

Forerunner: Improving education in Helsinki

**Ten ways to improve
education and learning
in the city of Helsinki**

Report

NOVEMBER 2019

HUNDRED.ORG

hundrED



Contents

FOREWORD – THE CITY OF HELSINKI.....	4
FOREWORD – HUNDRED.....	7
HUNDRED IN BRIEF.....	8
THE FINNISH EDUCATION SYSTEM.....	12
SYSTEM-LEVEL INNOVATIONS IN HELSINKI.....	26
PHENOMENON BASED LEARNING.....	28
LEARNERS AS DECISION MAKERS.....	30
EARLY LANGUAGE LEARNING.....	32
LOCAL DAYCARE AND SCHOOL.....	34
EXPERT AND TUTOR TEACHERS.....	36
SMART LEARNING ENVIRONMENTS.....	38
ENTREPRENEURIAL AND WORK LIFE SKILLS.....	40
WHOLE CITY AS A LEARNING ENVIRONMENT.....	42
DESIGN AND INVENTION PEDAGOGY.....	44
LEARNERS WELLBEING AND HEALTHCARE SERVICES.....	46
SOURCES.....	50

FORERUNNER:
**IMPROVING EDUCATION IN HELSINKI – TEN WAYS TO IMPROVE
EDUCATION AND LEARNING IN THE CITY OF HELSINKI**

Ruoho Noora, Leponiemi Lasse, Taimela Ilona (2019),
‘Forerunner: Improving education in Helsinki – Ten ways
to improve education and learning in the city of Helsinki’
HundrED Research. <https://hundred.org/en/research>

Published November 2019
Authors Noora Ruoho, Lasse Leponiemi, Ilona Taimela
Editors Chris Petrie, Katija Aladin, Saku Tuominen
Graphic design Jyri Öhman / Kilda
Layout Maria Paukkunen / liidee

Conclusions and recommendations from HundrED reports
represent the author’s own views.

Thank you to the Helsinki Education Division workgroup
which made this work possible.

Helsinki This report has been produced
in cooperation with the City
of Helsinki Education Division.

**SUP
ERC
ELL** HundrED also gratefully acknowledges
the support of our global partner Supercell.



Foreword – The City of Helsinki

Helsinki is a forerunner in education and one of the leading trailblazers in the world. Helsinki is reforming its educational activities and investing in digitalisation, various experiments and cooperation with startups, as well as social inclusion and equality. Education is unique in Finland, because regardless of the learner's social, economic, ethnic or linguistic background, everyone has equal opportunities for learning and obtaining a quality education. In Helsinki, every school is a good school.

Education improves the city's competitiveness and creates vitality and culture. This is realised by empowering the city's schools and daycare centres as innovative education and training developers that reform learning from pedagogical standpoints. Education must be able to predict and respond to increasingly rapid changes in society and the labour market. The goal in Helsinki is systemic change, with a focus on global future civic skills, the whole city as a learning environment, and the creation of a sustainable future. Digitalisation will bring significant pedagogical value to the learning process, growth and development of learners. Helsinki is continuously and systematically developing teachers' pedagogical and digital expertise, and headmasters' pedagogical and change management skills.

Helsinki's model of phenomenon based learning is at the core of learning in the city. Phenomenon based learning is flexible and open to change. It emphasises community spirit, cooperation skills, the application of data, and creative and critical thinking. Whenever there is an event that interests students, schools are encouraged to discuss it soon after. This will increase students' understanding of the world, make them more motivated to learn, and develop their skills.

In Helsinki, our educational goal is to focus on learning and its development. We want to transform Helsinki into an innovative city of lifelong learning.

Liisa Pohjolainen

Executive Director
of the City of Helsinki Education Division



Picture: Hannes Victorzon

The goal in Helsinki is systemic change, with a focus on global future civic skills, the whole city as a learning environment, and the creation of a sustainable future.



Foreword – HundrED

The operating concept behind HundrED stemmed from the needs of the Finnish education system. In 2016, Finland launched a new basic education curriculum, which was the product of a collaborative effort by teachers and professionals in the educational field. HundrED spent its initial years identifying Finnish educational innovations that helped teachers achieve the goals of the new curriculum.

Since the publication of the current curriculum, the international media have published partly incorrect information about the proposed educational reforms; some articles, for example, incorrectly claimed that Finland would give up teaching traditional subjects. Although the curriculum does not include such radical reforms, the change has nevertheless been significant for the Finnish education sector.

The Finnish curriculum defines the subjects and overall themes that must be addressed with regard to learners of different ages. With regard to implementing the curriculum, the Finnish education system relies heavily on properly trained teachers and their pedagogical freedom to achieve their goals as they see fit. For those working in education, the new curriculum created an interesting challenge in terms of how to renew practices and increase co-teaching to enable a multidisciplinary approach.

The curriculum specified in more detail than previously a number of comprehensive, multidisciplinary subject combinations that cut across several traditional subjects. These could include: technology and society, multiliteracy and media, cultural and

international studies, a sustainable way of life, and global responsibility. This practice has created a fruitful starting point for the development of old and new operating models.

This report presents operating models for implementing the goals of the new curriculum, which were created within and are used by the City of Helsinki's educational system. Regarding the models presented in the report, it is worth noting that they are being applied in public education throughout the city, with specific resources being allocated for this.

Lasse Leponiemi

Executive Director

Noora Ruoho

Researcher

HundrED in brief

HundrED Manifesto

The purpose of education is to help every child flourish, no matter what happens in life. In a fast changing world focusing on traditional academic skills will remain important, but that is not enough. To thrive as global citizens, children must be equipped with a **breadth of skills**.

While we are advocates of child-centric approaches and **personalized, passion-based learning**, the relationship between an inspired teacher and a motivated student will remain essential. **Assessment** has to be aligned with the core purpose of helping kids flourish and all of this should be reflected in the **learning environment** of the future.

To make this happen, we need **visionary leadership** at every level of our education system and ambitious education innovations; innovative, impactful and scalable approaches that are effective also in low-resourced environments.

The world of education is full of hardworking specialists who are making this happen every day. At HundrED we work to give them the recognition and visibility they deserve.

Our goal is to help improve education and inspire a grassroots movement by encouraging pedagogically sound, ambitious innovations to spread across the world.

HundrED in Practice

HundrED Global is a collection of 100 inspiring innovations in K12 education that are researched, interviewed and recognized by our research team as innovative, impactful and scalable.

HundrED Forerunners and Spotlights create partnerships between HundrED and local partner organizations to focus on a location or theme to research, understand and share ten impactful & scalable innovations.

HundrED Open is our open resource platform where anyone can share their innovative work in education for free and enter to be considered for the annual HundrED Global Collection.

HundrED's Community comprises our innovators, educators, ambassadors, youth and soon, funders. They support our work in discovering inspiring K12 education innovations and help us in spreading our annual innovation collections with local education innovation communities.

HundrED's Media team create news articles and community blogs, and maintains HundrED's digital platforms to help our global audience discover innovations from around the world easily.

In a fast changing world
multidisciplinary skills are needed
in addition to traditional
academic skills.

HundrED's Research team discovers and analyzes leading innovations in K12 education globally to select 100 that are innovative, impactful and scalable. We also conduct original research to understand the enablers and barriers that lead to the spread of effective educational innovations. Moreover, we work with many partners on highlighting leading educational innovations based on a theme or region for our spotlights.

To celebrate the release of our Global Collection we annually organize the **HundrED Innovation Summit** for the world's most inspiring education innovators, educators, youth and other engaged stakeholders, in Helsinki (Finland).



HundrED Forerunners

IMPROVING EDUCATION IN SYSTEMS

The challenge At HundrED, we love all kinds of education innovators: from teachers to entrepreneurs and from non-profits to start-ups. We believe that impactful and scalable innovations can make change happen. So far we have mostly focused on innovations that scale bottom-up – or in other words – grassroots innovations that have the potential to work in a range of contexts. However to make change happen quickly and at scale for example, in every school of a city, we should also be spending time with top-level educators. They have the means to achieve quality education for all students. And like the grassroots innovators, they also lack the time and connections to share their innovations to like-minded leaders around the globe.

Our solution To partner with that top level, we have created a new initiative called *Education Forerunners*, with the goal of identifying education stakeholders who are making change happen at scale. They can be countries, states, cities or networks of schools. Together with these forerunners, we aim to identify top level innovations that improve education immediately at a large scale. These can be system-level innovations, innovative strategies, or eco-systems that encourage innovation. We are excited to announce that the first HundrED Forerunner is the city of Helsinki. Together, we have identified 10 innovative approaches with a goal of improving education in every *school* of the city.

The network Although these innovations differ slightly from the grassroots innovations we've selected in the past, the end goal is still the same. If and when they are impactful, our goal is to help them scale. But in this case, we try to help them scale to like-minded education stakeholders. For example, in the case of Helsinki, we hope these all or some of these 10 "city-wide innovations" could be useful in many other cities of the world, both big and small. As a result, we want to create a network of innovative education forerunners who can share innovative practices with each other. We envision a sharing of best innovations between countries, states, cities or school networks that have a mission to help every child flourish.

The Finnish education system

Flexible and equitable education system

It is a key element of the Finnish education system that equal opportunities are offered to all. Education is guaranteed by the constitution and is free of charge from preschool all the way to higher education and the doctorate level. Education is accessible to everyone regardless of their financial status, age, ethnicity or mother tongue. The effectiveness of the Finnish education system hinges on these factors.

Finland has compulsory education by law. All children must complete comprehensive school or otherwise acquire the knowledge and skills equivalent to a basic education. Most children start school in the year when they turn seven, continuing until they have completed the comprehensive school curriculum. The 2019 government has decided to extend compulsory education to include secondary education. This means that, in future, all children must complete general upper secondary school or secondary-level vocational education. It also means that secondary education will become free. Although tuition fees have not been charged in the past, the decision means that textbooks and other study material will become free for students. The timetable for implementing this extension to compulsory education has not yet been decided. However, on its website the Ministry of Education and Culture says that this may occur as early as 2021.¹

The Finnish education system consists of many levels: early childhood education and care, pre-primary education, basic education, upper secondary education, vocational education and training, tertiary education and adult education (see Figure 1). People in Finland also train through liberal adult education and basic education in the arts. A key feature of the Finnish education system is that there are no educational dead-ends; students can move flexibly between various types of education. The objective is that students should always have an alternative if the current education path is unsuitable.

