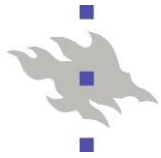




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# Finnish Education System

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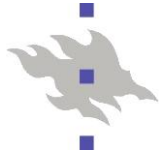
## The Finnish education system

- The Finnish education system consists of
  - comprehensive school (grade 1 – 9),
  - upper secondary school or vocational school (grade 10 – 12),
  - higher education (3 + 2 years) and
  - adult education.
  
- *According to PISA 2006 School Questionnaire data, there were in 49.9% of the classes less than 20 students and in 47.4% of the classes there were 21 – 25 students.*
- *In 2006, there were 3393 comprehensive schools and 578 918 students in those schools (Tilastokeskus, 2007).*
- *53.3% of the students continued their studies in upper secondary school and 41.8% in vocational schools*



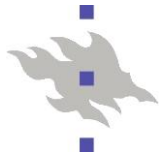
## Education policy in Finland

- **Financing for education goes through the Ministry of Education**
- **Everyone has the right to free basic education**
  - including necessary equipment and text books, school transportation (where needed), and adequate free meals.
- **Post-compulsory education is also free**
  - no tuition fees in general and vocational upper secondary education, in polytechnics or in universities



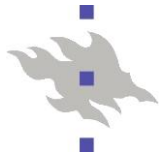
## Education policy in Finland

- **Finnish education and science policy stresses**
  - Quality
  - Efficiency
  - Equity
  - Internationalism
- **The lifelong learning viewpoint is integrated into education policy**
  - entails that everyone has sufficient learning skills
  - opportunities to develop their knowledge and skills



# Allocation of science subjects to grades in comprehensive school

Grade	1	2	3	4	5	6	7	8	9	10	11	12
Students' age	7	8	9	10	11	12	13	14	15	16	17	18
Level	primary school						lower secondary school			upper secondary school, high school		
	Comprehensive school, Basic education											
Science subjects	<i>Integrated environmental and natural studies</i>  <i>Altogether 9 hours / week / 4 year = 2.25 hours / week / year</i>				<i>Integrated Biology and geography 1.5 hours / week / year</i>  <i>Integrated Physics and chemistry 1 hours / week / year</i>		<i>Separate :</i> Biology 1.2 hours Geography 1.2 hours Physics 1.2 hours Chemistry 1.2 hours / week / year Health education 1 hours / week / year			<i>Separate :</i> Biology 2+3 courses Geography 2+2 courses Physics 1+7 courses Chemistry 1+4 courses Health education		
Compulsory/ Optional	C									C+O	O	



## Nature of a teaching/learning process in Finnish science curriculum

- The starting points for science instruction are the students' prior knowledge, skills, and experiences, and their observations and investigations ...
- ... From these, the instruction progresses towards the concepts and models
- The purpose of science education is to help the students
  - (i) to perceive the nature of science;
  - (ii) to learn new concepts, principles, and models;
  - (iii) to develop skills in experimental work and
  - (iv) cooperation; and
  - (v) to stimulate the students to study science (interest).”
- the role of a teacher is emphasised in the process.



## **Examples of goals for learning scientific method:**

The pupils will learn in physics and chemistry:

- scientific skills, such as the formulation of questions ... ,
- to make observations and measurements,
- to look for information on the subject of study,
- to make, compare, and classify observations, measurements, and conclusions;
- to present and test a hypothesis,
- to process, present and interpret results,
- to formulate simple models, to use them in explaining ... ,
- to make conclusions about their observations and measurements and recognize the causal relationships associated with the properties of natural phenomena
- to carry out simple scientific experiments clarifying the properties of phenomena.



## A subject teacher

- typically teaches at grades 7 to 12 (ages 13 to 19)
- is qualified for teaching positions in all kinds of schools in his or her major or minor subject
- teaches typically one major and one minor subjects (e.g. math and physics)

