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Konst, T. & Scheinin, M. 2020. Why education 4.0 is not enough – Education for sustainable future. In EDULEARN20 Proceedings. 12th International Conference on Education and New Learning Technologies, 6–7 July 2020, pp. 6326-6330.

Link to the original publication: [URL](#)

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WHY EDUCATION 4.0 IS NOT ENOUGH – EDUCATION FOR SUSTAINABLE FUTURE

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Abstract

When we speak about Education 4.0, we very often mean a concept that makes us rethink learning and education to match the needs of the changing world because the traditional ways of implementing education are not enough. With Education 4.0 we underline, for example, digitalization and globalization enabling learning to take place anywhere at anytime. However, with Education 4.0 we quite seldom emphasize sustainability crisis, which can very well represent the biggest challenge and change maker for education in the future. Digitalization or globalization most certainly act as significant drivers for changing education but together with the threat of climate catastrophe and the push for more sustainable social and economic systems the changes needed are bigger than what we presently understand with the concept of Education 4.0.

In our approach we explore Education 4.0. from wider viewpoint than it is earlier done; we focus on the vision of future higher education, which aims towards a sustainable future, and we describe the core ideas of this vision. We argue that any educational institution has not yet redesigned its pedagogical approach and solutions to the extent that is needed for a sustainable future. It is time to move towards 'Education 5.0', which incorporates all the important aims of education 4.0 and interconnects them to a sustainable framework as well as to ways of thinking and actions. Sustainable future requires quick changes in mental models and actions in higher education.

Keywords: Higher education, education development, sustainable development, education 4.0, education reform.

1 INTRODUCTION

Education 4.0. has been a popular topic in educational discussion during last few years in the context of higher education. The term refers to how education has to change along the changes taking place in the societies. Several drivers in the global environment as well as many national and international educational policies and initiatives require education to take a more active role in leading the direction of change. The term Education 4.0. lacks an exact scientific definition, but it refers to phenomena such as globalization or digitalization, which demand education to renew, for example not depending any more on time or place. Education 4.0. emphasizes close co-operation between education and working-life as well as the need for renewing teaching, underlining guiding and supporting learning instead of information sharing ([1], [2], [3]).

Sustainability crisis or climate change are very seldom mentioned in the context of Education 4.0., though they can be the biggest change makers in education. Digitalization and globalization certainly act as drivers for change in education, but together with the threat of the climate catastrophe and the push for more sustainable social and economic systems the needed changes needed are bigger than what we presently understand with the term Education 4.0.

Sustainable development is mentioned in the objectives of educational policies in Finland and in Europe generally, but it is not detectable in higher education and its everyday actions. The research shows that sustainable development is not visible in higher education ([4]) or it is mentioned in general objectives but not in the practices or contents of the studies ([5], [6], [7], [8]).

The term Education 5.0 has been used in educational discussion to some extent, but its use is imprecise, and it has not been defined. In this article, we describe how the important aims of Education 4.0 should be interconnected with sustainable development and how to proceed in this. We use the term Education 5.0 to represent our approach, because education development requires renewed thinking to enable a sustainable future.

Our approach is based on innovation pedagogy ([7], [9]) and transformative learning ([10], [11]) as well as posthumanism ([12]). In this study, we used triangulation/mixing methods, where different research

materials and methods were utilized. The research methodology focuses on literature and document analyses and participatory observation. The documents used consist of authentic documents, such as curricula in Finnish higher education institutions, the documents and research reports about education development on national level, and educational policy papers and initiatives in Finland and in Europe. The main research methods are participatory observation, and content and discourse analyses of curricula and other listed documents. The approach in this paper is based on action research and it exploits the experiences of the authors during their work in Finnish higher education development during more than 20 years.

2 FINDINGS

A prerequisite for implementing sustainable development in higher education is the change in our thinking. The aim of learning is to support the development of future competences and character qualities as well as to enhance a value basis that enables the learners to construct their own worldviews and act to create a sustainable future. The way we design content of learning helps to understand the interconnected relationships between nature, society and economy. The content and methods also aim to support the development of solutions for a sustainable future. The purpose of the curriculum is to organize learning opportunities to enable all this.

The pedagogical discussion in European higher education has traditionally been based on humanism. Taking into account the rapid development of science, the posthumanistic approach can be considered as a more sustainable framework in relation to the current and future worlds. Human knowledge, earlier seen as the defining aspect of the world, is reduced so that it has a less controlling position, and human rights exist on a spectrum with respect for nature and animal rights. Posthumanism originates from humanism, and the difference between these approaches lies on that posthumanism sees human beings as a part of nature and that nature must be considered in all actions. According to posthumanism, human beings have no right to destroy nature or set themselves above it in ethical considerations ([12]). This is especially important because we have no more time to rely on that the education in day-care and primary schools educate the future generations to act in a more responsible and sustainable way than what we have done. Education has to be able to wake up especially the young people in secondary and higher education as soon as possible. Their students there will be actors and decision-makers of the society and businesses of tomorrow, and education should provide them with knowledge, skills and attitudes needed for sustainable and ethical decision-making. According to the latest IPCC report ([13]), we have now less than ten years left to make the changes to remarkably restrain the climate change.

Learning objectives in higher education are strongly led by the requirements set by working-life businesses and organizations ([14], [15]). Working life competences are an excellent learning goal but should not be the only goal. Education must aim to support students' growth as autonomic and responsible citizens, being able to critically evaluate and renew their own actions. The will and ability to question things and search for solutions outside traditional ways of thinking will be crucial learning goals in renewing higher education.