All levels of education systems are governed nationwide by the Finnish National Agency for Education's grounds and curricula on education. In the Finnish context, the curriculum is regarded as a tool for teaching and planning. It is used for drawing up a comprehensive and controlled system that has no overlapping elements and creates a continuum between different levels of education. Based on this nationwide foundation, each municipality must draw up local plans for the provision of educational services – this leaves municipalities and cities with considerable flexibility in the organisation, assessment and development of their educational services.³

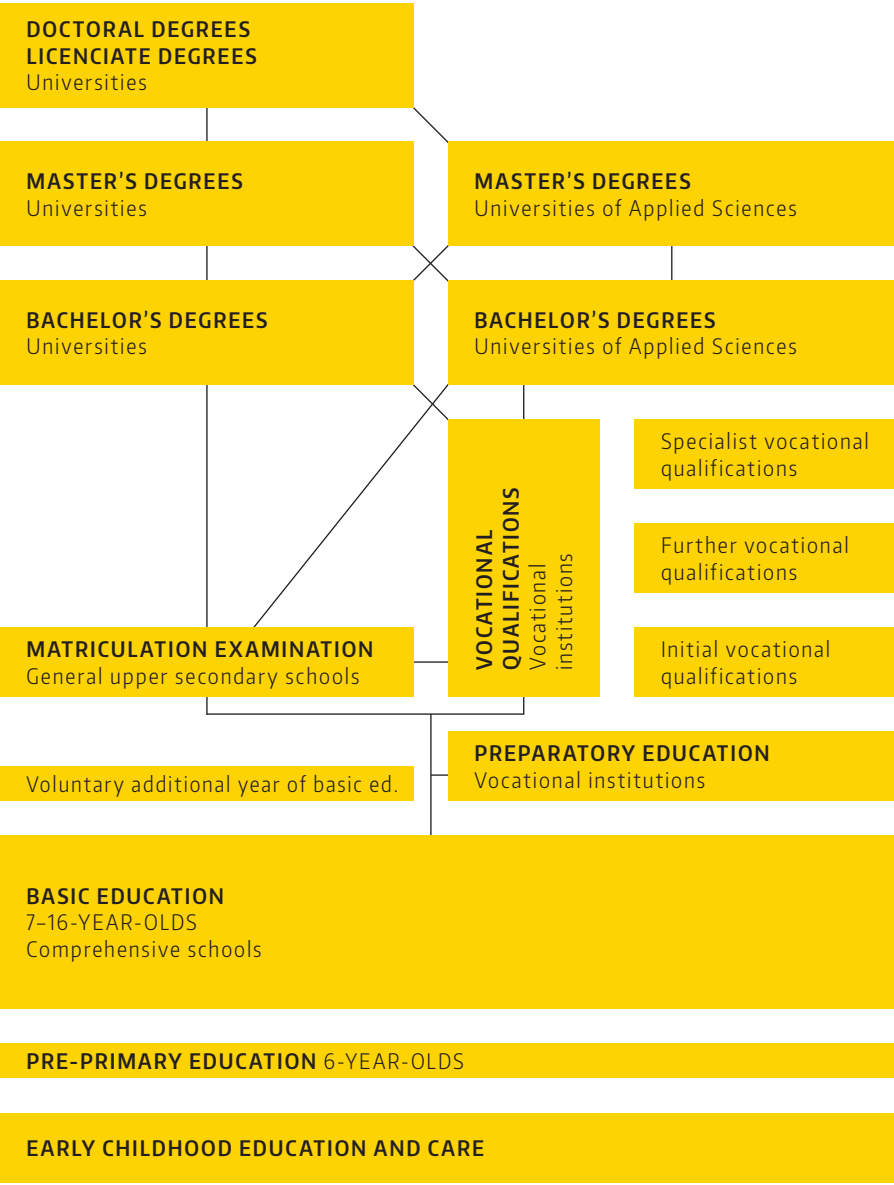


Figure 1. Diagram of the Finnish education system, 2018.²



Early childhood education and care, and pre-primary education

Organised before compulsory education, early childhood education and care is usually a child's first step into the Finnish education system.⁴ Early childhood education and care is defined in the law as a *"systematic and goal-oriented entity that consists of upbringing, education and care, with a special emphasis on pedagogy."*⁵ The purpose of early childhood education and care is to promote and support the child's overall growth, wellbeing and learning capabilities.⁶ Early childhood education and care can be organised through daycare centres, family daycare, or open early childhood education and care.

Participation in early childhood education and care in Finland has risen in recent years. 79 per cent of 3-to-5-year-old children in Finland participate in early childhood education and care. In other OECD countries, 87 per cent of children in the same age group take part in early childhood education and care, so Finland is slightly below the average.⁷ The lower percentage of children in Finland in early childhood education and care may be explained by family leave. Thanks to the Finnish family leave system, parents can look after their small children at home, so that the child's wellbeing, development of parenthood, family livelihood and the parent's job are secured. From the child's viewpoint, the key aspects of the family leave system and its use is the child's right to care provided by its parents, and ensuring the family's livelihood.⁸

The Ministry of Education and Culture set up a working group in 2017 to increase the participation rate in early childhood education and care. The report shows that attitudes towards early childhood education and care in Finland are divided into two camps. Home education and care and early childhood education and care are often viewed as mutually exclusive, although they could both be regarded as enriching a child's wellbeing and sphere of life.⁹

Pre-primary education, which was made compulsory in 2015, is provided one year before actual compulsory education either in the same place as early childhood education and care, or at school.¹⁰ Most children start at around six years old, and pre-primary education is a natural component of education between early childhood education and care and basic education, which together form a continuous education path. That is, pre-primary education promotes the growth, development and lifelong learning skills already touched upon in early childhood education and care.¹¹ Another purpose of pre-primary education is to boost the child's social skills and self-esteem, particularly through play and a positive atmosphere.¹²



Basic education

All children living permanently in Finland must attend compulsory education.¹³ Compulsory education is completed by attendance of formal education as specified in the Basic Education Act, or by learning the facts and skills listed in the basic education syllabus by other means.¹⁴ Compulsory education begins when the child turns seven and ends when the basic education syllabus has been completed or ten years have elapsed since compulsory education began.¹⁵ Compulsory education is usually completed over the course of nine years in general basic education.¹⁶

The objective of basic education is to “*support pupils' growth as human beings and ethically responsible members of society, and to provide them with the knowledge and skills needed in life.*” The Act also emphasises facts and skills related to civic education, equality and lifelong learning. The objective of basic education is to create educational equality in Finland.¹⁷

Around 560,500 pupils attended comprehensive schools in more than 2,300 schools in 2018.¹⁸ Municipalities are obliged to organise basic education, but it can also be provided, with the appropriate permits, by another party.¹⁹ According to the latest percentages, 95 per cent of basic education has been organised by the municipalities. The remaining 5% of providers receive government grants based on the number of students, that is, operate partly on the basis of state funds.²⁰

Secondary education

After comprehensive school, 90% of the students enter secondary education. Secondary education includes general upper secondary schools and vocational training. Youngsters who do not choose or cannot get a study place straight after comprehensive school have the opportunity to return to free education later.²¹ Following comprehensive school, students in upper secondary education can select between general upper secondary school or vocational education and training (VET), both of which usually take around three years. It is also possible to complete more than one set of secondary level qualifications at a time. This is known as a double qualification, the most common of which is a combination of vocational education and training and general upper secondary school.²²

As its name implies, general upper secondary education provides a general education and a stepping stone to tertiary education. According to the Act, the purpose of upper secondary education is to “*support students' growth into good, balanced, well-educated individuals and active members of society, providing them with the necessary facts, skills and capabilities they need in working life and their hobbies, and for versatile personal development. The purpose of education is also to provide students with tools for lifelong learning and self-development.*”²³

General upper secondary education includes taking nationwide matriculation examinations at the end of this stage. The matriculation examinations consist of four compulsory exams, consisting of the student's mother tongue and any three of the

Teaching supports pupils' growth as human beings and ethically responsible members of society.

following: Finland's other official language (Finnish or Swedish), a foreign language, mathematics and one subject measuring general skills (such as the natural sciences or psychology). Students can take other examinations in addition to the above four (such as two foreign languages). The matriculation examinations are the only standard exams for all students in the Finnish education system.^{24 25}

Vocational education and training provides basic professional skills and qualifications in a certain field.²⁶ Vocational education qualifications include vocational upper secondary qualifications, further education qualifications, and specialist vocational qualifications. By law, the purpose of vocational education and training is to “*improve and maintain the population's vocational expertise; provide the opportunity to demonstrate one's professional skills regardless of how they were obtained; develop the labour market and business life, meeting its needs and promoting employment; provide readiness to work as an entrepreneur and maintain one's working and working capacity; and to support life-long learning and professional growth.*”²⁷ Vocational education and training is based on practical aspects and close cooperation with the labour market.²⁸ Both general upper secondary education and vocational education and training make a student eligible for higher-level education.²⁹



Strengths and challenges of the Finnish education

Finland is continuously trying to develop its education system, which is why it became a world leader in terms of educating for the future³⁰. Finland will not rest on its laurels, but is continuously seeking innovative ways of teaching by renewing its early childhood education and care, and general basic education and general upper secondary education, curricula in cooperation with the teachers and academic researchers. The structure of this development work also prevents politically motivated changes to the basic education or general upper secondary education curricula by Finland's four-year governments; educational reforms are implemented in the longer term, for 5 to 10 years at a time.

The Finnish education system has been praised in PISA studies. According to the 2015 PISA studies, the Finnish education system promotes the learning of cooperation skills on a very equal basis. Finland comes second, after Iceland, in terms of differences between schools. Moreover, Finnish students' socioeconomic backgrounds had very little effect on collaborative problem-solving in comparison to other countries that were successful in the study. Young Finns come third, out of the OECD countries, in terms of their skills in the natural sciences. With regard to reading literacy, Finns have remained among the top countries, as they have in mathematics. However, an alarming development has seen boys and children with an immigration background faring less well at school.³¹

Although various educational comparisons are a source of interest in Finland, the country's education system is not developed from the viewpoint of external inputs, but is studied systematically and in the long term within Finland. Indeed, it is the task of the Finnish Education Evaluation Centre to assess the Finnish education system holistically and at all levels.³²

According to the FINEEC's 2019 report on the education system, Finns' educational strengths lie both in cooperation at multiple levels within the system, as well as outside it. The report also states that the Finnish education system has managed to respond to topical social phenomena such as the accelerating development of information and communication technology; global, sustainability-related problems; and making education meet the needs of working life. According to FINEEC, basic education and general upper secondary education have been one of the strengths of Finnish education in recent years, by taking account of learners' specific needs in early childhood education and care in particular.³³ The Finnish education system has also been distinguished by its wellbeing services in international comparisons.³⁴ For example, free health care services, school meals and transportation promote pupils' overall wellbeing in Finland.

