



# **FINLAND NATIONAL REPORT “THE SITUATION OF INNOVATION IN THE EDUCATIONAL AND TRAINING FINNISH POLICIES”**



## INDEX PROPOSAL FOR THE NATIONAL REPORTS ABOUT INNOVATION IN TRAINING & EDUCATION

- 1.- **CONCEPTUAL FRAMEWORK:** What do we understand by Innovation ability, by competence, by formal, non formal and informal learning... In all, what is our subject of study?

### General view to Finnish innovation policy

Innovations are in high importance in the Finnish society. The basis is that Finland has competitive enterprise and innovation environment. The innovation system is an extensive entity comprising the producers and users of new information, knowledge, know-how and the various ways in which they interact. At the core of the innovation system are education, research and product development, and knowledge-intensive business and industry. Versatile international cooperation is a feature running through the system. As can be seen, education is in crucial part in the foundation of Finnish innovation system.

The National Innovation Strategy (Kansallinen innovaatiostrategia) forms part of Government Programme 2007-2011. The strategy aims at creating broadly based and multifaceted innovation policy and its implementation. Broadly based innovation policy facilitates the development and reform of the knowledge-based competitiveness of the business life, national economy and regions. It promotes the exploitation of innovation in the public sector and society too. Improvements in economic productivity and competitiveness will require a more effective broad-based innovation policy. More attention will be focused on education, research and technology policy.

Tekes (<http://www.tekes.fi/en/community/home/351>) plays a central role in promotion of innovation and R&D activities in Finnish society. Tekes is the main public financing and expert organization dedicated to support research, innovativeness and technological development. Innovation policy is nationally and centrally implemented by a few actors, namely Tekes and guidelines given by the Science and Technology Policy Council. Innovation policy seems to be less visible at least to the great public and even to the entrepreneurs and companies. Tekes works with the top innovative companies and research units in Finland. Innovations and business life are connected to each others in Finnish society.

The systematic development of the national innovation system along with educational system has resulted in favorable development in Finland. For several times Finland has been rated as the most competitive nation in the world ([www.wef.org](http://www.wef.org)) and the 4th most innovative country in the world. In the national curricula for the basic the innovation activity is not mentioned. The higher education institutions (especially in the universities of technology and business schools) have chairs in innovation related issues and offer innovation related courses to students in some extent.

Educational institutions as a whole are active in innovation policy areas. However, as educational institutions cover the whole educational system from basic education to higher education it is not obvious at all that entrepreneurship and innovation policy activities are integrated in practice. Universities, polytechnics as well as institutions offering basic education are Finnish educational institutions. However, different educational institutions have different roles in promoting innovativeness and acting innovative itself.

## Education system

Finland has built up an education system which characteristics consist for example of uniformity, free education, school meals and special education by using the principle of inclusion. In Finland, there is very small differences between schools, which may be explained by the definition of admission areas and the lack of ranking lists and thus by the even distribution of good teachers between schools. Finnish society has a positive attitude to education. About 73 percent of the 25-64 -year olds have at least gained a certificate from upper secondary level and 33 percent (the highest in the EU) have had a university or corresponding education. Furthermore, the completion of basic education is a prerequisite for further studies.

The Ministry of Education is the highest education authority in Finland. It supervises publicly subsidized education and training provision, from primary and secondary general education and vocational training to polytechnic, university and adult education. Finnish education system is composed of as follows:

- one year of voluntary pre-primary education
- nine-year basic education (comprehensive school)
- about three-year upper secondary education, comprising vocational and general education
- about 3-5 year higher education, provided by universities and polytechnics
- adult education is available after basic education at all levels.

The basic right to education is recorded in the Constitution. Public authorities must secure equal opportunities for every resident in Finland to get education also after compulsory schooling and to develop themselves, irrespective of their financial standing. Legislation provides for compulsory schooling and the right to free pre-primary and basic education. Most other qualifying educations are also free for the students, including postgraduate education in universities.

The key words in Finnish education policy are quality, efficiency, equity and internationalization. Background to Finland's success in education builds as follows:

- Equal opportunities
- Comprehensiveness of education
- Competent teachers
- Student counseling and special needs education
- Encouraging assessment and evaluation
- Significance of education in society
- A flexible system based on empowerment
- Co-operation
- A student-oriented, active conception of learning.

The welfare of Finland is built on education, culture and knowledge. All children are guaranteed opportunities for study and self-development according to their abilities, irrespective of their place of residence, language or financial status. All students are entitled to competent and high-quality education and guidance and to a safe learning environment and well-being. The overall lines of Finnish education and science policy are in line with the EU Lisbon strategy. The education system is developed systematically, and the results can be seen clearly. Nevertheless, one must be on the alert when decisions on the education system and resources are made. Teachers'

professional skills must be maintained and they must be updated by continuous in-service training.

