

Liisa Kairisto-Mertanen & Taru Konst

REDESIGNING EDUCATION -VISIONS AND PRACTICES



TURKU AMK *
TURKU UNIVERSITY OF
APPLIED SCIENCES

innopeda[®]

*A Handbook for
Education Planners,
Developers and
Decision-makers.*

Liisa Kairisto-Mertanen & Taru Konst

REDESIGNING EDUCATION -VISIONS AND PRACTICES

TURKU AMK 
TURKU UNIVERSITY OF
APPLIED SCIENCES

innopeda[®]

The book project has received support from the Association of Finnish Non-Fiction Writers.

Course Material from Turku University of Applied Sciences 130

Turku University of Applied Sciences
Turku 2020

Graphic design: Jaana Kurvinen
Ad Twist ky

ISBN 978-952-216-753-8 (printed)
ISSN 1457-7933 (printed)
Printed by: PunaMusta Oy, Vantaa 2020

ISBN 978-952-216-752-1 (pdf)
ISSN 1796-9972 (electronic)
Distribution: loki.turkuamk.fi

FOREWORD

There is a need for a quick and radical change in education. At present, education is not able to adequately react to changes taking place all around us. Education should provide our students with knowledge, skills and competences as well as develop attitudes and values, which help them to act in the changing world of work and society, bringing them towards a sustainable future. There are numerous publications on development of education, but less on how the changes in education are led and implemented. Additionally, the impacts of the sustainability crisis are usually ignored in the discussion on the development of education: how education should react and ensure competences and attitudes in order to mitigate them.

Education must not just go along with the changes and adapt to them, but take an active role to build the society towards a sustainable future. There is an urgent need for innovative professionals who can contribute to the creation of innovations, and higher education institutions (HEIs) must be able to implement and organise education in such ways that their students are provided with competences to innovate in sustainable ways. Innovation competences, such as critical thinking, initiative, creativity and team-working and networking skills, together with character and attitudes, are prerequisites for innovations, and thus, for successful organizations and a sustainable society. The essential question is how to generate these competences during education.

Our solution for making the change is innovation pedagogy, a strategic approach which provides solutions for renewing traditional organizational processes, structures and ways of action in education. In our earlier book, *Innovation pedagogy – Preparing Higher Education Institutions for Future Challenges*, innovation pedagogy is presented in detail. The book explains how to implement learning and teaching according to the innovation pedagogy principles. It describes methods and tools how to develop students' innovation competences during their studies e.g. by integrating research and development activities with studies, enabling flexibility in curriculum, utilizing activating teaching and learning methods, and implementing studies in close company/working life co-operation. However, education cannot be renewed only by changing learning methods or teaching practices. Real redesign of education always requires changes also in the structures and processes of the educational institution, and thus management commitment, strategic decision-making and change management are needed in the change process.

This book, *Redesigning Education – Visions and Practices*, provides guidelines and solutions for concrete development of education. It is targeted especially for the management of educational institutions, education developers and planners, as well as for decision-makers in educational policies and strategies. The approach of the book is novel and innovative especially in discussing how work and education are undergoing a significant shift under the sustainability crisis and how education can respectively be developed: in brief, how to lead and implement the change process when redesigning education.

TABLE OF CONTENTS

INTRODUCTION.....	5
1 BACKGROUND.....	7
1.1 The evolving education.....	7
1.2 Drivers for redesigning education	11
1.3 Redesigning education towards sustainability – widening the education 4.0 approach	13
1.4 Changing work during sustainability crisis.....	17
2 VISIONS OF FUTURE EDUCATION TOWARDS A SUSTAINABLE FUTURE.....	21
2.1 Purpose	21
2.2 Learning goals.....	22
2.3 Lifelong learning and growth mindset	23
2.4 Posthumanism, ecological education and transformative learning.....	26
2.5 Digital world	29
2.6 Collaboration	30
2.7 Competences and character qualities.....	32
2.8 Redesigning teaching, learning and curricula	35
3 MANAGING THE CHANGE IN EDUCATION	40
3.1 Organizational roles and managing the change	41
3.2 Academic developer approach for managing change in education	43
3.3 Aiming towards a learning organization.....	49
3.4 Changing the organizational culture	53
3.5 Methods of intervention.....	54
3.6 Leadership in change management.....	58
3.7 Knowing the people in the change process.....	60
3.8 Understanding people in the change process.....	62
3.9 Working with people in the change process	64
4 EXECUTING THE CHANGE IN EDUCATION.....	68
4.1 The steps in the change process.....	68
4.2 Creating a climate for change	68
4.3 Enabling the organization	73
4.4 Maintaining the change.....	76
FINAL WORDS	80

INTRODUCTION

Redesigning Education – Visions and Practices provides ideas, guidelines and solutions why and how to develop education; in other words, how to make the change in education required by the changing and dynamic environment. The book is primarily directed at the management of educational institutions, education developers and planners, as well as for decision-makers of educational policies and strategies, but it can provide development ideas also for teaching staff in their everyday work. Our experiences and examples are mainly from higher education, but the approach and its ideas, guidelines and practices can be applied to other educational levels as well. The perspective of the book could be described with the words ‘think global, act local’. The changes and challenges, which working environments and education are facing are often global, such as the sustainability crisis and climate change, globalisation, or digitalization, and the ways how to react to them and act respectively must be applied locally to be able to lead and conduct the change process successfully.

The authors of this book are creators and long-term developers of innovation pedagogy, a Finnish approach to development of education in higher education. Innovation pedagogy and its solutions have been implemented with good results not only in Finland, but also in, for example, Brazil, Indonesia and Poland, and applied to other educational levels, not just in higher education. Embedding innovation pedagogy in higher education practices and processes during the last thirteen years have given the authors a lot of experience in leading and implementing the change process in the culture and development of education both locally and internationally. However, the purpose is not to state that the goals have been reached and describe how this was done. Every educational institution is still on the way, also the institutions applying innovation pedagogy. The aim of this book is to describe the change process, its challenges at its various stages, and learn from the steps taken. Even the most advanced educational institutions still have a long path to go, because we dare to claim that no one has reacted well enough to the changes taking place now and in the future. The biggest challenge is the sustainability crisis, and how to act in order to provide students with competences not only to manage in the dynamic working environments requiring innovations, but also with competences to have a good life and to build a sustainable future. The objective of this book is enormous, but we hope that our steps taken and experienced, and our visions for the future, will help all of us working with development of education to act together towards making the changes needed in redesigning education.

Innovation pedagogy is a practical learning approach that originated at Turku University of Applied Sciences (TUAS), in Finland. It is a research area with “open source code”, meaning that its development is based on the shared expertise of all developers of education. Innovation pedagogy follows very similar direction in education development which can be found in the EU and OECD educational policies. According to these, there is an urgent need for professionals who are capable of participatory innovation action leading to new

sustainable solutions or practices applicable in working life businesses and organizations. This book does not focus on innovation pedagogy but uses it as an example how to develop education towards the desired direction. Our focus is on the redesign of education; what are the changes needed and how those changes are made.

Our approach in this handbook concentrates on those two topics, what to change and how. Sections 1 and 2 focus on the first topic. We start with the context: how education has developed, how the world is changing and how it is changing work, and why education must change. Nowadays so-called Education 4.0 is discussed a lot. It is 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. However, Education 4.0 quite seldom discusses the sustainability crisis, which can very well represent the biggest challenge and changemaker for education in the future. In our approach we explore the elements of Education 4.0. from a wider viewpoint than earlier; we focus on the vision of future education aiming towards a sustainable future and describe the core ideas of this vision. We start from the learning goals, discuss what lifelong learning and transformative learning mean, and how we can integrate the ecological viewpoint in education. We examine how digitalization will change education in many ways, and how it can be coordinated with collaborative learning. Fostering the growth mindset and developing future competences and character qualities are at the core of our vision. In addition, we explore practical issues of future education such as structure, for example education not requiring physical space, subject-based curricula or hierarchical management; and methodology, focusing for instance on learning methods and environments. In all, the purpose of sections 1 and 2 is to discuss how to support the development of future competences and character qualities as well as enhance a value basis that enables the learners to construct their own worldviews and act to create a sustainable future. 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.

Sections 3 and 4 focus on the concrete change process, in other words, how to make the change. We discuss the main elements to be considered in redesigning education and how to manage and lead the changes needed. Additionally, we provide practical guidelines for the change process, and ideas for maintaining and evaluating the steps taken.

Our starting point for this book is that higher educational institutions have not yet renewed their pedagogical approaches to the extent that is needed for a sustainable future. It is said that it is education that can change the world, but as we see it, it is people who can first change education. We hope that by reading this book, our readers will get new ideas as well as the solutions to apply when aiming to redesign education to answer to the challenges of a sustainable future.

1 BACKGROUND

1.1 The evolving education

The history of education and first universities in Europe dates to medieval times when they evolved from Catholic schools and aimed at educating students as professionals, such as clerks, lawyers, civil servants or physicians. In the Christian cathedral schools or monastic schools, the monks and nuns were responsible for teaching the students. In addition to professional education, the purposes of these universities also included improving society and teaching scientific investigation based on critical thinking and research. Practicing academic research was seen to lead towards obedience to God and his servant the emperor. A student was obedient when listening carefully to the prescribed texts explained by the teacher. The aim was to learn by heart and repeat the learned content in class.

The professional and practical focus towards the end of the Middle Ages gradually transformed towards forming the task of the university to focus on producing “knowledge for the sake of knowledge”. The foundations of the modern university were laid during those times.

First universities were founded in the Middle Ages

The centres of education and literacy were born among the monasteries of the Roman Catholic Church and they along with cathedral schools remained important throughout the Middle Ages. It was the monks who taught classes concentrating especially on learning Latin and on maintaining the art of writing. However, they ceased to be the sole sources of education in the 11th century when the first universities were established in the major European cities.

The University of Bologna (1088) or university of Paris (1160–70) are considered the first research universities in Europe. In Bologna it was Frederick I Barbarossa who regulated that every school is formed by a group of students who follow a master overseeing them. The master is compensated by fees paid by the students. The newly formed university included a legally declared independence of research, which can be conducted free from any power.

The models created in those days largely still exist in the universities of today. The administrative structure of organizing the university in faculties was first established in those first universities and the main faculties included the arts or philosophy, theology, law and medicine. The students could aim for a bachelor’s degree, which was possible after

three or four years' basic study in grammar, logic and rhetoric and after a period of four years of studies, the student could take an examination in order to get a master's degree. Further four to eight years were needed for a licentiate degree, but it was possible only in medicine, theology or law. Both masters and licentiates could complete a Doctor's degree without any further studies, but it required paying a remarkable fee. Baccalaureate was considered as the lowest degree of university studies and it was a prerequisite for anybody wanting to continue studies in the actual university.

Today we find the non-completion of university studies as a problem in many countries. During the first decades of the existence of universities, it was more like a norm to leave the university without taking a degree. The students were satisfied with the knowledge gained during the studies, which made it possible for them to practice a profession and did not necessarily take out an expensive degree.

During the 15th century to approximately the 18th, the amount of universities all over Europe increased tremendously. By the end of the 18th century, there were almost 150 universities in Europe.

Industrial revolutions changed the society

Since the emergence of the first universities, the world surrounding them has changed tremendously. The changes concern not only society but also how people think and behave. According to the theory of grand cycles of economic development presented by D. Kondratiev more than 80 years ago, the economy is following cycles which have both rising and declining phases called prosperity, recession, depression and improvement (figure 1). The movement from one cycle to the next takes place through groundbreaking inventions called innovations. Due to the industrial revolution experiences during the past 250 years, the entire lifestyle of people has changed dramatically. The impact of the different revolutions on our lives seems to increase at the same time, as it can be noted that the intervals between the different revolutions have become shorter.

The first industrial revolution in the 18th century was based on the invention of the steam engine, which made it possible to replace manual workers with a machine. This way the same job that earlier required plenty of work force could be made easier, faster and at a lower cost. Because of this invention, many workers were not needed anymore, and the consecutive unemployment changed the entire structure of society. It caused people to

move to the cities and change from an agricultural life to an industrial life. Families, which in the countryside were used to being self-sufficient, were in the cities forced to buy products from third parties instead of producing everything by themselves.

The second industrial revolution can be said to have started in the 19th century when mass production became possible through the invention of the production line, which made it possible to produce high-quality products quickly and at a relatively low price. It changed the way how work was done in factories. Every worker in each station of the production line got a very specialized task. Due to this change, jobs were again lost and new professions emerged, but society was forced to change again. More people moved to the cities, which grew to metropolises with skyscrapers, electric networks etc. Because of the development, people got a possibility to acquire products, which were not attainable before.

The third industrial revolution can be described as the age of information and telecommunication and is credited to the emergence and large-scale use of the computer. Although the first computer was invented as early as 1936, it did not reach everyday use until the beginning of the 1970s. After that, it has fundamentally changed the way of working. The introduction of first robots and automation in general made it possible to produce products cheaper and quicker than a traditional production line worker was able to produce. Computing brought new aspect to life and made it possible to introduce several tasks to the customer and do banking etc. with the help of a computer.



Figure 1. From industrial revolutions towards a sustainable future

The fourth industrial revolution is attributed to connecting computers to each other through the Internet. This network turns all the millions of computers all over world into one giant computer and allows individuals possibilities, which earlier could only be dreamed about. Today we have the possibility to access information and communicate effectively with people across the world without having to travel. The systems can be connected to each other and even to physical items; the Internet of Things (IoT) is still relatively new and brings plenty of possibilities. There are people that claim that the fourth revolution has not yet ended, while others argue that we are on the threshold of the Fifth Revolution. Industry 4.0 is the term used to describe the practices and challenges of the fourth industrial revolution.

The fifth revolution, where we are living at the moment and will live in the future, has to do with the living conditions on Earth, and it both forces and encourages us to take sustainability as the number one priority in all decision-making of societies and economies, also in education. This is described in detail in the following chapters.

The different eras and decades in the past and present can also be presented in another way as in figure 2, by starting with agricultural revolution where the farmers are the ones executing the work. The next revolution is the industrial revolution and the industrial workers performing the work needed in the factories. The information revolution brought the knowledge workers to be the ones in the workforce. According to the reasoning we are now experiencing the humane revolution where a creative problem solver is the one needed at workplaces.

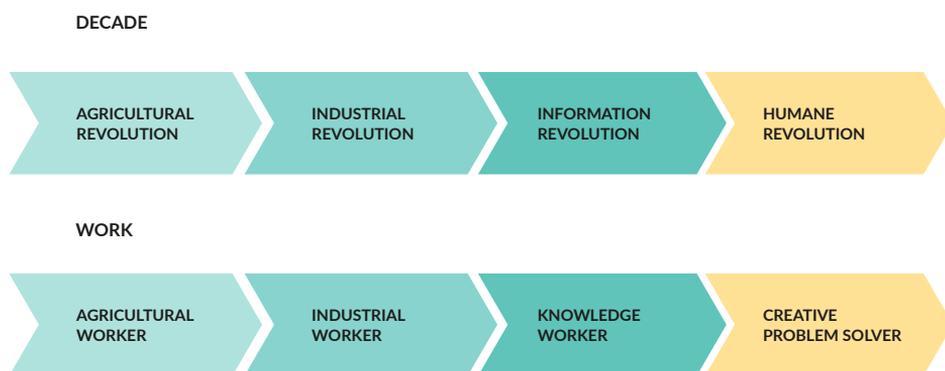


Figure 2. Different decades and work roles during them (Pölonen, 2019)

Information revolution brought different digital solutions to be used in the context of everyday life, at work and during free time. The humane revolution stresses the important notion that even though machines can often replace people, there still are various skills where people are superior to computers and robots. Computers are capable of learning fast to locate and process information without involving feelings in the process. Finding sequences and processing data with endless capacity is possible for them. Humans, then again, have the capacity of dreaming, using morale judgement and common sense with intuition. Caretaking and showing compassion with empathy is possible only for humans.

1.2 Drivers for redesigning education

The effect of the changes caused by the different industrial revolutions on education should have been as big as they have been on industry and on how people work. However, it seems obvious that education has changed very slowly. Learning should be at the core of education, but we still in many cases seem to concentrate on teaching and keep on thinking that it is the only prerequisite for learning. Extracurricular learning outside of the official educational institutions is many times left without notice and the teacher is still believed to be the only relevant source of information. The fact that digital sources have brought information at the reach of everybody is often ignored.

When looking back to the different industrial revolutions we can note that during the first industrial revolution, education was not needed to perform the simple tasks required. During those times, even young children were forced to work. Education was luxury and at the reach of only those who could afford it.

Alongside with the emergence of mass production, the demands for workers and their knowledge base increased. It became necessary for working people to know how to read and write, which created a need for the development of the educational system. However, education was writing on an empty page and the teachers were supposed to fill those pages with information about the subjects needed. The most important task of a teacher was to transfer his/her knowledge base to the students. A general holistic picture across different subjects was missing and the aim of education was to provide knowledge in tightly defined portions.

When computers emerged, they were gradually integrated in the educational system. The first computer aided learning materials were produced in the same way the classroom teaching was done. The distinction was that there was no teacher and that interaction was missing. The way how students were taught or assessed did not change. Instead of

learning, the whole process still focused on teaching.