## A primary school teacher

- teaches at grades 1 to 6 (ages 7 to 13)
- teaches typically all 13 subjects

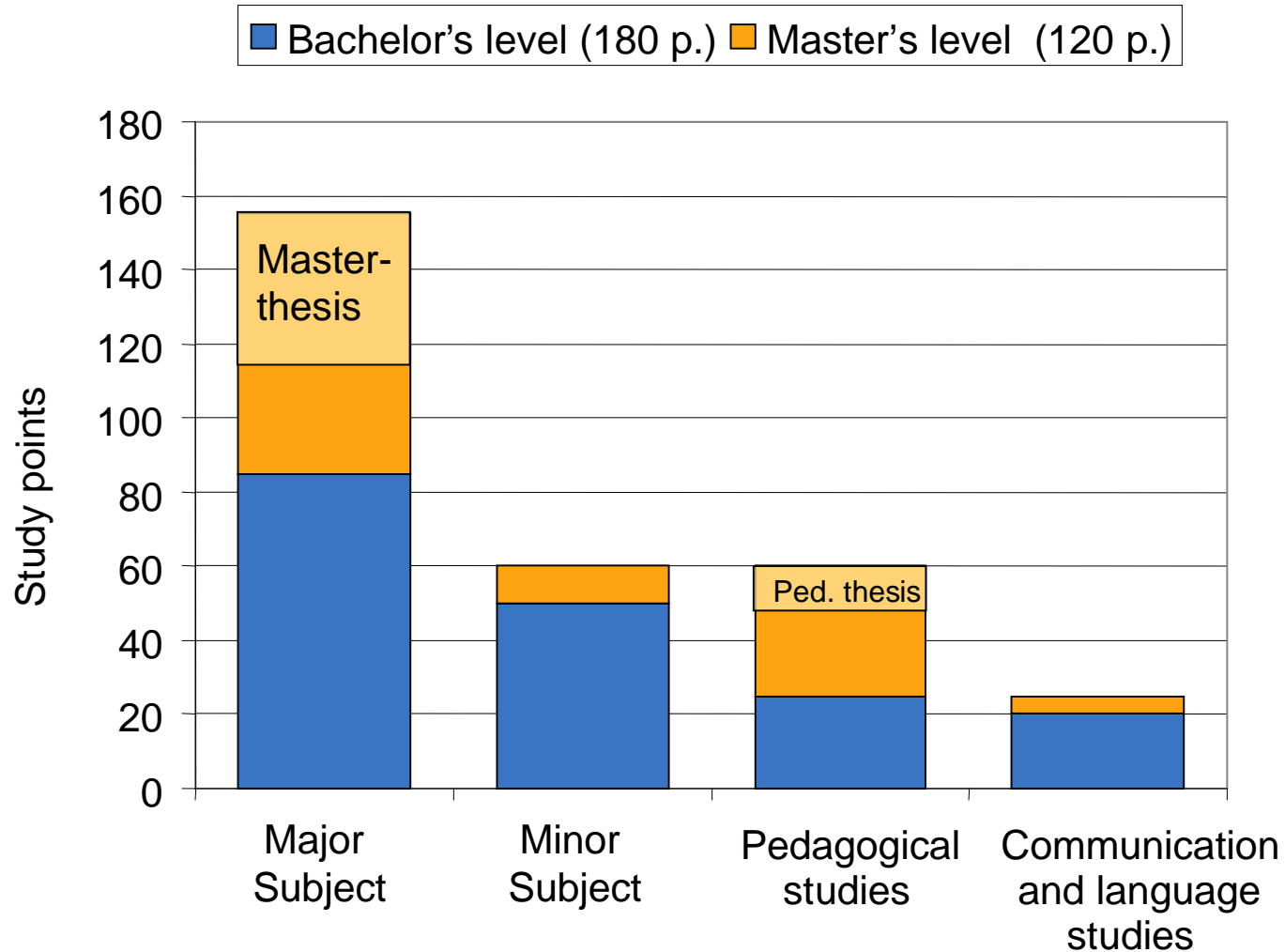


## Subject teacher's Master's degree

- Master's degree: 3 + 2 years (180 + 120 study points)
  
- Major subject (e.g. physics) 120 study points
  1. minor subject (e.g. chemistry) 60 study points
  2. minor subject (pedagogical studies) 60 study pointsLanguage and communication studies
  
- Competent to continue postgraduate studies



## Structure of the master degree of a subject teacher: 3 + 2 years





## Expertise needed in the profession of a science teacher Agreed together with university teachers working in science teacher education in the University of Helsinki

### 1. Subject knowledge and skills:

- well organised knowledge structure (expert)
- understanding nature of knowledge and how knowledge is acquired in the subject (e.g. nature of experiments),

### 2. Pedagogical knowledge and skills:

- an expert teacher can **plan, implement and evaluate** learning activities and learning (psychological, philosophical, historical and sociological background)
- competence to choose a variety of teaching and motivation methods

### 3. