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Co-creative problem solving

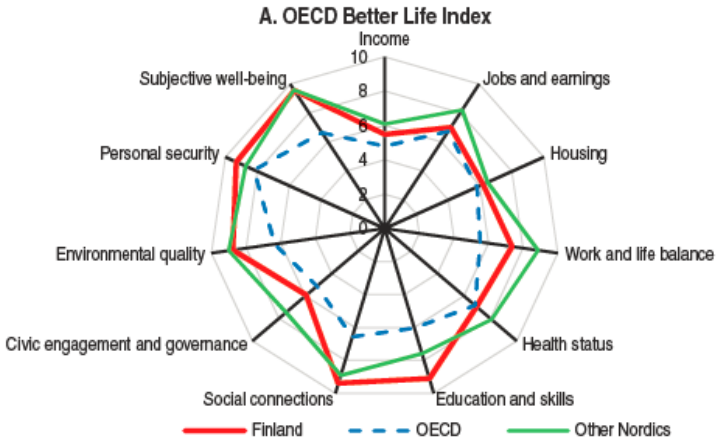
Introduction

There has been an increasing interest during the latest decades of Finland regarding the roots and reasons of the success of the country in the fields of Innovation, modernization, well being, social progress, high quality education. Along these key terms – together with other countries of the Scandinavian region but with a kind of special leading status, Finland has often been quoted in the international economy and policy studies.

„The country where people use the future" – more than a smart catchword, an exciting attitude which may well characterize why in many countries the Finnish way of development implicitly or explicitly serve as example.

A few illustrations about how in the global public opinion and media the country stands:

- First place on the list of best countries in the World (Newsweek, 2010),
- second place on list of Innovation groups of the World (Harvard Business Review, 2009),
- third place on the list of Global innovations (The Economist Intelligence Unit, 2009),
- first place on the list of best education in the World (World Economic Forum 2009, fourth place in 2014/15,
- first place on list of availability of Scientists/engineers (World Economic Forum, 2009),
- first place again on the list of wealth of the World (Legacy Prosperity Index, 2009),
- first place on the list of best countries in the World (Lifestyle, 2010),
- fifth place on the list of Global innovations in 2014 (3rd in 2009).



Quality of life in Finland

(OECD 2016)

Regarding the success of the education system, the most cited points are:

- *Education and learning has been a respected and admired part of the culture.* Finland built and secured its national identity in the 19th century through investing in education for all and when independence was achieved, the base was there to develop further.

- *"Leave no child behind"*
This has been a slogan adopted in Finnish schools (actually, long before it became popular in the US). Pupils with learning difficulties are patiently brought up to the average level by teachers and assistants giving them extra attention and support.

- *High quality teachers with compassion are needeed*.
Only 11% of applicants to the teaching profession are accepted, which means that the most motivated are selected. Respect for the vocation of teaching ensures that talented students choose the profession.

Recent period of economic downturn

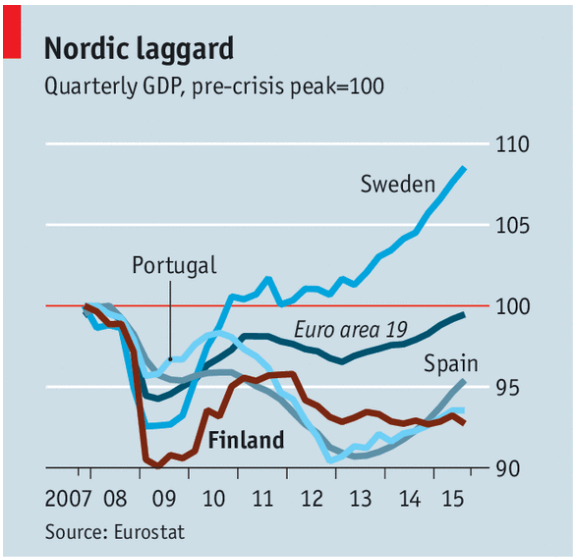
However acknowledged for its high level of income and well-being, Finland has faced serious economic problems in the past years. The only Nordic member of the Euro-zone, ran into trouble after the financial crisis of 2007-08.