Now, as we are living at the age of the fourth industrial revolution, we should be looking very carefully at our educational processes. The modern technology and its unlimited possibilities should be exploited in learning and teaching. We can offer our students online courses and material, which make it possible to tailor individual learning processes in student-preferred places and times. Information on practically any subject can be easily found in different sources provided by Internet, which means that information is not anymore possessed by the teacher. The problems we are facing today have also changed. Now a big challenge for any educator is to create awareness about the threat our environment is facing. Educating the students to be aware of the sustainability crisis and getting them to understand how they can contribute to preventing it is one of the big missions of education at all levels.

Today, teachers are needed for totally different purposes, meaning that the teaching profession is undergoing huge changes. To be effective at the age of the Internet the teaching profession must change from information provider to designer and facilitator of the learning processes. As learning paths are becoming more and more individual, students need help in finding the correct courses and in designing their individual studies to match their personal desired learning goals.

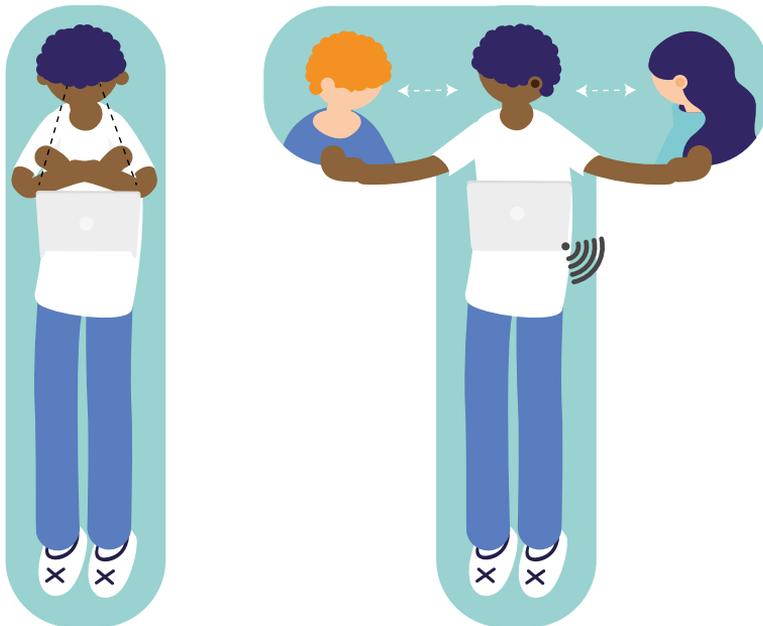


Figure 3. From I type professional to T-type professional (Confederation of Finnish Industries, 2011)

Alongside the changes in society, also the way we work is undergoing big changes. The share of jobs where the worker can define goals independently has already by year 2019 increased, but their amount will continue increasing in the future. The goal of future jobs is rather the continuous creation of something new instead of repeating the old. Divergent thinking and doing as well as searching for alternative and new ways of doing things will be necessary skills in every profession. Organizations are looking for professionals who have deep knowledge in a certain field of expertise, but who in addition to that also possess knowledge of other fields of interest. As figure 3 describes, we speak about I and T type of professionals. The vertical bar in the letter T represents the depth of skills and expertise in a single field, while the horizontal bar represents skills and expertise across different disciplines. An I type professional possesses deep knowledge only on a specific discipline without expanding to other areas of expertise. A T-type professional can collaborate across disciplines with experts in other areas and can apply knowledge into areas of expertise other than one's own. There are not many jobs left for I types, referring to tasks where it is possible to focus only on a very narrow expertise and working alone.

Succeeding in the future world calls for being able to offer sustainable solutions. Successful companies in the modern industrialized countries choose the innovative way of approaching their business. This involves that education must be able to generate competences of T-type professionals together with the ability to assess sustainability in all actions.

When speaking about innovations, we should rather be aiming at disruption and not be satisfied merely with innovation and doing old things in a new way. When wanting to change the world, it is not enough to fight against the existing system. The way to make a change is to create an alternative where the old systems start to look useless and unnecessary.

1.3 Redesigning education towards sustainability – widening the education 4.0 approach

When discussing the redesign of education, education 4.0 is often mentioned. Education 4.0 means 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 emphasize digitalization and globalization enabling learning to take place anywhere at any time. We want to renew teacher roles from teaching to coaching and supporting learning, and to have close co-operation between educational institutions and working life. However, with education 4.0, we quite seldom emphasize the 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

Anywhere	Anytime	Student ownership
Peer learning	Learning together	Coaching
Real problems	Authentic environments	Assessed not ranked

Figure 4. Learning according to Education 4.0

drivers for changing education, but together with the threat of the 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. (figure 4) Despite the alarming signs of the climate change, the goal of economic growth holds steady as the priority both nationally and globally, and development models that do not have economic growth as the goal seem to be politically incorrect. At the same time, scientific facts show that we should make ecological sustainability our priority number one. There is no society without a well-functioning biosphere, and without well-functioning society, there can be no stable economy. In other words, a sustainable world means that economy is subsidiary to ecological and social sustainability.

Some economists are calling for a paradigm shift from current economic models, stating that our economic growth imperative together with consumption-based well-being are responsible for the world's situation and that a paradigm shift is required to turn away from economic growth at any cost. Some economists see possibilities for sustainable economic growth. According to them, it will be the end of economic growth if we don't restrain climate change or, in other words, restraining climate change is a prerequisite for economic growth and provides huge market opportunities. Investments accelerating climate change must be transferred to investments restraining climate change. Businesses are ready even for strict regulations, if the rules are the same for all and known in time. Climate change can offer significant opportunities for businesses, especially in countries, which focus on environmentally friendly solutions. These solutions can restrain climate change globally, improve employment and be economically profitable.

In this book, we examine different viewpoints how learning can enable a sustainable future by giving opportunities for learners to create sustainable future for themselves, the people

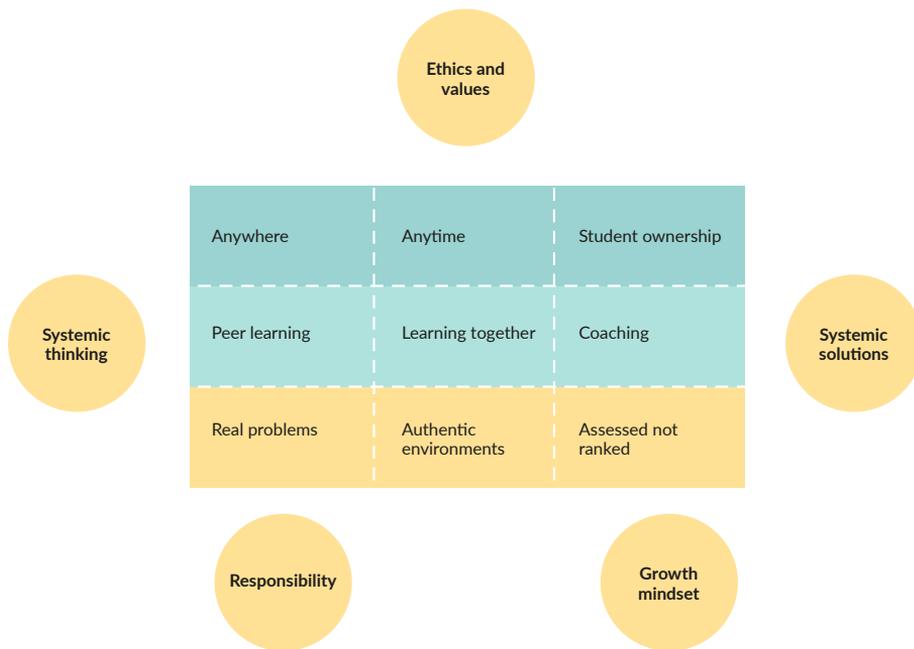


Figure 5. Widening the Education 4.0 approach

close to them, society and the globe. We often use, partly simplifying, the term climate change when discussing sustainable future. A sustainable future cannot be created only by climate change mitigation but by solving the wider sustainability crisis and by value choices. Climate change, however, lies in the core of the sustainability crisis intertwining together its other elements, such as biodiversity loss and extinction of species, use of land and water supplies, air and chemical pollution, ocean acidification, etc. These are all more or less interlinked and involve several ethical viewpoints and value choices. The aim of learning is to support a learner to see the interconnected relationships between these topics and consider the impacts of desired actions in wider contexts.

Education 4.0. emphasizes competences, which education should be able to provide, such as problem-solving skills, teamwork, creativity etc. These are absolutely necessary skills in the changing world, but they need to be interconnected to a sustainable framework, such as responsibility, ethics and value basis. Otherwise, these competences can be even dangerous, for example generating solutions damaging the environment or being ethically questionable. The growth mindset is encouraged, learners having competence and belief in their own capabilities doing things better in a sustainable way. Education must develop learners' systemic thinking, because the sustainability crisis is a systemic problem to be solved through systemic solutions. This requires the ability to see and

evaluate interconnectedness and relationships between phenomena. Figure 5 shows how Education 4.0. should be widened.

Three closely related factors can guide competence development to the direction of improving sustainable well-being (Cohen 1995):

1. Doing more with less – employing advanced and environment-friendly technologies, creating circular flows, eliminating waste.
2. Doing better with less – slowing population growth and decreasing per capita consumption, ending exploitation of humans, animals and nature, supporting regeneration of biological and cultural diversity, acknowledging planetary and social carrying capacity.
3. Elevating the common good – reinventing how we define and measure quality and life.

Briefly, competences can be used for the benefit of a sustainable future or they can support the opposite development; therefore education, and the competences it is aiming to generate, must include a strong value basis.

Aiming towards sustainability changes education in many ways. Learning contents cannot be based on subjects but on understanding connections between nature, society and economy with an objective to develop solutions for a sustainable future. Neither can the curriculum be a collection of more or less outdated knowledge but a tool for organizing learning opportunities towards solving real-life problems with competences such as critical thinking, systems thinking and creativity, and fostering character development with qualities such as resilience, curiosity, ethics and responsibility. All this calls for a mind shift, changes in our worldview or perspective (table 1).

	CURRENT PERSPECTIVE	SUSTAINABLE PERSPECTIVE
What is good life?	material consumption, individualism, needs of our generation	nonmaterial consumption, sharing and caring, needs of future generations
How we see economy?	competition, maximizing profits, rich and poor, "more"	cooperation, benefits for society, equality of opportunity, "better"
Time perspective	short term orientation	long term orientation

Table 1. Perspectives to well-being (adapted from Salonen & Konkka 2015)

This is not necessarily as difficult as it sounds. The current society based on consumerism, having environmental problems, life management challenges, and increasing mental problems drive us to find solutions to the current lifestyle. Modern research on well-being states that happiness or good life are not based on material things but on social relationships, time spent with people close to you, in voluntary work or in creative activities; continuous economic growth or increasing consumption do not make us happy. This sets challenges to education too: education should support the development of future competences and character qualities, as well as enhance a value basis that enables the learners to construct their own worldviews and act to create a sustainable future.

1.4 Changing work during sustainability crisis

The need for educational reform is usually justified with requirements caused by changing work; working life, working culture and work tasks are all under a significant change. Very seldom is it discussed if and how the sustainability crisis and climate change are changing work and thereby education too.

Researchers Järvensivu and Toivanen (2018) discuss how work and employment will change when we give up fossil energy and move towards a carbon neutral world. Surprisingly, many branches and industries can become labour intensive in a new way when fossil energy-based production methods are abandoned. Reform of the energy sector, new technologies and intensification of the use of resources can be both economically profitable solutions and have positive effects on employment. Circular economy creates new jobs and new energy solutions require workers in planning, production, assembling and service. In addition to manufacturing industries, it is possible that such branches as repair and handicraft, having a high employment effect, can grow in the future. In the current world, it is not profitable to repair products, but in a world, which is not based on disposable goods, there might be a lot of work e.g. for professionals offering repair, services or borrowing of clothes or household equipment.

Carbon neutrality means that resources must be utilized more efficiently in every field, and this leads to new business models and work tasks. Maintaining goods and selling services will increase, selling of goods decrease. The fields of agriculture and food production must change too. We need to move towards self-sufficiency in food production and towards a plant-based diet, and simultaneously sequester carbon in use of land. Leading specialist in foresight Mikko Dufva from the Finnish Innovation Fund Sitra states that work will not end but it will change. When unsustainable production models are compensated with sustainable ones, we can reutilize the existing infrastructure, for example making urban



Figure 6. Redesigning the existing infrastructure

greenhouses of parking halls and piggeries (figure 6). Old professions are still needed, but methods, materials and products will develop. For example, metal industries are needed, but less cars and more windmills are produced; in construction business, the role of renovations and use of wood construction will increase.

A popular topic is if automatization, artificial intelligence and robots will take people's jobs. Probably they are not able to compensate people in jobs, which require creativity, human touch, or the ability to act in complex situations. Graeber (2018) discusses the sense and significance of work. According to him, many well-paid and highly respected jobs are useless or even harmful. A survey conducted by Harvard Business Review lately, interviewing 12 000 experts of different fields, showed that half of the interviewees did not see any idea or significance in their own work tasks. Simultaneously, the jobs that cause most good for people and no harm for the environment are low-paid and less respected, such as child and elderly care. Graeber's solution to get rid of "bullshit jobs" is basic income, which could let people do something meaningful instead of staying in frustrating jobs, which are useless and even harmful. The idea of basic income is supported also by Naomi Klein, who sees that people should not be forced to work in jobs that only increase consumption. According to Klein, well-planned economy where public authorities restrain polluting industries and invest especially in public transport, renewing energy and the caring sector, would be more humane and offer satisfying ways of living.

Changing work calls for renewing economic institutions and ways of living. Whatever we do, it must be based on well-being that does not use much energy and resources. Political decision-making should actively lead work to a direction which uses fewer resources and creates more well-being. The status of jobs, which focus on caring for people and nature, must be improved. Nowadays the situation is often the opposite; intensive farming and mining industries are supported with public money, and educational institutions such as schools and universities, as well as care for the elderly and children, are targets for savings. Sustainability is not a job killer: according to International Labour Organization ILO, efforts to advance sustainability are compatible with employment opportunities and with the promotion of decent work. A good future for work requires a stable and healthy environment, and such future requires paying attention to environmental degradation and protecting workers and communities from it.

There have been concerns on tightening environmental legislation causing losses of jobs. Actually, the impact has been the opposite, and strict environmental legislation has created new jobs and new sustainable innovations. For example, in Finland the turnover of environmental technology has already exceeded the turnover of forest and paper industries, the latter traditionally having been the cornerstone of Finnish industries.

In all, the sustainability crisis and climate change can change work to a positive direction. Naturally, we must give up or reduce many things, such as meat-eating, holiday flights, or fast fashion, but we can also get many other things, such as a healthier diet, more commonality, social participation and even more meaningful work tasks. In addition, learning can be seen as work in future. When routine work diminishes, it can bring up skills where humans are better than machines. Fostering them can even become a competitive advantage for countries investing in education development.

References (chapter 1)

- Bregman R. (2017). *Utopia for Realists*. US: Bloomsbury Publishing.
- Confederation of Finnish Industries. (2011). OIVALLUS Final report. Retrieved from https://ek.fi/wp-content/uploads/Oivallus_loppuraportti_eng.pdf
- Cohen J.E. (1995). *How Many People Can the Earth Support*. New York: W.W. Norton.
- Graeber D. (2018). *Bullshit Jobs: A Theory*. New York: Simon & Schuster.
- Huttula T. (2018). Työn muuttuessa oppimisesta tulee työtä. In Suoranta A. & Leinikki S. (Eds.), *Rapautuvan palkkatyön yhteiskunta – Mikä on työn ja toimeentulon tulevaisuus?* (pp. 62–73). Tampere: Vastapaino.
- ILO (International Labour Organization) (2018). *The future of work in a changing natural environment: Climate change, degradation and sustainability*. ILO Research Paper Series, 30 August 2018. https://www.ilo.org/global/topics/future-of-work/publications/research-papers/WCMS_644145/lang--en/index.htm 30.12.2018
- Intelitek. *The education 4.0 revolution. An analysis of Industry 4.0 and its effect on education*. http://www.intelitek.com/resources/pdf/35-3000-0002_WP_Education_4_0_Ver_B.pdf
- Isomäki R. (2019). *Miten Suomi pysäyttää ilmastonmuutoksen*. Helsinki: Into kustannus.
- Järvensivu P. & Toivanen T. (2018). Miten järjestää työ ja työllisyys ekologisen jälleenrakennuksen aikakaudella? in Suoranta A. & Leinikki S. (Eds.), *Rapautuvan palkkatyön yhteiskunta – Mikä on työn ja toimeentulon tulevaisuus?* (pp. 44–61). Tampere: Vastapaino.
- Klein N. (2014). *This Changes Everything: Capitalism vs. the Climate*. New York: Simon & Schuster.
- Laininen E. (2018). *Transforming Our Worldview Towards a Sustainable Future*. In *Sustainability, Human Well-Being & The Future of Education*. Helsinki: Sitra.
- Max-Neef M. (2010). *The World on a Collision Course and the Need for a New Economy*. *Ambio*. 39 (3), pp. 200–210. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3357638/> 27.12.2018
- Pantsar M. & Keronen J. (2019). *Tienhaarassa. Johtajuus ilmastonmuutoksen aikakaudella*. Jyväskylä: Docendo.
- Pölonen, P. (2019). *Tulevaisuuden lukujärjestys*. Helsinki: Otava.
- Rüegg W. & de Ridder-Symoens H. (Eds.) (2010). *Universities since 1945*. In *A History of the University in Europe: Volume 4*. Cambridge University Press. ProQuest Ebook Central, <http://ebookcentral.proquest.com/lib/turkuamk-ebooks/detail.action?docID=605104> 1.1.2019.
- Salonen A. & Konkka J. (2015). *An Ecosocial Approach to Well-Being: A Solution to the Wicked Problems in the Era of Anthropocene*. *Foro de Ecucation*, 13(19), pp. 19–34. <http://dx.doi.org/10.14516/fde.2015.013.019.002> 27.12.2018
- The University from the 12th to the 20th century*. <https://www.unibo.it/en/university/who-we-are/our-history/university-from-12th-to-20th-century> 3.1.2019
- Tommola A. (2018). Työ ilmastonmuutoksen aikakaudella. In *Huili, winter-spring 2018/19*, pp. 22–31.

2 VISIONS OF FUTURE EDUCATION TOWARDS A SUSTAINABLE FUTURE



2.1 Purpose

The work as well as the whole world are going through a period of dramatic and unprecedented change. By definition, it means disruption of the old, and the coming of the unfamiliar or uncertainty, requesting the education to change as well. The future of learning according to education 4.0 is based on the idea of lifelong, experiential and collaborative learning. From new ways of approaching workspace design to increasing one's ability to study and work from virtually anywhere and fostering and training for new competences—this is what it means to work according to economy 4.0. However, we need to go beyond education 4.0 and start reacting to the sustainability crisis, as it can be the biggest single driver for changes needed in education. When the living conditions are in danger, all efforts to develop education must strive for sustainability simultaneously when fostering competence development or developing learning environments or methods. In brief, the purpose of education is to support the development of future competences and

character qualities as well as enhance a value basis that enables the learners to construct their own worldviews and act to create a sustainable future. 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.

In the following, we focus on the vision of future education aiming towards a sustainable future and describe the core ideas of this vision. We start from learning goals, discuss what lifelong learning and transformative learning mean, and how we can integrate the ecological viewpoint in education. We examine how digitalization will change education in many ways, and how it can be coordinated with collaborative learning. Fostering the growth mindset and developing future competences and character qualities are in the core of our vision. In addition, we explore practical issues of future education such as structure, for example education not requiring physical space, subject based curriculum or hierarchical management; and methodology, focusing for instance on learning methods and environments.

2.2 Learning goals

Changing world and changing work continuously require new knowledge and skills, which education should be able to offer in a flexible and easy way. In other words, both competences and degrees should be easy to update. According to several forecasts, modern working life will require that people can smoothly move from a work task to another, while the significance of degrees will decrease, and real competences will be more crucial.

However, following the competence requirements set by working life and business life is not the only purpose of education. Education plays a significant role in renewing societies, in guiding them to the direction of the desired future. There is no good working life without good life. Economic thinking emphasizing efficiency and profitability in educational systems endangers the role of good life, sustainable wellbeing and civilization. The critical competences needed in the future are closely connected with wellbeing of individuals and working communities. The best innovations are created when work is vocative, influential and exhilarating. A hale and creative society consists of hale and creative individuals. However, current educational policies often ignore these viewpoints and focus more on financial cuttings and requirements set by businesses and industries. Naturally, globalization and economic systems always have an impact on education, but

the competitiveness of businesses or the situation of the national economy cannot be the only factors steering educational solutions. Especially higher and secondary education must be able to remarkably widen their perspective to the future, from the workforce needs of the next few years, to solve both global and national societal challenges such as climate change, population growth, equality, or sustainable food production. Unfortunately, this kind of ethical forethought and prioritization of ecological preconditions is difficult to find in current educational policies anywhere. Working life competences are an excellent learning goal, but should not be the only goal. Additionally, education must aim to support students' growth as autonomic and responsible citizens, being able to critically evaluate and renew their own actions.

Learning goals are always connected with chosen values. Higher education and vocational education aim to provide students with study field specific competences and generic competences, which together enable students' success in changing work tasks and working environments in a way that enables the success of organizations as well. Success does not refer only to economic success but to good life too. The aim of education is to provide competences and wellbeing for individuals, who for their part create functioning and sustainable societies, enhance economic and sustainable development and equality, and increase wellbeing of nature, people and animals. Competence development must be based on values, which are visible in curriculum methods and contents. Nowadays our knowledge and understanding of that we are a part of nature, depend on it, and have numerous impacts on the diversity of nature, is missing in curricula contents as well as in learning goals of most disciplines and study fields.

To sum up, the vision of future education sets not only working life competences but also aspiration to good life and creation of a sustainable world as the goal for learning. The learners get the will and the ability to question things and seek solutions outside the current thinking patterns. This kind of education has a target of achieving transformation of values and worldviews, thinking and actions, and educating learners as change agents towards a sustainable future.

2.3 Lifelong learning and growth mindset

A growing body of literature, research reports and surveys foretell a future of work that emphasizes the ability to learn and adapt. The ability to continuous learning and development, critical thinking, empathy, ability to understand and find purposes, and cooperate and work in teams, are competences which will ensure wellbeing for individuals and societies. European educational policies share very similar goals. Besides lifelong

Never stop learning, as life never stops teaching

learning, metacognition, referring to a learner's ability to recognize and assess one's own learning and development needs, is a crucial competence in a changing world.

Lifelong learning is here to stay, and competence development means the ability to learn and renew, all this demanding that the requisites for good life are taken care of. Emotional flexibility and balanced feelings are needed to manage in the changing world. This means big challenges for education: How to prepare students to get used to the unknown and maintain an emotional balance as well as possess a renewing and ethically sustainable ability to act among all changes.

Numerous research papers, reports and policy statements direct the future directions and needs of competence development. The requirements of lifelong learning and continuous learning have pushed up, more than ever, the significant role of higher and vocational education. The aim is to decrease the central role of degree studies. Competences, i.e. knowledge, skills and attitudes, are considered more important than degrees. The changing world and working life require new competences, which education must be able to provide in an easy and flexible way, which means updating both degrees as well as competences in general must be enabled. According to forecasts, people must be able to change their work tasks in an agile way in modern working life, which means that success in the career path is determined by competences and not by degrees.

The changes do not concern only the young students of today. The current employed population will also need further education, and educational systems must be able to offer lifelong learning in a modular way to the working age population, and do it in a flexible, efficient and high-quality way.

Degree studies are expected to develop to a direction where prior knowledge and skills are recognized better than earlier, which can accelerate the completion of degrees. Having merely completed a degree years ago does not necessarily provide the required competence. Instead it should be made sure that competences are updated constantly e.g. by making sure that the working tasks have updated adequately the scope of the degree.

A growth mindset is important for both students and their teachers, helping them to see that they can act to positively influence their own learning, work, and community. To foster the growth mindset among students it is required that teachers first see themselves in the same way. This can be developed in the working community by providing opportunities for teachers to reflect upon their ideas, discuss what they have learnt, and implement their ideas without being afraid of the consequences of failures. Fostering the growth mindset is worth even if it takes time, because the growth mindset is necessary to believe that one can develop and successfully improve as well as recognize opportunities instead of threats. A growth mindset is a vital and intrinsic part of life-long learning.

2.4 Posthumanism, ecological education and transformative learning

Increasing signals of ecological and social crises raise significant questions for current thinking and learning. We must learn what is necessary and what is possible in order to have a sustainable future. The approaches in education, which have focused on empowering the student as the best person to make decisions about his/her own future, have been based on humanism. However, since science has taken huge steps forward it is worth considering whether the posthumanistic approach is better and more sustainable in relation to the current and future worlds, updating it to answer to the scientific view of reality in the 21st century. Posthumanism is based on humanism, but it differs from it by relegating humanity back to being one of the natural species, rejecting any claims based on anthropocentric dominance. According to posthumanism, humans have no right to destroy nature, or set themselves above it. Human knowledge, which earlier was considered as the defining aspect of the world, is also reduced so that it has a less controlling position.

Why is posthumanism important especially in secondary and higher education? This is because there is no longer time to rely on early childhood education and primary education developing attitudes and ways of thinking and ensuring that the future generations are more aware and responsible in their decision-making. The latest IPCC Report 2018 states that we must act now to save the planet because there are only 12 years to slow down climate change, and therefore young adults in secondary and higher education play a key role in our decision-making on how to make the required changes in our lifestyles.

Considering the current state of the world, we can state that we have to add posthumanistic values to the aims of all education and ensure that all degrees given must be able to generate competences that show the way to a more sustainable and equitable future where all life is respected. Education can focus on these themes better if its values enable

them and lead them in this direction, and this also enables the development of education on an operational level according to the values. These values do not mean empty words in curricula or extra costs in the implementation of education. They can generate new sustainable competitiveness for societies, because values turned into practices can mean, for example, new technical solutions constraining climate change, novel food innovations, sustainable and profitable food production, and innovations improving public health and decreasing health care costs.

The main question is how we can embed posthumanism in education and educate people for a transformation towards a sustainable future. This transformation requires transformative learning, which involves experiencing a deep and structural shift in the basic premises of thought, feelings and actions. It is a shift of consciousness, which dramatically and permanently alters our way of being in the world (O'Sullivan et al. 2002). The lack of transformative learning can be the reason for inefficiency of ecological education.

The current operative approach to learning lies on constructivism, where learners use information they already know to acquire more knowledge, or on a more challenging approach, which involves critical examining and if needed, changing perspectives and assumptions. However, transformative learning involves 'seeing things differently', i.e. having a holistic or so-called helicopter view seeing numerous alternatives and restructuring basic assumptions and mental models enabling a fundamentally different way of seeing the world. Transformative learning, questioning the current lifestyle and way of actions, can cause feelings of anxiety and resistance, and thus require unlearning especially among adult learners. It is important to provide opportunities for people to experience benefits of required changes. Transformative learning challenges us to rethink our acquired habits, because we cannot live and consume as we are used to. However, it is encouraging to remember those numerous research results on that satisfaction and happiness are generated by a society, which is not based on continuous growth of consumption. Transformative learning is also 'from the real world'; phenomena shaking our general assumptions are already here, such as global warming, terrorism, crises on health or energy sectors, and under these circumstances, education has to be active and redesign its activities to move towards future oriented learning that can nurture positive development on the personal, social and global level.

In practice, transformative learning in the educational culture and pedagogical solutions means that agency in everyday situations is promoted. Students can expand their learning by questioning existing practices, analyzing 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, community, or institution develops new practices. This kind of learning often has to do with transformative change in communities and societies.

FROM CONSTRUCTIVISM TO TRANSFORMATIVE LEARNING

CONSTRUCTIVISM	TRANSFORMATIVE LEARNING
<ul style="list-style-type: none"> • based on earlier knowledge and experiences, and connects them to new knowledge • learner centered • learners learn how to learn 	<ul style="list-style-type: none"> • starts from disorienting experiences • through self-knowledge • to critical reflection • and proceeds to dialogue and action

It is not enough that transformative learning makes us adopt a sustainable lifestyle, but the aim is to educate people who can generate change. Several researchers consider ‘character’ as the cornerstone for education, covering qualities such as curiosity, courage, resilience, ethics, leadership, mindfulness, sufficiency (= to be satisfied with less material welfare) and responsibility. There is no simple formula for how to teach and learn these qualities. Some concrete solutions are moving from subject-based orientation in education towards solving real problems in authentic environments, focusing on understanding the connections between people, nature, and society, including economy. Education can develop competences, but education itself needs to change too, not fixing values, contents and goals too strictly but giving freedom and space for changes. This naturally involves changes in society and political decision-making as well. There is a huge amount of information about our ecological situation, but the information does not necessarily lead to actions. There is also ‘a myth of progress’, believing that technology automatically offers us better solutions to our problems. A common reaction is to ignore/be apathetic, or to believe ‘somebody else will solve the problems’. To break through this in education we need collaborative actions, dialogic and participatory learning situations, and boundary crossing and problem solving in multidisciplinary teams. Sharing ideas, experiences and fears, encouragement, trust, motivation and joint actions are all empowering methods to be utilized in ecological education.

According to Finnish research on ecological education, we unconsciously transfer harmful ways of action to our children and young people in families and in education, and therefore we should cut off the spiral of overconsumption and change educational systems. The relationship between individuals and the economy is now in the core of education, morals are interpreted from the market’s viewpoint, and education means coaching competitive individuals. The core of education needs to be brought back to the relationship between people, society and nature. Education should wake a collective understanding of basic ecological preconditions. Experiential learning is seen as one efficient tool towards nature-based education recovering the relationship between future generations and nature.

Emerging digitalization and changes in work tasks and activities together put a special focus on skills and thus challenges to the educational community. In education, it must be determined how to use technology and digital tools, and in which situations they can generate added value. The important competence for the future is not only finding information, but to evaluate, combine and modify it, and create new knowledge. Critical thinking, problem-solving abilities, and collaboration are needed to foster new knowledge, and digital tools can help in developing these skills. For a sustainable future, it is important to learn and do things together, because wicked problems cannot be solved alone but in co-operation. This means enabling learning where different learners come together to share ideas and experiences with others, in an atmosphere of trust that recognizes the value of each participant. It is probable that the digital tools enable online dialogues and face to face collaboration in easy ways in the near future, and the most important thing is to learn how to focus on learning together, not solely on the devices and tools enabling it.

2.6 Collaboration

In working life situations, problems are solved and innovations created in different groups and networks. However, in universities the students traditionally study via lectures and reading, focusing on different subjects. Collaboration in learning has traditionally not been appreciated and sometimes it has even been forbidden. We know well that life is not split in subjects, yet schools teach as if it is, and we assess individuals, yet we know that solving wicked problems usually requires team working and networking with people with different kind of competences.

Transfer problem in learning = learning in one type of setting is not necessarily accessible when the learner is moved to another setting

A well-known challenge in education is so-called transfer problem. It means that learning can not be applied in the working life context; in other words, learning in one type of setting is not always accessible when the learner is moved to another setting. This is why elements of working life environments are necessary to be applied in educational environments, providing learners opportunities to learn in as authentic working-life environments as possible. Not only learning environments but learning methods and practices need to follow the same idea. In working life there often are people from many different fields with different kinds of expertise, and they are expected to work effectively together. Also the tasks in working life organizations often require competences that do not belong to the

scope of only one study field or discipline. Therefore, implementing multidisciplinary during studies, or so-called boundary crossing, is an efficient way to solve the transfer problem. The studies are implemented so that learners get used to working with other learners with different backgrounds and from different study fields, solving real problems together in as authentic environments as possible. This naturally means compensating traditional teaching and learning methods, such as lectures and exams taking place in classrooms, with very different learning methods and environments. Co-operation and collaboration are at the core of this kind of learning. So-called symmetrical learning is getting more and more typical in working-life organizations, referring to that workers have their own specific fields of expertise, and collaboration and dialogue between these actors benefits all parties. When these practices of working places are applied in education, the knowledge and skills learned during education can be transferred more easily to the working life context and the transfer problem is easier to solve.

Boundary crossing can help to solve the transfer problem. Learners are given opportunities to work with other learners from other study fields and with different backgrounds. They learn to see and understand different viewpoints, know how to work successfully in teams and groups consisting of different people, and recognize the importance of being interested also in matters not belonging only to one's own study field. With boundary crossing, learning competences needed to solve real life problems in working life is made possible.

Professionals, who can define their goals and means to achieve those goals by themselves are needed more and more. A lot of personal initiative is required. It also seems obvious that not only individual knowledge is valued; instead, people are required to build networks and interact in them to find the lacking pieces of information from different experts in their personal network. All this calls for an ability to expand one's connections to areas very different from one's own background. This kind of boundary crossing will be something that can help future learners to succeed in solving wicked problems requiring different kinds of knowledge and skills. Educational institutions in higher education especially should shift their focus on improving boundary crossing collaboration for example by offering courses that are multidisciplinary. Multidisciplinary education in higher education exposes students to research in multiple disciplines, trains them in collaborative methods through team working and promotes new forms of communication and collaboration among disciplines and study fields. In comprehensive school and primary education, this can be implemented by so-called phenomena-based learning. Phenomena-based learning integrates different subjects, often with arts and science, helps to understand complex phenomena, and

requires and encourages collaborative learning.

Fostering sustainable wellbeing starts in comprehensive school and enhancing collaboration and interpersonal competences play a key role there. The Finnish comprehensive education is based on the idea of equality, offering similar opportunities for all learners irrespective of their background, and on collaboration, fostering the ability of learners to listen and debate respectfully with others and to co-operate in teams and networks. These ideas are also significant tools towards a sustainable future. The sustainability crisis is a social problem, and dialogic learning and collaborative problem-solving and actions are needed to solve it. Sharing perspectives, experiences and motivations to change can create positive empowerment, feelings that there is hope and that problems can be solved. This is a collective process, depending on the shared recognition of problems to be solved, and can lead to joint actions towards a better future. Individualism naturally still matters, as education traditionally assesses individual development and performance. In addition to individual development, education needs to increase understanding of the common good being good for individuals as well, and interdependence between people to encourage collaboration. These are not conflicting aims, because we need the development of responsibility on both personal and social levels; we must care for ourselves to be able to care for others.