Justice and equality have always been the strengths of the Finnish education system, which aims to ensure equal opportunities for all.³⁵ For example, 95% of education is organised by municipalities through public funding,³⁶ and private schools are also supported by the government. Education is also free of charge in Finland. Another of Finland's strengths has been a system based on local autonomy and trust, in which the teaching profession is respected.³⁷ Teacher training in Finland has a scientific basis, which is regarded as a factor which maintains high quality.³⁸

On the other hand, the FINEEC report states that a general education in particular requires support to ensure quality and create strongly established methods of assessing education. In Finland, differences in educational attainment have grown in recent years and seem to grow further as students progress through the education system. However, developments in Finland are in line with international trends regarding inequality – other countries are also struggling with divergent learning achievements that usually stem from the students' backgrounds.³⁹



Helsinki – the world's best place to learn

The City of Helsinki is Finland's largest municipal provider of education. The City of Helsinki's Education Division provides early childhood education and care, comprehensive school, upper secondary and liberal adult education for all people in Helsinki. The City is not responsible for organising tertiary education. This report primarily discusses general education.

Everyone is given an equal opportunity to learn in the best possible way, and every school in Helsinki is just as good as the next one, regardless of its location.

In Helsinki, some 90,000 people are growing up and being educated on a daily basis in various learning environments within the city, including early childhood education and care, basic education, general upper secondary education and vocational education and training, as well as adult education centres. The Education Division's more than 13,000 professionals ensure that learners of all ages are provided with high-quality and equal education and learning opportunities.

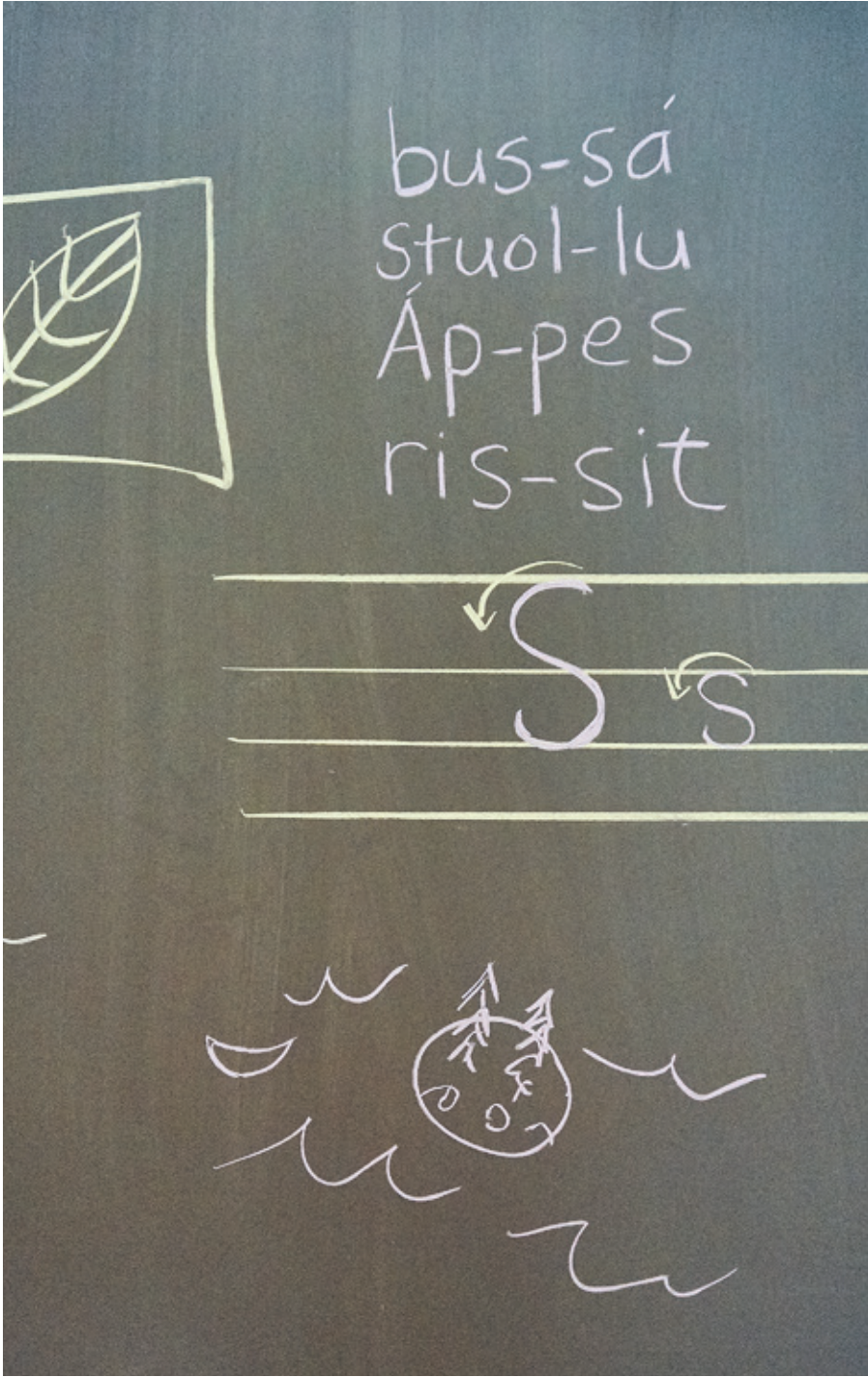
As an educational vision, 'Helsinki – the world's best place to learn' emphasises the significance and impact of learning for all individuals and the whole city. Education providers rely on doing things together, a human-centred and solution-oriented approach, and creativity. Their way of working has been summarised as *"experimenting, together, learning"*. Providers encourage new, daring and open-minded educational experiments.

Helsinki aims to reduce inequality by aiming for equal education opportunities. Everyone is given an equal opportunity to learn in the best possible way, and every school in Helsinki is just as good as the next one, regardless of its location. The city's Education Division is in charge of the Mukana project (Youth Social Inclusion) with the aim of reducing social exclusion amongst young people and inequality between city areas.

Helsinki's urban strategy has identified various areas for learning and competence development. The strategy focuses on pedagogically versatile learning opportunities, guaranteed through continuous development of pedagogy, learning environments, learning processes and competencies. This ensures that education in Finland is modern and versatile, makes use of digital tools and meets the future needs of working life. Pedagogy emphasises learners' strengths.

A healthy and motivated learning community is being built in Helsinki by means of motivated staff and participatory leadership. Pupils and students are included in the educational development. Healthy and safe learning environments improve the learning community's wellbeing and motivation. In Helsinki, teaching is not limited to school premises; the whole city serves as a learning environment. Schools and other educational institutions organise a certain proportion of their teaching outside school premises. This enables pupils and students to learn about many aspects of the city and thereby expand their learning.

Teaching and learning in Helsinki are attracting widespread attention. In 2018, a total of 75 international visitor groups, with more than 1,400 persons, visited the City of Helsinki's daycare centres, schools and educational institutions. Guests and international media representatives arrived from almost 50 countries during the year.



Education in Helsinki in figures

Helsinki is Finland's largest city, and its most diverse in terms of its population. This is also reflected in the range of educational services offered by the city. For example, Helsinki has more than the average number of foreign-language and out-of-town learners, both percentage-wise and in real terms, compared to any other Finnish city. The tables below show the City of Helsinki's Education Division's key figures concerning pupils and learners.

Every fifth learner in Helsinki speaks some other language than Finnish or Swedish as their native language.

Figure 2. Number and participation rate of children in early childhood education and care.⁴⁰

The number of children in early childhood education and care is 6 percentage points lower than the national average (79%), according to the OECD 2019 report.

	2015 participation number · rate	2016 participation number · rate	2017 participation number · rate	2018 participation number · rate
0–2-year-olds	5,840 · 28.7%	6,037 · 30.0%	6,346 · 31.8%	6,230 · 32.2%
3–5-year-olds	16,443 · 86.3%	17,014 · 87.9%	17,539 · 88.6%	17,980 · 90.0%
5-year-olds	5,735 · 90.6%	5,698 · 90.9%	5,952 · 92.0%	6,246 · 93.5%
6-year-olds	5,570 · 92.6%	5,906 · 93.5%	5,854 · 93.0%	6,128 · 94.6%

The figures for the children on 31 December, 2018. The figures include the city's daycare centres, family day care, purchased daycare services and private early childhood education and care.

	2015	2016	2017	2018
Finnish	18,922 · 76.2%	19,484 · 75.6%	19,570 · 74.3%	19,520 · 73.0%
Swedish	1,745 · 7.0%	1,847 · 7.2%	1,894 · 7.2%	1,944 · 7.3%
other	4,152 · 16.7%	4,440 · 17.2%	4,865 · 18.5%	5,274 · 19.7%

The figures for the children on 31 December, 2018. These figures include municipal daycare, family day care and purchased services.

Figure 3. Number of students in basic education.⁴¹

Urbanisation is having a positive effect on Helsinki's growing economic region. The city has a positive net migration rate, meaning that the number of families with children, in particular, has grown quickly. This is having a visible impact on the city, in the form of numerous school construction and expansion projects.

	2015	2016	2017	2018
entire city	48,543	49,744	51,071	52,589
comprehensive schools run by the city*	38,595	39,762	41,159	42,530
of which Finnish-language comprehensive schools	35,268	36,327	37,627	38,975
of which Swedish-language comprehensive schools	3,327	3,435	3,532	3,555
state and private schools	9,948	9,982	9,912	10,059

The number of pupils are the average of two days when a head count was taken (20 September, 2018).

* These figures do not include education in hospitals.

	2015	2016	2017	2018
foreign-language pupils	6,854	7,387	8,078	8,489
with Finnish-language basic education	6,805	7,320	7,993	8,389
with Swedish-language basic education	49	67	85	100
percentage of foreign-language pupils	17.5%	18.3%	19.3%	19.7%
number of Finnish as a second language pupils	7,047	7,498	7,955	8,421
percentage of Finnish as a second language pupils	19.7%	20.4%	20.8%	21.4%
pupils in special needs education	4,234	4,463	4,842	5,043
with Finnish-language basic education	4,011	4,197	4,555	4,744
with Swedish-language basic education	223	266	287	299
percentage of pupils in special needs education	10.8%	11.4%	11.9%	11.7%
integration pupils	1,498	1,653	1,916	2,015
preparatory education for immigrant pupils	347	408	514	403
pupils in language immersion education	823	843	893	896
pupils chosen through aptitude test	4,388	4,260	4,353	4,292

The number of pupils are as calculated on 20 September, 2018.

Figure 4. Number of students taking part in general upper secondary education.⁴²

After comprehensive school, pupils can apply to any general upper secondary school. Helsinki not only offers a secondary education to all of its own residents who finish comprehensive school, but students also come from elsewhere to study. In addition to general upper secondary schools maintained by the city of Helsinki, some general upper secondary schools are private or maintained by the government. Their student numbers are not included in these comparisons.