Output dropped by 8.3% in 2009 and although GDP grew in 2010 and 2011, then declined for the following three years. The country has suffered an *extraordinary combination of shocks*, like the decline of Nokia, once Finland's biggest company and the world's biggest maker of mobile phones. Exports to Russia have plunged by a third. Finland has also been affected by what the ETLA economic research agency in Helsinki called "the reduction of demand for print paper due to the substitution of print media by internet services".

The Finnish economic and social model is being challenged, says the OECD. Wages carried on rising despite sagging productivity: unit labour costs are 10-15% higher than those of Finland's trading partners. Potential growth has halved from around 3% a year before the financial crisis to less than 1.5% now. Unemployment is rising but social safety nets keep income inequality low.

The ongoing goverernemental austerity programme may realise savings of €4 billion—around 2% of GDP—in 2019, mainly through spending cuts. Even then, further parsimony will lie ahead for a country whose public expenditure is 58% of GDP, the highest in the European Union (the average is 47%). *The most important reform is an overhaul of the labour market*. Finland's system of national collective bargaining, wage agreements was

once a strength, but it is now keeping wages too high. The government advocates a more flexible system.



Productivity needs to be revived – it has fallen in manufacturing and hardly increased in business services. International competitiveness should be restored. The government programme to streamline regulations, promote competition and encourage entrepreneurship should support growth.

Finland is meanwhile well placed to find new sources of evolution. According to a World Economic Forum report, *it ranks second globally for innovation*. The government has an ambitious programme to restore competitiveness and fiscal sustainability through budgetary measures and structural reforms. *Startups are an ideology* among young Finns due also to a priority of the government: e.g. a €1.6 billion initiative to promote growth over the next three years to foster the use of new technology. High hurdles for the low-skilled in the labour market call for *further enhancing education and life-long learning*.

The international strategy environment

Though the original LLL idea of the UNESCO from the 1960's is still often meant to be mere paperwork concept in many developed countries, that is obviously not the case in Finland, where lifelong and lifewide learning practices and perspectives are feasible part of the everyday life, part of their national curriculum and corporate business strategies for more than a decade, especially following the paradigm shift in strategic thinking triggered by the economic downfalls and crises of the 21st century.

The main transforming factors regarding the context elements of education recently include the Ways of thinking - creativity and innovation, critical thinking, problem solving, learning to learn, meta-cognition – the Ways of working – communication, collaboration (teamwork),

Tools of working - information literacy, ICT literacy - and Living in the world - citizenship – local and global, life and career, personal, social responsibility.

According to the United Nation's proposition to measure development, emphasis should move to human-based rating instead of economic indexes. The Human Development Index accordingly includes the Life expectancy at birth, the Educational index and the GDP only follows then.