### **Individual innovation ability and competence**

There isn't only one acceptable definition for innovation. Innovation is always reliant on situation, place and starting point. It can also be feature of individual, community or society. Innovation is the result of cooperation between many actors. Cooperation can come about in a fruitful innovation environment. In a complex world of fewer borders, the production of competitive innovations needs more multi-dimensional networks in which knowledge, skills, abilities, needs and interests can connect. In general innovativeness can be practical creativity which can lead to new inventions and ventures. Typically result of innovation is new product or service but that is only small part of innovation outcomes. Herein innovations can be connected to individual abilities and competencies which can be developed and promoted by learning.

Learning is crucial in promoting innovativeness. Learning enables to understand and create own opinions in education and in business world as well. Schools, teachers and education system in general have primary liability to offer students possibilities to develop their innovative thinking and bring out their own thoughts.

Abilities or competencies related to innovativeness are many and there isn't right answer. Self-knowledge, motivation, capability to learn, initiative and active attitude are some features which can be seen as innovation abilities. Innovation abilities can also develop social, learning, thinking, working, and problem-solving skills, and to foster active participation like at school. An important task for the 21st century is to attend to students and teachers well-being which is the base for learning and therefore innovativeness too.

### **Formal non-formal and informal learning**

Formal learning is typically related to education and school institutions. Formal learning can be based on National Curriculum and it is systematic and target-oriented. Normally formal learning leads up to degrees and certificates. Formal learning takes place in from basic education to higher education in universities and polytechnics.

Non-formal learning based on target-oriented education and studying also but it doesn't strive to educational degree or certification. Non-formal learning takes place for example in civil training centres, in the course of training organisations and in updating courses.

Informal learning is learning by accident or you are learning just for yourself. Then learning isn't systematic and target-oriented. In addition, there is absence of formal and contents requirements. Informal learning occurs in working place, in practical or in everyday life.

## **2.- STARTING POINT OF THE STUDY ANALYSIS**

### **Education system in promoting innovativeness**

Pre-primary, basic and general upper secondary education and basic education in the arts all require professional and diverse teaching and guidance and a safe learning environment. The entire school community must support children's growth and learning

in a safe and socially considerate environment. The aim is that creativity, different talents and innovativeness will be advanced starting from early childhood education to higher education.

In the basic education smaller teaching groups allow early intervention in learning and attendance problems and enable the diversification of teaching and working methods, the development of innovative and creative learning environments and the consideration of students' different talents. The small sizes of teaching groups are helping teachers to observe all students equally. High-quality teaching methods and learning environments are requirements for learning and they promote positive learning outcomes. Learning environments will be examined from a broad perspective as an entity that supports the attainment of the objectives and contents of the national curricula. Quality enhancement in learning environments aims to promote students' creativity, innovativeness, social skills and problem-solving capabilities.

Basic education is the base of students' competence to start thinking and acting in innovative way. Aim of the Finnish education is to offer equal foundation and high-quality teaching for students to grow and develop. However, all people are different and abilities and competencies linked with innovation are advancing at different times. It can be impossible to develop all students' abilities at the same time and therefore teachers should manage them with different styles.

Finnish education system supports individual development and study planning when moving up from basic education to upper secondary education, comprising vocational or general education. The aim is to develop guidance counseling with due consideration of individual counseling needs. Availability of guidance counseling is improving all the time. Adequate training of guidance counselors will be ensured in the future too. This kind of system helps students to recognize own strengths and abilities and throughout to find out own interests.

Universities, polytechnics and other research institutes within the administrative sector of the Ministry of Education are playing a key role in implementing the National Innovation Strategy. Universities and polytechnics are contributing to the development of regional innovation systems by drawing on the centre of expertise programmes and the Structural Funds. In higher education students have possibility to focus more on innovativeness and to develop own abilities.

### 3.- THE ABILITIES AND COMPETENTES LINKED TO INNOVATION IN MY COUNTRY. State of art.

#### **How to become more innovative?**

Changes in the world of work, such as growing competence requirements, rapidly changing work tasks and contents, changing job descriptions and the growing significance of innovation, will mean growing challenges for the quality and provision of education and training services in general. Placement on the job market requires solid knowledge and skills in order to work in varying and different jobs. Versatile jobs provide a basis for further development of knowledge and skills and that can be utilised in different working environments.

