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Overview of Finnish education system

- Three main levels:
 - *Compulsory education: Elementary school from grades 1 to 6; Secondary school from grades 7 to 9*
 - *Secondary education: High-school and Vocational education*
 - *Tertiary education: University and Polytechnic (the latter are vocationally-oriented higher education institutions). Applicants need to pass entrance exams.*
- The school system is 100% state funded, from elementary school to University
 - *No fees, not even for foreign exchange students*

Overview of Finnish education system

- All teachers in Finland must have a masters degree from the University
- Teachers are selected from the top 10% of high-school graduates. The competition is extremely tough: It's more difficult getting into teacher education than law or medicine.
- The national curriculum is only broad guidelines - this gives schools and teachers a lot of freedom in terms of both content and methods (e.g. use of ICT).
 - *Freedom gives teachers an opportunity to build teaching around their own strengths and preferences.*

Overview of Finnish education system

- Finnish children start school at age of 7 (Compulsory education begins at the age of 7 and lasts for 9 years).
- Most of the children, clever or not, are taught in the same classrooms
- Extra care is taken about weaker students; 30 percent of children receive extra help during their first nine years of school. There are also schools for special needs children and children with more severe learning difficulties.
- 93 percent of Finns graduate from high school.
- 66 percent of students go to college - the highest rate in Europe
- For many years, Finnish students have been on the top or very close to the top for science, reading and mathematics in international standardised comparisons (e.g. PISA and TIMMS).
 - *The difference between weakest and strongest students in Finland is the smallest in the World.*

ICT in Finnish education

- Importance of ICT in education has been emphasised since the beginning of the millennium in many strategic papers
- "Finland has been at the top of international comparative assessments of learning outcomes for almost ten years now. The factors that have led to this success are not the same ones that will keep us at the top for the next ten years. ... In order for Finland to retain its position as a top country in education, schools need to make diverse use of the opportunities provided by ICT and media."(*National Plan for Educational Use of Information and Communications Technology, 2010*)"

ICT in Finnish education

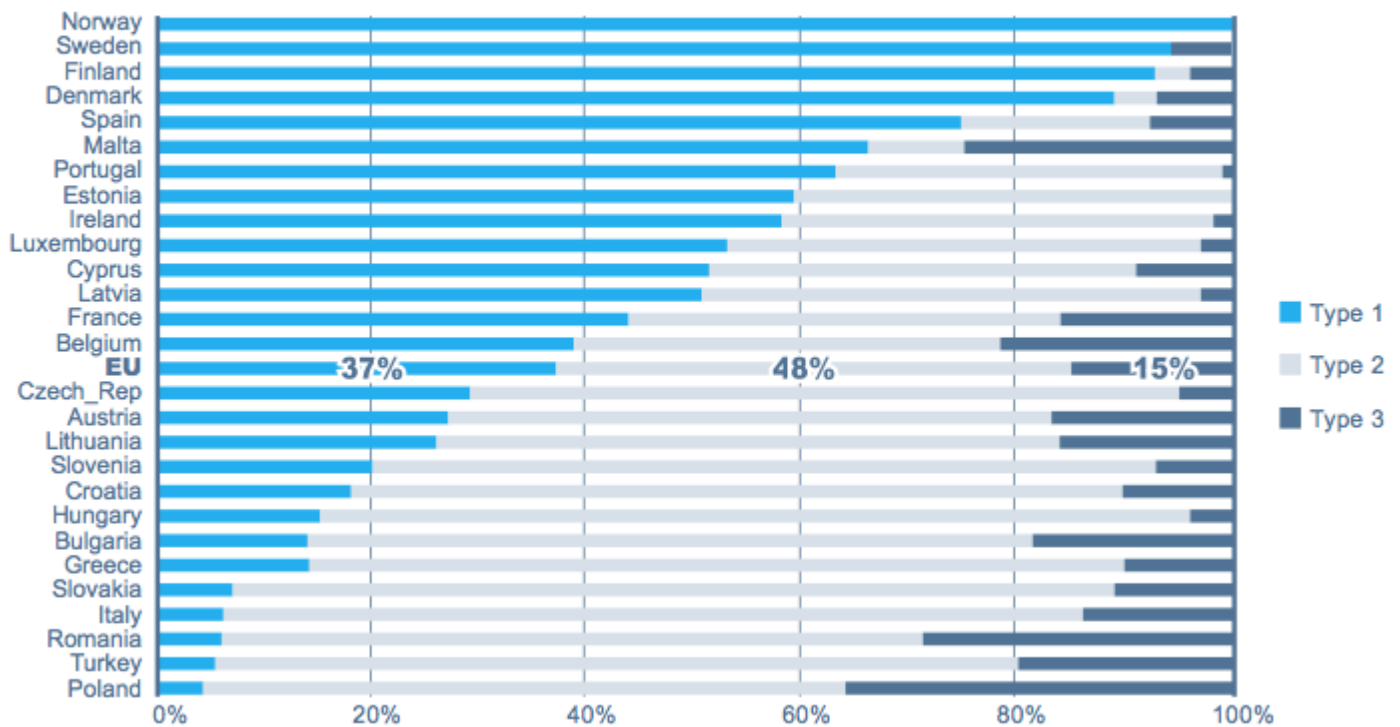
- In compulsory education and high schools, ICT is (or at least ought to be) integrated into various school subjects
 - *No dedicated ICT lessons*
 - *It is up to the teacher to use or not to use ICT during lessons in various domains*