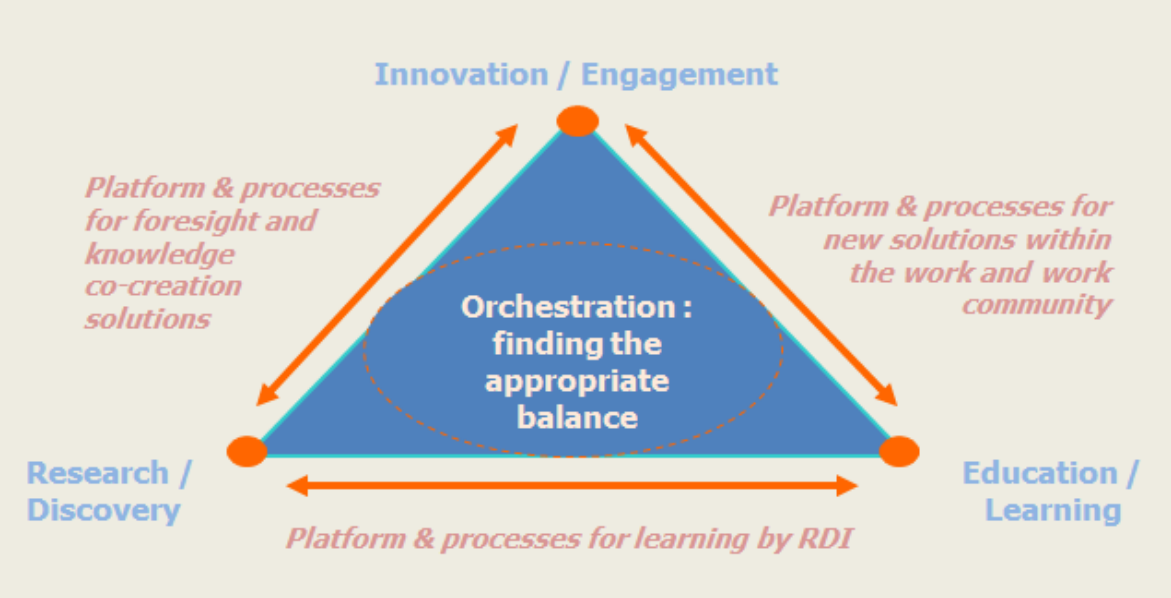
EU 2020 Strategy and Higher Education

The EU 2020 program mutually reinforcing priorities include: Smart growth - Sustainable growth and Inclusive growth. Among the seven flagships for implementation, we find the Digital Agenda, the Innovation Union and the Agenda for new skills and jobs.

The strategic role of universities in the processes can be identified as (i) focus on grand challenges, (ii) to strengthen the Knowledge Triangle- i.e. synergy between research & education & innovation and (iii) modernize the Triple Helix cooperation: University – Industry – Cities.

Meanwhile, in practical implementation, the focus is shifted on the Living labs and the user-driven innovations: the people and process development.

The Knowledge Triangle as blueprint of a new educational paradigm shift



The Knowledge Triangle should primarily be seen as a large-scale societal innovation through which Europe can strengthen its research potential, increase its capacity to educate talents and to promote and create demand-driven open innovation platforms for wide societal use.

New ways to learn call for new approaches to pedagogical development and assessment that truly encourage learning by doing and motivate the learners. Bringing together theory and practice is essential in implementing the Knowledge Triangle. (CESAER).

Implementing the Knowledge Triangle means among others targeting more development activities on curriculum and learning environment initiatives, which are essential to learning to learn. University teachers should be equipped with skills and competencies to facilitate learning and managing properly situations in which studies are focused on solving real life problems. The *growth of teacher students´ identities* should be supported through appropriate content, methods and importantly: operating culture.

In Finland, the emerging substantial economic as well as educational constellations have resulted in a focused pragmatic, research and innovation-centric paradigm shift in the educational, pedagogical thinking and strategy making, also known as Knowledge Triangle (Markkula 2013).

The idea of the organic interference among research-education-and innovation is being impressively put into practice by the newly established Aalto University of Helsinki project, manifested as a pioneering endeavour in Europe. The knowledge triangle concept – which has also led to the creation of the European Institute of Technology and Innovation (EIT) - makes part of the Europe 2020 strategy and the Horizon 2020 programme focusing on societal changes fostered by education, research and innovation. (EC 2009)

The educational changes and innovative stimuli fostered by the participants – teachers, students, researchers of businessmen – are expected to be *adopted, implemented* instantly and the result should be *reflected* as well as *detected* in the society. That is sustainable growth – and rather not the nonsense concept of sustainable development (Bartoli 2000 and Slemmer 1996) - and internalised knowledge sharing and accumulation, or in other words the intrinsic essence of LLL and lifelong education (LE) as envisioned by the UNESCO and the EU, respectively.

The role of universities and the Knowledge Triangle

The *EU "Common Strategic Framework"* for research, technological development and innovation stated that "where appropriate, European research and innovation policy should reach out to education and training, thus invigorating the knowledge triangle through concrete policy measures and synergies between education policy and the CSF for research and innovation.

The role of universities is crucial operating within their *regional innovation ecosystems* while being connected to global networks at the same time, and making the complex inter-linkages more understandable and visible. The quality and joy of research, learning and working will enhance remarkably, when the university activities are increasingly based on the real life & real case -approach building bridges to innovation and societal impact**.**

The effectiveness and efficiency of the university community will grow, when its operations are based on the implementation of the Knowledge Triangle principles and practices.

Realizing principles of Knowledge triangle also needs:

- motivating university students to effective and target oriented studies by developing teaching methods and support systems, such as student's personal study plan, multidisciplinary study teams and virtual learning environments;
- targeting more development activities on curriculum and learning environment initiatives, especially for the first-year studies which are essential to learning-to-learn;
- increasing ICT-assisted teaching and learning by developing new forms and methods of pedagogical education for all university teachers to equip them with skills and competencies as facilitators of learning;
- that many study teams include also professionals to apply lessons from the classroom to their work environment, projects that require students to work across traditional boundaries;

Present Educational Reforms in Finland: Raising workers' skills - Investing in the future

In the field of education, the performance of the country is acknowledged as excellent, but has weakened somewhat over recent years and the present budget cuts will need to be compensated by efficiency gains to maintain world-class results.
According to the OECD Economic Surveys on Finland (2016), adult skills are high in Finland, school results are good and educational attainment is also high. Tertiary education however starts late and is completed slowly. Vocational education provides a pathway to work for students with less interest in academic studies, but narrow qualifications and low foundation skills reduce adaptability to structural change.

The government foresees to launch programmes to continue professional education for teachers, update pedagogical approaches and use digital learning environments to allow a wider range of learning methods. The government also plans to make vocational education and training more flexible by making it easier to switch between educational paths and easing the financial and administrative burden for apprenticeships.

Finland has one of the highest levels of educational attainment in the OECD. It is renowned for its good results in compulsory schools, which are reflected in high PISA rankings, even though spending per pupil is slightly below the OECD average.(NB: PISA results are also falling in other Nordics). Finland ranks second in the OECD Survey of Adult Skills (PIAAC) for literacy, numeracy and problem solving in technology-rich environments . High-quality vocational education and training (VET) eases the transition from school to working life by focusing on trade-specific skills whilst lower foundation skills reduce VET graduates' adaptability to rapid technological change. Efforts to build these skills should be increased, along with life-long development and training.

Higher education institutions will be reformed by determined efforts to terminate overlapping programmes and through closer cooperation with government research institutes and economic life. A crucial question revolves around either developing the current higher education system (dual model) or discontinuing separate higher education sectors. The structural reform of universities should progress in short term perspective. Universities need to have globally visible profiles – with internationally attractive clusters of expertise to be created, joint public and private sector development measures implemented.

As it comes into everyday practice, the ideas and concepts may get palpable manifestations, like the *Phenomenon Based Learning project* launched in all the Finnish schools as of 2017 aiming at providing students more lifelike and involving practical experiences out of the classroom environment. The Finns commonly share the idea that whatever expertise or know-how we may possess it would be void and vain unless it is practically adoptable and useful in practice for the common good, also supplemented with the idea that we constantly need to acquire new skills and competences so as to be able to adopt to new situations, conditions in the swiftly evolving and changing digitalized world.

The Aalto University KT-based project and other attempts and pilot-projects in Finland do emphasize the importance of LLL as well as of shared and internalized and inclusive knowledge available for anyone interested.

