

DIY Workshop for New University Students: Future Factory, the Active Start for Studies in University of Oulu, Finland

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In the very beginning of the DIYLab project in 2014 in accordance to the project plan the curriculum analysis took place in three different countries. It was soon realized that the new Finnish national core curriculum for basic education have very much same kind of goals like the DIYLab project. There were many similar aspects and goals like self-regulation, students' activation, developing use of ICT, problem solving and group work skills as well as to pay attention in student's own interests among other goals.

At the same time University of Oulu wished to rebuild the orientation week of the freshmen. The goal of orientation week has been to give basic information about the studies for the new students, and to introduce them to the university study culture after the upper secondary school. However, the activating part was missing – the orientation included mainly sit and listen type of lectures and some leisure activities. There was an obvious need to rearrange the orientation week towards a learning experience that would support the active start of the studies and to integrate the new students as active members of the academic society.

In this paper we explain the objectives, contents and impacts of the Future Factory and also briefly describe how DIYLab and the philosophy of the project boosted the workshop in University of Oulu. In the end we make some concluding remarks of the DIYLab project, Future Factory and the new Finnish curriculum.

Introduction

Future Factory is an active start for new students in University of Oulu. It's linked to the strategic mission of the University to create new research based knowledge, educate future talents and spark innovations. The aim is to foster "an arctic attitude" that is a key component in the strategy of University of Oulu. The arctic attitude includes resourceful thinking, curiosity, collaboration and creativity.

During the very first week of the university studies the new students learn of and create solutions for the global challenges in Future Factory workshop. According to a research report, a powerful start of studies boosts the progress of studies (Seppo Honkanen, Modelling of study paths leading to graduation of engineering students' based on study success in secondary school and early phases of studies (abstract in English): <http://jultika.oulu.fi/files/isbn9789514293320.pdf>

During the three-day event the students work in groups. At first they define a challenge for themselves according to megatrends that will change the history of mankind. Secondly, they propose innovative solutions to the challenge in hand by using digital tools, digital resources and knowledge of their own. The solutions are formed into digital outputs, which will be shared on the internet. In the end, they vote for the best solutions and the best groups will be awarded. The ideas, which get the most votes, will proceed to a public voting. Almost 1200 students from different faculties participated in the Future Factory in 2016.

Future Factory was carried out in cooperation with the Finnish Innovation Fund Sitra. Sitra updates a megatrend list, which depicts the most urgent societal changes in the world. Future Factory was based on the most recent report Megatrends 2016: technology changes everything, global interdependency and sustainability crisis. The idea was that knowing the megatrends would motivate students for future oriented thinking and thus be meaningful for young adults.

During the workshop students, learn about challenges of our society, different kind of group work and problem solving methods and use of digital tools. Future Factory is an intensive event based on prepared instructions on web and students' self-regulation and self-guidance. It encourages students to take action over the things they believe in: be self-regulating instead of doing what has been told and to take responsibility over their own progress, learning and life.

Objectives of Future Factory workshop

The University of Oulu, a large Finnish multidisciplinary science university, is committed to push the boundaries of the known for a more sustainable, healthy, human and intelligent world. We contribute to solving some of the greatest global challenges like environmental change, scarcity of natural resources, global population growth, ageing, urbanization and digitalization. Future Factory gives new students the opportunity to innovate creatively new solutions to current national and global challenges and at the same time to get to know the trends that affect to our world these days.

The original idea for the Future Factory workshop comes from the vice-rector for education Helka-Liisa Hentilä. The purpose of the workshop is to offer students an active start for their studies instead of never ending info lectures and passive listening. It has been proven that the

better the start of the studies is the more fluent is the path of studies afterwards and students will get their degrees done in time with better outcomes.

University of Oulu wants the students to succeed in their studies, and later to be able to get far in their career. The Future Factory, organized as an integral part of the orientation studies, is aiming to shape skills that will be needed in the university studies and future working life, 21st century skills like digital and analytic skills, curiosity and creativity, collaboration, entrepreneurial mindset, interdisciplinary and international orientation and learning to learn. The Future Factory is also about the Arctic Attitude of University of Oulu: we challenge our students from the day one to be inventive, resourceful and to collaborate with others.