This will require transformative learning, i.e. ability to see things differently, or from helicopter view, in a holistic way, making it possible to see numerous alternatives and renewing basic assumptions ([10], [11]). In practical pedagogical solutions this means that agency in everyday situations is promoted: Students can expand their learning by questioning existing practices, analysing them critically, and modelling new forms of activities and practices in co-operation with others. This can lead to a situation where the whole group or community develops new practices. This kind of learning often has to do with transformative change in communities and societies ([16]).

Development of so called 'character skills', such as curiosity, courage, resilience, ethics, leadership, mindfulness, sufficiency (= to be satisfied with less material welfare) and responsibility, requires that the viewpoint of ecological education is embedded in higher education. Learning methods and environments need renewing if we aim to develop understanding about the interconnected relationships between people, nature, society and economy. Pedagogical tools for this are e.g. collaborative actions, dialogic and participatory learning situations, boundary crossing and problem solving in multidisciplinary teams. ([17])

The teachers' ability to learn and adapt to new ways of thinking is a major issue in introducing new innovations in education; if teachers do not adopt new ideas or resist them, the reforms will fail (e.g. [18]). Teachers need support and further training to be able to redesign education to the desired

direction. This can be approached in different ways. Adequate training is, of course, one of the key elements. Additionally, the atmosphere where we work cannot be too much underlined. The teachers must be able to feel that they are allowed to try out new methods and ideas and that they are also allowed to fail. We can all learn from our mistakes and from not so successful trials. This means that the atmosphere must support both the confidence to courageous experiments and the climate for innovative thinking. As always in change processes, the crucial skill is change management, which means that the participants themselves notice the need for change. They also have to realize that they have to act differently. It is urgent to start the change process in higher education as stated earlier. The first steps to integrate sustainable development in learning and teaching are waking up the discussion on the need for change as well as organizing further training for the teaching staff.

Curricula have an enormous potential, both educationally and conceptually, to forward values, attitudes and ways of thinking. Therefore, changes in curricula are important when redesigning education. It is well known that the autonomy for redesigning the curriculum varies in countries and universities. In some cases, the changes have to pass an administrative procedure, which may take several months or an academic year. However, in countries where the hierarchy is low and the universities or the faculties are more independent to make changes, the updating can start instantly. Firstly, students, teachers and other HEI staff understand reasons, consequences and interconnected relationships in sustainability crisis and climate change. They should also see opportunities and become aware of having an impact on the creation of sustainable future. In the curriculum, the learning goals can define that the graduating students have, in addition to working-life competences, the ability for critical thinking and knowledge, skills and attitudes to participate into the creation of sustainable future.

The basic knowledge of themes, such as sustainability crisis including climate change and environmental protection, can be included in curricula by mainstreaming, in other words by integrating these topics in applicable studies, and/or by offering separate courses. In addition, the teaching methods by which the content is conducted should support learning. The methods and environments should generate active learning, for example, via the problem-solving of real cases in cross-disciplinary student teams or via experiential learning methods, such as authentic learning environments etc. When learners can perform a task through an authentic experience, participate, act and discuss the experiences with each other, they learn best. The curricula content and methods together should help learners become aware of their societal environments and strive to guide learners in their own decision-making and to make them aware of the consequences that their decisions may have. Teaching and learning will then focus more on the development of critical thinking, creative problem solving and constructive procedures for sustainability themes instead of specific theories and methods.

In order to gain real impact, the changes in curricula should be implemented in all fields of study to ensure that all graduating students have at least a basic understanding about the topics under discussion. The research shows that knowledge lays the foundation not only for the understanding but for the responsibility of the climate. The increasing understanding about the climate change encourages for climate actions and strengthens the will to act for its benefit. ([19]).

3 DISCUSSION

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States, includes 17 Sustainable Development Goals (SDGs). One of the challenges in implementing these goals is to find concrete ways of actions to encourage people to participate. The SDG related to education aims to ensure that all learners have knowledge and skills to advance sustainable development by year 2030. ([20]) Also higher education must react on this challenge and bring sustainable development both in studies and in everyday actions.

Concrete actions play an important role in higher education. Values can seldom change ways of actions, i.e. how people act is usually not guided by values. On the contrary, values are formed only after the concrete actions are taken. ([21]). Therefore, fostering sustainable development in higher education should not start with value statements and descriptions, but by undertaking to implement real changes in curricula and in everyday actions.

Higher educational institutions have not yet redesigned their pedagogical approaches and solutions to the extent that is needed for a sustainable future. Educational reform is needed, but it is worth remembering that education cannot be changed only by renewing teaching and learning methods. For

a real change, the higher education structures, processes, ways of action such as how to lead the changes, also require renewing. In order to ensure a sustainable future, strategic decision-making, the commitment of the management and everyday actions are all needed.

Educational reform requires changes in thinking and ability to see things differently so that the development of actions can take place. Therefore, change management plays a crucial role in the reform. Renewing teaching and curricula are often the starting points for changes in educational institutions.

We suggest it is time to start talking about 'education 5.0', which incorporates all the important aims of education 4.0 and interconnects them to a sustainable framework and value basis. Neither education nor world can be changed by concepts but by actions, which need actions to be led by renewed thinking. The rapid changes in the models of thinking can be the key element in the higher education to support the ways of actions towards the sustainable future.

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