoara, Romania. Transactions on Engineering and Management, 4*(2), 37-46.

Medrick R. (2013). A Pedagogy for Sustainability Education. *Journal of Sustainability Education, 5,* 2013.

Perlstein A., Mortimer M., Robertson D., Wise H. (2017). Making Sustainable Development Real Through Role-Play: “The Mekong Game” Example. *Journal of Sustainability Education, 12,* 2017.

Scott, W., & S. Gough (2003). *Sustainable development and learning: Framing the issues.* London: Routledge Falmer.

Soini K., Jurgilevich A., Pietikäinen J., Korhonen-Kurki K. (2018). Universities responding to the call for sustainability: A typology of sustainability centres. *Journal of Cleaner Production, 170,* 1423-1432.

TeachSUS, (2018). *Teaching and Educating for Sustainability,* project application form and annex of the contract no. 2018-1-R001-KA204-049253.

Tejedor G., Segalàs J., Rosas-Casals M. (2018). Transdisciplinarity in higher education for sustainability: How discourses are approached in engineering education. *Journal of Cleaner Production, 175,* 29-37.