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Education for Sustainable Development through Teacher Training

Abstract. The paper is dedicated to the idea of a change project in a higher educational establishment. The aim of the change project is to promote education for sustainable development through teacher training while including sustainable development issues in the teacher training program focusing on active learning techniques. The paper describes actions towards the change project with concrete steps. It includes a detailed description of the five cycles of the change project together with value creation stories (immediate value, potential value, applied value, realized value, and reframing value).

Keywords: education, sustainable development, sustainable development goals, teacher training, active learning, change project

1. Introduction

Nowadays universities are increasingly facing the problem of outdated teaching techniques applied in educational process and the low motivation of students attending traditional face-to-face classes. At the same time, with the widespread use of massive open online courses and e-learning, students have an alternative to traditional classes, which involves studying at home. The modern system of

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teacher training should be not so much highly specialized but should help young and already experienced teachers to create modern, appealing content and develop students' competencies for the 21st century. The emphasis should be placed on active teaching techniques, blended learning and education for sustainable development.

Many scholars around the world agree that teacher training programs should be modernized. One of the most popular approaches is to provide competency-based education that should focus on key competencies needed in real life (critical and systemic thinking, lifelong learning competence, problem-based curricula, etc.) [Serdenciuc 2013: 757]. Moreover, teacher training as a kind of lifelong learning is a key factor for development and growth of countries [Aleandri & Refrigeri 2014: 547].

Some researchers have tried to evaluate the effectiveness of teacher training programs [Ciraso 2012: 1778] in terms of different factors, such as transfer motivators, school climate, organizational structure change, personal implication, willingness to change, and relationship with educative administration. Buchberger et al [Buchberger et al. 2000: 40] indicated three main results of effective teacher training: teachers acquire the ability to establish a powerful learning environment, transform academic knowledge into teaching and learning situations, and provide co-operative problem-solving and teamwork.

According to Morgen, Gericke and Scherp [2018: 18], the effectiveness of schools that implement the education for sustainable development strategy is higher than in other schools. This is especially true with respect to pluralism, collegial learning and student-centred approaches.

Sinakou et al. [2018] state that the inclusion of a course focusing on education for sustainable development in teacher training is almost a single opportunity for teachers to study the concept of sustainable development systematically and transfer this knowledge to students.

The study of Annan-Diab and Molinari [2018: 9] indicates that a interdisciplinary approach in education for sustainable development is extremely important, because it encourages students to combine knowledge from different disciplines to study sustainable development issues. A similar opinion is expressed in the study by Nasibulina [2015: 1081], where education for sustainable development is characterized as "vertical" education because it penetrates all levels of education. Major et al. [2017] propose the idea of creating an efficient educational institution that will teach sustainability issues for teachers. As a result, future teachers will be able to apply various methods in practice and prepare students for different global challenges.

2. Background: current situation on teacher training in Ukraine and at Sumy State University

According to the requirements set out by the Ukrainian Ministry of Education and Science, teacher training is obligatory for every teacher in the country during a five-year period of time. This means every teacher has to attend a teacher training program suited to their pedagogical and scientific interests. Such a program has to be worth no less than 3 ECTS credits, and usually lasts 1-2 months.

There are several established teacher training programs currently available at Sumy State University (Ukraine), including one devoted to e-learning techniques, and another one on innovative pedagogy. At the moment there is no teacher training program and few student courses interrelated to sustainable development issues at Sumy State University and none that is dedicated to education for sustainability. Existing teacher training programs are out-of-date and mostly feature traditional teaching methods.

2.1. The idea of a change project

The purpose of a change project is to develop a teacher training program that focuses on active learning techniques and to include sustainable development issues as a key aspect of the content. The new teacher training program will be titled “Active learning techniques for education for sustainable development.”

The aim of the change project is to promote education for sustainable development through teacher training.

The project is addressed to teachers from Sumy State University and other Ukrainian educational establishments.

Expected outcomes of the change project include:

- increased teachers’ awareness on sustainable development issues;
- dissemination of the idea of sustainable development among teachers and students;
- expanding the idea of sustainable development and sustainable development goals in teachers’ pedagogical practice through active learning techniques.

2.2. Actions towards the change project

Several steps have already been taken to implement the change project.

STEP 1. New teacher training program in active learning techniques

The new teacher training program in active learning techniques was successfully launched at Sumy State University in November 2016, but it did not include any sustainable development issues at that time.

The first two rounds of the teacher training program in active learning techniques were run during November 2016 and October-November 2017.

The teacher training program in active learning techniques included several components:

- lifelong learning;
- e-learning and blended learning;
- problem-based learning;
- project approach in education;
- gamification in education;
- mobile devices used in study process, etc. [Kostyuchenko 2017b: 19-20].

Active learning techniques were chosen to be used as teaching methods for the new teacher training program. The following techniques were considered to be the most effective ones for implementing a modified educational program:

- case-studies;
- flipped classroom technique;
- debates;
- simulation games;
- “world café”;
- open space;
- “think, pair, share” strategy;
- pitching, etc. [Kostyuchenko & Smolennikov 2016: 146-151].