Acting innovative is a result of many matters. Education, job experiences and features of individual itself are all contributing to how innovative you are. In accordance with

Finland's national strategy, one way to strength the competence base is to reform education and training. In addition, cooperation between different sectors is increased in research and development, innovation and research infrastructures. Universities and polytechnics have maybe the most important role in promoting innovativeness in Finland.

Strong vocational skills are crucial in the efficient utilisation of the latest innovations in production, services and society in general. In addition, training providers are playing an increasing role in developing business and working life and in the service sector.

Innovativeness in education and teaching is growing topic. Discussion is focused on circumstances where innovation can be born. In general can be said that innovation is the result of learning or research process. Next are presented two features, cooperation and environment, which can be seen as promoters of innovations.

### *Cooperation*

For innovation, cooperation and networks to emerge the actors often have to be close to one another. Trust is built on direct and close interaction between individuals. Cooperation and networking are important in learning and discovering. One way to support innovativeness is to create collective environment where children and adults as well can share ideas together. In pedagogy research is found out that collective learning assist also individual learning. In Finnish education for example team work and interdependence are used methods in teaching.

### *Environment and atmosphere*

An innovation environment is highly likely to mean the framework and criteria for an innovation system, such as a viable labour market, research and education and training system, intellectual property rights, business and market legislation and reliable social institutions. Diverse environments also promote unlikely encounters, which result in the most unexpected and revolutionary innovations. A truly innovative environment seeks and establishes links to the places where the necessary knowledge and skills can be found at the same time.

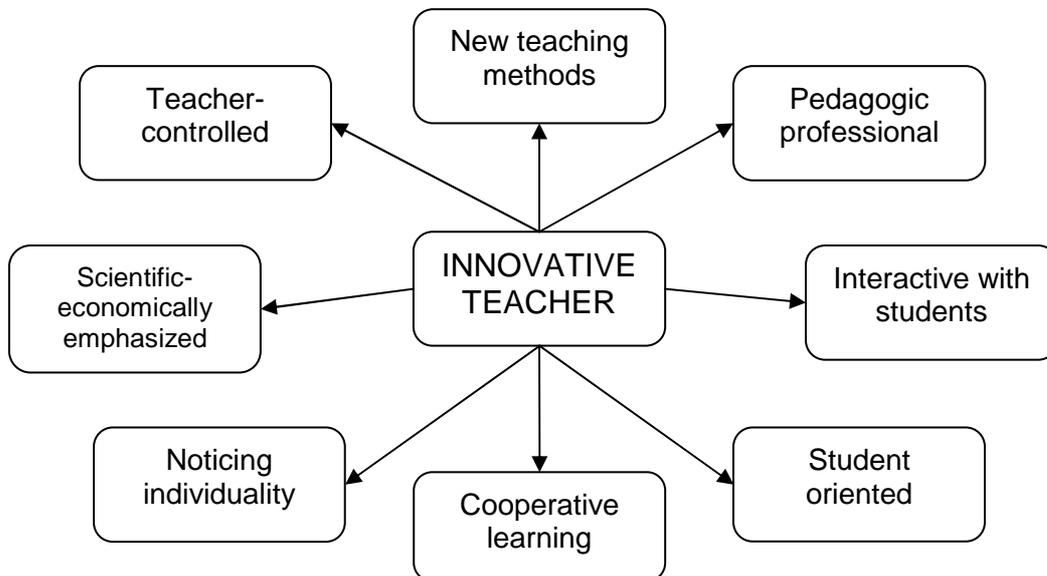
Different cultures and practices are part of everyday life all around in Europe. New practices and innovations are created in communities where different peoples meet each other and the various groups trust each other. A free atmosphere based on trust contributes to the creation of communities of various competences and encourages creative activities and innovativeness. In addition, international cooperation and internationalisation are prerequisites for improving quality and strengthening the innovation base.

### **Innovative teaching**

In general, in teacher education system a Master's degree is required, and teacher education includes also teaching practice. As the teaching profession is very popular in Finland, universities can select the most motivated and talented applicants for the education.

Concept of innovation is more common in business life than in education and teaching. Therefore, it is difficult to define what innovativeness in education and teaching is. One Finnish research (2009) *Innovation and innovativeness in teaching* represent that teacher who works innovatively is a pedagogical professional with regenerative ability.

Teacher also uses many teaching methods and interacts in a flexible and learner-centred way. Next picture shows some features what kind of innovative teacher could be.