Research and innovation policy reform program

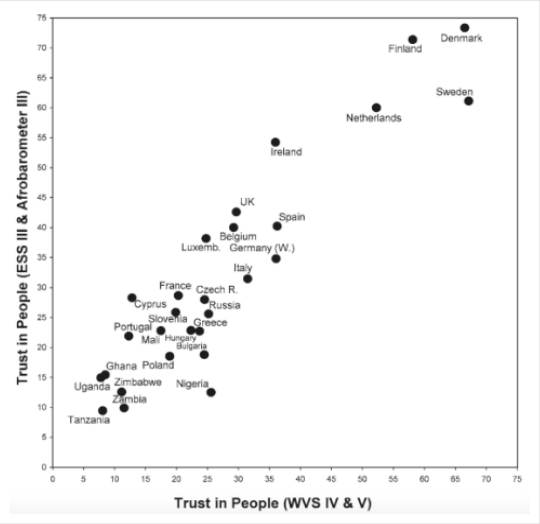
Digitalization and the increasing significance of intellectual capital and intangible value creation are transforming society, economy and R&D. New ways of acting and doing things have to be found as working life and competence requirements are changing. Raising the quality of education and research plays a key role in sustainable competitiveness.
The reform program of the Finnish Key development areas of R&D policy are shown in the following points:

- a radical reform of the higher education system
- promoting the exploitation and impact of R&I results
- strengthening new sources of growth, intellectual capital and entrepreneurship.
- improvement of the overall knowledge-base of the population and selective support for cutting-edge skills
- reform of the public sector and closer cross-administrative cooperation
- adequacy and targeting of R&D funding

Trust based approach

A noteworthy example of the socio-cultural context of education in Finland could be highlighted with the trust based approach.

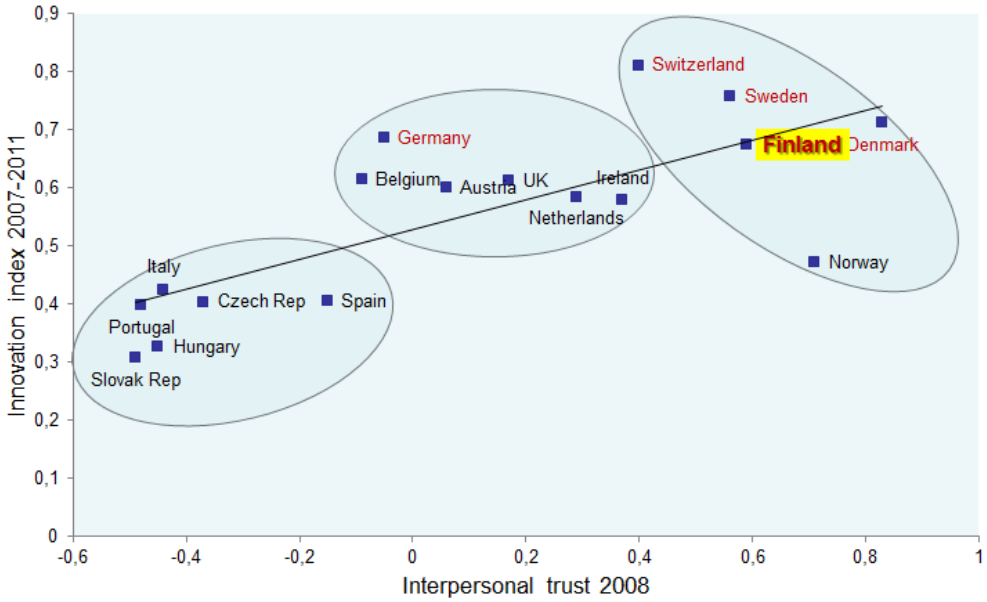
Interpersonal trust levels as measured by the World Values Survey and European Values Study, and the European Social Survey and Afrobarometer Survey – Inglehart & Welzel (2010)[26]



The Finnish society is characterized by high levels of trust. Teachers are also entrusted with considerable independence in the classroom. They have responsibility e.g. for the choice of textbooks and teaching methods. There is a climate of trust between educators and the community. There is no external evaluation and school inspection has no control over the work of teachers since they received a high level of authonomy.