	2015	2016	2017	2018
general upper secondary school students, entire city	15,493	15,305	15,133	15,517
students in general upper secondary schools run by the city	7,986	8,006	8,013	8,103
of which Finnish-language general upper secondary schools	6,796	6,839	6,850	6,895
of which Swedish-language general upper secondary schools	1,190	1,167	1,163	1,208
students in general upper secondary schools for adults run by the city	413	378	357	430
of which Finnish-language general upper secondary schools	372	344	317	385
of which Swedish-language general upper secondary schools	41	34	40	45
general upper secondary school students in private and state-run schools	7,094	6,921	6,763	6,984
students of only specific subjects in general upper secondary school run by the city	1,582	1,854	1,860	1,569
of which Finnish-language general upper secondary schools	1,438	1,736	1,642	1,421
of which Swedish-language general upper secondary schools	144	118	218	148
students in general upper secondary school run by the city entitling to statutory government transfer	432	488	429	451
of which Finnish-language general upper secondary schools	365	351	336	326
of which Swedish-language general upper secondary schools	67	137	93	125
students in preparatory education in general upper secondary school run by the city	40	38	44	47

The number of students represent the whole year, that is, an average of the spring and autumn figures.

	2015	2016	2017	2018
foreign-language students	811	871	984	1,051
of which Finnish-language general upper secondary schools	806	863	973	1,034
of which Swedish-language general upper secondary schools	5	8	11	17
percentage of foreign-language students	9.6%	10.3%	11.6%	12.4%
number of Finnish as a second language students	646	695	800	888
percentage of Finnish as a second language students	8.9%	9.7%	11.1%	12.4%
students from outside Helsinki	2,595	2,596	2,700	2,738
of which Finnish-language general upper secondary schools	2,111	2,108	2,191	2,236
of which Swedish-language general upper secondary schools	484	488	509	502
percentage of students outside Helsinki	30.6%	30.8%	31.8%	32.4%
students completing a double degree	336	343	360	417

The number of pupils are as calculated on 20 September, 2018. The figures do not include students in general upper secondary school for adults.

Figure 5. Number of students taking part in vocational education and training.⁴³

Vocational education and training is a type of upper secondary education. If they so wish, students who have completed comprehensive school are given a study place in vocational education and training. One of the key differences between general upper secondary education and vocational education and training has been the quickly rising number of foreign-language students in vocational education and training (16.9 percentage points in four years), which can be explained by the rise in the number of immigrants and refugees.

	2018
students of Stadin ammatti- ja aikuisopisto, average for the year	9,812
with training entitling to statutory government transfer	7,636
with further education entitling to statutory government transfer	281
of which students in apprenticeship training	1,895
education at educational institution	7,916
of which basic education at educational institution	7,247
of which further education at educational institution	281
of which preparatory training for vocational education	388
apprenticeship training	1,895
of which basic education in the form of apprenticeship training	614
of which further education in the form of apprenticeship training	1,281

The figures represent averages for the year.

	2015	2016	2017	2018
number of students with special needs	745	870	858	658
percentage of students with special needs	8.3%	9.7%	9.7%	7.2%
number of students completing a double degree	327	260	189	204
percentage of students completing a double degree	3.6%	2.9%	2.1%	2.2%
number of foreign-language students	1,836	2,111	2,851	3,433
percentage of foreign-language students	20.4%	23.7%	32.3%	37.5%
number of students from outside Helsinki	2,517	2,383	2,275	2,431
percentage of students from outside Helsinki	28.0%	26.7%	25.8%	26.5%

The number of pupils are as calculated on 20 September, 2018.

System-level innovations in Helsinki

High-quality learning for everyone

Like the rest of Finland, Helsinki abides by a strong principle of joint development. Effective and functional operating practices are shared between schools, cities and municipalities. The goal is to focus on the student's learning, and enable good learning results for each learner.

As the world around us has become more complex, new and versatile skills have been required in order to get by within it. Daycare centres and schools help children and youngsters to grow into the multifaceted world around them. Technology enables individual learning methods and new approaches for collaboration.

At all levels of education, emphasis is placed on transversal competences and learning. Transversal competence is a holistic way of understanding individual learning which is conducive to humanity, through knowledge, skills, values and attitudes. This is reflected in the National Core Curriculum for Early Childhood Education and Care (2018), the National Core Curriculum for Basic Education (2016) and in the future National Core Curriculum for General Upper Secondary Schools (2021), which all aim to create a unique learning path for each learner. In practice this means implementing comprehensive learning and cross-overs between school subjects. Learning takes place across subject boundaries and learners are involved in the planning and assessment of their own learning.

Learn more

If you are interested in learning more about the operating practices of the City of Helsinki's Education Division, see:

- www.hel.fi/kasvatuksen-ja-koulutuksen-toimiala/fi
- www.helsinkioppii.fi/en

In Helsinki, the focus has been on utilizing the experimental culture as part of the development of education division. Learning doesn't happen only in classrooms when the whole city of Helsinki is seen as a learning environment. In recent years, Helsinki has also invested in the digitalisation of institutions, development of expert teachers network and early language learning.

The operating models and solutions presented in this report are used extensively in Helsinki's public education system. These operating models have been developed as part of public education, and some aspects have also been applied in other Finnish cities and municipalities. We hope that the solutions and operating models in this report inspire actors in Finland and abroad to implement such operating models across entire cities. The City of Helsinki's activating culture and open introduction of its operating models can be considered an encouraging demonstration that systemic change in the implementation of innovation is indeed possible.





Learners investigate real phenomena in the world, thereby adding to the building blocks of their own learning.

Phenomenon based learning

The key aspect of phenomenon based learning is the related multidisciplinary and collaborative learning process – rather than a single project or individual outcome of what was learned. Phenomenon based learning means taking a multidisciplinary, collaborative, investigative and learner-centred approach to world phenomena. These phenomena put learners in charge of their own learning and enable them to study multifaceted and multidisciplinary subject groupings in depth. This is why teaching periods dedicated to each phenomenon must be sufficiently long.

In phenomenon based learning, the acquisition of the comprehensive competences highlighted in the curriculum can be accomplished in various ways. Phenomenon based learning consists of the following stages:

1. Studying the phenomenon begins by setting common goals and specifying the assessment criteria. The goals stem both from those set for the subjects' curricula and related to the phenomenon, and others based on the learner's own starting points.
2. Learners become enthusiastic and motivated about phenomena through texts, images, videos, visits and brainstorming.
3. They chart their personal preconceptions about the phenomenon and their hopes and targets regarding it, and ask questions of their own about what they want to learn.
4. During the research and data acquisition stage, learners immerse themselves in the phenomenon by examining it, visiting museums, or contacting experts. The range of information is jointly categorised.

5. During the phenomenon process, the focus is on sharing what you have learned; the goal is to state, in concrete terms, what you have learned and how it affects the future. Portfolio learning is very important so that the learners leave a record of what was learned during the process.

The multifaceted nature and challenging aspects of phenomena in the world require increasing levels of expertise, an investigative and multidisciplinary approach, and keeping abreast of topical issues. Phenomenon based learning challenges teachers to cooperate across subject boundaries, and to share their expertise. Cooperation also takes place with experts outside the school; this could mean researchers, parents or representatives of various organisations.

“We want to offer children and young students optimal learning opportunities, and a phenomenon based approach offers just this. Phenomenon based learning is flexible and open to change. It emphasises community spirit, cooperation skills, the application of data, and creative and critical thinking. It will help us get to the heart of the new kind of learning.”

– LIISA POHJOLAINEN, EXECUTIVE DIRECTOR OF EDUCATION, CITY OF HELSINKI

Target group

- Learners at all educational levels

Year established (in present form)

- 2018 early childhood education, 2016 basic education, 2013 general upper secondary school

EXAMPLE Phenomenon model in large schools

HIIDENKIVI COMPREHENSIVE school in Tapanila has a total of around 840 pupils in grades 1 to 9. Hiidenkivi is the local modern and communal school.

It aims to create a phenomenon model suitable for a large single-structure comprehensive school and its period system, and forming part of everyday school activities. One phenomenon lasts an entire period and is shown in the timetables in the same way as subject lessons. The idea was to create a multidisciplinary approach and the crossing of subject boundaries into a daily school routine. Objectives for the phenomena primarily arise from the subjects' competence-based targets.

The idea was not that the entire school would study the same phenomenon, but that themes would be chosen for each grade. The school brought together a representative group of pupils to brainstorm on what kind of interesting phenomena should be studied in different grades. Around half of these phenomena were developed during the seminar, and the rest were decided on by the teachers. The rule of thumb was that the phenomenon should not be too limited, in order to leave space for the pupils' own perspectives. Phenomena favoured by the pupils included labour market skills (9th grade), creating your own thing (4th grade) and forest (3rd grade).⁴⁴

EXAMPLE Phenomenon course with multiple collaborators

THE ARCTIC REGION was the theme for the academic year 2018–2019 at the Helsinki School of Natural Sciences. This subject was particularly topical that year, because Finland was chairing the Arctic Council. Course participants learned about nature, human activity and the impact of such activity on the delicate environment of the Arctic region. They also studied the position, languages and cultures of indigenous peoples.

Interaction between the students and teachers of Helsinki School of Natural Sciences and Ivalo general upper secondary school. Another key element was the opportunity to follow the activ-

ities of researchers and decision-makers at meetings of the Arctic Council and UArctic. The goal was to combine theory and practice, research and meetings, and to find out how issues should be carried forward in practice.

The Arctic course consisted of 34 course credits which the students could compile from the courses they chose. Some of the courses were common to all students. The course began with a kick-off lecture for all, and ended with a joint lecture. Other courses could be chosen freely. Students kept a study diary, which formed part of the portfolio created as a by-product of the course.⁴⁵



It is important for everyone to
“have a voice, be heard, hear others,
receive an answer, present an answer
and build understanding together”.

Learners as decision makers

Participation is clearly a common practice in the City of Helsinki’s Education Division. By law, the education provider must hear pupils and students with regard to decisions that have a significant effect on their position, and encourage them to become involved in their school’s operations and development. One of the key aspects of education consists of enabling learners to have a say and be heard, and to take part in the school’s activities.

The schools, general upper secondary schools and Stadin ammatti- ja aikuisopisto have student councils, the purpose of which is to promote opportunities to influence matters and participate. Student council representatives also sit on the school boards, contributing to the school rules and operating plans.

A youth council is elected at city level. The city has also decided on participatory budgeting, where children can submit proposals and anyone over the age of 12 can vote how the money will be used.

One of the tasks of the pupil and student councils is to create and maintain a pleasant atmosphere and thereby help to reduce bullying. Listening to and valuing other people’s opinions and respecting everyone are of primary importance. These democratic skills are learned and taught in group work throughout life.

Most schools in Helsinki have systems whereby more senior pupils support younger ones, and have various food, environmental and media groups that independently support the operating culture’s development. Activities like this include reducing food waste, producing the school’s social media and improving school satisfaction.

“When the city makes decisions about matters that affect pupils, they also listen to what we have to say. We meet politicians, write statements and let the adults hear how we young people feel about things. We can really affect things.”