Picture 1. Innovative teacher (adapted Tenhunen et al 2009)

Teachers in the different education levels are defining innovativeness in different ways. For example teachers in basic education appreciate more teacher-controlled way and discipline. Teachers in higher education value more different working methods and integration of subjects. Teaching can be also seen as a kind of leadership. Teaching requires sharing leadership, risk-taking ability and low amount of bureaucracy. After all, teacher is a situational manager in the classroom.

When developing teaching more innovative these matters should be took into account and consider in teaching. Timetables and good planning are the base of teaching and that teacher know own students and their needs. Creativeness and innovativeness should be presented in simple way and those should involve in teaching carefully. Possible methods to add students innovativeness is to use different methods in teaching for example experimental learning, different competitions and plays, stimulating teaching materials, brainstorming and working as a group.

Challenges in nowadays teaching are big teaching groups and hurry. There isn't always time for innovations and creative thinking. Teachers are in some point in middle piece where they should handle basic teaching and promote students own abilities and competencies.

### Supporting innovativeness within employment and unemployment

It is very difficult to evaluate how innovativeness is supported in companies and business life. There aren't certain courses related to only innovativeness but courses in wider perspective. In addition, it depends on employer have employees possibility to take part in different training courses.

Employment and Economic Development Office in Finland offer services to unemployed, those who are currently working or entering the working life as well as

employers. They provide services for unemployed mainly in job seeking, career planning and labour market training. Especially services related to innovation aren't available.

Here is one less-developed region where should put more efforts in Finland. How to support innovativeness in companies? And how to add innovative opportunities for unemployed? After education self-development is quite dependent of you. If you are not seeking new opportunities by yourself, there isn't necessary anyone who wants to support and add your abilities and competencies especially related to innovativeness.

**4.- EXPERIENCES AND BEST PRACTICES: Experiencias y mejores prácticas. It seeks to identify some experience that it's being developed in our country to encourage theses abilities**

**1.) Virtual learning environment / Web-teaching**

Web-teaching is defined method where Internet is used according to plan in the teaching. Web-teaching can be divided into three parts: structured teaching, self-access learning and multiform teaching (blended learning) where is used both web-teaching and traditional teaching. In addition, web-teaching can be utilized resource-based learning or interactive approach.

Web-teaching is student-centered way where teacher is trying to support individual development and innovativeness. Teacher doesn't necessary provide all the learning materials but students are expected to search information by itself and recognize what is crucial for learning. Teachers have different roles in web-teaching. Teacher can be producer of materials, experimenter of new methods, supporting person, tutor, mentor or specialist.

Finnish schools (in all levels) have possibility to arrange courses in Internet. For example Moodle is a virtual learning environment where can be managed versatile courses related to for example innovation and creativity. Moodle is an open source course management system which was started by Martin Dougiamas. At the moment Moodle is used and developed by hundreds of people around the world. Moodle is built upon sound pedagogical theories and it is based on social activity. In Moodle is possible to teach in online, share documents, make conversation and so on. Moodle gives freedom to students to work and learn when they have time and when they are thinking creatively because learning to become innovative and being innovative doesn't consider time and place.

Web-teaching and virtual learning environment are innovative methods in teaching. Internet enables more informal learning and place and time for learning are not beforehand given. In addition, distance teaching is possible and it is important at least in upper education level. Challenge is to get more computers in schools and students should have own computers as well.

	SUMMARY	INDICATORS	CHECKUP SOURCES
AIM	Aim is to provide Internet solutions to		

	make teaching more student-oriented regardless of place and time.		
OBJECTIVES	Same as previous.		
OUTCOMES	New teaching and learning environment which can promote innovativeness with its informality.		
ACTIVITIES	Online courses, discussions and cooperation.		Course feedback.
TARGET GROUPS	Teachers and students in all education level.		

## 2.) EDU.fi – web service for teachers

EDU.fi is web service which is directed to teachers. There is available teaching materials and other supporting materials (like competitions and theme day ideas) for every day teaching. Service is channeled mainly into nine-year basic education (comprehensive school) and upper secondary education, comprising vocational and general education. EDU.fi is executed by Finnish National Board of Education and it is also available in Swedish. Aim is to support teaching, learning and theirs developing and also distance teaching.

In EDU.fi is thematic entities from which teacher can select suitable parts for own student groups. There is covered all basic subjects like mathematics, history, biology and mother tongue and also some specific themes like culture, internalization, media, entrepreneurship, sustainable development, well-fare and technology. For example in teaching technology there is material about:

- why it is important to study technology
- description about technology industry in general
- examples of jobs if you are studying technology
- character descriptions about peoples who are working in technology industries
- required characteristics and skills in technology
- good practices
- web materials and new ideas for teaching.

As can be seen EDU.fi offers many new and innovative materials and ideas to teach both traditional and specific subjects. That is toolbox for teachers which are interested in to develop own teaching methods and having new ideas in class rooms.

	SUMMARY	INDICATORS	CHECKUP SOURCES
AIM	Aim is to offer toolbox for teachers to get new ideas and		

	materials for teaching.		
OBJECTIVES	Same as previous.		
OUTCOMES	Teacher can develop as a teacher itself and promote own innovativeness in teaching.		
ACTIVITIES	Materials and ideas to teaching. Also connections to business life like real examples.		
TARGET GROUPS	Teachers mainly in basic and upper secondary education.		

#### 4.- LESSONS LEARNED FROM THE ANALYZED EXPERIENCES TO REACH THE TRAINING INNOVATION OBJECTIVES:

##### Summary

In conclusion, innovativeness in teaching is challenging. How to create trustful environment where new ideas and thoughts can come up? Furthermore, how to support individual abilities and competencies in promoting innovativeness and exploit cooperation and team work at the same time? However, innovativeness can be seen as result of versatile learning where teachers, cooperation and environment have own important roles.

One useful aspect to use in our project is to use Internet as a promoter of innovation. Finland is good example of country which is exploited Internet as a working environment and also schools are using more and more Internet in teaching and learning as well. In general, web-based learning environment offer new teaching methods to develop students' abilities and to develop as a teacher as well.

Aspect that needs more attention is supporting innovativeness after education. From basic education to higher education self-development is noticed but after education there is need for more supported actions. In general there is need for innovativeness in adult life where isn't much time for advancing own capabilities. There companies are playing a big role and they should understand the meaning of lifelong learning within individuals.

#### 5.- ANNEXS

Education and research 2007-2012 Development Plan, Ministry of Education publications 2008:11.

Evaluation of the Finnish National Innovation System – Policy Report. Ministry of Education. Available in internet at:  
[http://www.tem.fi/files/24928/InnoEvalFi\\_POLICY\\_Report\\_28\\_Oct\\_2009.pdf](http://www.tem.fi/files/24928/InnoEvalFi_POLICY_Report_28_Oct_2009.pdf)

Heinonen, Jarna; Hytti, Ulla, IPREG Country Report Finland - Analysis of entrepreneurship and innovation policy in Finland, Turku School of Economics - Business Research and Development Centre, Finland, 2008. Available in internet at: [http://info.tse.fi/julkaisut/liite/E1\\_2008.pdf](http://info.tse.fi/julkaisut/liite/E1_2008.pdf).

Siltala, Reijo (2007) Luovuus, innovatiivisuus ja yhteisöllisyys opetustyössä (in English Creativeness, innovativeness and communalism in teaching). Available in internet at: <http://users.utu.fi/repesi/luovuuden07.pdf>

Siltala, Reijo – Alajääski, Jarkko – Keskinen, Soili – Tenhunen, Anu (2009) Opetusalan asiantuntijoiden käsityksiä opettajan pedagogisesta innovatiivisuudesta (in English Teachers thoughts about pedagogic innovativeness) Aikuiskasvatus nro 2.

Tenhunen, Anu – Keskinen, Soili – Siltala, Reijo (2009) Opetusalan asiantuntijoiden käsityksiä opettajan pedagogisesta innovatiivisuudesta (in English Innovation and innovativeness in teaching). Ministry of Employment and the Economy.

Websites about EDU.fi Web service for teachers: <http://www.edu.fi/>

Websites about Employment and Economic Development Office:  
<http://www.mol.fi/mol/en/index.jsp>

Websites about Finnish National Board of Education: <http://www.oph.fi/english>

Websites about Finnish science and technology, Information service:  
<http://www.research.fi/en>

Websites about The Evaluation of the National Innovation System:  
<http://www.tem.fi/index.phtml?l=en&s=3161>

Websites about Ministry of Education and Culture: <http://www.minedu.fi/OPM/>

Websites about opettaja.tv (in English teachers.tv):  
[http://opettajatv.yle.fi/kurssit/Sosiaalinen\\_media\\_oppimisen\\_ja\\_opetuksen\\_valineena\\_o\\_sio5\\_arkioppiminen](http://opettajatv.yle.fi/kurssit/Sosiaalinen_media_oppimisen_ja_opetuksen_valineena_o_sio5_arkioppiminen)

Websites about VERTTI – Teachers web course support, University of Helsinki:  
<http://www.cs.helsinki.fi/group/vertti/vertti/index.shtml>

Websites about Virtual learning environment: <https://moodle.utu.fi/>