ICT in Finnish education

Survey of Schools: ICT in Education (EC, 2013):

- Finnish schools' overall ICT infrastructure (~equipment, network + connectedness of equipment) is one of the best in Europe

Fig. 1.13a: Percentages of students by school type in terms of equipment
(Grade 4, country and EU level, 2011-12)



ICT in Finnish education

Survey of Schools: ICT in Education (EC, 2013):

- In Finnish schools the amount of ICT use for learning is the lowest in Europe!
 - *Finnish teachers use ICT to some extent when preparing the lessons but not during the lessons*
 - Finnish teachers don't use ICT during lessons, because...
 - Finland does very well in international comparisons without using ICT, so it is difficult to convince teachers to abandon current (non-ICT-based) methods and practices.
 - There is very little ICT-based training in teacher education. Teachers feel pedagogically incompetent, i.e. they lack innovative pedagogical practices.
 - *According to students' self-reports, Finnish students have the weakest opportunities to use ICT during classrooms in compulsory education, 4th lowest in high-school, and below EU average in vocational education.*
 - *The proportion of students that have not used ICT in schools at all during the last year is the highest in Finland (31%; EU average 20%)*
 - *Despite the seemingly good infrastructure, the students per PC ratio in Finland is only around EU average; lack of devices per students limits students' opportunities to use ICT in schools*

ICT in Finnish education

Survey of Schools: ICT in Education (EUN, 2013):

Fig. 2.5a: Use of school desktop/laptop for learning purposes at least weekly
(Grade 8, country and EU level, 2011-12)

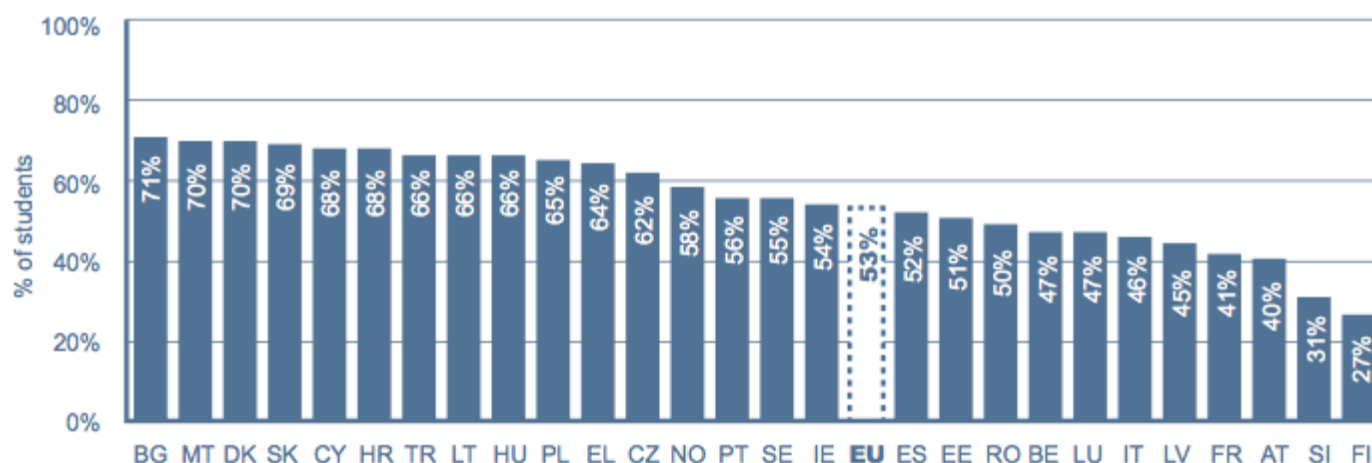
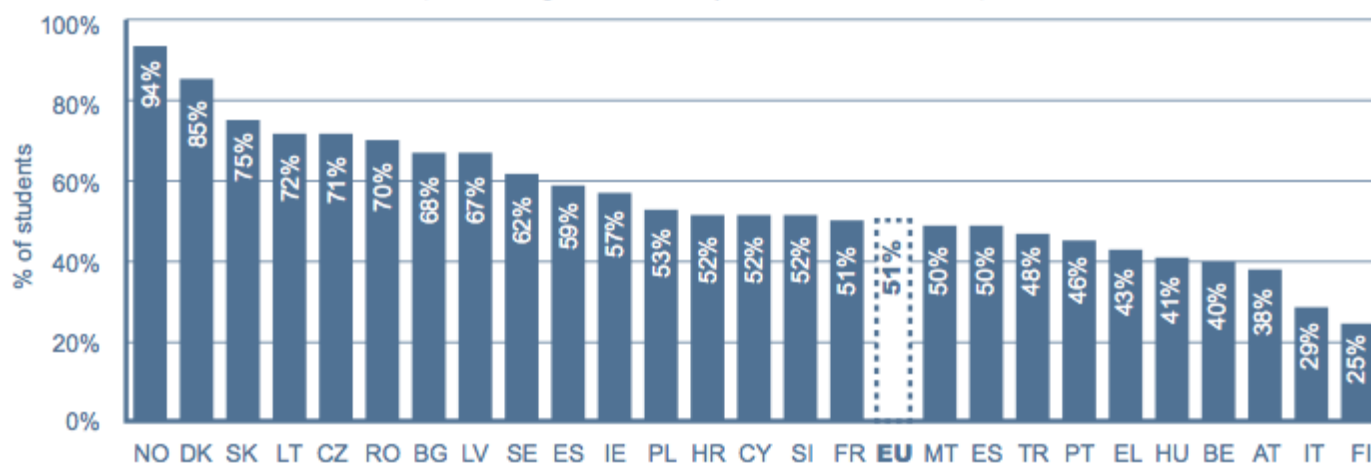