The key to change lies in collaboration. Shared experiences and even shared despair can lead to renewing of thinking and acting. Learning should create optimism and hope and simultaneously keep realities in mind. Instead of reproduction of the existing, education should aspire to radically new perspectives. As practical steps, collaborative methods can be utilized in order to foster empathy and build alternative futures. We can choose to focus on the common good and collaborative learning in addition to individual performance and believe in us as change makers.

2.7 Competences and character qualities

Creating a sustainable future requires transformative learning, learning which can renew and change our understanding of interdependence between humans and nature, the elements of wellbeing, and the role of economy. Learning involves critical evaluation of current values and worldviews. Instead of subjects and disciplines, the starting point for learning should be the wholeness of the globe and life as well as seeking solutions for future challenges. All this requires moving from subject based learning towards solving real problems with others, when generic competences such as critical thinking, creativity, and team working become essential. This does not mean forgetting subject-based competences. Discipline-specific competences are still needed, but without generic competences they

can be useless. To solve real problems, knowledge is not enough, but together with skills, character and attitudes it is possible to foster change agents for a sustainable future.

In comprehensive education the emphasis is put on the development of learners' self-reflection, courage, curiosity, initiative, ethical skills, leadership, empathy and responsibility. In Finland, this has been included in the new national curriculum, which came out in 2014. It is based on seven key competences: thinking and learning to learn; cultural competences, communication skills and self-expression; taking care of oneself and everyday skills; multiliteracy; ICT competences; work life skills and entrepreneurship; and participation, agency, and readiness to build a sustainable future.

Similar learning goals can be identified in secondary and higher education. The direction of competence development is guided by several studies, reports and educational policy outlines of the future direction and needs. They all emphasize the ability to learn and adapt. The continuous ability to develop, resilience, learning to learn, and critical thinking are underlined, because they can ensure both an individual's wellbeing and societies' ability to change. In addition, empathy, systemic thinking, and teamwork skills are usually listed as key future competences, as well as the growth mindset mentioned earlier and metacognitive skills. Metacognition refers to a learner's ability to recognize and evaluate his/her competences and development needs. Strictly defined subject- or discipline-based competences are usually missing in these reports and studies, IT skills being the only exception.

The future competences include intuition too. The current education concentrates especially on the development of analytical thinking, but the future education could develop the ability to connect intuition and logical reasoning. This means for example that learning is focused on practicing how to solve impossible problems instead of learning specific subjects. Learning situations where answers are searched together by practising and testing should be created.

Competences are not only knowledge and skills. The third dimension of attitudes, or character, are the element of competence, which really matter (figure 7). Knowledge and skills cannot take us towards a sustainable future, character and attitudes are inevitably required too. There are many constructs and concepts related to character. Associated qualities of character are often listed as follows: Ethics, curiosity, courage, resilience, leadership and mindfulness. Altogether, the concept of character refers to how we engage in the world. Developing character means acquisition and strengthening of virtues and values, and capacity to make wise choices. Character is a significant structure in redesigning education. There must be a deep understanding of human and nature and aim towards a

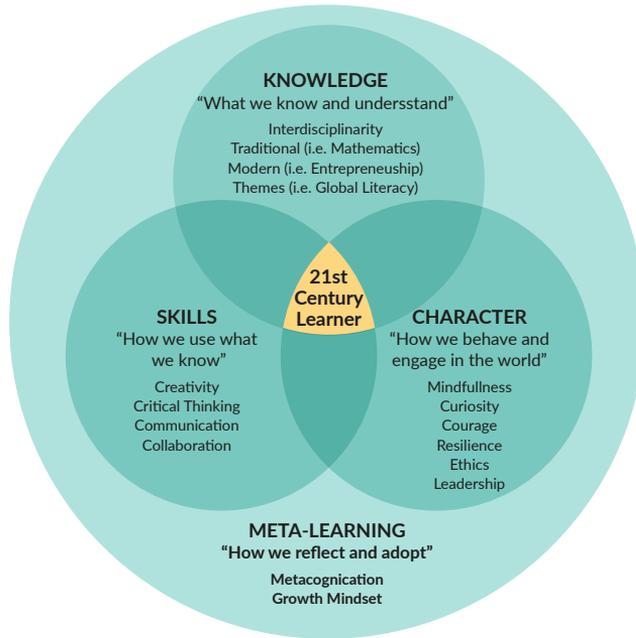


Figure 7. Four-dimensional education according to Fadel et al., 2015

meaningful life in the core of education. Character education is making changes, which offer real alternatives to our current lifestyle.

Ethics and values cannot be emphasized enough in competence development. Without them, many abilities listed above can be meaningless or even dangerous. For example, strong study field specific expertise with creativity and problem-solving skills together, without an ethical basis or values, can generate new products polluting the environment, or solutions which are ethically questionable. The attention is currently on competences, not on values. We aim to answer the question what kind of competences students will need in the future work market, but the question must be redesigned. The question is not only what kind of competences future education must be able to provide, but what kind of problems we must solve. Competences are not needed to produce more low-quality products at a cheap price but increase wellbeing, make work meaningful, protect the environment, and ensure opportunities for a good life. The purpose of education should not only be to provide competences for work, but competences for good life. It is society, which decides what it is valuable, not technology or the market. Education must participate in building a sustainable society, helping us to learn to think beyond ourselves and understand what is right under new circumstances. This can be done if education focuses more on the common good and

collaborative learning instead of individual performance only. Education must take the role as a leader to change and show that it believes in the possibility of change and in learners as change makers.

2.8 Redesigning teaching, learning and curricula

Changes around us are challenging our education systems in various ways as described earlier. Education requires a change in direction, from traditional knowledge-based to mosaic-like competences, which in addition to knowledge emphasize skills, attitudes and character qualities as well as the ability to self-evaluate to which direction to focus one's learning. Additionally, teacher roles need to be renewed. It is not anymore possible to forecast exactly which skills and knowledge to provide learners with. The teaching profession is renewing towards coaching, but still the daily core of the teaching profession is to promote learning. The task of a coaching teacher is to support, encourage and guide in order to make life-long learning, collaborative working methods, combination of different expertise, and utilization of feedback possible.

Learning will be improved, and transformative learning can be fulfilled if teaching can be renewed simultaneously. For example, in Finland, teachers are very good in traditional ways of teaching, but there are problems in several issues such as dealing with diversity, making use of digitalisation, and guiding students' active learning. There is also lack of teamwork and networking among teachers. Therefore, implementing real changes in education usually calls for reforms in teacher education. According to several research reports, teacher learning is a major issue in introducing new innovations in education, and if teachers do not adopt new things, or resist them, the reforms will fail.

Teaching and learning are facing very similar challenges. They need to be personalized: learners are different and learn in different ways, and teaching must be able to reach these different learners. The learning and teaching cannot focus only on traditional subjects anymore but on wider phenomena or modules, ensuring learners to see interconnectedness and dependence between phenomena and developing systemic thinking. Learning and teaching require motivation: teachers need support and further training to be able to redesign education to the desired direction, and learners' different motivations must be identified, widened and supported in order to enable learning. Learning and teaching environments are developed to social learning environments, formed by people with different talents and competences and by the interaction enabling collaborative learning. Then, collaboration concerns teaching too, requiring more co-operation between teachers, enabling co-teaching and other collaborative working methods. Attention must be paid

also to the sustainability of learning and teaching; what are the outcomes and how they contribute to personal growth, wellbeing and the desired competence development.

Curricula have an enormous potential, both conceptually and politically, to forward values, attitudes and ways of thinking, and that is why changes in curricula are crucial when redesigning education. The curriculum and its reform in particular must be prevalent as a result of the awareness of the needs of the globe, the nature, the society and the economy, and taking relevant action in accordance with those needs. It is not only the curriculum content but the application, usefulness, and contextual sensitivity that reflect the kinds of experiences from which the students will benefit academically or professionally, and it is hence posited here that the curriculum as the 'face' of the institution is mirrored in the kind of students produced, their competencies and qualifications. In Finland, the curriculum reform should not be too challenging in higher education, because universities and universities of applied sciences can decide both on the curriculum content and methods to implement it. Especially at universities of applied sciences, this autonomy has led to the development of so-called postmodern curricula, which integrate different subjects and are flexible. Here postmodernity is understood to focus on difference and diversity; recognizing shifts in time, space and boundaries; and on openness to flexibility, creativity, agility and responsibility.

A postmodern curriculum may be viewed as moving towards an open system with constant flux and complex interactions; requiring interactive and holistic frameworks for learning, with students becoming knowledge producers rather than knowledge consumers; and as transformative rather than incremental with respect to change, because change requires errors, chaos and uncertainty in the actions of the learners. In brief, postmodernity in the curricula of education allows us, if we want, to reform and renew them to the desired direction. In particular, the curriculum and its reform must be prevalent as a result of the awareness of the needs of society, the environment and nature and must take relevant action in accordance with those needs.

Curriculum development to the direction of a sustainable future involves changes in curricula content, methods, assessment, and in staff and student involvement (figure 8). The content should be able to provide the knowledge and skills, which are currently missing. For example, basic facts of themes such as the sustainability crisis including climate change and environmental protection, could be included in curricula by mainstreaming, in other words by integrating these topics in applicable studies. The methods by which the content is conducted should support learning. It is not enough to provide data – learning methods and environments to generate real learning must also be activated, for example, via the problem-solving of real cases in cross-disciplinary student teams or experiential learning

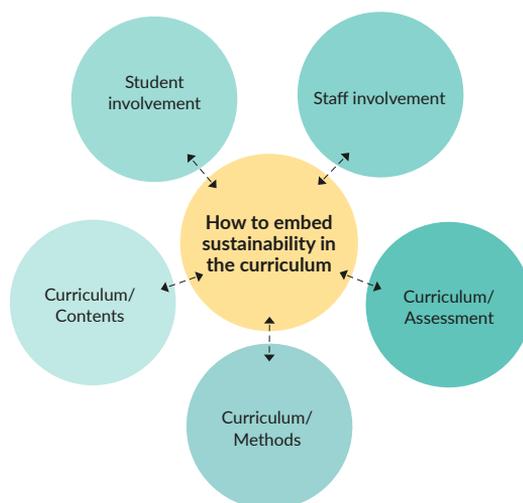


Figure 8. Embedding sustainability in curricula

methods, such as authentic learning environments etc. When learners can perform a task, go through the real experience, participate and act and discuss their experiences with each other, they learn best. The content and methods together should help learners become aware of their place in society and environment, striving 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 on critical thinking, creative problem solving and constructive procedures for sustainability themes instead of specific theories and methods.

The assessment guides learning, and therefore the assessment methods and criteria should be reconsidered too. For example, the learning process and outcomes can be evaluated from several viewpoints regarding how nature is always a part of our actions and decisions. Staff involvement in curriculum work refers to the earlier discussion about how the staff must have competences, further training and institutional support in order to be able to relay the curriculum. Student involvement in curricula means that there must be continuous discussion with students, just like with the staff, regarding why the approach paying attention to sustainability issues is inevitable and how to implement it together, and this must be included in student counselling as well.

The methodology, such as curriculum redesign described above and renewing teaching and learning, are examples of practical steps for preparing for the future. The future is not something inevitable, but it is up to us to choose to actively engage in designing and constructing that future. In the following chapters, we will focus in more detail on how to manage the change, how to design the change process, and how to make the change.

References (chapter 2)

- Bregman, R. (2017). *Utopia for Realists*. US: Bloomsbury Publishing.
- Dweck, C. S. (2006). *Mindset: The New Psychology of Success*, Random House, New York.
- Elliott, S. W. (2017). *Computers and the Future of Skill Demand*. OECD Educational Research and Innovation.
- Evans, T. L. (2012). *Occupy Education: Living and Learning Sustainably*. New York, NY: Peter Lang.
- Evans, Woody (2015). *Posthuman Rights: Dimensions of Transhuman Worlds*. Madrid: Teknokultura.
- Fadel, C., Bialik, M. & Trilling, B. (Eds.) (2015). *Four-Dimensional Education. The Competences Learners need to Succeed*. Boston: The Center for Curriculum Redesign.
- Finnish National Agency for Education (2016). *National Core Curriculum for Basic Education 2014*. Publications 2016:5.
- Finnish National Board of Education (2016). "Renewing teaching profession", available at http://www10.edu.fi/ammattipeda/?sivu=uudistuva_opettajuus 27.6.2016.
- Hakkarainen, K. (2005). *Asiantuntijuus ja oppiminen työelämässä – psykologisia näkökulmia*. In seminar: "Osaaminen murroksessa – työelämälähtöisen osaamisen tunnistaminen ja tunnustaminen." Arranged 12 Apr 2005 in Helsinki.
- Harari, Y. N. (2018). *21 oppituntia maailman tilasta*. Liettua: Bazar-kustannus.
- IPCC Report (2018). *The Intergovernmental Panel on Climate Change (IPCC): Special Report on Global Warming of 1.5°C (SR15)*. <http://www.ipcc.ch/report/sr15/> 19.10.2018.
- Illeris, K. (2009). *Transfer of Learning in the Learning Society – How can the barriers between different learning spaces be surmounted, and how can the gap between learning inside and outside schools be bridged?* *International Journal of Lifelong Education*. Vol. 28, No 2, 2009, 137–148.
- Karjalainen, A. (2007). *Akateeminen opetussuunnitelmatyö*. Oulu: Oulun yliopistopaino.
- Kettunen J. (2011). *Innovation Pedagogy for Universities of Applied Sciences*. In *Creative Education* 2(1), 56–62.
- Laininen E. (2018). *Transforming Our Worldview Towards a Sustainable Future*. In *Sustainability, Human Well-Being & The Future of Education*, pp. 161–200. Helsinki: Sitra.
- Lehtonen A., Salonen A., Cantell H. (2018). *Climate change education: A new approach for a world of wicked problems*. In *Sustainability, Human Well-Being & The Future of Education*, pp. 339–374. Helsinki: Sitra.
- Lonka K. (2018). *Phenomenal learning from Finland*. Keuruu: Otava.
- MacDonald D. (2003). *Curriculum change and the postmodern world: is the school curriculum-reform movement an anachronism?* <http://faculty.ed.uiuc.edu/westbury/jcs/Vol35/MACDONALD.HTM> 3.1.2012. 1.2.2019.
- Penttilä T. (2012). *Environmental Issues in Business Education at Finnish Universities of Applied Sciences: Towards a Postmodern Curriculum?* Turku: Research reports from Turku University of Applied Sciences.
- Penttilä T. (2014). *Towards a Postmodern Curriculum?* In *The Policies of Inclusion*, by Laurinkari J. and Tarvainen M. (Eds.), EHV Academic press, October 22, 2014. Pp. 99–112.
- Penttilä T., Kairisto-Mertanen L. (2013). *Developing Innovation Competences Through Boundary Crossing in a Social Learning Environment*. In Lehto Anttoni – Penttilä Taru (eds.) *Pedagogical views on Innovation Competences and Entrepreneurship*, pp. 34–43. Reports from Turku University of Applied Sciences 171. Tampere 2013

Opetus- ja kulttuuriministeriö (2018). Maailman osaavimmaksi kansaksi. Opetus- ja kulttuuriministeriön tulevaisuuskatsaus. Valtioneuvoston julkaisusarja 21/2018. Opetus- ja kulttuuriministeriö, Helsinki 2018. http://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/160903/21_TUKA_OKM_WEB.pdf?sequence=8&isAllowed=y 28.8.2018

O'Sullivan E., Morrell M., Connor A. (2002). *Expanding the Boundaries of Transformative learning: Essays on Theory and Practice*. New York: Palgrave.

Rohweder, L. (2007). The Paradigm of Sustainable Development and Education – Reflections on the Past and on the Future. In *Towards Sustainable Development in Higher Education – Reflections*, ed. by Kaivola, T. – Rohweder, L. Publications of the Ministry of Education 2007:6, pp. 74–79.

Snaza N., Appelbaum P., Bayne S., Carlson D., Morris M., Rotas N., Sandlin J., Wallin J. & Weaver J. (2014). Toward a posthumanist education. *Journal of Curriculum Theorizing*, 30(2): 39–55.

Sterling S. (2010). Transformative Learning and Sustainability. In *Learning and Teaching in Higher Education*, Issue 5, pp. 17–33. <http://dl.icdst.org/pdfs/files/Ocd7b8bdb08951af53e5927e86938977.pdf> 12.2.2019

Tervasmäki T., Tomperi T. (2018). Koulutuspolitiikan arvovalinnat ja suunta satavuotiaassa Suomessa. *Niin & näin* 2/18. <https://www.netn.fi/artikkeli/koulutuspolitiikan-arvovalinnat-ja-suunta-satavuotiaassa-suomessa> 16.8.2018.

Työ- ja elinkeinoministeriö (2018). Tekoälyajan työ. Neljä näkökulmaa talouteen, työllisyyteen, osaamiseen ja etiikkaan. Työ- ja elinkeinoministeriön julkaisuja, 19/2018.

Valtioneuvoston kanslia (2018). Tulevaisuusselonteon taustaselvitys. Pitkän aikavälin politiikalla läpi murroksen – tahtotiloja työn tulevaisuudesta. Valtioneuvoston selvitys- ja tutkimustoiminnan julkaisusarja 34/2018

Valtioneuvoston kanslia (2018). Valtioneuvoston tulevaisuusselonteon 1. osa. Jaettu ymmärrys työn murroksesta. Valtioneuvoston kanslian julkaisusarja 13a/2017

Wolfe, C. (2009). *What is Posthumanism?* Minneapolis, Minnesota: University of Minnesota Press.

Värrä V-M. (2019). *Kasvatus ekokriisin aikakaudella*. Tampere: Vastapaino.

Värrä V.M. (2007). Kasvatusfilosofian tärkein tehtävä. In *Niin & näin* 1/07. <https://netn.fi/artikkeli/kasvatusfilosofian-tarkein-tehtava> 13.2.2019.

3 MANAGING THE CHANGE IN EDUCATION

In the previous chapters, we described how the world is under a constant change and education should be adapted to face the changes. The changes can be due to different reasons, such as the sustainability crisis, digitalization, globalization, or changing work but they all share the same impact; earlier practices need to be changed. In the following, we do not focus on why the change is needed, but how the change, originating from various reasons, is conducted and managed in education. Usually this change requires that the current practices followed in any educational institution must be reconsidered and sometimes big changes are required. This means initiating a change process in the organization, which is likely to cause resistance in people.

Change in an organization means finding a new direction to match the changing demands in the environment of the organization. It is necessary to enhance or maintain the sustainable competitive advantage in the world, which is under a constant change and where interest group preferences are constantly on the move. Change is also needed to reach the aims of education while responding to the changes recognized in the environment.



Change management is about making sure that the necessary changes made in the organization are applied and maintained in an intended way. There are several models of change management and different phases in the change process, which must be considered and planned so that the feeling of insecurity can be kept to a minimum among the people working the organizations. The people should instead be empowered with enough information, motivation and training to be able to carry out the needed changes. All this requires careful planning of the people leading the change process. The role of communication is extremely important, as the leaders cannot count on everybody accepting the change. Communication about the changes to be made must be planned and executed systemically to anticipate and avoid resistance as much as possible.

3.1 Organizational roles and managing the change

Every organization has a primary task or idea, which defines its purpose or right to exist. To reach the aims around this reason to exist the organization needs people. People are hired to fulfil a certain role; they are supposed to be connected to the organization from the standpoint of this role. The roles people hold in their official situations might be very different from the roles they hold in unofficial situations. An individual’s role in the organization is very different from the role e.g. in the family as the latter is permanent and does not change in the course of time. Organizational roles change, the people fulfil their roles for a certain period of time and after that, they might look for something else or the organizations might want to change the people (figure 9).

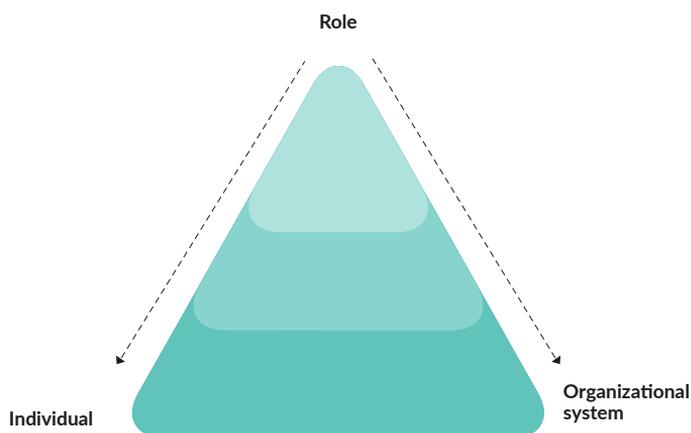


Figure 9. The role-individual-organizational system triangle (Borwick 2018)

When looking at organizational change, it is essential to make a difference between the person and his/her character and the role. People can intentionally change their behaviour in a certain role although their character would remain the same and unchanged. When appointed to a new role, people might start behaving in very odd and strange ways, usually they do that because they think that in the new role this kind of behaviour is needed.

To make it possible to reach the goals of an organization, the roles can be about producing, selling, informing, managing, consulting or about any other function needed in the organization. Sometimes the core idea of an organization needs to be revised and changed due to different influencing factors, which might be caused by external but also internal forces.

A powerful tool to examine how an organization functions is Organizational Role Analysis (ORA). It is designed to examine a role in terms of rules and relations, and to avoid, whenever possible, a character or personality analysis. ORA is an organized process for freeing the individual to understand their role within a system. It is a systemic process, using the system to uncover the system.

The change takes place in the system level, not at the personal or psychological level. The changes are not necessarily easy for the different role-holders and can cause anxiety and resistance. The challenge of making a change lies not in changing the person but in changing the role. The role connects the individual to the system, and it is not easy to change one's role especially in the case you don't know what is expected of you in the new role.

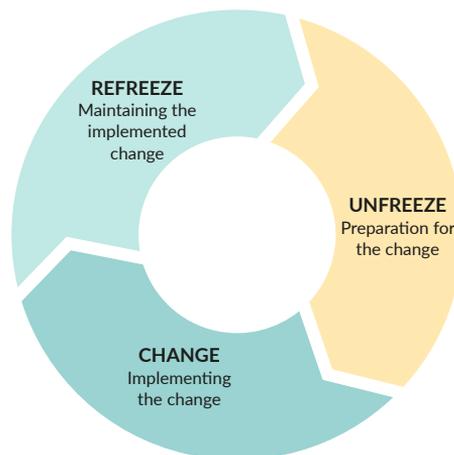


Figure 10. Levin's CATS model on changes as three steps (Cummings et al. 2015)

The management of change involves three major factors: the individual, the role and the system. Changing the role can bring almost instant change in behaviour when the individual is willing to accept the new role. Using organizational role analysis, it becomes possible to examine the behaviour as it relates to the role not to the person.

An early but still valid approach to change management is from the year 1947 when Kurt Lewin presented his fundamental assumptions underlying any change in a human system. He is widely considered the founder of change management. His model was a simple change as three steps (CATS) process including the steps unfreeze – change – refreeze (figure 10).

Since then, CATS has dominated almost all theories of change in the western world. It is said that finally all theories of change are reducible to this basic idea of CATS presented by Lewin. According to Lewin, unfreezing is needed to define what needs to be changed. At this phase it is important to ensure that there is strong support from the management. It is essential to create a need for change and at the same time understand the doubts and concerns among the people in the organization. During the change phase the aim is to move to a new level of behaviour. This is done by involving people in the process and empowering action. There might be plenty of rumours, which must be dispelled by effective communication. At the refreeze stage, behaviour should be anchored into the culture. It is the task of the management to develop ways to sustain the change and provide support and training for people. Whenever there is success, it should be celebrated.

3.2 Academic developer approach for managing change in education

To foster change, many educational organizations define in their organization the body of academic developers whose responsibility is to follow recent development concerning learning and teaching and introduce these practices to the whole university. These academic developers reside between different disciplines and very often situate in the central administration. This place in the organization can help the developers in their task, but it also can make them feel to be in the middle of different opinions coming from the faculty members in the different faculties. Mere instructions sent to the faculties are not an ideal way of making things happen. Instead the academic developers need different approaches when wanting to change the culture and influence people.

However, it usually does not work just to give instructions to the different faculties and study programs on how to change they ways of doing things. The academic developers need to find other ways of making the change happen. They must be wise enough to “sell” the idea to the faculties and their members. This way they can avoid the phenomenon “not invented here”

which is very commonly born in an expert organization when instructions are given from above.

In the next chapters we will introduce different approaches which can be used when introducing change in an educational organization. We discuss the five approaches – Grass-root Model, Faculty-led Model, Strategic Model, Community Building Model, and Research-led Model – presented by Popovic & and Plank (2016).

When introducing the different approaches, we give examples from Turku University of Applied Sciences (TUAS) in Finland, where these different models were applied when implementing a new pedagogical approach called Innovation pedagogy. The implemented change required a motivated faculty whose members were capable of continuous learning and rethinking their ways of delivering education.

Example. Innovation pedagogy aims at creating not only study field specific competences but also innovation competences. It stresses that innovation competences – creativity, initiative, critical thinking, teamwork and networking – must be set as an aim for every study program regardless of the field of study. At TUAS, the cross-disciplinary educational units, i.e. the organizational structure based on multidisciplinary, made it possible to create new learning environments where students had an opportunity to mingle with their fellow students from different degree programs. Innovation pedagogy is included in the strategy of the higher education institution indicating that it is the educational approach followed by every member of the organization.

Grass-root Model

The change process can be initiated by interested individuals who usually are faculty members in the university. This is the case when an individual teacher is eager to develop the ways of delivering education. The change process can start by an individual teacher starting to use activating learning and teaching methods and versatile and development-oriented assessment. The decision to start applying them does not need involvement from others than just from the teacher who is applying them.

Although individual-focused work many times has low impact across the institution, it can still serve as an example to those individuals who are more cautious about making changes. It is useful to share good experiences and this way provide



encouragement for the other members of the educational institution.

The initiative for individuals to start acting as change agents can come from outside of the university, in case they have come across good examples when meeting colleagues who are sharing their practices. Alternatively, it can be started by the own university's academic development by organizing information sessions in form of internal training or e.g. lunch-time workshop sessions.

This bottom-up approach may be less threatening to individual faculty members than a top down approach. The disadvantage is that it may lead to a development of a very individualistic bottom-up culture of teaching.

Example. In the case of introducing innovation pedagogy, staff members were encouraged to try new ways of delivering tuition. They were constantly told by the management in the faculty that mistakes are allowed, and that the most important thing is to focus on student learning. Through experience we learned that sometimes the students also have big prejudices concerning changing the way they are expected to work. At this phase, it is necessary to also accept negative feedback from the students. Sometimes the change requires perseverance and trust from the people involved. They must get the feeling that they are moving to the right direction regardless of the feedback. The experiments by individual teachers were supported in the faculty by organizing events and forums where good practices could be shared.

Faculty-led model

The initiative to start a change can also come from just one faculty in the university. The faculty can pick up good practices and examples which are discipline-specific and this way create more credibility to the issues handled than changes initiated by the academic development unit. When the initiative comes from the faculty itself, the engagement and motivation of the people in case is likely to be bigger compared to a situation where the initiative is launched from outside. With the help of right gatekeepers, meaning faculty members who are considered opinion leaders by their colleagues, the initiative may then later be offered, possibly re-versioned, to other faculties or to the whole university.



The faculty-led model may offer a chance for inter-faculty projects and it can be adopted as best practice coming from another faculty in the organization. This way it can increase multidisciplinary opportunities as different faculties start working together. However, special attention should be paid to not losing economies of scale when the initiative is led by faculties.

Example. In the case of launching innovation pedagogy, the initiative was led by only one of the faculties. It was originally strictly a faculty-led approach. After being successfully launched in one faculty, the university management became interested in the concept and gradually adopted it to be applied by the whole higher education institution (HEI). Innovation pedagogy was finally incorporated to the strategy of the HEI. Today it is the official pedagogical approach followed by the entire HEI.

The approach met several obstacles as many of the more traditional faculty members found it hard to change their ways of doing things. It turned out to be extremely important to find people to take the initiative in piloting and who were willing to change their approach towards learning and teaching.

Several new applications, such as new learning methods and multidisciplinary course implementations, were introduced during the launching process. They were meant for all the students of the faculty and had a purpose of changing the working and learning habits of both students and teachers towards the desired direction and giving possibilities to inter-disciplinary cooperation.

Strategic model

The strategy-led model means that the approach is linked to the university strategy and tied to the priorities led either by the institution or by the government. In this model, there is a central role for the academic development unit as it is taking the responsibility of implementing the strategically chosen approach in every faculty in the institution. The institution has defined principles for teaching and learning, which identify the aims and priorities of the institution. Each faculty is expected to show annually how they are following the strategy and what measures they are taking to implement the defined principles in the learning processes.

There might be different teaching and learning committees, which have the responsibility of introducing the new ideas to in their own field.



The central committee for the whole institution, where all the faculties have their own representatives, is a good place to talk about the priorities and concern shared across the whole institution.

The strategic model offers consistency across the entire educational institution and this way it may have a long-term impact on the organizational culture. It can contribute to better use of resources as it reduces the need for localized activity. It clarifies the aims for the university as a whole and increases sense of the institution as a community. There is an opportunity that university-wide initiatives take place in a consistent manner and are embedded in the culture facilitating future initiatives. Then again, among the weaknesses is that faculty-specific initiatives are neglected.

Example. Innovation pedagogy started as an approach applied by only one faculty around the year 2006. In the early years it was developed in the faculty of technology, environment and business where several measures were taken to implement it in the everyday activities of all degree programs.

To make sure that the development went further to the desired direction, an academic development unit called “Future learning design” was established for the whole HEI. This unit organizes a committee where all the faculties send their representatives. The task of this committee is to make sure that innovation pedagogy develops and takes the requirements of the faculties into account. The faculties also have committees with representatives from their different study programs. This way the HEI tries to make sure that all faculties and their members adopt the concept of innovation pedagogy.

Our experience shows that when all the faculties were supposed to start acting according to the principles of innovation pedagogy, plenty of resistance was met, not only by the faculty members in the whole HEI but also by the students who were not used to active working methods or multidisciplinary way of working.

It proved to be extremely important to give the faculty members opportunities to get to know each other and this way build trust among them. Plenty of different meetings, internal conferences and discussion forums, where good practices could be shared were organized. It still took years until the concept was fully understood and accepted by the whole HEI.

Now innovation pedagogy is a concept, which is constantly evolving and developed by all the people working for the HEI. After years of hard work and careful planning it is now more or less accepted by the HEI.

Community building model

The community building model may emerge from a grass-roots model, but as activities are targeted on encouraging the sharing of ideas, peer support and networking, it has the potential for greater impact than a purely individually initiated approach.



In the community building model, the focus is on breaking down unwanted individualism by encouraging people to share ideas, provide and receive peer support and network, this way building communities around the topics interesting for them. There is an important role for the academic development unit in facilitating the development of the communities, but the aim is that they become self-sustaining. The support that the centre can provide may include focusing on common points of interest and encouraging potential members to join. Providing a space which can be physical or virtual or both can be helpful.

Example. In the case of Innovation pedagogy monthly meetings were organized, which were called “Innostudio” and meant for teachers to share their experiences and discuss the latest research results in the field of education. Also, the internal conferences which were organized yearly served for the purpose of encouraging people to connect and cooperate with their colleagues.

About 20% of the faculty members took part in Innostudio. The internal conferences and workshops organized in an interesting location proved to be much more popular, and they were organized outside of the HEI in attractive places. The measures taken to connect people across disciplines proved to build understanding and bonding people who were traditionally used to working only with their peers from the same discipline.

This experience shows that it is important to connect people across disciplines to form communities where they can share good practices. When there is enough trust between people, also the bad experiences are shared. Peer to peer help has shown to be extremely important when wanting to implement new ways of doing things.

Research-led model

There are usually two important tasks for a higher education institution teacher: research and teaching. Depending on the type of the institution, these two tasks might be competing for the time of the teacher. In traditional universities, it is typical that the



research task is considered more important when again in universities of applied sciences the teaching task many times reserves more attention than research. As both are needed, the case is many times that traditional universities are looking for incentives to encourage their faculty members to develop teaching, and in the universities of applied sciences, incentives are needed to boost research.

One good idea is to integrate teaching with research. This can be done in several ways. The teacher can use his/her research results and take examples from there to teaching. The students can participate in the research and this way develop their research skills. There is also a big need for research on pedagogical practices. The faculty members can be encouraged to do research and share results about what they are doing. Results are good if these pieces of pedagogical research are valued as highly as research on more subject specific domains.

Example. In the case of innovation pedagogy, the faculty members were encouraged to do research about their experiments when applying new methods in learning and when combining research in their own subject field to be done during the learning process together with students. The research conducted and reported accordingly is an important tool when wanting to develop learning in the HEI. The research results shared by peers are efficient in convincing people about the usefulness of the new approach.

In our case, a specific research group for innovation pedagogy was established. We were lucky enough to get funding for projects, which had an important role in conceptualizing innovation pedagogy. New research ideas developed the practices further and research results gave faith in moving forward with the new concept.

3.3 Aiming towards a learning organization

In a situation where the world is under a rapid change, it is not enough that only the individuals are learning but instead the whole organization must be updating its competences constantly. Under uncertainty and change, the viability of organizations depends alike upon individuals' ability to learn. Success in the future requires flexibility, responsiveness and new capabilities. The most important fact is developing understanding about the importance of setting a sustainable future as the first goal of all actions.

Organizations that are competent learners are called learning organizations. When organizations possess a learning orientation, they have an ability to question their old views

about their environment and about the ways to approach the market, and change their ways of operating according to the acquired new information. Organizational learning can be described as a three-stage process that includes information acquisition, information dissemination and shared interpretation.

According to Senge, a learning organization is “an organization that is continually expanding its capacity to create its future”. It has been argued that the rate at which organizations learn may become the only sustainable source of competitive advantage for them. An organization must possess such a skill that it is able to actively produce information which cannot be bought anywhere. People make up organizations, so it is essential that the people are capable of being innovative and producing something new; the learning of the organization is directly related to the learning of its employees.

At its most basic level, organizational learning is the development of new knowledge or insights that have the potential to influence behaviour. All organizations operating in dynamic and turbulent environments must pursue the processes of learning, behaviour change, and performance improvement. Yet psychological and organizational factors conspire to make organizations and their members resist change and miss opportunities to create preferred futures. It is important to understand the sources of resistance, as well as strategies for overcoming them. It is obvious that a learning organization acts in an adaptive way. But being adaptive is only the first stage in moving toward a learning organization as adaptive learning is mostly about coping. It is however necessary to focus also on transformative learning because that is about creating and seeing the systems that control events.



Figure 11. The five attributes describing a learning organization according to Senge (1992)

It is vitally important that an organization wanting to be successful makes sure that the conditions for organizational learning exist. Transformative learning which pursues ongoing radical innovation calls for the members of the organization to continuously question their beliefs and behaviour. The primary reason for implementing organizational learning is to enable organizations to adapt to change and achieve their objectives.

According to Senge (1992), learning is moving from thought to action. He presents a five-factor framework for the attributes in an organization. The attributes are building a shared vision, personal mastery, working with mental models, team learning and systems thinking (figure 11).

It is important that the members of an organization share the same vision of the organization's aspirations and future. Personal mastery is a situation where members of the organization possess proficiency or skills that they have acquired through continuous learning, so that they have the capacity to produce desirable results. Mental models are deeply ingrained assumptions or generalizations that individuals hold about the world. Combined, all these attributes promote team learning whereby team members contribute to each other's development and capacity to achieve positive results. Systems thinking is an approach that views unrelated sections, components, processes or events as integrated to improve decision-making.

Of these requirements one of the most important is individuals in organizations taking action to develop and refine their cognitive maps, which influence the way they behave and see things. Many new insights fail to be put into practice because they conflict with deeply held internal images of how the world works. These images limit us to familiar ways of thinking and acting. These organization-wide beliefs about the world are called mental models. Mental models shape how we act, they even influence what we see and thus affect our ability to understand things. It is very much possible that people with different mental models understand the same thing differently. Therefore, it is very important to be aware of the existing mental models and to know how to influence them to the desired direction. Knowledge generation at both individual and organizational level results from the interaction of acquired information with existing mental models, because all actions we take are ultimately based on some decision we have made about the cause of a problem and the perceived outcomes of any actions we take to correct the problem.

Within an organization, there are two types of mental models: explicit and tacit. Explicit mental models are formally stated, communicated and stored in organizational memory. Tacit mental models are not formally communicated or stored in organizational memory, they are hidden and not expressed openly. It must be noticed however that despite their lack of articulation, tacit mental models can dramatically impact collective organizational



competence. They pose a problem because their effects on decision-making are not explicitly recognized.

There are two types of learning skills needed to develop and manipulate mental models: skills of reflection and skills of inquiry. Skills of reflection mean becoming more aware of the way of forming the mental models and understanding how they influence our actions. Inquiry skills concern how we operate in face-to-face interactions with others, especially in dealing with complex issues that could lead to conflict.

Individuals in an organization who participate in the decision-making must be prepared to change their mental models before a shared vision can be reached. To be able to do that, they have to be able to communicate with each other and understand how the other party sees things. Sometimes a constructive conflict is needed before a common mental model can be reached.

Building mutual understanding requires ongoing change of information, dialogue, among the different people in an organization. In a dialogue, people listen to other people and are willing to check their points of view according to the comments and responses gained from the other party. Relationships and communication are essential in the process. It has been said: “when you listen to somebody else, whether you like it or not, what they say becomes part of you.”

The process of discarding obsolete mental models is called unlearning, which is central

to higher order learning when identifying and replacing outdated beliefs and behaviours. Mental models become obsolete as reality changes. Unlearning is a first and necessary step changing any organization’s theory in use. If this is not the case, then the way information is collected, interpreted and acted upon will become severely biased over time. For generative learning to occur, organizations must stop limiting their behaviours to those options that are consistent with existing mental models.

Understanding mental models and how to change them is a vital skill in education when aiming to provide competences about how to act differently towards a sustainable future. This involves understanding and making visible the mental models of both students and university staff.

3.4 Changing the organizational culture

When we speak about culture, we can mean it at the level of society and nation, but we can also speak about culture equally at the level of organization or other smaller groups.

Hofstede (1981) has examined culture at the level of nations and defines it as: “Culture is the collective programming of the human mind that distinguishes the members of one human group from those of another. Culture in this sense is a system of collectively held values.” According to Schein (1992), organizational culture is: “How things are done around here. It is what is typical for the organization, the habits, the prevailing attitudes, the grown-up pattern of accepted and expected behaviour.”

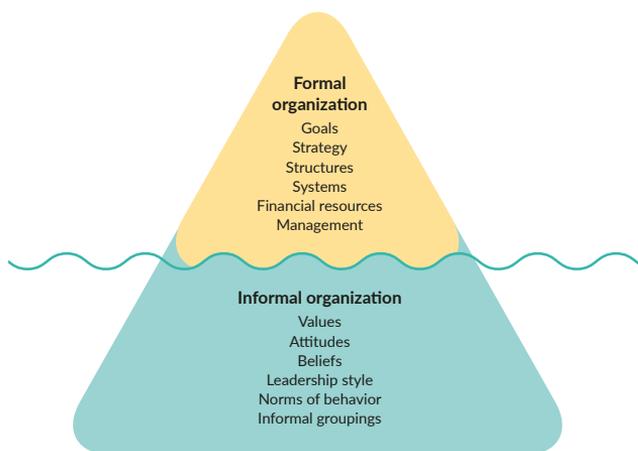


Figure 12.. The organizational iceberg

Organizational culture is many times described with the iceberg metaphor (figure 12). There is the visible part, which includes the formal, tangible elements such as goals, structure, strategy, technology and financial resources. All these can be counted when we plan the change we want to make in the organization.

However, as in an iceberg, there is a hidden part, which includes elements that we should be aware of. As these elements are hidden, it might be difficult to understand and influence them. They include values, attitudes and beliefs, which very often could be mental models born during the previous years of organizational life. The hidden part also includes the norms of behaviour, which are not that much talked about, but which influence the everyday life in the organization. Understanding what the hidden part includes is important when thinking about changing education and taking the sustainability education more as target.

The iceberg model in figure 12 points out that the informal part of the organization is out of sight but at the same time forms a great part of the organization.

3.5 Methods of intervention

Any helping or change process always has a target or a client. In the case of universities, the question of a client is eternal. The student is a co-producer and must be involved in the process as much as the teacher (the seller). This means that in addition to university personnel and all faculty members, also the students are an important target group when the aim is to change the whole educational culture of a faculty. The change process is a selling task for the management, as like Daniel Pink (2017) points out, the modern way of selling stresses that all professions, where the intention is to influence other people, are about selling. According to this way of thinking, also the profession of a teacher is about selling the ideas to the students. This is an interesting approach also when aiming to redesign education towards a sustainable future; how to make all partners involved, including university staff and students, to understand that we are facing the biggest challenge ever, and that learning as well as actions are needed of everyone.

According to Schein (1987), there are several people involved representing several roles of clients when having the change process in mind. He defines four client categories: contact clients, intermediate clients, primary clients and ultimate clients. According to him, a contact client is the one who approaches the consultant initially. In the case of making changes in education, this could be somebody from the educational management who has understood the need for change and has the authority to start a change process. This is the case when the change process takes place top down with the initiative of the management. As we

have described earlier, sometimes the initiative for change starts the other way around, from bottom up.

Intermediate clients get involved in early meetings or planning next steps. In the case of education, the people who belong to this group could be people from administration whose task is to take care that the change processes are started, and implementation takes place.

Primary clients own a problem for which they want help. They can be the management team, different individual managers, teachers and students. Ultimate clients may or may not be directly involved with the consultant or manager, but their welfare and interest must be considered in planning further inventions.

Different methods are applicable when working with both the faculty members and students. In the following, the different methods of intervention are introduced. They can all be used in the change process, but they all require the nomination of a responsible person to take care of the method.

Process consultation

Process consultation puts the emphasis on helping others to help themselves, not on solving their problems for them or giving them advice. As the world is becoming more and more complicated, it would be an impossible task to any consultant to give commands to others about what to do. The only sustainable way of approaching this is to design the consultation process so that it leads to the right problem-solving steps.

In education, consultation is a process of interaction between two professional persons: a consultant, who is a special service provider and the consultee, who is an expert in curriculum, pedagogy or educational leadership. The consultee is often directly engaged with students and responsible for them in designing the learning process. Ideally both the consultee and the consultant will learn from each other as a result of the consultation conversation. The goal of the consultation is to enhance or support the consultee's skills and not to tell them what to do. The focus of consultation is on work related problems, not intrapsychic conflicts.

The consultant works with the consultee to figure out what is the starting point and how to define the goal. After that, the two parties define the schedule for the whole process and define concrete steps needed to bridge the gap between the starting point and the desired end state.

Supervision

Supervision is an ongoing and regular process, which aims at learning through interaction. It is an ethical and confidential negotiated relationship in which both parties have rights and responsibilities. It is accountable to the organization, the profession and to the service user. Supervision is also a forum for reflection, learning and professional growth.

Supervision provides the chance to stand apart from our work and to reflect on what we do, the context of what we do and the impact this has on us as professional people. This reflection brings a greater objectivity and personal understanding to our work. It is an opportunity to evaluate our practice in terms of both progress and challenge and it allows us to develop and learn from our experiences. The development of a safe environment encourages mistakes and vulnerabilities to be examined as learning opportunities and not disciplinary occasions.

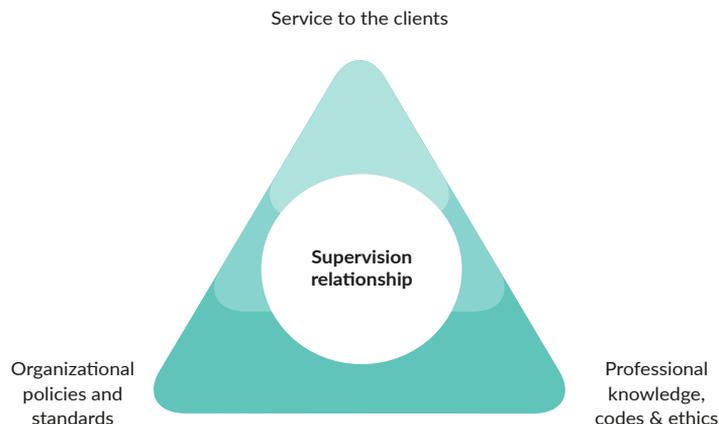


Figure 13. Overview of supervision (Beddoe 2010)

As represented in figure 13, supervision is primarily intended for developing an improved service to clients. It is a practice, which is accountable to the organizational policy and associated legislation. It is underpinned by the knowledge, skills, competences and codes of practice and ethics of relevant professions. These three elements provide the framework for supervision. Within this framework sits the supervision relationship which is the medium through which all else is accomplished.

Coaching

Coaching is a training or development process via which an individual is supported while achieving a specific personal or professional competence result or goal (figure 14). Occasionally, the term coaching may be applied to an informal relationship between two individuals, where one has greater experience and expertise than the other and they offer advice and guidance as the other goes through a learning process.



Figure 14. Coaching can help in reaching aims

Coaching can be used in the university to help the student achieve a certain learning goal. It can also be used to coach the faculty members when wanting to achieve certain changes in their behaviour. Today’s managers are encouraged to be facilitators who empower through a common vision, and team leaders who motivate and lead. The best way for managers to coach is using strong interpersonal skills to provide the right advice and support to different individuals in their organization and do that at the right time.

Coaching differs from mentoring by focusing upon competence specifics, as opposed to general overall development. A mentor is one who is involved in a life-long process of self-development, can assist in breaking down barriers to performance, stays current in his or her respective fields, and understands how networks operate. A mentor can help to prioritize projects to be done and provide a set of “best practices” for how to approach a given problem. A mentor can also help to understand how change occurs, as well as how to plan for and implement change.

Tutoring and mentoring

The importance of tutoring is understood in universities. Tutoring means providing expertise, experience, and encouragement and general assistance in problem solving when

the person to be tutored finds answers by him/herself. A tutor in the university can be a faculty member or an older student. Tutors always build individual relationships with their students and thus have a potential to have a big impact quickly. Tutoring has proven to be especially useful when introducing ways of acting in new circumstances or along the study process as the studies require decisions to be made.

A mentor is one who is involved in a life-long process of self-development, can assist in breaking down barriers to performance, stays current in his or her respective fields, and understands how networks operate. A mentor can help to prioritize projects to be done and provide a set of “best practices” for how to approach a given problem. A mentor can also help to understand how change occurs, as well as how to plan for and implement change.

Both tutors and mentors act as mirrors. They do not give any advice but ask questions, which make the person to be tutored or mentored think about different alternatives and possibilities. Important skills for a tutor and mentor are the skill to ask appropriate questions, which lead forward in the process, and a skill to listen to the answers. The tutor or mentor then interprets the answers and by adapting his/her behaviour makes the next questions. It is a process where the one to be helped finds the answers by him/herself. Fundamentally it is a dialogue with a goal to help the other person.

3.6 Leadership in change management

The wicked leader is the one whom the people despise.

The good leader is the one whom the people revere.

The great leader is the one of whom the people say:

“We did it ourselves.”

Modified from Lao Tzu

Not only in education, but in other organizations as well, the focus is easily on management and handling the operational matters needed to keep everyday work going on. However, when wanting to make a change in the way how things are seen and done, the focus should be shifted to leadership. Management can be defined as “a set of processes that keep the system running smoothly. It is about planning, budgeting, organizing, staffing, controlling and problem solving.” Then again, leadership can be defined as a “set of processes that

creates organizations in the first place or adapts them to the changing circumstances.“ (Kotter, 2012.) Leadership is about working with people and inspiring them to reach for the desired future.

Leadership is about establishing direction about the future, building a shared vision, bringing to surface, and challenging prevailing mental models. It is vital when redesigning education towards a sustainable future. Making the change calls for influencing everyone working for the organization. It is about aligning people to form teams and coalitions understanding the vision and accepting its validity. It is also about motivating and inspiring people to overcome different existing barriers.

Creating a real learning organization requires that decision-making is spread out to different people in the organization. It is dangerous to think that the brains of the organization are only at the top of the organization. Every member of the organization is important and involved in the process of acquiring and interpreting information. The main issue is to create such an atmosphere that people are prepared to participate and use their potential. They must be prepared, able and willing to learn from each other.

Educational institutions are organizations where the lines of authority are not always clear. It is characteristic for a teaching profession that it can be done in isolation without necessarily engaging in cooperation with other members of the organization. Sometimes teachers do not feel commitment to the goals of the institution but believe strongly in their professional expertise and autonomy. Making a change in this kind of circumstances is challenging and requires strong understanding about how to handle not only the people but also the prevailing structures and policies.

Focusing on maintaining the current balance is natural for people. Even changes that appear to be positive involve uncertainty. Different people and groups within the organization act in different ways when they are confronted with change. Strong resistance or undermining of the change might appear. The most common reasons for resisting change are, according to Kotter and Schlesinger (2008):

- 1) a desire not to lose something of value
- 2) a misunderstanding of the change and its implication
- 3) a belief that the change does not make sense for the organization
- 4) a low tolerance for change.

Leadership skills are needed to make the change happen. Creating a vision for the future is one the first tasks of an efficient leader. Senge (1992) has emphasized the importance

of a shared vision also in the literature concerning learning organizations. It becomes important to have the vision embedded in the organization to ensure a continuous cycle of improvement.

Leadership in a learning organization starts with the principle of creative tension. Creative tension comes from seeing clearly where the organization wants to be (the vision) and understanding the truth about where it is (current reality). In a learning organization, the whole energy is used to working with the creative tension, moving the reality toward the vision. When working together the members of the organization build a shared vision and develop elastic glue, which keeps the working environment and creates efficiency. When participating in the dialogue, people gradually start experiencing the connection between what they do and what the organization is achieving.

In a learning organization, the roles of a leader are acting as a designer, a teacher and a steward. Being a designer means giving the shape to the organization, defining its purpose, vision, core values etc. The leader also defines reality and brings to the surface people's mental models of important issues so that they can be handled. Finally, yet importantly, the leader must be able to steward both the people in the organization and the purpose or mission that underlies the enterprise.

3.7 Knowing the people in the change process

Looking at people by generations, which in the case of education means looking at student and faculty members, provides an opportunity to observe the preferences and behaviour of individuals belonging to a cohort born at similar time. The generational cohorts are a tool to analyze changes in views over time. The definition of cut-off points between different generations is no exact science but rather a tool to help understanding the differences and tendencies among people born at the same time.

PEW research centre defines the different generations as can be seen in figure 15. The silent generation was born between 1928 and 1945; they now form a big part of the retired and old-age people in the society. Baby Boomers are the generation born between years 1946 and 1964; they are a numerous generation born after the Second World War and presently reaching the retirement age. This is causing brain drain all around the world and a need for educated people to replace them in the various positions both in business as well as in public service.

Generation X was born between 1965 and 1980; at the moment, they form a big group



Figure 15. Generational differences in workforce (Kollaer 2019)

of people working the business as well as in different teaching positions. They sometimes have it difficult to get adjusted to the different options of social media and digital world. Many of the faculty members in the universities belong to the generation X.

