

DEvelop COmpetences in Digital Era. Expertise, best practices and teaching in the XXI century

IO2. Innovative training models, methods and tools for teachers in the digital age

**NATIONAL REPORT: Finland** 

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### Introduction

According to digitalization in EU, Finnish government implements the general development of digital era by the action plan of government 2016. Finnish government have taken five strategic priorities in the Government Programme to bring the Finnish economy onto a path of sustainable growth and higher employment and to safeguard sufficient financial resources for public services and social protection. These priorities are materialized in the 26 different key projects. One of the strategic priorities is digitalization. This programme will implemented during 2015–2019 in educational sector during different key project, for example 'New learning environments and digital materials to comprehensive schools'.

There are many processes going (changes in the society, fast development of social media, new curricula, reforms, developing of digital matriculation examination etc.) and teachers understand the need of new teaching methods and materials, further training and updating their skills. ICT and digitalization including developing of teaching and methodology by ICT instruments are one of the most innovative sectors during last years.

According to Liisa Pohjolainen and Pasi Silander, digitalisation is understood as system change and management of operational culture to enable new activities. Informational technology includes data processing and automation, informational and communication technic (Finnish 'TVT') means more devices and technical equipment. Practical use of these terms varies from wider ('TVT') to narrower (differentiation between ICT and digitalization).

Finnish national report aims to identify innovative training models, methods and tools for teachers in the digital age. The main object of the report is identifying local situation, teachers' skills and competences and good or best practices of digitalization. The report describes training models and successful methodologies to integrate into the school staff digital, methodological and socio-relational skills requested by digital era.

Chapter 2 will give general description of the Finnish educational system, a framework of the main national laws and legislative funding programs, trends and policies activated at national level. It will discuss about actions targeted to the integration of the ICT and digitalization to school's daily activities, significant experiences of projects (Ope.fi Standards, Oppiminen online, Digi-tutor) spread in Finland. Some e-platforms (Opeka.fi and Ropeka.fi) collected consistently self-assessment of teachers and leaders in digitalization sector.





Chapter 3 will identify of local good or best practices and classify of profiles and skills of educational institutions professionals in the ICT field. According the structured interviews headmasters and school leaders are identified the digital skills of teachers and both helping and restraining factors of the effective use of those competences. All together 20 school leaders and five key persons were interviewed in Finland. Identified best practices and educational successful methodologies, based on the analyses of structured group interviews for school leaders' and in-depth interviews of key persons.

The results of the interviews shows strengths in Finnish educational system: mostly all staff have basic ICT skill, mostly adult education is using already some distance courses and material, personalization of study process makes it possible to use different methods in guidance. Many projects are supporting financial to develop digital era, as so called Digi-tutor program and at least digital competence in the schools has been based on the personal activity of some teachers. Using of e-tests and cloud services are increasing, and teachers uses them as practical methods. The digitalization will support lifelong learning and distance learning.

There is infrastructure and know-how in Finland, but on the other hand, it is surprising how small digital education is in reality. As risks can seen that there is no national criteria for the digital competence of the citizens or of the teachers. The lack of a national vision and strategy concerning the development of ICT competence in Finland have to solve. ICT development happens in the projects and there is no long-term regular funding at the municipal level but one third of the communes do not apply for any development funding at all. The competence of the digital era and all this results would be synchronised between the national level and the schools during national vision and strategy, by support of key projects. The new situation and new hardware cause many questions and new challenges in schools: who will be responsible in equipment and update them, how often schools have to update their hardware and what are best solutions (devices and software).

According the interviews made during DEODE project, the leaders opinion is that first have to be learning, and technic is tool for the learning. The integration of ICT into the learning process in school practices have to based on pedagogical understanding that digitalisation promotes teaching and guidance, improving the quality of guidance, and gives opportunity to develop and create a new modern material. The guidance have to be timely and achievable. Projects, national and international, give possibilities to organise further training of teachers and up-to-date hardware. Projects also will give opportunity to develop this sector, learn from each other. Cooperation and networking between teachers of own sector will implement more benefit. At least there are needed more training for teacher, more time resources. The main competences that teachers should have in order to carry on the effective practices are deeply connected to attitude and motivation, genuine desire to develop and share knowledge and materials.

The goal is that learning will be possible in digital environments in cases when the presence learning is not possible. Digital environments will support developing of distance learning, larger cooperation between different





education providers and working life, and skills of lifelong learning. The most important aspect of digitalisation would be that the material would always be available, shared to everyone in use. The challenge will be to get all learners involved.

The key projects of Finnish government give opportunity to apply projects and financing for further developing and updating digital competences.





# 1. Description of Italian national context

# 1.1. Finnish education system and national legislative framework

Finland is state of the open and free education system. The basic right to education is recorded in the Constitution of Finland: legislation provides for compulsory education and the right to free pre-primary and basic education. The legislation governing primary and secondary level education, as well as part of the legislation governing adult education was reformed on 1st January 1999. The education system has remained unchanged, but the new legislation has substantially increased the independent decision-making powers of the local authorities, other education providers and schools.



Figure 1: Finnish Educational System<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> <u>http://www.oph.fi/english/education\_system\_education\_policy</u>

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The Finnish education system is composed of nine-year basic education (preceded by one year of voluntary pre-primary education) which gives general eligibility for general upper secondary schools and vocational upper secondary qualifications. Both the general upper secondary and vocational upper secondary qualification give general eligibility for higher education in universities and universities of applied sciences. The Finnish educational system is open lifelong learning system and there is any closed pathway. People can study so many different qualifications as they like. Adult education is available at all levels. (Figure 1.)

Success of the Finnish education system based on the equality for education, free, competency and quality, flexibility and mutual trust. The equality for education and free of charge education guarantee equal access the education to everybody between 7 and 16 years basic nine years education, irrespective of domicile, sex, economic situation or linguistic and cultural background. Teachers and schools are committed and enjoy large autonomy. Master's degree is a requirement, and teacher education includes teaching practice. The Finnish education is flexible and based on a student-oriented active conception of learning. As support there will offer learners and students personal guiding, counseling and tutoring, early intervention, individual support for the learning and welfare. The self-assessment skills of learner are developed since the day care center. Special needs education is integrated into regular education as far as possible.

The Finnish education system bases on empowerment of municipalities. Municipalities are responsible for the provision of education and the implementation. The assessment and evaluation of education and learning outcomes are supportive. National testing, school ranking lists and inspection systems do not exist.

Parliament and the Government define education policy. In addition to educational legislation, these policy definitions are specified in various development documents and in the state budget. A central development document in the educational sector is the 'Development Plan for Education within the Administrative Field of the Ministry of Education and University Research' (KESU), which the Government approves every four years for the year of its approval and for the following five calendar years.

The national administration of education and training has a two-tier structure in Finland. The Ministry of Education and Culture is the highest authority and is responsible for the strategic and normative steering of education and all publicly funded education in Finland. The Ministry is responsible for preparing educational legislation, all necessary decisions and its share of the state budget for the Government. For the purposes of organizing education and training, the Ministry grants authorizations to education providers for provision of education and training, determining the fields of education in which they are allowed to organize education and that of their total student numbers. There are several expert bodies supporting the work of the Ministry. Usually social partners are represented in these bodies.

The Finnish National Agency for Education is the national development agency responsible for early childhood education and care, pre-primary, basic, general and vocational upper secondary education as well as for adult





education and training. FNAE drafts the national core curriculum and qualification requirements in accordance with applicable legislation and in co-operation with stakeholders. Higher education is the responsibility of the Ministry of Education and Culture.



Figure 2: Levels of decision making in Finnish education system

According to Learning and Competence 2025 – Strategy of the Finnish National Board of Education (2015) FNAE promotes increasing the use of information and communications technology in education and works toward establishing a national partnership between educational administration, education providers, the business sector and organisations for finding ways to accelerate the implementation of digital infrastructures and learning environments as well as their use in teaching.<sup>2</sup>

There are no specific laws regarding ICTs in education. There are some major reforms and key projects, though, in the field of education that include furthering and development of ICT.

Provisions on the Finnish National Qualifications Framework (NQF) are laid down in an Act and Government Decree on the National Framework for Qualifications and Other Competence Modules (93/2017, 2 §:n 2) and entered into force from 1 March 2017. The Finnish NQF based on EQF and classified qualifications, syllabi and

<sup>&</sup>lt;sup>2</sup> Learning and Competence 2025 – Strategy of the Finnish National Board of Education. FNBE 2015:

<sup>164907</sup>\_learning\_and\_competence\_2025\_finnish\_national\_board\_of\_education.

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other extensive competence modules of the Finnish education and qualifications system into eight levels based on requirements.

# 1.1.1 Basic education curriculum reform

The national core curriculum for pre-primary and basic education was renewed in 2014. New local curricula that are based on this core curriculum were implemented in schools from August 2016.

The Head of Curriculum Development, Irmeli Halinen, blogged 25.3.2015:

"Developing schools as learning communities, and emphasizing the joy of learning and a collaborative atmosphere, as well as promoting student autonomy in studying and in school life – these are some of our key aims in the reform. In order to meet the challenges of the future, there will be much focus on transversal (generic) competences and work across school subjects. School subjects still have an important role to play in teaching and learning."<sup>3</sup>

# Basic education curriculum reform Core ideas



Figure 3: Core ideas of basic education curriculum reform

One particular aim of the reform was to develop the learning environments and work methods used in basic education. Also games and other virtual environments should be recognized more often as learning

<sup>&</sup>lt;sup>3</sup> <u>http://www.oph.fi/english/current\_issues/101/0/what\_is\_going\_on\_in\_finland\_curriculum\_reform\_2016</u>





environments. "Technology plays an increasingly significant role in everyday school routines, thus allowing pupils to be more easily involved in the development and selection of their own learning environments. Each subject at school uses a variety of work methods, giving the pupils chances to learn different skills with each work method. Opportunities for pupils to develop their information and communication technology skills have been improved in all subjects, with technology being included more in instruction and study. For example, programming has been integrated in the curriculum as part of the objectives set for mathematics. Pupils learn the fundamentals of programming even in the lower grades."<sup>4</sup>

The government launched an action plan to revamp comprehensive schools in the autumn 2016. "It serves to put the new curricula into practice and responds effectively to existing and imminent challenges in comprehensive school education. As outlined in the Government Programme, EUR 90 million will be used over three years to execute the plan.<sup>5</sup> Of these resources, around EUR 8 million was made available in autumn 2016 through the Finnish National Board of Education for activities relating to experimenting, development and innovation, and roughly EUR 7.5 million will be disbursed for training and activities for tutor teachers."