Multidisciplinary workshop

Future Factory is a multidisciplinary workshop for new students. It is based on self-regulation and self-control of the students. The guidance (both in Finnish and in English) is given by digital tools, by videos, web site and helpdesk channels. Future Factory has one common kick-off event in the very beginning with an introduction of an expert from Sitra on the megatrends of today's society. Participating students are separated into different locations, and the guidance is given in distance via Adobe Connect web conference solution from one main hall. After the introduction the guidance is only on the web, and we trust the capability of the students, peer-help and powerful collaboration. The students have to choose the megatrend of their interest, and solve a challenge they find interested. They have all the information available on the web, in the campus library etc., the knowhow of the group, the tools they wish to use and the timetable of ours. They are guided to use some group working methods but they are also able to use some of their own, too.

During the Future Factory workshop the new students learn to get to know one another, the campus area, the tools and different kinds of working methods for group working and problem solving. Future Factory encourages students to take action over the things they believe in. We want to give fresh start to the students by showing them they can make a difference in the world. The pedagogical model behind the Future Factory blends processes from different pedagogical approaches: the phenomenal learning, the problem based learning, the computer supported collaborative learning and the progressive inquiry.

In 2016 Future Factory was a three-day workshop for 1200 new students in University of Oulu. The degree programmes were able to decide either their new students will participate the event or not. In the August 2016, most of the faculties and degree programmes were able and willing to take part. In 2017 all the faculties and degree programmes will take part in the event. There will be altogether 2100 students participating the workshop.

The first Future Factory was organized in cooperation with the Finnish Innovation Fund Sitra. There are limitless possibilities to integrate various stakeholders like private and public sector

and NGOs in future. The Future Factory is widely scalable in its format. After the happening in 2016 many stakeholders showed their interest to the event.

Impacts

The strongest short-term impact was the growth of the group spirit and solidarity. Most of the students told in the feedback that to work with others and to get to know each other was the greatest benefit of the event. The staff members and the students of university pedagogics who observed the event noticed, that the solidarity between students developed rapidly during the intensive three days. That predicts fluency for following study years.

We were able to support all kind of learning styles during the workshop. Some of the groups told us that they were able to use the strengths, competences and abilities of each member of the group to achieve the results.

Overall Future Factory was an ambitious challenge to the University of Oulu to try something totally new with the new students. Social constructivism maintains that human development is socially situated and knowledge is constructed through interaction with others. We applied the social constructivism into practice with 1200 students: It is worth of finding out what are the processes and keys that supports students to interact with each other and what prevent these.

Next Steps

Future Factory is totally scalable to the other levels of education and other institutions, even worldwide. The event can be organized from kindergarten to higher education institutions. Same model works in every group. Only the background material must be different in different educational levels. The pedagogy is suitable in every level. One aim of the Future Factory event is to be a model for university teaching of active and student-oriented way.

Future Factory is a very cost-effective way to have a big activating event for masses of students. There were only five people to work part-time in the Future Factory. The small investment (under 7,40 e/student) we made to the Future Factory and thus a fluent start of studies is expected to pay back in the form of high pass on rate of degree studies, being an important state funding criterion for the Finnish universities.

The feedback of the event has been gathered from new students, their tutor students and the university teachers participating in university pedagogical studies. In addition, the five members of FF working group have evaluated the event from different points of view. Overall, the experiences from Future Factory are so promising to us that there will absolutely be another event next year. One vision is to integrate similar joint workshop way of working in the latter phase of bachelor and/or master studies.

The solutions the students created included many ideas of apps, services and products that could have business potential (like for example Senior GO, or Rubbish GO or A Tool to Break the Ice). There is an evident slot for cooperation between university and business life in that point.

In September 2017, the 2100 students from all the faculties of University of Oulu will be solving problems and developing new ideas for the future. The theme of the event will be Finland 100 years according our national anniversary and the specific themes will be connected in five focus research areas of University of Oulu:

1. Creating sustainability through materials and systems
2. Molecular and environmental basis for lifelong health
3. Digital solutions in sensing and interactions
4. Earth and near-space system and environmental change
5. Understanding humans in change

The legacy of DIYLab for Future Factory

The Future Factory project is an example how to really let the students lead their learning and working by themselves, in the spirit of DIY Lab. Following the example of fifth and eighth grades in basic schools we could be sure that the university students will succeed as well. We just decided to trust the students, their abilities and skills, their interests and point of views, and all it was all worth of it.

Some students find somewhat difficult to be a leader of one's own learning, but many students saw it as a great possibility and as an interesting way to create something really new in a group. It is obvious that some students in basic and higher education need more support and guidance than others, and that is what we will develop for the next Future Factory.

After few years the generation entering universities have studied in the basic school in accordance with the new curriculum that emphasizes strong self-regulation, use of digital tools and group work. That will be the time when higher education institutes do need to meet the skill set. Maybe University of Oulu will be ready for this!