Millennials are the generation born between 1981 and 1996. They grew together with the Internet, social media and smartphones. They are represented among the university teachers but hardly any more among the students. The following generation Z is the one, which found the world where connected technologies were no longer novel but normal. Generation Z is comfortable with collecting and cross-referencing information from many different sources and integrating virtual and offline experiences.

The rapid development happening in the circumstances of the school or university forming part of the society becomes visible, when looking at the experiences of the people who belong to the different generations and who are working e.g. as teachers in different levels of education. There are still people working as teachers who have experienced the emergence of the television, first computers and Internet. Sometimes people of these generations think that it is waste of time for the students concentrating in their devices. The students, they are working with, then again have no experience of such past world but find using of different digital learning aids, social media, cellular phones etc. forming part of their normal life. Denying the use of these during learning seems unnatural and even bullying for these students.

The learning styles between the generations might be very different. Compared to previous generations, generation Z seems to be more active and collaborate and demand more online learning, which allows them to freely choose the time, and place where learning takes place. They appreciate active learning during class and are used to blended learning in general.

There are things to know about generation Z when working with them either in business or in education. Generation Z has no trouble working extra hours and are ready to propose

their ideas at work. They have always had adults in their lives who have been ready to support them. Special circumstances, like experiencing the recession and its consequences, has made them more risk averse. They are comfortable with diversity and used to dealing with different people. They are always on their devices, which may cause that their soft skills are not that developed as those of the earlier generations. They value financial security and require continuous skills training. Unlike the previous Millennials generation, generation Z is looking for stability in the changing world. They expect the government to do more to fix the problems we are facing in the future.

They are passionate about social causes and extremely worried about the environment and climate change. Representatives of generation Z, like Greta Thurnberg, have aggressively expressed their worry about global warming and caused a big movement among young people about how these issues are handled by the people now in power. Like Finland's minister of education, Liv Andersson, puts it "I think that the environmental movement of young people is one of the most powerful public movements there have been for a long time." The generation Z demands that the issues of environment are handled also at school and during their further studies.

3.8 Understanding people in the change process

People experience change in many ways. It is very typical that there is resistance towards new ways of doing things. Change can also cause feelings of insecurity in front of unknown. It is essential to understand how change may be experienced by different people.

One example to model the change process is presented by Elizabeth Kübler-Ross in 1969. Her model is originally meant to monitor the emotions of dying people. The model consists of different stages, as described in figure 16.

The Change Curve is a powerful model that helps to understand how people will react to change and how those wanting to achieve change can provide support during the process of change.

At the first stage, people in the change process may be in a position of shock or denial. They don't find it easy to accept the fact they will have to change their old ways of approaching things. Time is needed for them to adjust to the changes. The role of the manager is to help the people in the change process understand why change is needed as well as to find ways to help them adjust to the process. At this stage, plenty of communication is needed to provide answers to all the emerging questions.

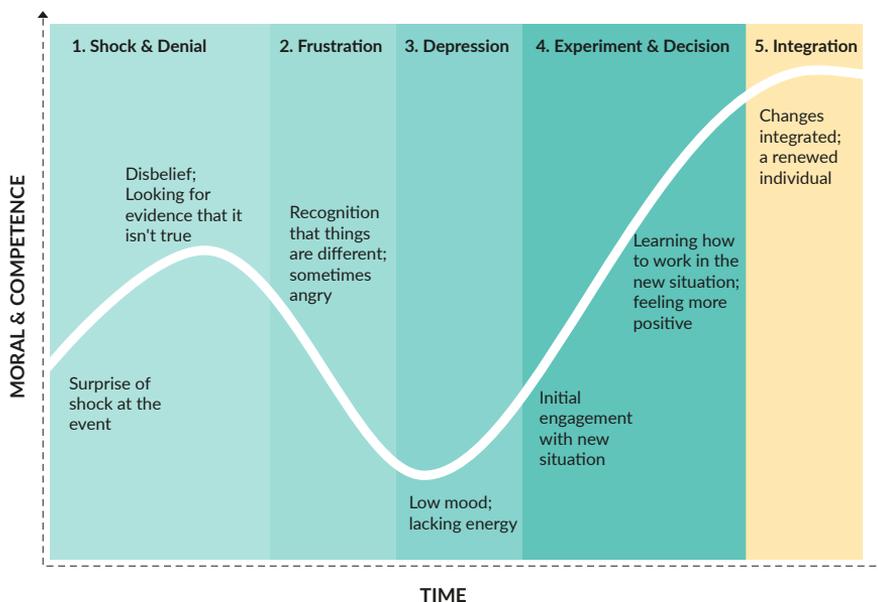


Figure 16. Adapted from Kubler-Ross Change Curve (Cleverism 2015)

At stage 2, the reality becomes clear and fear about the future might be experienced by the people. They start understanding that they are in a process where they need to learn, change and adapt, which may make them angry. Clear communication, support and careful planning is needed to avoid chaos produced by anger about the change. With time, the people in the change process will slowly proceed to accepting the new situation.

At stage 3, the change is finally accepted, and the people involved start understanding how to adapt to the new circumstances. The people in the process enter to the learning stage and it must be understood that training takes time and that it cannot be rushed.

Stage 4 is a learning phase which is not always pleasant for the people in the process. A new way to make training exiting helps employees to be fully involved in the process and willing to give their best. It starts becoming clear for everybody in the process that there is no way out of the situation.

At stage 5, people finally start accepting the new situation and understanding the importance of the change. Finally, the benefits of the work so far start becoming visible and different teams start showing improvements. The people initiating the change have been waiting for this stage.

3.9 Working with people in the change process

Questions are necessary in a conversation to get an idea about the feelings and intentions of the other person. Making the questions in a right way does not feel like pushing or pressing by the person whom they are addressed to. Making questions calls for listening to the answers given. Listening is an important skill when wanting to build real dialogue and reaching a defined aim.

Quite in the beginning, it is good to start the dialogue with open questions, which give the other person an initiative to start talking about the issues handled widely. Open questions usually begin with words like how, why, when, in which way etc. The answers to open questions contain explanations with many words. It is not an aim to get answers like “yes” or “no” to them.

If the open questions do not provide enough information, then it is wise to start using closed and targeted questions. They are suitable when the aim is to focus attention to a specific issue of interest. Targeted questions are an effective tool when wanting to give the conversation a specific direction.

When making the questions, the aim is a dialogue, not interrogation. It can be helpful to have the following five guidelines in mind when formulating the questions:

- 1) Make short questions.
- 2) Make questions, which are understandable.
- 3) Make clear questions.
- 4) Make one question at a time.
- 5) Make encouraging questions.



It is extremely important to listen carefully to the responses given to the questions. Listening is an active process including not only receiving, but also valorizing and interpreting the messages sent by somebody else. Listening to other people expresses interest towards them and this way it is a way of showing appreciation. Active listening includes assessing the importance of the received message while comparing it to the scripts and knowledge base in the memory of the listener. Listening builds trust as it appreciates the other person, because while listening, the listener is learning something new and putting him/herself in a vulnerable position. The opposite of listening is telling which is quite common in many western cultures. We easily think that the only way to make things happen in the direction we want is to tell how they must be done. However, when telling, the other person is put

down with an assumption that the teller has all the wisdom and that the one being told is not appropriately aware of the issue.

When the aim is to make a change, there are always many people involved. They have their own preconceptions and ideas about which the one wanting to influence them should be aware of. Especially people, who have real expertise in their own field, do not usually accept that they are being told how they should change their behaviour. Misinterpretations might be involved, which must be handled. The people in the change process should feel appreciated or the discussion might take a form of a conversation, which does not lead to positive results. Asking instead of telling is a good way to approach change, show appreciation towards the other person and get to know the true ideas of the other.

Edgar Schein speaks (2013) about humble inquiry when creating effective organizations and wanting to influence other people. He defines a humble inquiry as “an attitude based on your curiosity, asking questions to which you do not know the answer, the implementation is complex because either you are not sure what you should be curious about or your question can be misunderstood”.

Making questions and asking is a better way to gain understanding about people’s minds. By listening actively, it is possible to get the tools needed when wanting to make change and influence other people. Engaging in humble inquiry demands self-confidence from the one who is asking the question. S/he is being put in a position where it is necessary to accept that listening brings new insights and must be utilized when aiming for the intended results. The discussion forms a cycle where a relationship can begin to develop through the cycles of being told something in response to asking. Humble inquiry develops genuine curiosity and interest and this way reduces the possibility of misinterpretation or bad judgement.

There is a notion that organizations perform better when the people working in them recognize that they are interdependent and start actively collaborating with each other. Working together and collaborating requires trust and trust can only be built when the people get to know each other and start understanding each other’s ways of behaving and thinking.



References (chapter 3)

- Beddoe, L. (2014). *Best practice in professional supervision: A guide for the helping professions*. London, GBR: Jessica Kingsley Publishers, 2010. ProQuest ebrary. Web. 6.7. 2014.
- Borwick, E. (2018). *Organizational Role Analysis: managing organizational change in business settings*. In *Coaching in depth*. (2018) *The organizational role analysis*. Ed. John Newton, Susan Long, Burkard Sievers, Routledge, London.
- Chin, T.; Rabow, J.; Estrada J. (2011). *Everything you always wanted to know about how to tutor*. Temple University Press, Philadelphia.
- Cleverism (2015). *Understanding the Kubler-Ross Change Curve*. 24.6.2015 <https://www.cleverism.com/understanding-kubler-ross-change-curve/> 29.12.2019
- Cummings S., Bridgman T. & Brown K. G. (2015). Unfreezing change as three steps: Rethinking Kurt Lewin's legacy for change management. *Human Relations* 2016, Vol. 69(1) 33–60.
- Drennan D. (1992). *Transforming company culture*. London: McGraw Hill.
- Finnish National Agency for Education (2016). *National Core Curriculum for Basic Education 2014*. Publications 2016:5.
- Grey, C. (2004). *Essential Readings in Management Learning*. London, GBR: Sage Publications Ltd, 2004. p 21. <http://site.ebrary.com/lib/turkuamk/Doc?id=10076759&page=29>
- Heikkilä, J. – Heikkilä, K. (2001). *Dialogi – avain innovatiivisuuteen*. WSOY: Vantaa.
- Hofstede, G. (1991). *Cultures and organizations. Software of the mind*. Maidenhead: Mc-Graw Hill.
- Keskinen, s. (toim.) (2008). *Työnohjaus: Mitä missä milloin?* Turun yliopiston täydennyskoulutuskeskuksen julkaisuja. B; 23. Turun yliopiston täydennyskoulutuskeskus. Sarja B, Raportit ja selvitykset, 0788-7914; 23. Painosalama
- Kezar A. (2001). *Understanding and Facilitating Organizational Change in the 21st Century*. ASHE-ERIC Higher Educational Report, Vol. 28, 4. San Francisco, California.
- Kollaer, J. (2019). *Millennials in Construction – How's That Going for You?* In *Construction Citizen; Reshaping the Industry*, 21.2.2019. <https://constructioncitizen.com/blog/millennials-construction-hows-going-you/1902211> 28.12.2019
- Kotter, J. P. (2012). *Leading Change*. Harvard Business Review Press. USA.
- Kotter J.P. & Schlesinger L. A. (2008). *Choosing strategies for change*. Harvard Business Review, July – August, <https://hbr.org/2008/07/choosing-strategies-for-change>
- Long, Susan (2018). *Coaching in Depth: The Organizational Role Analysis Approach*, edited by John Newton, and Burkard Sievers, Routledge, 2018, ProQuest Ebook Central, <https://ebookcentral.proquest.com/lib/turkuamk-ebooks/detail.action?In docID=712216>.
- Long, S. (2018). *Coaching in depth: The organizational role analysis approach*. Retrieved from <https://ebookcentral.proquest.com>
- Popovic, C. & Plank, K. (2016). *Managing and Leading change. Models and Practices in* Baume, D. & Popovic, C. (2016) *Advancing Practice in Academic Development*. Routledge.

Schein, E. H. (2013). *Humble inquiry. The gentle art of asking instead of telling.* Berrett-Koehler Publishers. San Francisco, USA.

Senge, P. M. (1990). *The Leader's New Work: Building Learning Organizations*, Sloan Management Review, Vol. 32, Issue 1.

Senge, P. M. (1992). *The Fifth Discipline: The Art & Practice of the Learning Organization.* Random House Australia: Milson Point, NSW.

Senge, P. M (1992). *Mental Models.* Planning Review, vol 20, No 2, 4-12.

Senior, B. & Swailes, S. (2010). *Organizational.* Harlow: Prentice Hall.

Sinkula, J. M. – Baker, W, E. – Noordewier, T. (1997). *A Framework for Market-Based Organizational Learning: Linking Values, Knowledge, and Behaviour.* Journal of the Academy of Marketing Science, Vol. 25, No. 4, 305–318.

Slater, S. F. – Narver, J. C. (1995). *Market Orientation and the Learning Organization.* Journal of Marketing, Vol. 59, July, 63-74.

Rüegg W. & de Ridder-Symoens H. (Eds.) (2010). *Universities since 1945.* In *A History of the University in Europe: Volume 4.* Cambridge University Press. ProQuest Ebook Central, retrieved <http://ebookcentral.proquest.com/lib/turkuamk-ebooks/detail.action?docID=605104> 1.1.2019.

4 EXECUTING THE CHANGE IN EDUCATION

4.1 The steps in the change process

In the following, we handle change management in education, following the principles presented in the previous chapters with the help of a three-stage model. The three stages of the model are creating a climate for change, engaging and enabling the organization and implementing and maintaining change.

The literature on change management speaks about first order and second order change. First order change concerns minor adjustments and improvements in one or several dimensions of the organization. It does not change the organization's core. Second order change is transformational and concerns the underlying values, mission and structure of the organization.

4.2 Creating a climate for change

A successful change management is most likely to succeed when there is a clearly defined aim and a desired end for it. Making a change requires that a climate for change is created in the organization. An educational organization is special in the sense that its members are all experts in their own field. They need in-depth understanding about the need for change; otherwise they are not likely to accept it and plenty of resistance is likely to be born. It is helpful to direct all the actions towards engaging and enabling the organization, and finally measures are needed for sustaining and maintaining the change.

Creating a suitable climate for change in an educational institution is very much about making the needs of the surrounding society clear and visible. Being aware of the changing environment outside of the university should naturally form part of any faculty member's life, but painting a real-life picture about the environment helps in initiating the change process. As we have explained concerning a learning organization, it should be natural for every member of the organization to follow the changes in the environment and adjust their behaviour according to them. Everybody forms his/her own understanding about the situation, and it is essential to present enough facts for this understanding to take

an appropriate shape. Understanding why the change must take place is an important beginning part of the change analysis and conversation.

In chapters 1 and 2 we have painted a picture about the changes happening in the world. We have also explained that the change process can start from top or bottom. When wanting to make a change that influences the entire institution it should always have the approval of the management.

Example. In the case HEI, the change was initiated by setting up new faculties and appointing new leaders to them. The starting point caused a lot of excitement in the study programs and in the faculty members, as they were grouped in a totally new way, forming a multidisciplinary faculty comprising of engineering, business and design students and led by a person coming from outside of the present organization. The ways of delivering education in different study programs were very traditional and strongly based on classroom tuition, the teacher being the expert and the students listening. The same content was repeated in classroom situations to different groups without exploring the possibilities of combining groups. The attitudes of both the teachers as well as the students were driven by the disciplines they studied. Multidisciplinary ideas were not appreciated, and students were not encouraged to have contacts with their fellow students from other programs. As this was a new faculty according to the new organization, it was sometimes painful to see the students not appreciating each other's study fields. Many prejudices were found between business and engineering students, both of them thinking their own study field to be the most important one. Neither did faculty members feel any need to get to know the people from other study programs.

The new manager experienced the situation as not desirable, although the older faculty members found no need to change it or approach their new colleagues or students from other programs. At the same time, working life started to talk about the need for multidisciplinary knowledge, expressing that the traditional deep knowledge in one field only was not enough anymore. Instead there was a clear need for versatile engineers who have strong soft skills and know something about business as well. Equally the business students were expected to understand about the world in general outside of business as well. During those times innovation was an approaching concept which was considered important all over the world. One of the tasks of the HEI was to educate innovative graduates in all the fields of education. The world is evolving and later the issues connected with sustainability rose in importance when considering how to plan the studies.

During the first years of the change process, the vision for the future of the faculty started to take a shape in the mind of the faculty leadership. It took a format of a learning network where all the study programs had a place. They were all equally important and had a common aim of producing high-level graduates for the needs of the surrounding world. Although the study programs still were very independent, the faculty had a common board with all the study program leaders. There were also some common functions in the format of e.g. research and development activities or international operations, which were organized centrally in the faculty.

The change

There was a clear need for change and the new vision had to be communicated to the whole faculty. The first thing was to make the need visible so that every faculty member could understand the need. Plenty of evidence was available in the format of different reports produced by reliable parties. The reports were interpreted to an easily understandable form and presented to the whole faculty repeatedly during many internal meetings. The expectation was that the faculty would accept the message and understand the need for change. However, this was not the case; instead, the ones who could not accept the presented ideas started looking for information from their sources. When dealing with change the resistance-level also outside of the HEI can be big, as the problem with education is that everybody has experience on it and naturally, the ways they have conducted the studies are considered as the correct ones. All this required a lot of perseverance from the leaders. They had to believe that they had interpreted the message from the world outside of the HEI correctly and that the vision they had built was the correct one.

Quite in the beginning of the change process, a small group of people showing interest in contributing to the change was gathered. This group, which was named “Innoteam” had a very important role in contributing to the change in different study programs. In the team meetings, different methods and ways to implement them in different study programs were discussed. It also designed different internal seminars, which had an important role in bringing people together and introducing the ideas concerning the change.

It was found important to influence in the old artefacts in the faculty and handle existing mental models which inhibited the diffusion of new ideas. One important way of building new ways of doing things was the implementation of a common, compulsory study unit for all the students in the faculty. It had an important role in emphasizing the equal importance of the programs and, at the same time, introducing a new way of learning to the students.

At this phase some mistakes were made. First of all, relying on the group of enthusiastic people of Innoteam, telling people how they should change the way they are conducting education. This approach only produced the commonly known phenomenon “not invented here” and many faculty members totally ignored the message. The students were also forgotten when introducing the new joint study module for all. This resulted in endless discussions with student unions, where they questioned the usefulness and importance of the new multidisciplinary study module. It was especially engineering students who were afraid that this new study module was waste of time and even threatening the future of the students.

Finally, more people were attracted to take part in the new movement and started applying new ways of doing things. This required that people themselves found out or ‘invented’ the need for change. In practice, this meant a lot of time spent on open discussions forums, seminars and collaboration of people sharing their thoughts and ideas.

When the aim is to make change, the first thing is to push up the urgency level. In every organization, the forces to reinforce complacency are big and they try to maintain the status quo, especially in situations where a real sign for the change needed is missing and the organization seems to be functioning quite well.

The change is linked with the analysis of the present situation of the organization and the desired future painted in the vision. In educational institutions, especially the task of the management is to follow the developments in the world outside of the educational institution and sense the demands that it sets to the graduating students. The role of education is to produce graduates who can take the challenges of their future working life positions and understanding how to work towards a sustainable future. Under the circumstances of constant change in the outside world, also the educational institutions must accept that their role is to actively change and contribute to the changes towards the desired future in the environment as well.

The only possibility to keep up with the demands of the changing society is to follow closely what is happening there and try to anticipate weak signals which reflect where the development is going. At this phase good leadership is needed in convincing the faculty about a need for change. The change is constant and needed in both the content forming the curricula as well as in the ways how education is carried out.

Conducting a self-evaluation at this phase is very fruitful and a good way to get an idea where the organization is now. It reveals how well the content is keeping up with latest

developments, but also reveals how the arrangements in the learning environments correspond to the needs of the changing world. In every organization, there are some strong pillars which can serve as a starting point when designing the future. It is wise to make the points you want to keep visible.

It is the task of the management to define the desired checkpoints which go together with the goals for future actions. In education, the checkpoints as well as the picture painted about the future should always include aspects which connect the institution with the vision of a sustainable future.

The change process must be carefully planned. It is important to understand the vision for the future and define what the aim of the change is. It is equally important to understand what the current situation, the starting point, is.

People in the organization might all experience the change in their own unique way. Forming an understanding about drivers of different people, the faculty and the students helps in the next phases when the implementation takes place, and it also helps to maintain the achieved changes



One good way of looking at the change is to present the whole picture in a format of a tree. The roots of the tree represent something you want to keep. The leaves and the canopy represent the future and the situation you want to achieve. In the middle of the tree you can add measures needed to proceed from the present situation to the situation painted by the vision. Threats are presented in a form of clouds in the sky. The tree should be created together, not only presented by the management.

Actions to take to understand the starting point:

- form a clear picture of the driving forces in the environment = why the change is needed
- define what is the preferred situation in the future
- paint a clear picture about the vision for the future
- try to obtain a general view of drivers among faculty members and students
- define checkpoints for the self-evaluation
- define criteria used in the self-evaluation
- execute the self-evaluation
- analyze results to form a picture about the present situation
- make a gap analysis between the present situation and the preferred future
- present the results to the whole faculty
- understand the resistance and acceptance among faculty members

4.3 Enabling the organization

Once the starting point for the organization is made clear and the decision of the needed change is understood, the next task is to engage and enable the organization. It is essential to communicate the vision and find the right people from the organization to start the change process with. According to Senge (1992) and the theory of learning organizations it is necessary, especially in the circumstances of constant change, that the whole organization is updating its competences all the time. Senge stresses the importance of the members of an organization sharing the same vision of the organization's aspirations and future. It becomes important to have the vision embedded in the organization to ensure a continuous cycle of improvement.

Different people experience the change in different ways. The theory of diffusion of innovations categorizes people according the speed of adoption into five categories. The same curve can be used when monitoring adoption or acceptance of a new product or cultural change according to the demographic and psychological characteristic of defined adopter groups. In this curve it is assumed that finally, after some time, all the people monitored adopt the innovation or change in question. The process of adoption over time is illustrated as a classical normal distribution.

As shown in figure 17, the different groups are:

- Innovators, 2.5% of the people
- Early Adopters, 13.5% of the people

- Early Majority, 34% of the people
- Late Majority, 34% of the people
- Laggards, 16% of the people

According to this categorization, innovators are adventurous and like to experiment new things. They can think autonomously and see the positive aspect of new things. Early adopters, who share pretty much the same characteristics with innovators, follow them. The early adopters are more integrated in the social networks and respected by their environment than innovators who sometimes are individual fanatics. Early adopters are the ones who, after accepting new initiatives, are prepared to give feedback on them. They are valuable in the sense that they help in distributing new ways of thinking among their peers in their networks.

The early majority includes many followers who want to wait for the experiences of early adopters before they decide to accept or decline the new idea. However, they form the critical mass for the success of the process. When making a change the innovators and early adopters help in convincing the early majority.

The sceptics who do not think that they need the innovation or are not willing easily to accept the new idea belong to the group of late majority. Finally, they will go with the mass and accept the new idea especially if the critical mass works for them.

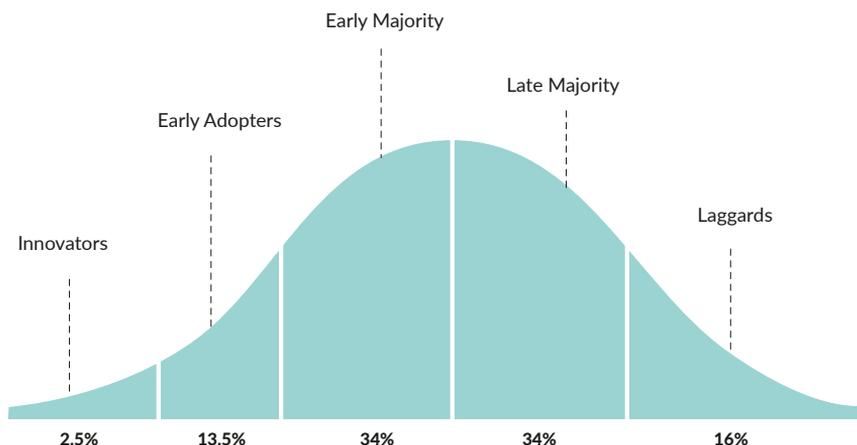


Figure 17. Innovation adoption lifecycle (Interaction Design Foundation, 2019)

Laggards have a traditional and conservative attitude. They find it difficult to break existing norms and values. Sometimes they might be active ejectors who will never accept the presented new idea. In the case of making a change, it must be accepted that there will always be people belonging to this group. Sometimes it is impossible to convince everybody in the crowd.

When making a change in the organization, it is important to find the right people to form a pilot group. Very often, they can be found among the ones who tend to behave like innovators or early adopters. Starting the change with them while they are acting as change agents will bring the early majority to the process. Finding ways to make the work on the change process with the pilot group look attractive will increase the interest among the late majority as well and bring them to work for the change.

It is wise to identify a group of people who find it easy to accept change and start working with them as a pilot group. Working with them might influence other people as well. It is easier for them to accept the change when they see their fellow workers accepting it. When possible, working in the piloting group should be made appealing by finding ways which are found attractive in the working environment.

Existing resistance should be understood by talking openly about it. Some of the causes of resistance might be based on misunderstanding and talking about it might help in easing the situation. Using words to make the vision understandable is necessary. In general, plenty of interaction and discussion helps in building the necessary shared vision.

Actions to take to enable the organization:

- find the right people to form a pilot group for change making
- find means to attract the members of the pilot group
- engage the people in the pilot group and make the piloting work look appealing
- understand the resistance and acceptance among faculty members
- visualize the vision and the good achievements so far
- take measures to start building on the existing good achievements
- find right measures to empower people proceed towards the vision
- identify the gap between the vision and the starting point and find the correct measures to proceed towards the vision

4.4 Maintaining the change

The third phase of change management includes implementing and sustaining the change. Using Senge's terminology, the organizational members should achieve a situation of personal mastery and have the capacity to produce desirable results. Working with existing mental models, which are deeply ingrained assumptions or generalizations that individuals hold about the world, also becomes necessary.

The prerequisite for maintaining the change is that enough trust has been created in the organization. Trust can be defined as a person's belief that another person or institution will act consistently with their expectations of positive behaviour. It does not become an issue unless the person being trusted can affect the interests of the person doing the trusting. In the case of interpersonal trust, it means believing that the other person is not trying to take advantage of me, embarrass, or humiliate me. It also means believing that the other person is not trying to cheat, and s/he is aiming at goals defined together.

It can be said that trust starts with trusting oneself by overcoming fears and building confidence in oneself. It is important to be aware of those behaviours that are likely to destroy others' trust in oneself. In any relationship trust must be both earned and given.

The other form of trust exists in the organizational context and is trust between an individual and the institution. Institutional trust can be divided into trust on competence and trust on intentions. The first refers to the institution's capability of fulfilling expectation and the latter refers to ethical and fair behaviour.

When wanting to make a change, both categories of trust are needed. Interpersonal trust contributes to cooperation between people, whether it is successful and leads to a good working relationship. Building trusting relationships in the organization is essential for the change process to succeed. Having no trust in the organization can show itself by controlling and micromanaging. An extreme lack of trust can lead to fear. Some people need to have the feeling of being in control even when they are not the leaders.

Building trust starts by experiencing a pattern of consistency in the behaviour of yourself and others. Practical trust is demonstrated by your reliability and keeping your word. Practical trust is fundamental, as without it, the working team is facing big problems. When the level of trust is emotional, people trust that you are on their side. It requires emotional intelligence and shows itself in people believing they are judged kindly and respectfully.

Experiencing consistency leads to building confidence on the possibility of relying on the other person, while it at the same time diminishes fear. This leads to empowering others to act and delegate. Empowerment is trust at the organizational level. It is an important task of a leader to empower employees through trust. Having the feeling of empowerment might lead to inspiration, which is not an easy step to reach.

It is very much possible that people with different mental models understand the same situation and issue differently. This stresses the importance of being aware of the existing mental models and to know how to influence them to the desired direction. Knowledge generation at both individual and organizational level results from the interaction of acquired information with existing mental models.

Once the change has been implemented, it is necessary to take care of organizing enough opportunities for people to interact in order to maintain common understanding. It is possible to establish trust and good relationships only with people with whom there has been at least some interaction. This is a prerequisite for continuous development and co-operation too. This includes students as well: when implementing any change student representatives should be included in all discussions. Creating trust among students is important as well; students must feel that the education institution where they study knows how to best serve their development.

It is quite usual that people speak about same things in different words. Giving people opportunities to understand each other's ways of thinking is crucial to maintain the change. It is also important to give people possibilities to express their doubts. Only by bringing the doubts visible and creating an open atmosphere it is possible to correct misunderstandings and learn from them. The same is valid for positive achievements, expressing them by words is equally important. People might not see or understand their value until bringing them visible in common discussion.

By encouraging open discussion and sharing ideas does not only help to maintain the achieved changes, it is a prerequisite for further development as well. As stated earlier, every educational institution is still on the way, the world is changing continuously, and it requires systematic development activities in every educational institution to follow these changes. Additionally, education must not just go along with the changes and adapt to them, but take an active role to build the society towards the desired direction. Thus, the vision and the values of an educational organization are significant, and they must be discussed, shared and implemented together with all members in the organization.

This is especially important when aiming towards a more sustainable future. There are no

simple guidelines how to do this, and therefore open discussion is important more than ever. Education must participate in building a sustainable society, helping us to learn to think beyond ourselves and understand what is right under new circumstances. This can be done if education focuses more on the common good and collaborative learning instead of individual performance only, which has been usual in traditional education. Educational institutions can take the role as leaders of change, and this requires commitment and collaboration of all members of the organization. The changes are possible when people believe in the possibility of change and in themselves as change makers.

Actions to take to maintain the change:

- Make sure that there are enough opportunities for the people to meet and share ideas
- Create trust and a positive atmosphere
- Encourage all kinds of discussion and interaction between people
- Make positive achievements visible
- Allow negative feedback too and encourage open discussion
- Create safe and permissible atmosphere

References (chapter 4)

Antonides, G. & Van Raaij, F. W. (1998). *Consumer Behaviour a European Perspective*. John Wiley & Sons Ltd: Chichester.

Hofstede, G. (1991). *Cultures and organizations. Software of the mind*. Maidenhead: Mc-Graw Hill.

Interaction Design Foundation (2019). *Understanding Early Adopters and Customer Adoption Patterns*. <https://www.interaction-design.org/literature/article/understanding-early-adopters-and-customer-adoption-patterns>. 1.2.2020.

Intelivate (2019). *Trust Issues? How to Rebuild Trust by Understanding the Basics*. <https://www.intelivate.com/team-strategy/rebuild-trust-issues> 27.12.2019

Kezar A. (2001). *Understanding and Facilitating Organizational Change in the 21st Century*. ASHE-ERIC Higher Educational Report, Vol. 28, 4. San Francisco, California.

Kotter, J. P. (2012). *Leading Change*. Harvard Business Review Press. USA.

OECD (2017). *OECD Guidelines on measuring trust*. OECD publishing, Paris.

Popovic, C. & Plank, K. (2016). *Managing and Leading change. Models and Practices in Baume, D. & Popovic, C. (2016) Advancing Practice in Academic Development*. Routledge.

Pölonen, P. (2020). *Tulevaisuuden lukujärjestys*. Otava.

Senge, P. M. (1990). *The Leader's New Work: Building Learning Organizations*, Sloan Management Review, Vol. 32, Issue 1.

Senge, P. M. (1992). *The Fifth Discipline: The Art & Practice of the Learning Organization*. Random House Australia: Milson Point, NSW.

Senge, P. M. (1992). *Mental Models*. Planning Review, vol 20, No 2, 4–12.

Slater, S. F. – Narver, J. C. (1995). *Market Orientation and the Learning Organization*. Journal of Marketing, Vol. 59, July, 63–74.

FINAL WORDS

The process of developing an educational organization towards a learning organization is a never-ending one. The role of education is to provide the society outside of the university with the kind of people it needs. As the world is changing at an accelerating speed, educational institutions must be prepared to constantly monitor and acquire information about these changes and adapt their ways of carrying out education to meet the changing requirements.

The purpose of this book is to present guidelines for carrying out education so that graduates will have the best possible chances to create a good life and success for themselves, for the society and for the globe. This must be done with the understanding that “a good life” also involves acknowledging the global challenges and acting to solve the sustainability crisis in our world. The big challenge for all education is promoting an ecological civilization. This calls for redefining our understanding about competence-based education. The emphasis should be put on the competences that enhance innovations contributing to sustainable solutions and enabling a good life and sustainable future in general.

The focus in this book and in its examples is in higher education, but the approach is applicable and useful for all level of educational institutions. By paying attention to educational values and by renewing structures, processes and everyday work in education, we can get new relevant tools to build a more sustainable society and future. We hope that the first half of this book has convinced the reader that the changes in education are necessary and that it has provided ideas of those essential elements in education which need to be redesigned. The second half of the book focuses on practical guidelines how to make the changes; how to manage, execute, and maintain the changes. Each of these steps is important in making a real change and they could all be explored in more detail. However, the aim here is to give ideas how to start and make improvements in the current situation. The significant steps are discussion on necessity of change, management commitment, shared vision on chosen direction, staff and student involvement, and embedding the changes in everyday actions. Even big changes are possible and wicked problems can be solved. People working in the field of education usually consider their work being relevant and meaningful, and commitment to changes can be created when the need for them is realized and shared. As the famous quote of Margaret Mead states: “Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it’s the only thing that ever has.”

REDESIGNING EDUCATION - VISIONS AND PRACTICES

The starting point for this book is that higher education institutions have not yet renewed their pedagogical approaches to the extent that is needed for a sustainable future. The biggest challenge for all educational institutions is the sustainability crisis, and how to act in order to provide students with competences not only to manage in the dynamic working environments requiring innovations, but also with competences to have a good life and to build a sustainable future. The objective of this book is enormous, aiming to help all of us working with the development of education to act together towards making the changes needed in redesigning education.

Redesigning Education - Visions and Practices provides ideas, guidelines and solutions why and how to develop education; in other words, how to make the change in education required by the changing and dynamic environment. The book is primarily directed at the management of educational institutions, education developers and planners, as well as for decision-makers of educational policies and strategies, but it can provide development ideas also for teaching staff in their everyday work.