The Year 2008 Social outcomes of education indicator included measures of self-reported health, volunteering, interpersonal trust and political efficacy, assessed in the Survey of the OECD Programme for the International Assessment of Adult Competencies. These four social outcome measures are considered among the key indicators of individual and national well-being. Both educational attainment and literacy proficiency are positively associated with these measures.

Whilst trying to find connection between trust and innovation, we can find a positive correlation.



The issue of trust in the educational process should be therefore considered as important.

Nowadays one may often feel lack of trust between education stakeholders and teachers which creates unreceptive environment for the professional development process.

In turn: "In a continuously unfavourable environment the majority of the energy is devoted to the continuous adaptation performance, little of it remains for "useful" work. In this environment, it remains just who is unable to concentrate resources needed for the outburst." (Kálmán, 2005)

Conclusive remarks – with some holistic aspects

The author of the present study has spent a year as guest professor in Finland - at the Tampere University – and had the chance to observe, experience, consider, even analyse several of the above described contextual elements in wider perspective, being also supported by the senior Finnish academic community fellows.

When we study the characteristics of paradigm shifts in Finland, the important aspects are: research based planning, trust based approach, career path, open learning environment, knowledge triangle - which can blaze a trail to the competences needed for LLL paradigm change.

The issue is really a kind of conceptual, if not philosophical one. We are dealing with deep, partly spontaneous, smartly governed conversion attempts in a thoroughly transforming system – being Finland, one of the globally most modern ones – whilst face the challenge of peculiar nature. *"Our democratic institutions were not designed for dealing with situations of interdependence" (Bauman).*

We are in fact observing a sort of futuristic-holistic scenario which may be with good deal of certainity, a model, a „Vorbild" for the European developments.

Or – alternatively - maybe we are dealing with a tough pragmatic one, directing us back to the down-to-earth aspects of simple interest-guided systems?

Lifelong learning has remained an applause line in public speeches but has yet to become a line item in educational policies. This requires a kind of social innovation as well – whatever abstract it may sound - , since globally, most communities do not have access to a lifelong learning networked system that could help it remain competitive in the global marketplace.

Given the decentralization of academic and governmental institutions, broad partnerships between industry and academia, policymakers, and engineering organizations could produce this infrastructure. Such partnerships could be effectively responsive to the rapidly and unpredictably changing environment, thus enabling the much needed social innovation (Quadrado 2013).

From education to independent learning is a pathway that by understanding and assessing current practices in lifelong learning may help to explore strategies for addressing unmet needs. A comprehensive, co-operative system of lifelong learning will require deep, long-term collaboration among key players in science and engineering.

Stimulating lifelong learning can improve the knowledge base of every country's human capacity for innovation and competition. Coordinated efforts between industry, academia, professional societies, and policymakers to develop a framework for lifelong learning should begin.

Resources

Reformative Finland: Research and innovation policy review 2015–2020
Research and Innovation Policy Council
http://www.minedu.fi/export/sites/default/OPM/Tiede/tutkimus-_ja_innovaationeuvosto/julkaisut/liitteet/Review2015_2020.pdf

Economist - Finland's economic winter
http://www.economist.com/news/business-and-finance/21689751-nordic-laggard-can-forge-ahead-reforms

Why Finland is first for education?
World Economic Forum Tokyo 2016
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https://www.oecd.org/eco/surveys/Overview-OECD-Finland-2016.pdf

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Markku Markkula, Aalto University & EU Committee of the Regions Brussels,
DG EAC, 8 March 2012
http://www.cesaer.org/content/assets/docs/KT-Workshop_Markkula-Sjoer.pdf

Inglehart and Welzel, World Values Survey, 2010
https://ourworldindata.org/trust

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