– MILJA, 9TH-GRADER

Target group

- Learners at basic education and upper secondary level

Year established (in present form)

- 2016

EXAMPLE All pupils take part in developing the school

THE MANAGEMENT of Tapanila comprehensive school (grades 1–6) decided to include participation lessons in the school timetable for all pupils and teachers. The idea is that pupils take part in one participation group, together with their teachers. Participation groups enabled the pupils to affect the daily activities of their school. At the same time, pupils understood the significance of taking part and making a difference.

This was made possible by arranging time for a common participation lesson involving the entire school (about

1 hour per month). This was based on “compulsory” participation groups: pupil council, environmental group, media group and exercise group. In addition to these, there were groups that served the school’s needs and increased school satisfaction.

As a result, the pupils have learned to appreciate what participation and influencing mean. The sense of community has also been enhanced by interaction across grade boundaries, and the number of events organised by the school has increased, with pupils participating actively.⁴⁶

EXAMPLE Pupils agreeing on exam dates

IN RESSU COMPREHENSIVE school, the teacher sums up what has been studied and explains what skills must be mastered before moving onto the next module. The teacher then asks the pupils how they would like to prove that they have achieved the necessary level. The pupils can decide between themselves whether they wish to take an exam. The teacher can remind them that there are alternative evaluation methods.

If the pupils wish to have an exam, they agree jointly on the date for it. The class must be able to reach an agreement on a suitable exam date. They may also agree on a practice lesson and reserve time for a tutor lesson if someone feels that some aspects of the course material remain unclear. Pupils approach the teacher if they wish to have a tutor lesson. Everyone will have a chance to attend one.⁴⁷



In Helsinki, language learning begins in the 1st grade, and the first steps are already made in early childhood education and care.

Early language learning

Helsinki's new language programme was launched in August 2018: all 1st-graders will start a new language as they begin school. In Helsinki, the alternatives for the first new language are English, Spanish, French, Swedish, German, Northern Sami, Russian, Estonian or Chinese. Before starting school, children learn about languages in early childhood education and care and pre-primary education through play, songs, games and other activities.

Helsinki's goal is to improve its residents' language skills. Thanks to their strong language skills, the people of Helsinki will be able to cooperate in their international home city and around the world in a range of languages. Helsinki is trying to achieve this by starting language studies even earlier than before in order to make use of children's natural ability to learn and speak new languages. Language studies also teach children thinking and learning skills and tenacity.

In every case, language teaching takes into account the learner's age; to begin with, languages are taught through play, songs, games and activities. Language teaching is inspiring and requires participation. For example, pupils can select what subjects the language lessons cover. Assessment is there to support the pupil's learning, and is encouraging in nature. Appropriate use is made of digital tools to aid learning. Early language learning emphasises oral skills, practising pronunciation and intonation, and the joy of learning something new.

"Helsinki was the first city in Finland to begin teaching foreign languages from the first grade onwards. A key aspect of this is that learners have a wide selection of languages to choose from, including Chinese, Estonian, Spanish, German and French as well as English."

– PIA PAKARINEN, DEPUTY MAYOR FOR EDUCATION

Target group

- Learners at basic education

Year established (in present form)

- 2018

EXAMPLE Organising language teaching

THE HELSINKI SCHOOL network has been planned so that a number of languages can be studied in each of the five areas. In line with the city's strategy, language studies are considered important. Each pupil has a chance to learn languages and the language selection is wide in schools. In addition to this, pupils in Helsinki can progress further than the national requirement in their studies of common languages.

Study of the first foreign language or one of Finland's official languages (Finnish or Swedish) begins in the 1st grade. In grades 1 and 2, studying focuses on activities, games, play, the joy of learning and developing oral language skills. All pupils start another foreign language in the 6th grade. In addition, pupils can select another language to study, starting in grades 4 and 8. In Helsinki, they can study English, Spanish, Italian, Chinese, Latin, Northern Sami, French, Swedish, German, Russian or Estonian.⁴⁸

EXAMPLE Public debating in a foreign language

AS THE VOLUME of hate speech, fake news and infotainment increases, in social debate and politics there is a high demand for genuine dialogue, information, source criticism and proper debate based on facts. The course discussed how to construct a good argument both under the guidance of a teacher and in teams, and a lot of the time in front of an audience. This was all done in English.

Teachers were taught about the secrets of debating through two periods of co-teaching, on the basis of the World Schools Debate format. The course was taught in cooperation with the debating societies of Aalto University and the University of Helsinki. The students also took part in the Talk the Talk event

organised by the Slush organisation. Course participants learned about compelling argumentation, self-control and performance.

Each student had their own, personal goal. The most talented students fine-tuned eight-minute speeches to acquire structures that have the maximum impact, while beginners learned to speak in English in front of an audience, extending their speeches once they had enhanced their debating skills.

The participants exceeded their expectations of self: "I just talked in front of an audience about inheritance tax, a subject I didn't know anything about previously – how did this happen?"⁴⁹



Children attend their local daycare centre or school, where they can receive the services and support they need.

Local daycare and school

The idea behind the principle of children attending their local daycare centre and school is to treat all children equally, enable their participation in local activities, and make friends in the neighbourhood. When selecting a local daycare centre or school, the key issue is that the child receives the necessary services and support as close to home as possible. A child's local daycare centre or school may also be determined on the basis of where the child's inclusive services can best be provided.

Each child has the right to be cared for and educated close to home. Pre-primary and basic education is free. Early childhood education and care and basic education must promote equality between children and prevent social exclusion. Education must be accessible and provide all children with the possibility to attain the related skills. The facts and skills children learn enhance participation, active membership, long-term friendships, taking initiative to ensure safety, and promote exercise and healthy life choices.

Care and education are organised appropriately and flexibly by a joint decision. Learning environments are modified, and teaching makes use of flexible groups, co-teaching and staff competences, taking each child's needs into account.

Schools have nurses, social workers and psychologists, and part-time special needs teachers to cater for each child's individual needs. Any support measures are planned, implemented and assessed by a multidisciplinary team. To ensure a smooth learning path, it is crucial to have a proper plan for the transitions between early childhood education and care and pre-primary and basic education. If necessary, a special needs assistant may be appointed for a pupil.

"Pupils learn from an early age that we are different, learn in different ways and at varying speeds, but can still do things together, form a community and learn together."

– ANNE SAVOLAINEN, TEACHER

Target group

- Learners at early childhood education and basic education

Year established (in present form)

- 2018 early childhood education, 2016 basic education

EXAMPLE Active and 'tasty' meeting for parents of new first-graders

THE KATAJANOKKA comprehensive school (grades 1–6) organised an active parents' meeting, with a tour of the school premises. Guardians were invited by the pre-primary education team via the school website.

The meeting began with food tasting in the lunch room, in cooperation with the Service Centre that provides

school meals. First there was a brief round of introductions. This was followed by a tour of the school in groups. Every item on the agenda was discussed during the tour. For example, languages were discussed in the language class, handiwork in the handiwork class, and the groups toured the social welfare premises and sports facilities.⁵⁰

EXAMPLE Inclusive teaching

AN INCLUSIVE SCHOOL means a common school for all pupils. The goal is to ensure that each pupil receives the support they need within their group. This is a method by which pupils share their daily school routines and form a shared group. In the case of inclusive teaching, all pupils study in the same group, making flexible use of various premises.

The inclusive teaching model can be implemented in the form of pair work, which benefits both the pupils and teachers, and improves teaching quality. Regardless of any need for support, the objective is to make the pupils study together, led by the class teacher and special class teacher.

Implementing the inclusion model places higher requirements on school

premises. The building must enable teaching differentiation and flexible teaching arrangements. This can be done if there are separate but interconnected facilities. It is OK to be creative about the use of school premises: not only the classrooms, but also the corridors, yard, meeting rooms and gym can be used for teaching.

In inclusive teaching, groups are primarily formed on the basis of the way the group functions, that is, group dynamics. It is also possible to work in a classroom in teams – the use of teaching arrangements is assessed case by case. This model can also be applied in course-form environments in which groups can change in each period: this means that groups can change regularly to become more functional.⁵¹



Teachers act as spearheads of development, training their colleagues around the city.

Expert and tutor teachers

Helsinki focuses on teachers' professional development and school reform. As part of teachers' continuing education, the city has created developer teacher networks to support competence development. Expert and tutor teachers operate across school boundaries and educational levels, promoting the implementation of the latest and best operating models.

The network of expert teachers consists of teachers in early childhood education and care, basic education, general upper secondary schools, and vocational education and training who support schools and educational institutions in the reform of teaching. There are five teams, with a total of around 60 teachers, who develop, create partnerships and share good practices, in addition to performing their own teaching duties. Managers of daycare centres, headmasters of schools and educational institutions and tutor teachers can request training from expert teachers for specific schools and educational institutions. Expert teachers are entitled to have fewer regular lessons each week, in order to share their expertise with other daycare centres and schools. Together with new teachers and headmasters, they develop operating models, learning environments and practical uses of technologies. Their training consists of sharing tried and tested practices and handing out material. They also support the management in the implementation of pedagogical change.

Expert teachers have been divided into five teams:

- Learning environments
- Phenomenon based learning
- Language, interaction and thinking skills
- Portfolio learning, assessment and comprehensive learning (PALO)
- STEAM team (S=Science, T=Technology, E=Engineering, A=Arts, M=Mathematics)

Tutor teachers work on daily issues in comprehensive schools, mentors provide help in general upper secondary schools, and digital agents assist in vocational education and training units. Each comprehensive school has 1–4 tutor teachers supporting their colleagues. Each general upper secondary school has two tutor teachers, who are called mentors. The digital pedagogical team in vocational education and training guides the pedagogical utilisation of digitalisation throughout vocational education and training. Tutors, mentors and digital agents are trained together and act as a network that shares and develops expertise.

“The most efficient way to launch new ideas and pedagogical practices is by having teachers tell their colleagues about such matters.”

– MARJO KYLLÖNEN, HEAD OF EDUCATION DEVELOPMENT SERVICES, HELSINKI EDUCATION DIVISION

Target group

- Teachers at all educational levels

Year established (in present form)

- 2016

EXAMPLE Pop-up school in a library

POP-UP SCHOOL EVENTS are open to all to learn how comprehensive schools in Helsinki go about their teaching duties. You can follow lessons live and ask the teachers and learners questions about the learning situation in Finnish or English.

A pop-up school is a genuine learning situation in which the learner is both the actor and researcher. The teach-

er helps the learner to learn and to find information. At the same time, anyone interested in the subject can learn more about it. For example, the teachers and pupils of Taivallahti Comprehensive School presented their method of phenomenon based learning in the Oodi library in autumn 2019. One of the themes of the pop-up school was the effect of the European Union on our daily lives.⁵²

EXAMPLE Development of digital skills in education

THE CITY of Helsinki supports the development of expertise in digitalisation and information technology as part of teaching and learning in a number of ways. More and more expertise is accumulating through daily work and its development in connection with care, teaching and studying in daycare centres, schools and other educational institutions.