One of the supporting projects during implementation of digitalisation is Uusi peruskoulu ('A new primary school') program included so called Tutor teacher project. According this project a tutor teacher is a teacher who shows other teachers the best way to harness digitalisation in their work as teachers and embraces new pedagogical approaches as well promote the digitalisation of teaching. There will be 2,500 tutor teachers in comprehensive schools.<sup>6</sup>

Another part of the action plan is promoting teachers' professionalism throughout their careers. Among the suggested actions for this there is e.g access to massive open online courses for all teachers: "Teacher education units, teachers and business operators will work together to create an online continuing professional education model and will produce digital material."<sup>7</sup>

# 1.1.2 Digitalization of matriculation examination

Every year, about 35 000 candidates take the Matriculation Examination in upper secondary schools as a final examination. "Passing the Matriculation Examination entitles the candidate to continue his or her studies at university. Admission to Finnish universities is also possible without passing the Matriculation Examination. These candidates are eligible to apply in a separate quota."8 The exams are arranged in Finnish and Swedish and 6% of the candidates fail the exam. The examination consists of at least four compulsory tests: altogether

<sup>&</sup>lt;sup>4</sup> <u>http://www.oph.fi/english/education\_system\_education\_policy</u>

<sup>&</sup>lt;sup>5</sup> http://valtioneuvosto.fi/hallitusohjelman-toteutus/osaaminen

<sup>&</sup>lt;sup>6</sup> <u>https://twitter.com/uusiperuskoulu</u>

<sup>&</sup>lt;sup>7</sup> <u>http://minedu.fi/documents/1410845/4183002/New%20Comprehensive%20School%20Action%20Plan%202016/8eef80c8-95e5-</u> 4d85-8a7c-426f6c98680c





200 000 tests are done every year. Digitalization applies to the whole process: exam questions, exam system, assessment in the schools, assessment by censors and results.

# Digitalization schedule



Figure 4: Digitalization schedule<sup>8</sup>

# 1.1.3 Reform of vocational upper secondary education

"This reform updates the entire vocational education and training (VET) by 2018. In the future, work life requires a new kind of competence, while there are fewer financial resources available for education. VET has to respond more swiftly to the changes in work life and operating environment and to adapt to individual competence needs.

<sup>&</sup>lt;sup>8</sup> <u>https://www.ylioppilastutkinto.fi/images/sivuston\_tiedostot/Kehittaminen/YTL\_presentation\_English.pdf</u>

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# **Developing VET**



Figure 5: VET reform

In Finland, VET is organised by different types of education providers: municipalities, joint municipal authorities, the state and the private sector. An authorisation to provide education is required. In the future, education is regulated through a single authorisation license, and education providers will have increased freedom in organising their activities.

The current supply-oriented approach will be refocused into a demand-driven approach. Education will be competence-based and customer-oriented: Each student will be offered the possibility to design an individually appropriate path to finishing an entire qualification or a supplementary skill set. The primary importance is on what the student learns and is able to do. Digital learning environments and new approaches to pedagogy (e.g. modern simulators) will have a larger role in the future of learning. Learning in the workplace will be increased.

The reform includes examining the education provider network. VET will be available throughout the country in the future as well. The ministry will ensure that all education providers have sufficient professional and financial resources to provide education. Education providers are encouraged towards voluntary mergers. There are up to 370 different vocational qualifications available in Finland. In the future, the number of qualifications will decrease, and qualification content will be broadened. This supports designing individual study paths and enables more rapid responses to the changing competence needs in work life."<sup>9</sup>

<sup>&</sup>lt;sup>9</sup> <u>http://minedu.fi/en/reform-of-vocational-upper-secondary-education</u>

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Government proposal 2017

#### NEW VOCATIONAL EDUCATION AND TRAINING as of 1 January 2018

Working life is undergoing changes. New occupations keep emerging and old ones disappear. Technology advances. Earning logics are renewed. Students' needs are becoming even more individualised. Skills need to be updated throughout careers.



Figure 6: Basic elements of new VET

# 1.1.4 Higher education

This year the government allocated an additional appropriation of approximately EUR 30 million to enhance digital learning environments in higher education and to improve opportunities for all-year-round learning.<sup>10</sup>

# **1.2. Institutional and organisational processes**

"Most institutions providing basic and upper secondary level education are maintained by local authorities or joint municipal boards. Responsibility for educational funding is divided between the State and the local authorities. Most private institutions do not differ from those that are publicly maintained. They follow the national core curricula and qualification requirements. They also receive public funding.

Pre-primary and basic education is part of the municipal basic services that receive statutory government transfers. The statutory government transfer is based on the number of 6–15 year olds living in the municipality

<sup>&</sup>lt;sup>10</sup> Budget review 2017. Ministry of Finance publications – 3c/2017

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and the special conditions of the municipality. This funding is not earmarked and the municipality can decide for itself how it allocates this funding. The statutory government transfer for municipal basic services is approximately a third of the calculatory costs.

The funding for upper secondary education and vocational education and training is based on the number of students reported by the school as well as on the unit prices set by the Ministry of Education and Culture. In the funding of polytechnics the Government allocates resources in the form of core funding, which is based on unit costs per student, project funding and performance-based funding. For example completed degrees are part of performance-based funding. Polytechnics also have external sources of funding. Both in vocational training and in the funding of polytechnics the education providers are encouraged to improve their results through performance based funding.

Finnish universities are independent corporations under public law or foundations under private law. Each university and the Ministry of Education and Culture set operational and qualitative targets for the university and determine the resources required every three years. The agreement also defines how these targets are monitored and evaluated. Universities receive funding from the state but they are also expected to raise external funding."<sup>11</sup>

## **1.3. Key institutional figures framework**

The national education administration is organised at two levels. Education policy is the responsibility of the Ministry of Education and Culture. A national agency, the Finnish National Agency of Education, is responsible for the implementation of the policy aims.

# **Two-tier national administration**



Figure 7: Policy marker level in Finnish educational system

<sup>&</sup>lt;sup>11</sup> <u>http://www.oph.fi/download/146428\_Finnish\_Education\_in\_a\_Nutshell.pdf</u>

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# 1.3.1 Departments and units of the Ministry of Education and Culture



Figure 8: Units of Ministry of Education and Culture

# 1.3.2 The Finnish National Agency of Education

The educational administration and the national board managing educational issues were established in the late 19th century. In 1 991 the National Board of General Education and the National Board of Vocational Education were combined to form the Finnish National Board of Education respon sible for both general education and vocational education and training. At the beginning of this year as the Finnish National Board of Education and CIMO Centre for International Mobility merged to form the Finnish National Agency for Education. The new organisation will continue to provide expert services in the same fields as its predecessors. It works with the Ministry to develop education as well as promoting international mobility and cooperation. The Ministry of Education is the responsible body for the higher education institutions.

"In 2017, the Finnish National Agency for Education will receive some 223 million euros in funding. Out of this, 58 percent, that is 130 million euros, will be distributed to customers as different grants, subsidies and scholarships. Some 32 percent of the overall sum distributed to customers is allocated to financing international





mobility and cooperation. The funding for state-owned schools operating in annex to the agency comprises of approximately 50 million euros."<sup>12</sup>

# 1.3.3 Local administration

"The educational administration was previously characterised by the State's precise steering and control. Since the 1980s, school legislation has been reformed, which has resulted in a continuous increase in the decision-making powers of local authorities and educational institutions. Steering and control of the local authorities' educational administration through government subsidies has decreased dramatically, and the local authorities' cultural and educational administration is no longer steered by field-specific legislation to any significant extent."<sup>13</sup>

"Local administration is the responsibility of local authorities, most commonly municipalities or joint municipal authorities. These make the decisions on allocation of funding, local curricula, recruitment of personnel. The municipalities have also the autonomy to delegate the decision-making power to the schools. Typically the principals recruit the staff of their schools.

Education providers are responsible for practical teaching arrangements as well as the effectiveness and quality of its education. There are, for example, no regulations governing class size and the education providers and schools are free to determine how to group pupils and students. Local authorities determine how much autonomy is passed on to schools. The schools have the right to provide educational services according to their own administrative arrangements and visions, as long as the basic functions, determined by law, are carried out. In many cases for example budget management, acquisitions and recruitment is the responsibility of the schools.

The teachers have pedagogical autonomy. They can decide themselves the methods of teaching as well as textbooks and materials. Polytechnics and universities enjoy extensive autonomy. The operations of both polytechnics and universities are built on the freedom of education and research. They organise their own administration, decide on student admission and design the contents of degree programmes."<sup>14</sup>

12

<sup>13</sup> <u>http://www.oph.fi/english/education\_system/historical\_overview/administration</u>

http://www.cimo.fi/instancedata/prime\_product\_julkaisu/cimo/embeds/cimowwwstructure/27467\_Finnish\_education\_in\_a\_nuttshell.p

14

http://www.oph.fi/english/current\_issues/101/0/finnish\_national\_agency\_for\_education\_begins\_its\_operations\_at\_the\_beginning\_of\_ 2017

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### **1.3.4 The Trade Union of Education in Finland**

Opettajien ammattijärjestö, "OAJ, is an independent trade union, not linked to any political party, with over 120,000 members. The unionization rate for teachers is over 95 per cent. OAJ is the sixth biggest trade union in the country. OAJ in its present form was founded in 1973. Since 1991, all teachers, from preschool teachers to university lecturers, have been eligible for membership of this all-embracing union. The membership also includes teacher student and retired teachers. The fact that all teachers belong to one union is exceptional.

One single union gives a clear and strong mandate to defend teachers' status and safeguard the interest of teachers at local, regional and national level. OAJ works closely together with the members of parliament, government, ministries and the National Board of Education as well as media and parent's associations. OAJ also works very closely with universities and teacher education establishments.

All OAJ members have a teaching qualification or they work as a teachers or as an expert in the education sector. OAJ is an organization for all teachers consisting of different teacher groups and categories which have their own platforms and associations within OAJ.<sup>\*15</sup>

# **1.4. Professional Profiles and Competence**

"Teaching is an attractive career choice in Finland. Thus the teacher education institutions can select the applicants most suitable for the teaching profession. For example the intake into class teacher education is only 10 per cent of all applicants. In subject teacher education the intake varies from 10 to 50 per cent depending on the subject. In vocational teacher education the intake is 30 per cent of the applicants.

Teachers in basic and general upper secondary education are required to hold a Master's degree. Also teachers in vocational education and training have to hold a higher education degree. The high level of training is seen as necessary as teachers in Finland are very autonomous professionally. Teaching and guidance staff within day-care centres generally have Bachelor's degrees. Pre-primary teachers in schools hold a Master's degree.

Teachers in the first six years of basic education are usually generalists, class teachers, whereas those in the last three years and at upper secondary level are subject specialists, subject teachers. Class teachers have a Master's degree in education. Subject teachers have completed a Master's degree in the subject they teach as well as pedagogical studies.

<sup>&</sup>lt;sup>15</sup> <u>http://www.oaj.fi/cs/oaj/Brochure%20OAJ%20the%20interest%20organization%20for%20teachers</u>

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Depending on the institution and subject, vocational teachers are generally required to have an appropriate higher or postgraduate academic degree, an appropriate polytechnic degree or the highest possible qualification in their own vocational field. In addition at least three years of work experience in the field and completed pedagogical studies are necessary.

Guidance counsellors in basic and upper secondary education and training support pupils or students in their studies and any possible learning problems. The qualification requirements are a Master's degree and guidance counsellor studies. Special needs teachers help learners who have more serious problems both in mainstream education or special needs education. They also support and consult teachers. Special needs teachers hold a Master's degree with special pedagogy as the main subject or a teacher qualification including special needs teachers teacher studies.

Teachers at polytechnics are required to have either a Master's or a post-graduate Licentiate's degree, depending on their position. They must also complete pedagogical studies. University teachers are generally required to hold a Doctoral or other postgraduate degree. Responsibility for the operations of basic education schools and upper secondary schools rests with principals. Principals are generally required a higher academic degree and teaching qualifications. In addition, they are required to have appropriate work experience and a certificate in educational administration or the equivalent. University rectors must hold a doctorate or a professorship. Most commonly the rector is appointed from among the professors of the university. In polytechnics, rectors are required a postgraduate Licentiate's

degree or doctorate and have administrative experience.

# Most teachers are required a master's degree



#### Figure 9: Required education degrees of Finnish teachers





At most levels of education the teachers are required to participate in in-service training every year as part of their agreement on salaries. Finnish teachers consider in-service training as a privilege and therefore participate actively. The State also provides in-service training programmes, primarily in areas important for implementing education policy and reforms. The education providers can also apply for funding to improve the professional competence of their teaching personnel. Teachers are recognised as keys to quality in education. Therefore continuous attention is paid to both their pre-service and continuing education.<sup>\*16</sup>

# **1.5. Systems of assessment and Quality Assurance**

"In Finland school inspections were abolished in the early 1990s. The ideology is to steer through information, support and funding. The activities of education providers are guided by objectives laid down in legislation as well as the national core curricula and qualification requirements. The system relies on the proficiency of teachers and other personnel. There is strong focus on both self-evaluation of schools and education providers and national evaluations of learning outcomes."

"National evaluations of learning outcomes are done regularly, so that there is a test every year either in mother tongue and literature or mathematics. Other subjects are evaluated according to the evaluation plan of the Ministry of Education and Culture. Not only academic subjects are evaluated but also subjects such as arts and crafts and cross-curricular themes. From the schools' perspective, the evaluations are not regular as they are sample-based. The education providers receive their own results to be used for development purposes. The main aim of the national evaluations of learning outcomes is to follow at national level how well the

objectives have been reached as set in the core curricula and qualification requirements. Consequently, the results are not used for ranking the schools. In higher education the polytechnics and universities are responsible for the evaluation of their own operations and outcomes. In this they are supported by a national body that is responsible for developing the quality of education.<sup>\*17</sup>

<sup>&</sup>lt;sup>16</sup> http://www.oph.fi/download/146428\_Finnish\_Education\_in\_a\_Nutshell.pdf

<sup>&</sup>lt;sup>17</sup> http://www.oph.fi/download/146428\_Finnish\_Education\_in\_a\_Nutshell.pdf

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Figure 10: Quality management

# 1.6. Projects connected to digitalization

According to digitalization in EU, Finnish government made action plan and followed the general lines. Finnish government have taken five strategic priorities in the Government Programme to bring the Finnish economy onto a path of sustainable growth and higher employment and to safeguard sufficient financial resources for public services and social protection<sup>18</sup>. One of the strategic priorities is Digitalisation, experimentation and deregulation (procedures), EUR 100 million. These priorities are materialized in the 26 different key projects. Digitalisation mentioned in followed key projects:

Public services will be digitalized

A growth environment will be created for digital business operations

In educational sector is one active key project (2015 – 2019) New learning environments and digital materials to comprehensive schools

Teacher's ICT skills were developed and supported during projects Ope.fi 1, Ope.fi 2 and Ope.fi 3. These projects are developed to train of teachers ICT skills. Oppiminen online is a part of the "OsaOppi III – Osaamispisteet pelissä" and OsaOppi IV project in which the requisite skill sets, as defined by the

<sup>&</sup>lt;sup>18</sup> <u>http://valtioneuvosto.fi/en/implementation-of-the-government-programme</u>

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<u>Ope.fi standards</u> (in Finnish), are provided over 3 levels and 3 locations around Finland: Espoo, Hämenlinna and Oulu.<sup>19</sup>

Teachers ICT skills are followed during years 2012 – 2017 by e-platform <u>http://opeka.fi/fi</u>. Teachers from basic and general upper secondary schools can give feedback about their skills and competences of ICT using on this self-assessment platform. Reports will group on the four different levels:

- comprehensive school: elementary level ('alakoulu')
- comprehensive school: upper level ('yläkoulu')
- comprehensive school: integrated elementary and upper level ('yhteinäiskoulu'
- general upper secondary school ('lukio')

There are not background research about teachers' ICT skills in VET.

- The answers will identified skills and competences on the five different groups:
- technological capabilities ('teknologiset valmiudet')
- methods/mode of operation ('toimintatavat')
- attitude ('asennoituminen')
- using in the teaching process ('opetuskäyttö')
- competences ('osaaminen')

The last results shows the positive tendency in the technological capabilities (2017: 2,78 by scales 1 - 4), mode of operation (2017: 2,39) and attitude (2017: 2,38). More than half of respondents/teachers (65 %) are working with ICT on the level 2–3 (scales 0–1, 1–2, 2–3, 3–4 from the lowest to the highest).<sup>20</sup> Surprisely the using of ICT in the teaching is lower (2017: 1,43) compered to the earlier years and teachers reported less skills and competences in digital era (2017: 1,91). Please see more about changes during 2012 – 2017 in the Figure 11.

<sup>&</sup>lt;sup>19</sup> <u>http://www.oppiminenonline.com/in-english/</u>

<sup>&</sup>lt;sup>20</sup> http://opeka.fi/fi/educationlevel/chart?semesters=1&reportid=mC4oQIdqui47FNSDkxTp2FdJDWcdJG2G

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Opeka	Yleissivistävä, 2017	På Svenska In English	Opeka	Yleissivistävä	, 2017	På Svenska In English
« Takaisin	Tasot ja vastausjakaumat		« Takaisin Tasu Vinkki: osa-alueen nimeä klik	o <b>t ja vastausjakau</b> <sup>kkaamalla saat näkyviin, misti</sup>	<b>Imat vuosittain</b> ä kysymyksistä tai osa-alueis	ta se muodostuu.
Vinkki: osa-alueen nimeä k Teknologiset valmiudet	klikkaamalla saat näkyviin, mistä kysymyksistä tai osa-aluei 2,78 2,76 Vieissivistävä Kaikki vastaajat	sta se muodostuu.	Teknologiset valmíudet	2.78 2.32 2.34 2.11	Vuosi 2017 Vuosi 2016 Vuosi 2015 Vuosi 2014 Vuosi 2013	
Toimintatavat Asennoituminen	2.39 2.38 2.38 2.38 2.37		Toimintatavat	2.08 2.39 2.21 2.25 2.28 2.18	Vuosi 2012	
Opetuskäyttö Osaaminen	1.43 1.45 1.91		Asennoituminen	2.26 2.38 2.24 2.21 2.32 2.25		
0 Näytä kaavion tiedot taulukkona Alla näkyy, kuinka suuri osa	1 2 3 4		Opetuskäyttö	1.43 1.69 1.69 1.89 1.83 2.14		
100O	sa-alueiden keskiarvon jakauma		Osaaminen	1.91 2.13 2.33 2.31 2.11		
75	65 % 65 %		Näytä kaavion tiedot taulukkona Alla näkyy, kuinka suuri osa v	astauksista sijoittuu tietylle ta	solle.	
50			Osa	a-alueiden keskiarvon jak	auma	
25	25		75	0% 6%	Vuosi 2017 Vuosi 2016 Vuosi 2015 Vuosi 2015 Vuosi 2014 Vuosi 2013 Vuosi 2012	
0 Taso Tası 0-1 1-2 Näytä kaavion tiedot taulukkona	2 Taso 2 2-3 3-4		50 <sup>41</sup> 12 % 40 42 20 %	6 2 %		
		Pysyvä linkki tälle sivulle	1 N S 1 N S	3 10 % <sup>6 %</sup> 4 %3 10	5	

Figure 11. Change in the ICT skills and use in teaching process during 2012 - 2017

According to the answers teachers of the general upper secondary schools (*'lukio'*) have the best value in both technological capabilities (2017: 3,04) and in operations (2017: 2,57) compared to the teachers of other school levels.<sup>21</sup> They also are using the different ICT and digital methods most in the teaching process (2017: 1,72) – this is more as the average of the all respondents (1,44). On the contrary, teachers of elementary schools have the best attitude (2017: 2,45) and competences to digitalization (2017: 1,98).

According the levels of teachers skills (by scale 0-1, 1-2, 2-3 and 3-4) teachers mostly are on the level 2-3. Only teachers of upper level in comprehensive schools are below of the average 65 %. 75 % of respondents from general upper secondary schools are on the level 2-3. There are any persons on the level 0-1, but also highest level have quite low percentages of skilled teachers (2-3 %). (Please see more Figure 12.)

Teachers have progress in some sectors (answers are more positive compared to the earlier years):22

<sup>&</sup>lt;sup>21</sup> http://opeka.fi/fi/schoolcategory/chart?reportid=tq8ADGuiiOrCZRWloqId7ukfwUBq8\_J98\_6vRC5Egk4

<sup>&</sup>lt;sup>22</sup> http://opeka.fi/fi/educationlevel/analysis?semesters=1&reportid=Z0LhBADLRbDc\_B\_yll-I4I9gEDyk9BBi





- The devices and software in use work well. \*\*\*
- I have got devices, what I need, from my school. \*\*\*
- The school is using a wireless network, and students and visitors can use the Wifi with their own devices. \*\*\*
- I follow social media networks to learn new.
- ICT skills are one topic during development discussions with my leader. \*\*\*
- I have tried graphic or other types of programming with my students. \*\*\*
- Better level of my ICT skills. \*\*\*
- I will receive sufficient technical support to ICT in my school.
- Pupils can use their own devices (eg laptops, smartphones, tablets) in their classes. \*





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![](_page_25_Picture_0.jpeg)

![](_page_25_Picture_1.jpeg)

Figure 22. ICT skills of teachers in comprehensive and general upper secondary schools.

Some other answers are less positive compared to the earlier years.<sup>23</sup>

- Scope of new technology into teaching is a burden. \*\*\*
- Level of using the information and communication technology during my lessons. -
- I can influence my school to procurement of ICT.
- I find good ways to utilize information and communication technologies in different learning situations.
- My school has jointly agreed goals for using ICT in teaching. \*\*\* -
- I would like to use information and communication technology more in my teaching. \*\*
- Students use information and communication technology most of my lessons. \*\*
- I can use digital materials in my teaching. \* -
- The working atmosphere is positive to experimenting with new things in teaching. \* \_

The school leaders have the other e-platform for following the digital environments and development needs in their schools (self-assessment tool http://ropeka.fi/fi). Answers will identify followed sectors:

- strategy ('strategia')
- commitment to the change ('sitoutuminen muutokseen') -
- developing of the new working culture ('uuden toimintakulttuurin luominen')
- developing of competence ('osaamisen kehittäminen'). -

Reports will group on the four different levels:

- comprehensive school: elementary level ( 'alakoulu') \_
- - comprehensive school: upper level ( 'yläkoulu ')
- comprehensive school: integrated elementary and upper level ( 'yhteinäiskoulu')
- - general upper secondary school ('lukio').

Results are analysed on the scale 0 (weak) to 4 (strong) and on the different levels of competences by average percentages (0-1, 1-2, 2-3 and 3-4).

The best value can be found in developing of the new working culture (2,96) and developing of competences (2,84). (Please see more Figure 13.24)

 <sup>&</sup>lt;sup>23</sup> <u>http://opeka.fi/fi/educationlevel/analysis?semesters=1&reportid=Z0LhBADLRbDc\_B\_yll-l4l9gEDyk9BBi</u>
<sup>24</sup> <u>http://ropeka.fi/fi/educationlevel/index?reportid=UXe55dtfBCtY-lc86Cl\_NCk7Bt9\_aAih</u>

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![](_page_26_Picture_0.jpeg)

![](_page_26_Picture_1.jpeg)

Ropeka		Yle	issivistäv	i, 2017		På Svensi In Engli:
Takaisin						
	т	asot ja	vastaus	sjakau	mat	
nkki: osa-alueen	nimeä klikkaar	nalla saat n	äkyviin, mist	ā kysymy	ksistä tai osa-alue	ista se muodostu
Strategia	1	1	2.62	The second secon	elssivistāvā ikki vastaalat	
Sitoutuminen			2.64			
Uuden toimintakulttuurin			2.96			
Osaamisen kehittäminen	_	_	2,84			
	0 1	2	3	4		
0				Yi Ka	iissivistävä ikki vastaajat	
75		62 % 62 %				
0						
s			27 % 27 %	-		
	55 55					
0 Taso 0-1	Taso 1-2	Taso 2-3	Taso 3-4			
ytä kaavion tiedot taul	lukkona					
						Pysyvä linkki tälle sive
	Obie Aliane	Läherä	nalautetta	Texata	Rekisteriseloste inc	m

Figure 13: Development of the digital environments and development needs in the

comprehensive schools and general upper secondary schools

According the answers, the general upper secondary schools have the best value on the developing of the new working culture (3,17 compared to the medium average 2,98) and developing of the digital competences (3,06 compared to the medium average 2,84). The upper level of comprehensive schools are lower values compared to the medium of the all responses. Please see more details in Figure 14.

![](_page_26_Figure_7.jpeg)

Figure 14. Leaders answers classified by school levels.

![](_page_27_Picture_0.jpeg)

![](_page_27_Picture_1.jpeg)

Omnia, one of the biggest vocational and education training center in Finland, have got own project with specific objectives for the next year.<sup>25</sup> The goal is that learning will be possible in digital environments in cases when the presence learning is not possible. Digital environments will support developing of distance learning, larger cooperation between different education providers and working life, and skills of lifelong learning. For that Omnia will have decided followed activities:

- Ensure that all students have good digital skills for developing their own skills and working life.
- Ensure that different departments develop specific objectives of digital skills according to their needs in distance learning and using ICT in the teaching.
- Departments and work groups identify their need and form for the digital support according to their objectives to reach the goals.
- Ensure the competence of the personnel, infrastructure and support for ICT.
- Provide more forms of cooperation and identify together of production contents.
- Evaluate effectiveness.

<sup>&</sup>lt;sup>25</sup> <u>http://www.oppiva.omnia.fi/wp-content/uploades/2016/04/Digiloikka.pdf</u>

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![](_page_28_Picture_0.jpeg)

![](_page_28_Picture_1.jpeg)

# 2. Description of the national survey results in Finland

# 2.1 Methods

I Working was done by methods developed in DECODE process, using of questionnaire.

Interviews were in Finnish. All questions and background information of DECODE project were translated to Finnish language by Anssi Kuisma. Questions were sent to interviewees beforehand. All answers and notes were collected in Finnish, just analyse and report was made in English. The report consists of the summary of interview answers translated in English, but also some citations of the authentic answers in Finnish are included.

# 2.2 Focus group: methodological overview

Focus group gets involved school leaders, head masters (management staff and coordinators).

# 2.2.1 Invitation to focus group interviews in Finland

Process of finding persons was followed:

- invitations by e-mails on general level (leaders of Education and Cultural services, Finnish Agency for Education)
- invitations by e-mail to school leaders /principals/directors around Finland
- specific invitations by e-mail and phone to target group persons
- negotiation on general level who can be right persons for target group

Answers- mostly from Southern region of Finland (Uusimaa, Keski-Uusimaa).

# 2.2.2 Organising focus group interviews in Finland

Interviews were organised by opportunities of participants, by timetable. There was two types of groups: one with representors of basic and upon secondary education, and the other with representors of VET organisations.

Twenty headmasters/school directors were interviewed in focus groups with the aim of detecting best practice, accompanying needs and coordination for the integration of ICT in teaching practices. Focus group sessions involved around 5-8 persons. Three interviews for focus groups were organised. There were two persons from DECODE project: one of them interviewed and the other one saved and wrote down notes. All interviews were transcripted later by notes and videos.

![](_page_29_Picture_0.jpeg)

![](_page_29_Picture_1.jpeg)

In the template, theoretical principles to observer to realize Focus Groups are also indicated.

## 2.2.3 Background of interviewees

People who had different roles within their institutions, were chosen to the group interviews (Table 1). Not all participants knew each other before. We invited them to introduce and describe their roles and the schools in which they work.

Table 1: Participants of focus groups and their competences on the different educational levels

Focus group	Number of persons	Early childhood education	Basic education	Upon secondary education	VET	Other
Group 1	4		1	1	2	4
Group 2	8				8	
Group 3	8	2	6	5		1
Total	20	2	7	6	10	5

#### 2.2.4 Structure of interviews

All interviews started with short introduction of DECODE project (partners, aims, activities and expected outcomes) and introduction of interviewers. Interviewees introduced themselves (name, organisation, role). The interviews started with warm up questions and discussion about their school profiles, understanding of innovation and digital revolution.

## 2.2.5 Answers

Interviews started with introductions of participants and with so called warming up questions. These questions were:

![](_page_30_Picture_0.jpeg)

![](_page_30_Picture_1.jpeg)

What is your idea of school innovation?

What is innovation in your work context?

In what way digital revolution, also regarding the challenge of artificial intelligence, can modify learning and school practices/activities? (focus mainly on digital competences and student's needs in the digital era)

Participants discussed about topics - digitalisation, how to distinguish ICT and digitalisation. Representors used mostly basic and upon secondary education 'TVT' (ICT) terms.

Discussion about new skills and needs was quite active.

Key competences of the twenty-first century are on very general level.

'It would be place for integration of ICT or digital tools only if it will give some advance/success/benefit. Pedagogical point of view have give some benefit and background for using digital tools.'

The 21<sup>st</sup> century key competences are mostly described on general level. The difference of ICT skills and digital skills is not very clear for users.

Staff recognizes that youngsters have different devices (smart phone etc.) and these devices are used more or less for inexcusable things. Devices are not used for training purposes and not also for training of working life basic user skills. Even common ICT skills (eg. Word documents, Excel counting) may be lost.

#### Competences and best / effective practices

1: Based on your personal experience, which are the competences for the twenty-first century citizen that schools can help develop through the integration of ICT?

The first question caused active discussion in each focus group. The general opinion was that identification of the twenty first century competences for citizen was described or understood on general level. The groups tried to concrete the general competences connected to digitalization and twenty-first century competences. Differentiation of digitalization and ICT skills was challenging and discussion turned to the ICT tools.

Leaders discussed about changes in the society and digitalization of different services for citizens. This will be big challenge not only for older persons in their daily activities (bank, invoices, different applications, contracts etc.). Leaders pointed the needs of ICT user skills on the general level. Kindergartens and primary schools have

![](_page_31_Picture_0.jpeg)

![](_page_31_Picture_1.jpeg)

challenges to offer and guarantee the general user skills of ICT. All citizens will need basic skills to manage edocuments.

'Kansalaisten palvelut sähköistyvät, mikä on haaste ikääntyneille. Koulussa on luotava perusta tietotekniikan käytölle ja jo varhaiskasvatuksesta alkaen annettava tähän taitoja.'

'Perustietoyhteiskunnassa asioiminen, sähköisten lomakkeiden täyttäminen - näiden taitojen opettaminen auttaa opiskelijoita myös myöhemmin työelämässä omaksumaan uusia tietokoneohjelmia.'

'Avaintaidot (**yhteiskunnassa toimimisen avaintaidot**) kuuluisivat kaikille tukeakseen monet palvelut siirtyvät **tietoverkkoon**. Koulujen pitää tukea niiden taitojen kehittämistä (palvelut, laitteet).'

Digitalisation of the society will influence to study, work, leisure and communication. People will need new skills to manage confidential and ethical information.

The competences of the twenty-first century citizens that schools can help develop through the integration of ICT named during group interviews were the following:

- all key competences of Lifelong Learning (both written and oral)
- problem solving
- team working
- multi-reading skills digital literacy
- text and image literacy, critical evaluation of data sources,
- 'interpreting' images and videos.
- mode of operation by sustainable development
- integration and enhancement ICT in educational settings and teaching processes
- problem solving
- team working
- basic skills in ICT

The leaders listed other so called soft skills that will support digital competences and/or are connected to twentyfirst century skills. Primary skill would be learning to learn larger and deeper also in ICT field. Schools can teach and advise practically all key competences (working life skills, safety using of digital material etc.).

![](_page_32_Picture_0.jpeg)

![](_page_32_Picture_1.jpeg)

Digital competences will support soft skills such as networking, project work and structured working, and help a student by organizing his/her skills. This will increase student's self-awareness and self-assessment. Networking and team working skills are mentioned often as working life new needs and these have to be taught and trained in schools. Youngsters get accustomed with new equipment and programs much faster compared to adult population and we require them to adapt with new challenges (networking and sharing information by legal principles and ethical rules). In reality, these skills need to be taught and trained how to manage networking and create a public image and profile.

Leaders from VET discussed about technical skills (using different devices) versus using content. The following key competences are needed for the labor market: information retrieval and processing, digital literacy (critical thinking and problem solving, self-expression, online publications, digital portfolio), digital skills and creativity (images, videos, visual presentations).

One topic was, how to organize the training of new digital skills and competences. Finnish government points out the integration as one of the successful methods to benefit the digitalization in schools. Benefit is understood as answering to skills demanded in the labor market and described in the requirements of curricula and qualifications. Leaders stressed methods that are connected with active and experiential learning and based on pedagogical perspective.

'Kannattaa integroida siinä, missä on järkevää, pitää olla pedagoginen näkökulma taustalla.'

Indeed multi-reading skills are mentioned many times in curricula: managing with digital literacy, critical evaluation of data sources, interpreting images, photos and videos, legal and ethical decisions.

Different topic was included to possible future developing and possibilities of digitalisation: different program for supporting memory processes and controlling of memory and programs helping in mechanic questioning of homework. Digitalisation would support developing of language skills (Quizlet), especially English skills, benefit and integrate language through gaming.

'Perinteisessä pänttäämisessä digivälineiden hyödyntäminen (esim. kielissä Quizlet)' 'Digitaalisuus voisi tukea enemmän **kielitaidon** (englanti) kehittämistä, hyödyntää ja integroida sitä koulutukseen esim. pelaamalla.'

![](_page_33_Picture_0.jpeg)

![](_page_33_Picture_1.jpeg)

Some of leaders mentioned waiting for new innovations in language use: simultaneous translation of speech. Not all experts agree with using digital methods or setting against digital and more traditional ways of studying.

'Ei saa unohtaa/asettaa vastakkain digitaalisuutta ja perinteisempiä opiskelutapoja'

Fast development of information technology and constantly coming new can be confusing. There is a need for guidance where it is worth accompanying. New devices and methods (eg. online publications) can cause fear and require re-learning from the old methods.

'Tietotekniikka kehittyy kovaa vauhtia, jatkuvasti tulee uutta – tarvitaan ohjeita, missä kannattaa olla mukana. Uudet välineet ja menetelmät (esim. verkkojulkaisut/digiportoliot) poisoppiminen vanhasta.'

The understanding of digital skills can connect to lifelong learning skills and support lifelong learning as well distance learning. Digitalisation offers new opportunities against exclusion: systems allow and encourage people to network and find each other.

'Digitaalisuus tarjoaa uusia mahdollisuuksia yksin jäämisen/syrjäytymisen vastaan: järjestelmät mahdollistavat ja kannustavat **verkoistumaan** ja toisiaan löytämään.'

On the other hand, leaders are worried about inequality of the students on the level of digitalization: some learners are in top and others down, background of learners either supports or is not favorable to develop digital skills. The challenge will be to get all learners involved.

'eriarvoistuminen: on huippudigiosaajia ja oppilaita, joiden tausta ei välttämättä suotuisat digitaitojen omaksumiselle'

Summary: representors of vocational education pointed more general skills in society and service sector (new skill needs for citizens) and occupational skills (related to working life). General and upon secondary education – integration to different subjects, active and experiential learning. All: new challenges with critical reading and evaluation of data source.

![](_page_34_Picture_0.jpeg)

![](_page_34_Picture_1.jpeg)

2: Based on what has just emerged and on your personal experience, which are the best practices (in ICT integration) already existing in schools in your region? (specify name of project, school, URL, contact details)

#### What makes them best/effective practices?

The best practices what already existing in schools are: e-skills in VET requirement social-media methods for developing of vocational skills/path simulations in VET O365 in VET portfolio internet - programs, platforms Padlet Pinterest videos, visual packages Moodle platform - mostly group based, materials, tasks, guidance, schedule On-line lecture, blogs e-learning platforms, programs – licences (in library) Quizlet WhatsApp Skype Thinglink Facebook Youtube Surveypal QR gaming Seppo platform Kiltakoulu model Visuhops Trello Wilma e-mails

The computer belongs to the everyday life in every school. In general education, mobile devices have been used, for example, in information retrieval, in connection with a task (mind map). The hardware is not so good,

![](_page_35_Picture_0.jpeg)

![](_page_35_Picture_1.jpeg)

there may be a few IPad classes and learners' phones. Optional Robotic Club, Youtube Videos are used to support (mathematics) learning.

In vocational education, e-skills are part of qualifications. They are using some methods as part of their development of vocational skills development and a wide variety of simulations in cases where authenticity is not possible. 0365 should be used in every institution. as well as portfolio. Training has changed in vocational education sector and learning practices. Important is the pedagogical perspective of changing the methods and choosing new tools and materials. Many students have their own devices.

Existing equipment: laptop, computer smart phone IPad, Windows tablet different mobile devices chromebook smart board data projector

The new situation and new hardware cause many questions and new challenges in schools: who will be responsible for the equipment and update them. How often schools have to update their hardware? What are the best solutions (devices and software)? The aim of the future development will be provide each learner/pupil with some terminal/computer. Nowadays we are going from computers (static working place) to laptops (taking with). Ideal situation will be, when the platform is accessible and it is not dependent on the equipment. Leaders pointed out that the learning comes first and the technique is just a tool for the learning.

The most important aspect of digitalisation would be that the material should always be available and shared to everyone. The aim of the future is that the lessons are being saved and the students can watch the lessons later.

Digitaalisuuden tärkein anti olisi se, että materiaali olisi aina saatavilla, jaettavana kaikkien käytössä. Tulevaisuuden toiveena on, että tunnit videoidaan ja opiskelijat saavat seurata tunteja myöhemmin.

Using methods for suitable task makes practices most effective. Leaders from general education listed followed examples:

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![](_page_36_Picture_1.jpeg)

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free time and language skills - gaming information search - Internet tests – e-tests guidance for VET students (work based learning) - WhatsApp e-learning - Moodle

Technical point of view: importance that platforms, programs will work (not term of technic). Unfortunately we have sometimes problems with network errors and updating of equipment.

![](_page_36_Figure_5.jpeg)

Figure 1: Factors making practices effective

The level of using digital devices and methods depend on:

- level of equipment: computers are everywhere, there are data projector and smartboard in many classrooms. Schools have different number of computers, IPads or tablets, smartphones, Chromebooks etc. Teachers have to reserve and borrow equipments.

- level of users skills
- level of working guarantee: updating of equipment and programs/platforms, working of networks
- level of software: which programs, platforms, games etc will be used
- level of tasks: why teacher choose such kind of methods, platforms and equipment

![](_page_37_Picture_0.jpeg)

![](_page_37_Picture_1.jpeg)

There are followed comments about effectiveness of digital devices and methods in schools:

Internet, kun sitä osataan käyttää oikein ja erilaiset opetuksessa käytettävät ohjelmistot (Padlet, Moodle, Quizlet...) ('Internet and the different software for teaching when it is properly used')

Kännykkä voi olla sekä paras että pahin väline (' Smart phone can be both the best and the worst device')

Chromebook on kätevä: tieto ei katoa, vaan tallentuu pilveen. Etuna myös helppokäyttöisyys ja lisäksi huolto on helppoa (' The Chromebook is practical: information does not disappear and is stored in the cloud. An advantage also is ease of use and maintenance')

*Pilvipalvelut ovat käteviä ja ne ovat lisänneet opettajien keskinäistä jakamista* (' Cloud services are convenient and have increased teachers' sharing')

Opettajien välinen jakaminen lisääntynyt ja opettajat suhtautuvat digivälineisiin myönteisesti (' There is an increasing sharing (of material, skills) between teachers and the teachers have a positive attitude towards digital devices')

On aloitettu digitutor-ohjelma (nuoret neuvovat toisiaan ja henkilökuntaa) ja ohjelmointitaidot on otettu käyttöön: opiskelijat ovat ohjelmoineet opiskelussa käytettäviä ohjelmia (' A digitutor program has begun (young people advise each other and staff) and programming skills have been advanced on: students have programmed programs for study')

#### 3: What is the level of transfer of these good practices, what facilitates and what does restrain them?

Level of transfer of these good practices is mostly 80-85 % (no-users 15 - 20 %). There are different possibilities between different schools and regions in Finland.

![](_page_38_Picture_0.jpeg)

![](_page_38_Picture_1.jpeg)

Example 1: upon secondary school in Uusimaa with 400 learners – 50 teachers: they have in the school 60 laptops, 40 chromebooks, 20 IPads

Example 2: upon secondary school in Espoo – each teacher has a personal IPad and computer. Each student of 7th grade has their own IPad, 8th grade has a circulated IPad. There are Apple TVs and smart boards in the classrooms. Limited money and time – there needed training for digital skills.

We have had projects granted by FNBE for digital devices, digi-tutor (2016).

Good practices are facilitated by followed arguments: cloud services are practical, are increased sharing between teachers in charging digital tutors, program for digi-tutor (young people quide each others and staff) many likes to organize e-tests development of technique: training, money, on the top all are in WhatsApp – good to communicate and share information summary (bank) of devices, methods, programs (licences) what we have got

Restrain of the use by followed factors: attitude – depends on person social media not in teaching process – some not appreciate as teaching method age limit (primary school) not enough equipment – digital teaching material cannot understand what sharing very weak daring

![](_page_39_Picture_0.jpeg)

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#### Table 2.

Торіс	Facilitating factors	Restraining factors
Equipment	enough devices, personal devices for teachers uploaded	teachers have to reserve and borrow their devices best devices are all time reserved problems with uploading, network errors
User skills	80-85 %, mostly all staff have basic skills mostly language teachers are experienced to use different programs Digitutor program, program for digi-tutor (young people quide each others and staff) resources (time) for training money/grant for teachers' training motivation and positive attitude	15-20 % no-users daring and motivation weak limited skills and programming skills of teachers limited resources (time, money, staff) to organise training for teachers
attitude	attitude depends on person and his/her skills sharing between teachers in charging many likes to organize e-tests	limited resources not like to do something extra no sharing no networking teachers do not appreciate social media in teaching process
limits, licenses	licenses for many programs and platforms – possible to choose the best solution for training	procurement law race, limited financial resources age limit - licenses from parents licenses in YouTube learners have got not enough devices and/or skills
Programs, platforms	all teachers in adult education have to use Moodle bank of existing programs	too many, too fast development – difficulties to choose Moodle is not the best and elastic platform
different social media advices	WhatsApp (50 % used) is effective for connection, communication and guidance FB 30 % cloud services are practical, are increased Best solutions: Wilma, data projector, e- mails	teachers have not smart phones, cannot use WhatsApp Uncertainty about what to use
others	benefit for teaching and learning process benefit to use will motivate teacher to train new skills	changes in study programs

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limits: not enough equipment (have to organize paper test) – have to borrow problem in networking pupil's equipment – cannot use skills changes in study programs limited skills of pupils limited skills of teachers programming skills licenses from parents licenses in YouTube limited financial resource: big difference between towns and countryside procurement law race – kilpailuttaa limited time limited resources limited time for training

The challenge is the development of technology: can it always be at the cutting edge of technology? Suggestions: there could be 'compulsory programs', which are supported - they are introduced

It must be remembered that the purpose dictates the form: there is no need and purpose for using digital devices in every lesson. Only if it serves learning. The challenge of using digital equipment is often the economy.

'On muistettava, että tarkoitus sanelee muodon: kaikilla oppitunneilla ei ole tarkoituskaan käyttää digivälineitä. Vain jos se palvelee oppimista. Digivälineiden käytön haasteena on talous.'

#### Professional development

4: Which are the main competences that teachers should have in order to carry on the best/effective practices mentioned before (referring also to digital, methodological and socio-relational skills)?

The world is changing, and also learning tools (digital) are changing. Online guidance differs from face to face guidance. The personalization in vocational education enables organising training and guidance partly in the classroom and partly online. There are new ways and methods of working. It is important to allow all students an equal level of personal training and guidance, and instructors must be able to support them.

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Shared teaching and driving skills require cooperation and networking. The adoption of digitalisation requires motivation, desire to try and change of mind. It also requires the manager's intent and peer support.

Attitude – motivation sharing skills – networking daring – courage to ask study from pupils self-directed (itseohjautuva) learning from each other: daring to ask and receive help self-confidence – don't believe that they can learn using of new programs changing role of teacher – not needed to be competent in all Office program user skills for digital devices (having already basic ICT skills) re-learning skills, learning skills General digital skills: multi-reading skills, skills of data sources, skills for digital conversation more specific: digital portfolio, visual presentations photoshop delimiting skill (there is no need to manage all) – is challenging

The main competences that teachers should have in order to carry on the effective practices are deeply connected to **attitude and motivation**, genuine desire to develop and share knowledge and materials. The best and effective practices in integration of ICT require time, examples, peer support, learning and experimentation, planned training, equipment and software. Finnish teachers have mostly basic user level skill of ICT. Compared to number of existing learning platform there is too little training.

Conclusion the followed skills was named during interviews:

socio-relational skills (these are most important and most challenge)

sharing skills networking skills interactive skills curious and entrepreneurial attitude delimiting skills

#### digital skills:

basic ICT skills

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user skills for digital devices skills for digital conversation skills manage with information confident and ethical digital literacy skills of data sources skills to make visual presentations, Photoshop, digital portfolio

#### methodological skills

skills to develop digital material (not only copy the books to the e-platform) Copyright, ownership of digital material (ownership), permissions skills to use existing digital material

5: Based on your personal experience, what does help and what does restrain the acquisition and the effective use of those competences? Focus on organizational and educational aspects: bureaucracy, logistics, timing, training models and pedagogical teaching methods.

There is not any list of what skills should be teachers have. The most important thing is the attitude - the courage to try, sharing skills, self-guidance.

Table 3.

Aspects	helping factors	restraining factors	
Bureaucracy	strategy leader will give resources support of FNAE, finance, projects	licenses new responsibilities (who will be responsible in new tasks, uploading etc.)	
	key projects of state	resources, teaching obligation, pay system	
Logistics	enough equipment devices/platforms are easier to use and upload	equipment, borrowing use friendly equipment	
Timing	training for teachers digi-tutors	extra tasks limited time resources not enough training	
Training models	digi-tutors learning from each others	not understanding about the possibilities	

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	networking, cooperation international projects	
Pedagogical teaching methods	acting: face to face, presence sharing, networking	needed re-learning security (sharing personal information)
Other	attitude, motivation, courage to try learning skills self-directed acting, daring to ask and receive help; changing role of teacher – not needed to be competent in all can also help in promoting health (activity bracelets, etc.) Snapchat in health services of school – easier to contact	attitude, daring – courage to ask help form learners/pupils; self- confidence, don't believe that they can learn using of new programs

The management of school have an important role by trying to remove restraining and limiting factors. Some bureaucracy such as teaching obligation, pay system can limit to real motivation – it would be good to get more relaxed hands for those who want to do more.

#### 6: Which are the pedagogical aspects more connected with the integration of ICT in school practices?

The integration of ICT into the learning process in school practices have to based on pedagogical understanding that digitalisation promotes teaching and guidance, improving the quality of guidance, and gives opportunity to develop and create a new modern material. The guidance have to be timely and achievable. In the 21st century, the subject-specific teaching became to the starting point for phenomenon based pedagogy.

Mobile devices are thought to be helpful for students. Basic skills, thinking, learning, engagement, multiple reading, interaction, expression, ICT for high school are intended to everybody. In the new elementary instruction, for example, coding is for everyone. For answering of these future aims, further training is provided for teaching staff.

The followed pedagogical aspects were named during interviews:

Accessibility of teaching and guiding support to distance learning, more material, videos developing of lifelong learning (free digital lectures support lifelong learning)

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developing platforms more user friendly using based on aims, tasks and sectors: suitable digital device and method integration digital methods and materials to learning process e-learning will support studying of distance learner (for example rare languages) developing of digital matriculation examination (e-tests) have forced some measures: to update the data networks, servers etc. it has been able to justify some needs and solutions Edison learning platform Seppo – gaming languages – different support to language learning and memory processes Quizlet – how to support traditional cramming automatic translation of speech many companies are making different program for education - discussion, negotiation what will be good and needed gaming in mathematic IPad -photo, video WhatsApp - connecting, information sharing cooperation and networking between teachers of own sector - more benefit by using existing material

international projects will give opportunity to develop this sector, learn from each other

#### 7: How do you keep yourself up-to-date in order to acquire the mentioned competences?

The key projects of Finnish government give opportunity to apply projects and financing for further developing and updating digital competences. There are many processes going (new curriculas) – teachers understand the need of further training and updating their skills. Projects give possibilities to organise further training of teachers and up-to-date hardware.

Different creators and networks have to merge and recognize their existence. For teachers the benefit is important, this will motivate but also joy of making and creating something together. Being in the process from the start, planning topics and creating services more findable, usable and functional. Updating existing material and collecting collectively different degrees, topics, material – creating a service for collected bank of digital material.

Supports: digitutor teacher activities (the project stopped). Hot ICT present teaching (starting lecture + program, tutor comes to the lessons site-by-site support for teacher).

Most important is that teachers starting to support each other, increasing self-guidance.

Merging of networks Networking and sharing between teachers using these programs

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Co-funded by the Erasmus+ Programme of the European Union

e-learning videos/material organizing digital matriculation examination

# 8: Have national policies for education helped in recent years the development of teaching and methodological innovation through ICT? Can you give some examples?

Digitalisation is one of the five strategic priorities in the Finnish Government Programme (2016). This means opportunity to apply different project and funding for developing digitalisation. In education sector, Government has also many programs for reforming of vocational upper secondary education and developing new learning environments and digital materials to comprehensive schools. The aim is to modernize learning, organize more personal pathways for students, make deeper cooperation with labor market, build connections between different levels of education. The new curricula for basic education will change the subject-specific teaching to the starting point for phenomenon based pedagogy. This all need also organizing training for teachers.

The EU has an impact on the level of planning - Finland takes the goals seriously and puts it in action. Education policy has helped - has been a clear goal to target. Funding from projects to acquire tools for schools - has been a fierce development over the last three years. Distance learning and the use of video tutorials (self-made & network-ready videos) has also been added. This has also increased the networking of teachers during the developing process sharing between teachers.

This sector is one of the most innovative during last years: developing of teaching and methodology by ICT instruments. There is infrastructure and know-how in Finland, but it is surprising how small digital education is in reality.

Suomessa on olemassa infraa ja osaamista, kuitenkin on yllättävää, miten vähäistä digiopetus on todellisuudessa.

Best examples of last development:

Digi-tutor, project of FNBE

Edison learning platform (<u>http://www.tiera.fi/palvelut/sivistystoimen-palvelut/edison-oppimisalusta</u>) new, best and comfortable (state and municipal owned), comprehensive and important

Seppo (http://seppo.io/) moving school, gaming.

![](_page_46_Picture_0.jpeg)

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There are same challenges: as there were many funded projects by the state, funding is not enough, especially in the provinces.

Many companies are investing in training and paid applications are marketed to schools - we need to think about what everything is going on

'monet yritykset panostavat koulutuksen kehittämiseen ja maksullisia sovelluksia markkinoidaan kouluille. on mietittävä, mihin kaikkeen lähdetään mukaan'

#### Closing section

After questions and discussion we summarized the general topics and answers. Participants had opportunity for further input and adding some missing information (for example later by e-mail).

We inform the participants that the synthesis will be shared after the meeting and that they will have a few days for the feedback.

Table 4: General ideas by different levels

Торіс	early childhood education	basic education	General upon secondary	VET
the competences for the 21st century citizen that schools can help develop through the integration of ICT	sustainable development team working	integration of ICT to studying/learning/teaching process sustainable development team working Multi-reading skills Text and image literacy, critical evaluation of data sources, 'interpreting' images and videos. Memory skills Basic ICT skills safety use of digitalization	integration of ICT to studying/learning/teaching process sustainable development team working Multi-reading skills Text and image literacy, critical evaluation of data sources, 'interpreting' images and videos. filling up e-forms Memory skills Basic ICT and programming skills Structuralisation skills and organising the information project management – structured working Creating own public profile adding self awareness and self assessment	all key competences of LLL (both written and oral) sustainable development integration of ICT to studying/learning/teaching process problem solving team working Multi-reading skills Text and image literacy, critical evaluation of data sources, 'interpreting' images and videos. filling up e-forms learning skills, ICT Basic ICT skills Possibilities for distance learning – learning skills, support to LLL Creating own public profile adding self awareness and self assessment Key competences and skills needed in working life

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Торіс	early childhood education	basic education	General upon secondary	VET
the best practices (in ICT integration) already existing in schools in your region	IPad computer games	computer, laptop, IPad, smartphone, Chromebook Internet, programs, platforms Padlet Quizlet gaming Wilma data projector smart board	e-tests organizing matriculation examinations Wilma Quizlet Chromebook Seppo data projector smart board WhatsApp	e-skills in VET requirement; O365 in VET portfolio Moodle (e-courses, guidance) WhatsApp for guiding during practical periods; programs and platforms social-media methods for developing of vocational skills/path simulations in VET Skype, WhatsApp, FB, YouTube
the level of transfer of these good practices, what facilitates and what does restrain them	age limit youtube license procurement law race licenses from parents	digi-tutor 80-85 % (no-users 15 – 20 %). cloud services are practical, increased sharing between teachers in charging, age limit, social media not in teaching process limited time for training youtube license procurement law race limited skills and devices licenses from parents	digi-tutor 80-85 % (no-users 15 – 20 %). cloud services are practical, increased sharing between teachers in charging, many likes e-tests sharing weak limited time for training procurement law race limited skills and devices	Using WhatsApp and FB in guiding, Moodle in adult education, distance learning, e-lecture sharing weak limited time and resources for training procurement law race limited skills and devices
the main competences that teachers should have in order to carry on the best/effective practices	Attitude – motivation sharing skills – networking user skills for digital devices learning skills	Attitude – motivation sharing skills daring – courage to ask study from pupils changing role of teacher – not needed to be competent in all having already basic ICT skills	Attitude – motivation sharing skills self-directed learning from each other: changing role of teacher – not needed to be competent in all having already basic ICT skills General digital skills: multi-reading skills, skills of data sources, skills for digital conversation more specific	Attitude – motivation sharing skills digital portfolio, visual presentations Photoshop delimiting skill (there is no need to manage all) – is challenging changing role of teacher – not needed to be competent in all having already basic ICT skills Office program General digital skills: multi-reading skills, skills of data sources, skills for digital conversation more specific
factors what does help and what does restrain the acquisition and the effective use of those competences	the courage to try, sharing skills, self-guidance	the courage to try, sharing skills, self-guidance using based on aims, tasks and sectors: suitable digital device and method	the courage to try, sharing skills, self-guidance using based on aims, tasks and sectors: suitable digital device and method	the courage to try, sharing skills, self-guidance

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Торіс	early childhood education	basic education	General upon secondary	VET
		integration digital methods and materials to learning process	integration digital methods and materials to learning process	
the pedagogical aspects more connected with the integration of ICT in school practices	participation, documentation, self- assessment	digi-tutor gaming in mathematic IPad –photo, video data source Quizlet, Seppo Edison learning platform	digi-turot organizing digital matriculation examination developing platforms more user friendly gaming in mathematic IPad –photo, video data source Quizlet, Edison	digi-tutor distance learning, LLL guidance Accessibility of teaching and guiding e-lecture, videos, QR
up-to-dating in order to acquire the mentioned competences	projects	digitutor, hot ICT present teacher Networking of networks Networking and sharing between teachers using these programs e-learning videos/material	digitutor, hot ICT present teacher Networking of networks Networking and sharing between teachers using these programs e-learning videos/material organizing digital matriculation examination	further training for teachers, different projects
examples how national policies for education helped in recent years the development of teaching and methodological innovation through ICT	Digitalisation is one of the five strategic priorities in the Finnish Government Programme, funding applying	new curricula Digi-tutor, project of FNBE Digitalisation is one of the five strategic priorities in the Finnish Government Programme developing new learning environments and digital materials to comprehensive schools, funding applying	new curricula Digi-tutor, project of FNBE Digitalisation is one of the five strategic priorities in the Finnish Government Programme, funding applying	reform in VET Digitalisation is one of the five strategic priorities in the Finnish Government Programme, funding applying

# 2.3 In-depth interviews to key actors

# 2.3.1 Methodological overview

Deepening in interviews to key actors (policy makers, decision makers, institutional representatives), indicating also the theoretical principle to observer to realize interviews.

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Five persons among policy and decision makers were interviewed in Finland with the objective to evaluate the steps taken by relatively governance integration of ICT in education system and teaching practices.

Interviewed persons represented ministry, municipality, policy and association level (Table 5):

Table 5: In-depth interviews key actors in Finland

Institution of key actors	Position of key actor
Finnish Agency for Education	Director general in Finnish National Agency for Education
	(Director of Education and Cultural services in Espoo city 2008-)
Education and Cultural services in Espoo city	Director of Education and Cultural services in Espoo city 2012-2016
	General director of Omnia 2006-12, 2017-
The Advisory Board of the Education and Early Childhood Education Board of Espoo;	Vice chairman of The Advisory Board of the Education and Early Childhood Education Board
Teachers without Borders Finland network;	In Espoo, Communications manager of Teachers without Borders Finland network
The Greens of Uusimaa	The Greens of Uusimaa
The Trade Union of Education in Finland	Vice Chairman of OAJ, the Trade Union of Education
	Chairman of the general education teachers of the Trade Union of Education
Finnish Agency for Education	Counsellor of Education at Finnish Agency for Education, Team of Digitalisation

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# 2.3.2 Description of the in-depth interviews (Anssi Kuisma)

# 2.3.2.1 The most important challenges brought by the digital era

There is a concern about the ICT skills of the teachers and the motivation and attitude of the teachers to develop. It's obvious that teachers' competence does not grow by itself.

With the pupils the problem is that the starting level varies a lot. Children do know how to use social media and games, but the basic skills of ICT (e.g office programs and file management) are weak. Knowing the entertainment use of computers and smartphones will not be enough in the working life or living as a fully empowered citizen in the futures societies. On the other hand in basic education upbringing and social skills are still the most important things. One of the interviewees told about a seminar of education development where the HR director of Nokia stressed the importance of teaching articulacy and social skills to children, even compared to science skills. In principle all the know-how can be taught in the work places, but for the expressive and social skills it's too late.

For a long time now the development of ICT has been done by hardware first. The digitalization will not succeed if there is no understanding why things are done and discussions concern only to computers and equipment choices. There is an urgent need to combine digitools with pedagogy and form a common vision of the pedagogical applications. All this said, upgrading the capacity of the data transfer networks is also a distinct challenge.

# 2.3.2.2 The most important government acts for the integration of ICT in education

#### system and teaching practices

The most important act for governments to direct the field of education is to decide about curriculas for the primary, secondary and pre-primary education. One of the key projects of the sitting government is the New basic school program 2016-2018. It includes the model of digi-tutor teachers, which is the first organized personnel education system to develop competence of ICT. The granted funding is 23 milj.  $\in$  in three years time. Government has also started to talk about "*digi leap*" in every sector and thus widened the awareness and importance of the matter.

At the moment (12.5.2017) there are 20 different aids and 6 development programs going on according to the website of ministry of education. Project funding has long been the most important method for the ICT

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development. Aside government and EU aids schools have also used private sector actors as project partners. Apple, Google and Microsoft have all been active in supporting ICT development of schools.

One of the most influential decisions has been the digitalisation of matriculation examination. Decided in 2003 and coming to force gradually from 2016 on it has forced schools and teachers to develop their competence in ICT.

## 2.3.2.3 The intervention areas that still need investment

You can see investments to machinery, but not to in-service training. So far the digital competence in the schools has been based on the personal activity of some teachers. Many times the attempts to develop the competence of the teachers has mainly consisted of putting pressure on or even bully teachers, which is wrong. Also it is an illusion that pupils could teach teachers. Innovative principals and teachers have developed learning environments a lot, but a firm connection between innovators and other employees is needed. Teachers education, more effective in-service training, and especially updating training of the older teachers, still need investment. One of the interviewees missed the beginning of the ICT's takeover in the 90's when the principle was that one third of the resources was meant to machines, one third to programs and one third to the training of the users.

There is still a need to upgrade the capacity of the data transfer networks and to improve accessibility and reliability of the ICT tools. If teachers are supposed to use ICT fluently in education, they should have personal laptops or pads paid by employer. Then teachers could play - and learn - with the machines at free time, too. Large contracts demanded by education providers limit the use of open software and can make urge for development awkward and controversial.

Also creating a working authentication system for the schools would increase equality. Pupils should not be required to use authentication systems of the banks to sign in to systems. To sum up, funding for some digitools and the skill level of teachers should be generally agreed upon and guaranteed, but teachers and schools should have freedom to experiment whatever equipment and software they want.

## 2.3.2.4 Current national policies related to the european recommendations

On the national level the EU and OECD recommendations are watched closely. Cooperation between the different organizations has increased. Among others the Finnish National Board of Education is a member of European Schoolnet and Pestalozzi Programme of the Council of Europe. On the local level the european processes are not so known. The objectives should meet on paper at least in the curricula. There is no national

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criteria, anyhow, for the digital competence of the citizens or of the teachers. Usually EU recommendations are followed quite punctually in Finland, but in education the situation is a bit different. For example, Finland joined The European Qualifications Framework (EQF) system only recently.

# 2.3.2.5 Communicative and organizational problems and what might help facilitate a better cooperation

Lack of a common vision can be seen exactly there that the funding of the ICT development happens in the projects and there is no long-term regular funding at the municipal level. Moreover, one third of the communes don't apply for any development funding at all. Development funding should be less project-based, so it would be more equally guided to the municipalities. Communes, who are usually the responsible education providers, need a development plan, too. ICT should be more often on the tables of the boards and directors to increase the awareness of the significance of the matter and cooperation between different ICT units of communes should be improved.

Among the interviewees the biggest problem seemed to be the lack of a national vision and strategy concerning the development of ICT competence. Curricula are good but they are quite general and broad based. Principles and education providers have a lot of power to specify them and teachers have pedagogical freedom in the classrooms, so the changes are often fragmented and personalized. The state level works as stated in the government program and the ministry of education is not aware of or even care about the everyday life of the schools. The Finnish National Board of Education point of view is often that when the guideline has been signed the matter is finished and should somehow be in force immediately, but of course the implementation of the fine decisions takes some time and effort in the local level.

At worst also the (political) management of the education providers is ignorant about the competence of the digital era and all this results an asynchrony between the national level and the schools, and big differences between the schools. The official national education policy has been that the nearest school is the best school. One of the interviewees encouraged systems thinking where everybody should know the situation and the differences between schools should not be hided.

A stronger vision and criteria about the development of ICT in education would facilitate better cooperation. Dialogue between different actors should be increased and build an ecosystem of co-ordinated networks to ensure a minimum level of competences in digital era. Good example is the network model that National Board of Education created in a very short time for the training of immigrants.

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# 2.4 Conclusions/results

According to SWOT analyse there can find followed strengths, weaknesses, risks or opportunities in teacher training for the enhancement of their digital skills (Figure 2):

As strengths have seen that mostly all staff have basic ICT skill. Many projects are supporting financial to develop digital era, as so called Digi-tutor program and at least digital competence in the schools has been based on the personal activity of some teachers. Using of e-tests and cloud services are increasing, and teachers uses them as practical methods. The digitalization will support lifelong learning and distance learning.

Weaknesses are such kind limits as limited of skills by learners and teachers (need for in-service training), limited resources (financial, personal, equipment), age limit - licenses from parents, licenses in YouTube, procurement law race. Networking and sharing between teachers is weak, some teachers cannot believe that pupils could teach them, and some teachers do not appreciate social media in teaching process.

As opportunities can be seen that EU and OECD recommendations are watched closely. One of the key projects of the Finnish government is so called is digileap, and this will give EUR 100 million finances for improving of digitalization in Finland. Digitalisation of matriculation examination is one concrete step by the digitalization process. As youngsters use already a lot social media and games during their free time, digitalization is easier for them. Increasing cooperation, networking and sharing between teachers as well

updating training of the older teachers are taking as different opportunities by the digitalization and integration of ICT to the common school life. Dialogue between different actors should be increased and build an ecosystem of co-ordinated networks to ensure a minimum level of competences in digital era. Good example is the network model that National Agency of Education created in a very short time for the training of immigrants.

Stronger vision and criteria about the development of ICT in education would facilitate better cooperation. If teachers are supposed to use ICT fluently in education, they should have personal laptops or pads paid by employer.

![](_page_54_Picture_0.jpeg)

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- mostly all staff have basic ICT skills
- many projects to develop digital era
- digi-tutor program
- using e-tests
- increasing of cloud services, practical
- free to choose methods in schools (by teacher
- digitalization will support lifelong learning and distance learning
- digital competence in the schools has been based on the personal activity of some teachers

- need for in-service training
- limited resources (financial, personal, equipment)
- age limit licenses from parents
- licenses in YouTube
- procurement law race
- learners have got not enough devices and/or skills
- no sharing, no networking
- teachers do not appreciate social media in teaching process
- fast development and volume are confusing, not understanding about whole possibilities

# SWOT

- EU and OECD recommendations closely
- the key project of the Finnish government, digileap , finances
- youngsters using social media and games
- digitalisation of matriculation examination
- increasing cooperation, networking and sharing between teachers
- updating training of the older teachers
- connections and dialogue between innovators and employees are needed
- stronger vision and criteria about the development of ICT education

lack of a national vision and strategy concerning the development of ICT competence no national criteria, anyhow, for the digital competence of the citizens or teachers

- development happens in the projects, no longterm regular funding at the municipal level
- one third of the communes don't apply for any development funding
- competence of the digital era and all this results are an asynchrony between the national level and the schools
- teachers motivation and attitude to develop their skills
- digitalization won't succeed if there's no understanding why things are done

#### Figure 16. SWOT analyses

Risks are the lack of a national vision and strategy concerning the development of ICT competence. There is no national criteria, for the digital competence of the citizens or of the teachers. ICT development happens in the projects and there is no long-term regular funding at the municipal level and one third of the communes don't apply for any development funding at all . All this results an asynchrony between the national level and the schools, and big differences between the schools. Teachers motivation and attitude to develop their skills influence more positive or more negative to the using of different social media and digitalization tools. The

![](_page_55_Picture_0.jpeg)

![](_page_55_Picture_1.jpeg)

digitalization won't succeed if there's no understanding why things are done and discussions concern only to computers and equipment choices.

Needs and perspective of improvement:

On the list of needs and perspectives are many of the 21<sup>st</sup> century skills:

- Lifelong learning skills (soft skills)
- critical reading, creativity
- Self-direction, initiative
- Teamwork, collaboration, sharing
- Working with a new material for digital use (not only coping the old lesson books)
- Civil, ethical and social-justice literacy.

At least there are needed more training for teacher, more time resources. Kindergartens and primary schools have challenge to offer and guarantee the general user skills of ICT. All citizens will need basic skills to manage with e-documents. Digitalisation of the society will influence to study, work, leisure and communication. People will need new skills how to manage with information confidentiality and ethics. Fast developing of information technology and constantly becoming new can be confusing. There is a need for guidance where it is worth accompanying.

Assessment of Transversal Skills ATS2020<sup>26</sup> includes the transversal skill frameworks followed skills: digital competences/skills, general frameworks of 21th century skills and national key skill frameworks.

![](_page_55_Figure_13.jpeg)

<sup>26</sup> <u>http://www.ats2020.eu/pfiles/41-transversal-skills</u>

<sup>27</sup> http://www.oecd.org/site/educeri21st/40756908.pdf

![](_page_56_Picture_0.jpeg)

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#### Challenges:

'It would be place for integration of ICT or digital tools only if it will give some advance/success/benefit.

Pedagogica I point of view have give some benefit and background for using digita I tools.'

On the other hand leaders worried about inequality of the students on the level of digitalization: some learner are in top and others down, background of learners either supports or is not favorable to developing of digital skills. The challenge will be to get all learners involved.

The new situation and new hardware cause many questions and new challenges in schools: who will be responsible in equipment and update them, how often schools have to update their hardware and what are best solutions (devices and software).

Technical point of view: importance that platforms, programs will work (not term of technic). Unfortunately we have sometimes problems with network errors and updating of equipment.

Demerging teaching skills for digital era;

The world is changing, also including learning tools (digital) are changing. First have to be learning, technic is tool for the learning. There are new ways and methods of working. It is important to allow all students an equal level of personal training and guidance, and instructors must be able to support them. Online guidance differs from face to face guidance. The personalization in vocational education enables organising training and guidance partly in the classroom and partly online.

Shared teaching and driving skills require cooperation and networking. The adoption of digitalization requires motivation, desire to try and change of mind. It also requires the manager's intent and peer support. The management of school have an important role by trying to remove restraining and limiting factors.

The main competences that teachers should have in order to carry on the effective practices are deeply connected to **attitude and motivation**, genuine desire to develop and share knowledge and materials.

The most important problems detected and possible solutions.

The key projects of Finnish government give opportunity to apply projects and financing for further developing and updating digital competences. There are many processes going (new curriculas) – teachers understand the need of further training and updating their skills. Projects, national and international, give possibilities to organise further training of teachers and up-to-date hardware. Projects also will give opportunity to develop this sector, learn from each other. Cooperation and networking between teachers of own sector will implement more benefit.

![](_page_57_Picture_0.jpeg)

![](_page_57_Picture_1.jpeg)

The most important aspect of digitalisation would be that the material would always be available, shared to everyone in use.

This sector is one of the most innovative during last years: developing of teaching and methodology by ICT instruments. There is infrastructure and know-how in Finland, but it is surprising how small digital education is in reality. There is no national criteria, anyhow, for the digital competence of the citizens or of the teachers. The lack of a national vision and strategy concerning the development of ICT competence in Finland have to solve. ICT development happens in the projects and there is no long-term regular funding at the municipal level **but** one third of the communes do not apply for any development funding at all . T he competence of the digital era and all this results would be synchronised between the national level and the schools during national vision and strategy, by support of key projects.

The integration of ICT into the learning process in school practices have to based on pedagogical understanding that digitalisation promotes teaching and guidance, improving the quality of guidance, and gives opportunity to develop and create a new modern material. The guidance have to be timely and achievable. In the 21st century, the subject-specific teaching became to the starting point for phenomenon based pedagogy.

Mobile devices are thought to be helpful for students. Basic skills, thinking, learning, engagement, multiple reading, interaction, expression, ICT for high school are intended to everybody. In the new elementary instruction, for example, coding is for everyone. For answering of these future aims, further training is provided for teaching staff.

Developing of digital matriculation examination (e-tests) have forced some measures: to update the data networks, servers etc. it has been able to justify some needs and solutions.

Biggest challenges for teachers and learners will be multi-reading skills - digital literacy, critical evaluation of data sources, 'interpreting' images and videos.

The general characteristic of Finnish educational system is freedom to choose methods in schools (by teachers). On the other hand, cultural differences as working alone ('lonely shooters'), difficulties to share material, weak team working skills, are challenge in the future digitalization. The digi-tutor action (project based) have seen as positive solution. Indeed, if pupils or students will start tutoring, some teachers cannot believe that pupils could teach them.