The brochure “Innovative Green Teaching. Primer on innovative teaching techniques of environmental and energy topics” [Ebers et al. 2017] was used as a source of guidelines for planning classes. It included numerous links to different examples of active learning techniques applied to sustainability issues. The brochure was created by teachers from Sumy State University (Ukraine), University of St.Gallen (Switzerland), and University of Tartu (Estonia) and was published in December 2017 as a result of the SCOPES project funded by the Swiss National Science Foundation. The brochure includes such sections as: blended learning, flipped classroom, case study, public debates, pitching competition, visual thinking: infographics and mind maps, video and audio, Model UN and other simulations, educational business games, etc.

Additionally, some case-studies presented during the Baltic University Program Teachers’ Course on Education for Sustainable Development in Higher Education were also useful for the new teacher training program.

The teacher training program in active learning techniques is currently under revision. Education for sustainable development is planned to be implemented into the program as a key component. The new teacher training program

is planned to start in October 2018 when the next round of teacher training at Sumy State University starts.

STEP 2. Venue for the change project

In November 2016 a creative educational space called IdeaLab was founded at Sumy State University under the Swiss-Ukrainian-Estonian institutional partnership project of the Scientific Cooperation between Eastern Europe and Switzerland (SCOPES) # IZ74Z0_160564/1. The interior of the room was jointly designed by students and teachers and therefore, the room became an inspiring place both for students and teachers to try new methods of study [Kostyuchenko 2017a: 16].

There was no doubt when choosing a venue for the change project. The IdeaLab was found to fit the purpose perfectly. The room was additionally decorated with some inspiring pictures as well as some basic information on sustainable development issues.

Sumy State University has been cooperating with UNDP as part of the “Community-based approach to local development” since 2010. The UNDP project provided some posters and other information materials that were used to create the proper environment for learning sustainable development issues at the IdeaLab.

STEP 3. Baltic University Program teachers’ course

Several teachers from Sumy State University took part in the Baltic University Program Teachers’ Course on Education for Sustainable Development in Higher Education during the period of 15 September 2017 – 31 March 2018. The 7-month course was run by the Centre of Lifelong Learning (Åbo Akademi University, Finland) in cooperation with the Swedish International Centre on Education for Sustainable Development (Sweden).

The aim of the course was to support university teachers in their efforts to integrate education for sustainable development in teaching and courses/programs, to strengthen the implementation of the United Nations Development Goals through creating and implementing a change project at the home university.

The Teachers’ Course on Education for Sustainable Development in Higher Education included several e-learning sections, such as “Introduction to sustainability” and “Climate change” via the Moodle distance education platform, as well as face-to-face workshops on “Sustainable development issues” and “Education for sustainable development methodology”. Different learning methods were introduced during the course, mostly focusing on e-learning techniques, peer learning and face-to-face training.

The idea of the change project became clear and feasible as a result of the Baltic University Program Teachers’ Course on Education for Sustainable Development in Higher Education.

STEP 4. Workshop on Sustainable Development

A two-day workshop for teachers was held at Sumy State University on 2-3 November 2017. The workshop was dedicated to sustainable development goals (SDGs) and was organized in cooperation with UNDP “Community-based approach to local development”. The quiz “How much do you know about the SDGs?” [www.17goals.org/quiz-level-1/] was held at the beginning of the workshop to measure teachers’ awareness of sustainable development. The results of the quiz showed that the majority of teachers from Sumy State University were familiar with SDGs but did not know the details.

Representatives of UNDP “Community-based approach to local development” presented 17 SDGs cubes to Sumy State University to visualize the ideas of the workshop. The SDGs cubes are currently kept in the IdeaLab and provide a good visualization of sustainable development issues for both teachers and students coming to creative educational space for different activities and events.

A study tour of the innovative factory “Kobzarenko Plant” (which manufactures agricultural equipment [www.kobzarenko.com.ua/about_en.html]) was held on the second day of the workshop – 3 November 2017. Teachers attending the workshop had a unique opportunity to see practical issues of energy efficient technologies (alternative electric and heating systems, recycling, etc.).

STEP 5: Identification of supporters

Another challenge was to identify supporters, i.e. colleagues who support the idea and are ready to help as members of the team. It is almost impossible to make changes alone, that is why the idea of the change project was disseminated between colleagues from Sumy State University who were already using active learning techniques in their teaching practice, and those ready for changes. As a result, strong support for the change project was found from several young teachers.

2.3. Change project value creation story

The value created by the change project was identified based on the framework provided by Wenger et al. [Wenger, Trayner & de Laat 2011]. Education for sustainable development through teacher training created different types of value, which could be described in five cycles.

CYCLE 1: Immediate value

Immediate value was created as a result of participation of several teachers from Sumy State University in the Baltic University Program Teachers’ Course on Education for Sustainable Development in Higher Education. Immediate value included:

- deeper knowledge of sustainable development and education for sustainable development;
 - new knowledge of the design thinking method, critical thinking technique and circular economy approach;
 - new skills and experience of working with Moodle;
 - the creation of a new network of change-makers in higher education.
- The new network inspired changes, and the new knowledge and skills acquired during the teachers' course helped to implement the change project.

CYCLE 2: Potential value

Activities and interactions can produce “knowledge capital,” whose value lies in its potential to be realized in the future. Such knowledge can take the form of personal assets, relationships and connections, resources, collective intangible assets, transformed ability to learn. Potential value of the change project includes:

- building new partnerships in teacher education with staff from different countries (colleagues from the network can contribute as lecturers to workshops and webinars in teacher training for education for sustainable development or as critical friends in discussions of difficulties for implementing the change project);
- implementing new study materials received from foreign colleagues, e.g. new teaching materials on education for sustainable development, cases on sustainable development, etc.;
- transforming ability to learn: increasing capacity to work together with colleagues in an education for sustainable development community; deepening experience in e-learning.

CYCLE 3: Applied value

The applied value of the change project refers to changes that take place in practice, particularly:

- developing teachers' professional competences;
- increasing the quality of the educational process (via new teaching techniques and through increase in a number of inspired teachers ready for changes);
- changing students' understanding of what matters in higher education (through students' active involvement into the study process).

CYCLE 4: Realized value

The emphasis of realized value is on improved performance, which results from the changed practice. On the one hand, teachers (so called “change-makers”) teach students in a non-traditional way using active learning techniques and including elements of education for sustainable development into their existing courses. On another hand, students influence other teachers who teach in a traditional way, stimulating them to change. Both students and teachers, who are

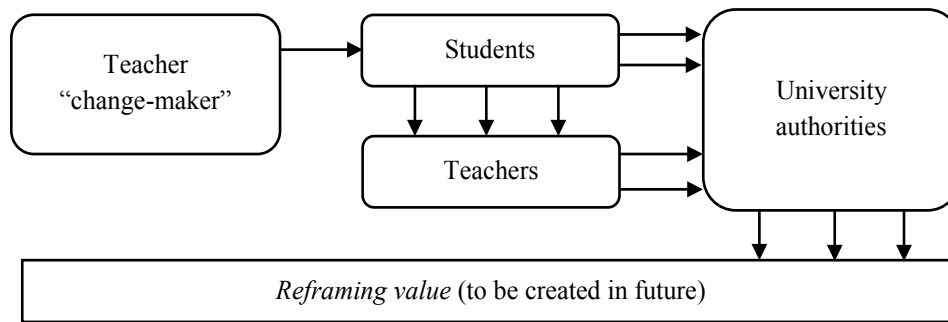


Figure 1. From realized value to reframing value

Source: own elaboration.

ready for change, influence University authorities by asking them to implement the changes in the curriculum and making them part of new practice at the university.

CYCLE 5: Reframing value

Reframing value is created when social learning causes a reconsideration of the learning imperatives and the criteria by which success is defined. In the context of the change project reframing value includes reframing strategies, goals and values towards education for sustainable development. It is expected that the strong social voice of both students and teachers will motivate the university authorities to include the sustainable development issues in the university policy. At the same time changes at both individual (teacher or student) and collective (majority of teachers or students) levels should take place to make changes happen at the organizational level.

3. Conclusion

Although Ukraine has ratified United Nation's Sustainable Development Goals, there are still almost no courses related to sustainable development issues in higher education of Ukraine.

The main idea of the paper is to promote education for sustainable development through teacher training, as teachers can include some sustainable development issues in their existing courses, giving some concrete examples and cases.

Active learning techniques are becoming more and more popular, and they can be applied in different areas of study. The change project focusing on teacher training in the use of active learning techniques for education for sustainable development is something totally new in Ukraine.

Considering the fact that every teacher in Ukraine is obliged to undergo teacher training at least once during a five-year period, the change project involves the dissemination of knowledge to every 1 out of 3 teachers from Sumy State University during the course in active learning techniques to support education for sustainable development during the next five years.

The purpose of the pilot change project was to trigger general changes in university policy towards education for sustainable development in the future. At the moment the idea is just to launch an introductory course for teachers focusing on education for sustainable development. Future studies could be dedicated to specific aspects and difficulties of integrating sustainability in the strategy of the university.

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Edukacja na rzecz zrównoważonego rozwoju poprzez kształcenie nauczycieli

Streszczenie. Artykuł przedstawia projekt zmian w uczelni wyższej. Celem projektu jest promocja edukacji na rzecz zrównoważonego rozwoju poprzez kształcenie nauczycieli z uwzględnieniem tematyki zrównoważonego rozwoju w programie kształcenie nauczycieli, w którym szczególny nacisk kładzie się na techniki aktywnego uczenia się. Autorzy opisują działania zaplanowane w projekcie zmian, w tym poszczególne etapy. Projekt składa się z pięciu cykli oraz opisuje proces tworzenia wartości (pośredniej, potencjalnej, praktycznej, zrealizowanej i przekształcającej).

Słowa kluczowe: edukacja, zrównoważony rozwój, cele zrównoważonego rozwoju, szkolenie nauczycieli, aktywne uczenie się, projekt zmian