The digital skills of teaching staff and headmasters have been defined at three levels. The Education Division has set the target that all teaching staff will achieve the first level, 90% the second level and 20% the third level by the end of 2019.

Competence development is supported by developer teacher networks. These cover the entire city and all levels of education. General education special teachers operate at all levels of the city. The digital pedagogical team in vocational education and training guides the pedagogical utilisation of digitalisation throughout vocational education and training. Tutor teachers work on daily issues in comprehensive schools, mentors help in general upper secondary schools and digital agents provide assistance in vocational education and training units.⁵³



Learners document their own learning on digital learning platforms, creating various content and sharing what they have learned with each other.

Smart learning environments

Daycare centres and schools help children and youngsters to grow into the multi-faceted world around them. Technology enables individual methods of learning and new ways of collaborating. The City of Helsinki offers learners equal opportunities to use smart technology in a pedagogically appropriate manner. Learners practice skills that will enable them to act in and influence society in the future.

With virtual reality applications, learners can be transported to distant places and environments or eras that would otherwise be inaccessible (such as rainforest, lunar surface, the bottom of the sea or the Middle Ages). Augmented reality tools enable pupils to plan their school yards. An immersive space makes it possible to bring targets and learning environments, which would otherwise be inaccessible, close to learners.

Smart learning environments are enabling teachers to plan and implement much more versatile learning modules than previously. Learners in Helsinki have access to plenty of technology, both free and licensed digital material, and various physical and virtual learning facilities that can support their learning. Smart learning environments are already used in early childhood education and care, continuing throughout the learning path.

“The idea of a smart learning environment is to create a forum where technology assists the learning process; it is not there to make things harder or make you lose your focus, but to enhance the learning experience.”

– KARRI MEHTELÄ, ICT PROJECT MANAGER, HELSINKI EDUCATION DIVISION

Target group

- Learners at all educational levels

Year established (in present form)

- 2016

EXAMPLE Image adventures in a self-built city

IN 2015–2016, learning revolved around a “city” theme, which included a variety of activities. The largest single project in a daycare centre in Katajanokka involved building a city of their own. The learners first learned about urban planning and zoning. Each child designed their own building, creating it out of recycled materials. The buildings were made into a city that was painted and included roads, parking areas, parks, a river, a bridge and even a graveyard!

Manipulated photos had appeared in a newspaper in which Star Wars characters had taken over Helsinki, and the Death Star was hovering over Helsinki Cathedral. The young Star Wars experts wondered whether the images and video were real and concluded that no such pictures could exist unless the events they depicted had really happened.

This raised a genuine need to practice media literacy and talk about pictures in the media, resulting in the idea that we could practice image and video pro-

cessing by using the city we had built. We decided to make images in which the children were in the city and an animation in which a bus drives along the city streets. We started by taking photos. We used a tablet to take photos of the city from different angles, from close by and at a distance. The children were photographed against a single-colour background.

Once the child's image had been separated from the background, an application was used to superimpose it on a photo taken of the city. The children decided which part of the city they wanted to be in. For some it was important to be close to their own house, others wanted to walk in the middle of the street now that it was OK to do so, while some children had an adventure in the graveyard or were peeking from behind houses. We also created an animation in which a bus we had built drives around the city, picking up the children, after which all the children get off the bus and the bus leaves the city.⁵⁴



Learners in comprehensive schools, general upper secondary schools and vocational education and training practised running a game in the form of play, a game or in a real environment.

Entrepreneurial and work life skills

Entrepreneurial and work life skills prepare learners for future requirements once they enter the labour market. Improving joint development between companies and schools and educational institutions lies at the core of this issue – future working life skills are learned through practical entrepreneurial experiences.

Working life requires initiative, self-guidance and an entrepreneurial approach. In terms of transversal competencies, the basic education and secondary education curricula stress labour market skills, entrepreneurship and active citizenship. Identifying your strengths improves your self-esteem and enables you to plan the kind of life that suits you. Entrepreneur pedagogy boosts a learner's courage in tackling new challenges, while improving their creativity, responsibility, initiative and decision-making.

All basic education pupils (in grades 8 and 9) gain a few periods of work experience, lasting a few weeks, with a company. Each 6th and 9th grader also takes part in various learning environments, consisting of, for example, a miniature city in which the student works and receives a salary, or runs their own business and sells products to customers. The pupil also plays a role in a miniature city as a responsible consumer and citizen. Entrepreneur training is also connected to the theme of sustainable development and teaching about the circular economy. Schools, general upper secondary schools and vocational education and training also provide courses and workshops that focus on drawing up a CV, the planning of self-branding, or starting a business. Many pupils and students also cooperate with start-ups or other companies.

In addition, they learn about corporate life through the development of their own innovations and productisation. Innovation education may also result in new prod-

ucts for learners, which can have commercial potential. The idea is that learning environments do not have to be limited to school premises, but can also be located in companies, organisations and workplaces.

“I was interested in becoming an entrepreneur and wanted to give it a go. On an entrepreneur course, you can start a real company and begin running it. We thought of a ‘Koulusafka’ (School Lunch) application with which you can check what’s for lunch. It’s still running.”

– MARLEENA, GENERAL UPPER SECONDARY SCHOOL STUDENT

Target group

- Learners at basic education and upper secondary level

Year established (in present form)

- 2016

EXAMPLE ‘Me as a Brand’ course

THE GOAL OF THE COURSE is to have students see themselves as capable and skilful arts professionals and employees, whose expertise and work would be of interest to various customers and social actors. The students were very enthusiastic and motivated to complete real assignments for paying customers as part of the course.

The participants learned about their own competences, discussing skills and attitudes. Most of the work revolved around a real assignment: how to

communicate with customers about your own skills, how to listen to the customer and work towards a goal, how to work in a team whose members know different things, and how to stick to a schedule.

The key starting point for learning was problem-oriented and experimental working. Technology was utilised wherever appropriate to achieve the course targets in terms of information acquisition, work processes and tools for personal expression.⁵⁵

EXAMPLE Entrepreneur courses

ETU-TÖÖLÖ Upper Secondary School focuses on entrepreneurship, which has yielded some exceptional results. It was awarded a prize in 2017 in Tallinn as the only and best Entrepreneurial School of the Year. This was the second time running that the school has received a prize for entrepreneurship. The previous prize was given in 2016.

Of the school's 650 students, more than 200 take the various entrepreneur courses on offer. One example of the outcomes of the entrepreneur course is the Koulusafka application, with which students in Helsinki and

Vantaa can view schools' lunch menus. In the case of certain schools, they can even see when it's their turn to have lunch. The lunch menu of some 200 schools is currently available via the application; in the future, the idea is to expand this to cover the entire country.

Various entrepreneurship events are organised and the school has created its own entrepreneurship education model, which is being actively developed in an entrepreneurship team and led by teachers. Etu-Töölö Upper Secondary School engages in active cooperation with the actors around it.⁵⁶



In Helsinki, the whole city is viewed as a learning environment in which learners and teachers can move around freely and learn about real phenomena in an authentic environment.

Whole city as a learning environment

The whole City of Helsinki can be regarded as a large learning environment in which learners work actively. Instead of learning taking place only at school and in the classroom during the school day, learning is now viewed as something tied neither to time or place.

Helsinki wants to make the learner's role more active than previously: in this way, you can emphasise a learner's ownership of their own learning. To achieve this target, it is crucial to learn through authentic phenomena. Because the Helsinki Regional Transport Authority offers free transport to basic education groups and their teachers during school hours, no costs are involved in travelling to the sources of authentic phenomena. Digital applications, devices and platforms enable learning and the related work outside as well as inside the classroom.

A diverse natural environment, cultural history and cooperation with various sectors offer a rich learning environment for learners of all ages. All of the city's parks, playgrounds, museums, theatres, cultural buildings and libraries are learning environments. In Helsinki, nature is nearby and available. The city's nature schools are very popular. There are forest pre-schools where, as a rule, everything is done out of doors.

When learning moves out into the surrounding society and close to world phenomena, deeper learning occurs and the learning process is connected to the learner's own world. This also means less sitting in a classroom and more exercise than previously. Learners have taken part in film-making and joint productions have been cre-

ated with the city orchestra and National Opera. The city's sports-oriented schools also work in close cooperation with sports clubs and federations and the Olympic Committee; it is not uncommon to cooperate closely with other cultural and leisure time actors.

"Helsinki is our learning environment. Even in kindergartens children go outside the classrooms and can learn in museums, theatres, libraries, streets, shopping centres and everywhere in the city. In this way, they learn about their home city of Helsinki."

– LIISA POHJOLAINEN, EXECUTIVE DIRECTOR OF EDUCATION, CITY OF HELSINKI

Target group

- Learners at all educational levels

Year established (in present form)

- 2016

EXAMPLE Forest pre-schools

KANAVA DAYCARE CENTRE was the City of Helsinki's first daycare centre to receive the Luonnossa kotoaan ("At Home in Nature") certificate, awarded by Suomen Latu, in 2016. Children in 'At Home in Nature' groups spend time in nature at least three times a week. In practice, however, they go into the woods almost every day.

The groups stay in the woods two to three hours at a time. They may also spend time just outside in the yard.

Weather permitting, pre-schoolers may spend almost the entire day outdoors. However, the younger children have a nap indoors.

The curriculum adopted in 2016 is particularly well suited for forest pre-school activities. The day may begin with a group activity involving nature observation and a joint activity; perhaps a game where the children count up and down in interesting ways.⁵⁷

EXAMPLE Art education with a mobile application

A MOBILE APPLICATION using location data was used on a visual arts exhibition day to prompt students to visit art galleries in Helsinki. The students were divided into small groups that could choose 5 galleries out of 14. The galleries were marked in a map on the game platform. Once they arrived at their chosen destination, the groups viewed the exhibition, completed the related tasks and sent their work to their teacher.

The teachers built the game in advance: they used a map as a game platform, marked the galleries on it and set questions that the students answered in groups. The tasks tapped into the students' creativity, team work and problem-solving skills, and multimedia communication. The teachers also managed the game in real time by evaluating their answers and giving feedback.⁵⁸



Solutions to everyday problems are sought by tinkering, building, constructing and experimenting.

Design and invention pedagogy

Design and invention pedagogy promotes design thinking, resulting in the design of new products, services and ideas. By developing learners' ideas, we can learn skills for the future and build a sustainable future.

Design thinking looks into the future, considering how objects, items, services or experiences could be designed or made into concepts in new ways. Design is used as a method of solving real-life challenges. Learners take centre-stage; they are encouraged to think in new ways and try out various ideas. Their problem-solving skills improve, and any errors are used in the learning process. Learners work in interaction with their environment, making use of any suitable technologies.

The learner's active approach and discovery of personal learning paths are important. Positive emotions, the joy of learning and creating something new give a boost to learning and even further development. The creative process teaches critical thinking and reflection, which are important in today's world. Thinking begins with wondering, and enough time must be allocated to curiosity and imagination in the learning process. Interaction skills also improve in collaborative problem-solving situations. It is important to build a sustainable future, and students are instructed to take account of the consequences of their actions and their impact on other people and the environment, and to innovate by devising more sustainable solutions.

Design and invention pedagogy can be applied in handicrafts, arts and STEAM workshops, or in multidisciplinary learning modules. Learners are challenged to come up with new solutions to problem situations. Games, experimentation and

other functional working methods and various forms of art increase the fun of learning and boost creative thinking and eureka moments.

Learners are instructed and encouraged to select and use materials, tools, equipment and ICT in line with sustainable consumption and the circular economy. Design thinking also guides learners to grow as consumers and appreciate the significance of their choices in terms of sustainability. They can use premises where they have access to technology and digital applications in the learning process. University experts, professionals in creative fields and various expert networks cooperate with teachers and work with learners, developing their ideas and new solutions.

"By tinkering, a student can be transformed from a passive consumer into an active producer and developer. Students often think that school assignments are compulsory and it's only when they get home that they can get to the interesting stuff. At best, a school can nevertheless enable a learner to solve interesting challenges, learn working methods and achieve things."

– LEENU JUUROLA, PROJECT PLANNER

Target group

- Learners at all educational levels

Year established (in present form)

- 2016

EXAMPLE Design of a clothes collection

FASHION DESIGNER Riina Salmi and art and drama teacher Helka Lundell joined forces in 2019, deciding to create a clothes collection together with a group of children. The various work stages included learners from different levels of learning, ranging from comprehensive school to a university of applied sciences.

The collection was created using 100% recycled materials: trash and textile

waste. Responsible design may concern not only the environmental impact but also the effects on society at large, such as social participation and meaningful learning.

The collection consists of unique prototypes, which will be made into the first factory-manufactured collection towards the end of 2019. Learning method, which was created as part of this activity, supports collaboration across different levels of education.⁵⁹

EXAMPLE Maker culture to embrace the world

THE MAKER CULTURE combines doing things with your hands, innovation and the use of technologies. Students create, experiment, innovate, learn and share what they have learned. By making things, students can engage in projects that interest them, such as designing a board game, and board and playing pieces, dice and other equipment with a 3D printer.

The City of Helsinki implemented a project to bring the maker culture into Helsinki schools. The pupils and teachers of six Helsinki schools participated in the maker premises and operations in various workshops. The key observations were compiled into a manual that can be used by anyone interested in the subject.⁶⁰



Student welfare services,
the promotion of mobility,
and school meals are key ways
of ensuring student wellbeing.

Learners wellbeing and healthcare services

A child's wellbeing lies at the heart of all learning. Improving learners' wellbeing in all possible ways promotes learning and a sense of belonging, and provides tools for leading a balance, active and happy life. Each child and young person is important and, regardless of their socioeconomic status or any special needs, they are offered the best possible services free of charge.

Promoting wellbeing and health is stressed in the operations of the entire city. Learners' wellbeing is supported proactively, and in many ways on an everyday level. Learners are viewed as holistic individuals: school supports the learner's physical, mental and social growth and wellbeing, and promotes the adoption of a healthy lifestyle. Student welfare services have been available to children and young people in Helsinki for more than 40 years. Free school meals, available since 1948, are part of learning and the community.

Multidisciplinary student welfare services provided locally maintain a good learning atmosphere and help to prevent bullying and social exclusion. Daily exercise and school meals keep pupils and students going, improve their learning performance, and help them to adopt an active lifestyle and healthy diet. School meals take account not only of dietary recommendations, but also learners' participation and sustainable development. For example, school meals now have more vegetarian ingredients, and food waste has been reduced.

Services in Helsinki are customer-oriented and easily accessible. Wellbeing must be promoted, even before problems occur. In terms of preventing social exclusion,

it is important to adopt measures in a timely fashion and strengthen the bases for factors and growth environments that support and protect wellbeing.

Preventative student welfare services are provided wherever children and young people spend time. Services are provided on a multidisciplinary basis at all levels of education, taking different language groups into account. Student welfare psychologists or social workers assess learning difficulties, solve problems through interaction, or support learners with mental challenges. Anticipation and early interception are important.

Schools in Helsinki operate on the 'Finnish Schools on the Move' principle. Learning is boosted through functional methods and by increasing exercise during each school day and when going to and from school. Each school finds its own ways of incorporating more exercise into the school day. About a quarter of all lessons are devoted to some form of physical activity every day, and this time is primarily spent outdoors around the year. During breaks, pupils can play games and have equipment at their disposal. They can also prompt each other to be physically active.

"All adults in school are needed in support of the wellbeing of the children and youngsters. A multidisciplinary work community makes use of each employee's special competences. An individual adult can help a great deal, by being genuinely present for someone and showing an interest in a young person's issues."

– VESA NEVALAINEN, HEAD OF STUDENT WELFARE ISSUES,
EDUCATION DIVISION, CITY OF HELSINKI

Target group

- Learners at all educational levels

Year established (in present form)

- 2016

EXAMPLE Food jury

PUBLIC EDUCATION in Finland includes a free school meal. This is generally served at the school and the pupils have the opportunity to influence what the food is like. Since the school year 2018–2019, schools have offered more vegetarian options, which is now normal.

The increase in vegetarian options was prepared together with the pupils. 14 food juries were established in Helsinki in spring 2017. Pupils on the food juries tasted the new dishes. Based on their feedback, various vegetarian dishes were developed and selected for the following school year.⁶¹

EXAMPLE Finnish Schools on the Move

AT THE PUKINMÄENKAARI comprehensive school, pupils plan and implement Finnish 'Schools on the Move' activities together with their teachers. The school organises an exercise week each year. During that week, there is exercise every day.

A group of pupils are chosen to act as 'prime movers' trained at the beginning of the school year. Their job is to get the others moving during breaks. Pupils in

the higher grades organise dancing sessions during lesson breaks for younger pupils, and make use of the nearby exercise facilities and school premises, where they can play table tennis or pool.

During lessons, there are regular breaks to get the blood circulating. Pupils can use Bobles chairs and therapy balls, or lie on mattresses. The exercise team shares tips with teachers on active teaching alternatives.⁶²



Get involved

WHAT IS A FORERUNNER?

Forerunners are schools, districts, cities, counties, states, or countries that develop policies which foster innovative practices across their classrooms at scale. These leaders believe that education can be improved by teachers and empower them to test new approaches in their classrooms. They also seek inspiration from others, testing innovations from other parts of the world that can make a difference for their students.

WHY JOIN THE NETWORK?

Networks increase their value the larger and more diverse they are. By becoming part of the HundrED Forerunner program, you will be joining and engaging with some of the most innovative educational leaders in the world. You will also be contributing your innovative approaches to a worldwide network of like-minded educators to increase their global impact.

HOW TO GET INVOLVED?

To become a Forerunner, HundrED will run a structured research process that we developed as an iteration of our Spotlight projects that we have been running for 3 years. We will partner with you for 6–9 months, identifying and researching your innovative approaches to determine the top 10 that can be replicated by other Forerunners in the network. If you're interested in becoming a Forerunner, email danny@hundred.org

Sources

1. Ministry of Education and Culture 2019. Extension of compulsory education. Retrieved on 1 October 2019: <https://minedu.fi/hanke?tunnus=OKM032:00/2019>
2. Ministry of Education and Culture & Finnish National Agency for Education, 2018. Education in Finland – Finnish VET in a Nutshell. Retrieved on 25 September 2019 from: https://www.oph.fi/download/165770_finnish_vet_in_a_nutshell.pdf.
3. Karjalainen (toim.) Akateeminen opetus-suunnitelmatyö, 2007. Oulun Yliopisto, Opetuksen kehittämissyksikkö.
4. Ministry of Education and Culture, 2019. Finnish education system. Retrieved from: <https://minedu.fi/koulutusjarjestelma>.
5. Act on Early Childhood Education and Care, 2018. Section 2. Definition of early childhood education and care. Retrieved from: <https://www.finlex.fi/en/laki/kaannokset/2018/en20180540.pdf>.
6. Ministry of Education and Culture, 2019. Finnish education system. Retrieved from: <https://minedu.fi/koulutusjarjestelma>.
7. OECD, 2019. Education at a Glance 2019: OECD Indicators. OECD Publishing, Paris. Retrieved from: <https://doi.org/10.1787/f8d7880d-en>.
8. National Institute for Health and Welfare. 2018. Tutkimustietoa lapsistrategian valmisteluun – Teema: työn ja perheen yhteensovittaminen. Retrieved from: <https://minedu.fi/documents/1410845/12479361/40+Minna+Salmi+THL.pdf>
9. Karila, Kosonen ja Järvenkallas. 2017. Varhaiskasvatuksen kehittämisen tiekartta vuosille 2017–2030. Ministry of Education and Culture, 2019.
10. Official Statistics of Finland (SVT), 2019. Concepts – Finnish education system. Tietoa tilastoista. Retrieved from: http://www.stat.fi/meta/kas/koulutusjarjest_en.html.
11. Ministry of Education and Culture, 2019. Finnish education system. Retrieved from: <https://minedu.fi/koulutusjarjestelma>.
12. Finnish National Agency for Education, 2019. Esiopetus – Kasvatus, koulutus ja tutkinnot. Retrieved from: https://www.oph.fi/koulutus_ja_tutkinnot/esiopetus
13. Basic Education Act, 1998. Section 25. Compulsory education. Retrieved from: <https://www.finlex.fi/fi/laki/ajantasa/1998/19980628#L7>
14. Basic Education Act, 1998. Section 26. (13 June 2003/477) Completion of compulsory schooling. Retrieved from: <https://www.finlex.fi/fi/laki/ajantasa/1998/19980628#L7>.
15. Basic Education Act, 1998. Section 25. Compulsory education. Retrieved from: <https://www.finlex.fi/fi/laki/ajantasa/1998/19980628#L7>.
16. Ministry of Education and Culture, 2019. Finnish education system. Retrieved from: <https://minedu.fi/koulutusjarjestelma>.
17. Basic Education Act, 1998. Section 2. Objectives of education Retrieved from: <https://www.finlex.fi/fi/laki/ajantasa/1998/19980628#L1P2>.
18. Official Statistics of Finland (SVT), 2018. Pre-primary and comprehensive school education. ISSN=1799-3709. Helsinki: Statistics Finland. Retrieved from: http://www.stat.fi/til/pop/2018/pop_2018_2018-11-14_tie_001_en.html.
19. Basic Education Act, 1998. Chapter 2. Local authority as an education provider & Chapter 3: Other education providers. Retrieved from: <https://www.finlex.fi/fi/laki/ajantasa/1998/19980628#L1P3>,
20. Official Statistics of Finland (SVT), 2018. Pre-primary and comprehensive school education. ISSN=1799-3709. Helsinki: Statistics Finland. Retrieved from: http://www.stat.fi/til/pop/2018/pop_2018_2018-11-14_tie_001_en.html.
21. Ministry of Education and Culture & Finnish National Agency for Education, 2012. Education in Finland – Finnish VET in a Nutshell. Retrieved from: https://www.oph.fi/sites/default/files/documents/finnish_education_in_a_nutshell.pdf
22. Education path, 2019. Double qualification – vocational education and training. Retrieved from: <https://opintopolku.fi/wp/ammattillinen-koulutus/useampi-tutkinto-samanaikaisesti/>
23. General Upper Secondary Schools Act, 2018. Section 2. Purpose of general upper secondary education. Retrieved from: <https://www.finlex.fi/fi/laki/alkup/2018/20180714>
24. Ministry of Education and Culture & Finnish National Agency for Education, 2012. Education in Finland – Finnish VET in a Nutshell. Retrieved from: https://www.oph.fi/sites/default/files/documents/finnish_education_in_a_nutshell.pdf
25. Ministry of Education and Culture, 2019. Finnish education system. Retrieved from: <https://minedu.fi/koulutusjarjestelma>.
26. Ministry of Education and Culture, 2019. Finnish education system. Retrieved from: <https://minedu.fi/koulutusjarjestelma>.
27. Vocational Education and Training Act, 2017. Section 2. Purpose of vocational degrees and vocational education and training. Retrieved from: <https://www.finlex.fi/fi/laki/alkup/2017/20170531>
28. Ministry of Education and Culture, 2019. Finnish education system. Retrieved from: <https://minedu.fi/koulutusjarjestelma>.
29. Ministry of Education and Culture, 2019. Finnish education system. Retrieved from: <https://minedu.fi/koulutusjarjestelma>.
30. The Economist. The Worldwide Educating for the Future Index 2018, 2019. Retrieved from: <https://educatingforthefuture.economist.com/>
31. Ministry of Education and Culture, 2019. PISA results 2015. Retrieved from: <https://minedu.fi/pisa-2015>
32. Finnish Education Evaluation Centre, 2019. FINEEC. Retrieved from: <https://karvi.fi/karvi/>
33. Väättäinen, H. (toim.) 2019. Kannatteleeko koulutus? Yhteenveto kansallisen koulutuksen arviointitoiminnan tuloksista. Tiivistelmät 5:2019. Kansallinen koulutuksen arviointikeskus.
34. OECD, 2019. Education at a Glance 2019: OECD Indicators. OECD Publishing, Paris. Retrieved from: <https://doi.org/10.1787/f8d7880d-en>.
35. European Commission, 2019. Finland Overview. Eurydice. EACEA National Policies Platform. European Commission. Retrieved from: https://eacea.ec.europa.eu/national-policies/eurydice/content/finland_en
36. Official Statistics of Finland (SVT), 2018. Pre-primary and comprehensive school education. ISSN=1799-3709. Helsinki: Statistics Finland. Retrieved from: http://www.stat.fi/til/pop/2018/pop_2018_2018-11-14_tie_001_en.html.
37. European Commission, 2019. Finland Overview. Eurydice. EACEA National Policies Platform. European Commission. Retrieved from: https://eacea.ec.europa.eu/national-policies/eurydice/content/finland_en
38. University of Helsinki, 2018. Kirsti Lonka: Koulutus nosti Suomen köyhyydestä, ja vain jatkuva kehittäminen pitää sen maailman huipulla. Uutis- ja tiedotearkisto. Ajankohtaista. Kasvatustieteellinen tiedekunta. Retrieved from: <https://www.helsinki.fi/uutiset/koulutus-kasvatus-ja-oppiminen/kirsti-lonka-koulutus-nosti-suomen-koyhyyydesta-ja-vain-jatkuva-kehittaminen-pitaa-sen-maailman-huipulla>
39. Väättäinen, H. (toim.) 2019. Kannatteleeko koulutus? Yhteenveto kansallisen koulutuksen arviointitoiminnan tuloksista. Tiivistelmät 5:2019. Kansallinen koulutuksen arviointikeskus.
40. City of Helsinki, 2019. Kasvatus ja koulutus. Toimintakertomus 2018. Retrieved from: <https://www.hel.fi/static/liitteet-2019/KasKo/toimiala/kasko-toimintakertomus-2018.pdf>
41. City of Helsinki, 2019. Kasvatus ja koulutus. Toimintakertomus 2018. Retrieved from: <https://www.hel.fi/static/liitteet-2019/KasKo/toimiala/kasko-toimintakertomus-2018.pdf>
42. City of Helsinki, 2019. Kasvatus ja koulutus. Toimintakertomus 2018. Retrieved from: <https://www.hel.fi/static/liitteet-2019/KasKo/toimiala/kasko-toimintakertomus-2018.pdf>
43. City of Helsinki, 2019. Kasvatus ja koulutus. Toimintakertomus 2018. Retrieved from: <https://www.hel.fi/static/liitteet-2019/KasKo/toimiala/kasko-toimintakertomus-2018.pdf>
44. City of Helsinki, 2019. Ilmiömalli isossa yhtenäisessä peruskoulussa. Oppimisen toteutukset. Helsinki oppii. Retrieved from: <https://www.helsinki-oppii.fi/fi/oppimisen-toteutukset/ilmiomalli-isossa-yhtenaisessa-peruskoulussa/>
45. City of Helsinki, 2019. Uudenlaista opiskelua: arktinen kurssi Helsingin Luonnontiedelukiossa. Oppimisen toteutukset. Helsinki oppii. Retrieved from: <https://www.helsinkioppii.fi/fi/oppimisen-toteutukset/uudenlaista-opiskelua-arktinen-alue-osaksi-omaa-maailmaa/>
46. City of Helsinki, 2019. Oppilaiden osallisuusryhmät. Oppimisen toteutukset. Helsinki oppii. Retrieved from: <https://www.helsinkioppii.fi/fi/oppimisen-toteutukset/oppilaiden-osallisuusryhmät/>
47. City of Helsinki, 2019. Koepäivästä sopiminen oppilaslähtöisesti. Oppimisen toteutukset. Helsinki oppii. Retrieved from: [https://www.helsinkioppii.fi/fi/oppimisen-toteutukset/koepäivästä-sopiminen-oppilaslähtöisesti/](https://www.helsinkioppii.fi/fi/oppimisen-toteutukset/koepaivasta-sopiminen-oppilaslahtoisesti/)
48. City of Helsinki, 2019. Kielten opiskelu. Mitä ja miten koulussa opiskellaan. Perusopetus. Kasvatus ja koulutus. Retrieved from: <https://www.hel.fi/helsinki/fi/kasvatus-ja-koulutus/perusopetus/mita-opiskellaan/kielten>
49. City of Helsinki, 2019. Debatointi opetusmenetelmänä. Oppimisen toteutukset. Helsinki oppii. Retrieved from: <https://www.helsinkioppii.fi/fi/oppimisen-toteutukset/debatointi-opetusmetodina/>
50. City of Helsinki, 2019. Osallistava ja moniaistillinen koulutulokkaiden vanhempainilta. Oppimisen toteutukset. Helsinki oppii. Retrieved from: <https://www.helsinkioppii.fi/fi/oppimisen-toteutukset/osallistava-ja-moniaistillinen-koulutulokkaiden-vanhempainilta/>
51. HundrED, 2019. Inklusiivinen opetus. Innovations. Retrieved from: <https://hundred.org/fi/innovations/inklusiivinen-opetus>
52. City of Helsinki, 2019. Taivallahden peruskoulun pop up -koulu Oodissa perjantaina. Kasvatus ja koulutus. Retrieved from: <https://www.hel.fi/uutiset/fi/kasvatuksen-ja-koulutuksen-toimiala/pop-up-koulu-oodissa>
53. City of Helsinki, 2019. Kehitä osaamistasi. Koulutus ja tuki. Helsinki oppii. Retrieved from: [https://www.helsinkioppii.fi/fi/koulutus-ja-tuki/kehitä-osaamistasi/](https://www.helsinkioppii.fi/fi/koulutus-ja-tuki/kehita-osaamistasi/)
54. City of Helsinki, 2019. Kuvaseikkailuja itse rakennetussa kaupungissa. Oppimisen toteutukset. Helsinki oppii. Retrieved from: <https://www.helsinkioppii.fi/fi/oppimisen-toteutukset/kuvaseikkailuja-itse-rakennetussa-kaupungissa/>
55. City of Helsinki, 2019. Uusi Minä brändinä -kurssi Torkkelissa. Oppimisen toteutukset. Helsinki oppii. Retrieved from: [https://www.helsinkioppii.fi/fi/oppimisen-toteutukset/uusi-minä-brändinä-kurssi-torkkelissa/](https://www.helsinkioppii.fi/fi/oppimisen-toteutukset/uusi-mina-brandinä-kurssi-torkkelissa/)
56. City of Helsinki, 2018. Etu-Töölön lukion opiskelijat kehittivät suositun koulusafka-kännykkäsovelluksen. Uutiskirje. Retrieved from: <http://www.kaskonuutiskirje.fi/etusivu/etu-toolon-lukion-opiskelijat-kehittivat-suositun-koulusafka-kannykkasovelluksen.html>
57. Helsingin uutiset, 2016. Kuvasarja: Eskarilapset jopa 3 tuntia päivässä metsässä – ”Söin välipalan mustikkapuskasta”. Puheenaihe. Retrieved from: <https://www.helsinginuutiset.fi/artikkeli/434547-kuvasarja-eskarilapset-jopa-3-tuntia-paivassa-metsassa-soin-valipalan>
58. City of Helsinki, 2019. Mobiilipeli taidekasvatuksellisenä metodina. Oppimisen toteutukset. Helsinki oppii. Retrieved from: <https://helsinkioppii.fi/fi/oppimisen-toteutukset/seppo-mobiilipeli-taidekasvatuksellisenä-metodina-2/>
59. City of Helsinki, 2019. Pukinmäenkaaren peruskoulu – Liikkuva koulu. Kasvatus ja koulutus. Retrieved from: <https://www.hel.fi/peruskoulu/fi/koulu/pukin-maenkaaren-peruskoulu/meidan-koulu/liikkuva-koulu>
60. City of Helsinki, Education Division, 2019. Tinkering to take on the world – joy and innovation in learning.
61. Helsingin uutiset, 2017. Raati maisteli uusia kouluruokia – ”Uskon että vegepuikoista tulee kesto-suosikki”. Puheenaihe. Retrieved from: <https://www.helsinginuutiset.fi/artikkeli/552970-raati-maisteli-uusia-kouluruokia-uskon-etta-vegepuikoista-tulee-kesto-suosikki>
62. City of Helsinki, 2019. Pukinmäenkaaren peruskoulu. Retrieved from: <https://www.hel.fi/peruskoulu/fi/koulu/pukinmaenkaaren-peruskoulu/opetus/opetus>

hundr*ED*

HUNDRED.ORG