Fig. 2.5c: Use of school desktop/laptop for learning purposes at least weekly
(Grade 11 general, country and EU level, 2011-12)



ICT in Finnish education

Survey of Schools: ICT in Education (EC, 2013):

- On the other hand...
 - *In Finland, students use ICT outside of the school more frequently than in any other European country.*
 - *Finnish students' confidence to use ICT is among the highest in Europe*
 - *There are large regional regional differences in the frequency of ICT use in schools*

ICT education in Finland

- ICT/CS degrees can be obtained from Universities, Polytechnics and vocational education
- People's interest towards ICT in general and ICT education particular has varied according to the various ICT-hype created by Finnish media.
 - *Nokia's public image / success has been one of the main factor that has shaped attitudes.*
 - *Since the beginning of the millennium the amount of applicants in ICT studies have been in slight decrease*
 - *However, during the last two years there has been a surprising increase in the amount of applicants (similar trend has been observed in the US)*
 - Potential explanations for the recent increase: Success of Finnish gaming industry, realisation that modern society is heavily relying on ICT...
- Employment rate in ICT sector is high:
 - *Within the first 5 years after graduation unemployment rate is between 3 to 5%,*
 - *After five years unemployment rate almost zero percent.*

Problems / challenges in Finnish ICT education

- There is a general problem to get enough competent applicants in STEM domains in Universities
- Especially girls have low interest towards STEM education and careers
- In order to promote students' interest toward STEM domains...
 - *those that do well in STEM in high-school final exams can get to University without entrance exams.*
 - *Students can already take University courses during high-school and these will be recognised when entering University*

Problems / challenges in Finnish ICT education

- Slow progress and low graduation rate
 - *More than 90% of the ICT students work while studying*
 - *Consequently only 10% of the students' reach the threshold value of 55 credits per year*
 - *Only about 50% of the students will eventually graduate (within 10 years or less).*
 - *From the point of view of the revenue model of Universities this is a huge problem*
 - *From the societal / industry perspective this is much less dramatical, because ICT students are typically working for the ICT industry anyway, regardless of graduating or not.*
 - *This problem can not be solved easily because there is no regulation in ICT sector who will/can be employed (unlike teachers, lawyers and medical doctors). There is a "heroic" work tradition in the ICT industry: Diplomas don't weight nearly as much as one's actual ICT skills.*

Conclusion

- Finland has a good ICT infrastructure in schools, but teachers utilise the infrastructure extremely poorly
- Finland has a strong ICT sector and the general interest towards ICT studies is also sufficiently high. However, students' graduation rate in ICT sector is far from optimal
- Overall, it appears that both the ICT knowledge and the general interest towards ICT studies develop outside the formal education in Finland

Future challenges in Finnish ICT education

- To increase ICT use in compulsory education
- To increase the general appeal of STEM domains
- Attract female students and socially skilled people to study ICT
- Speed up graduation times and increase graduation proportions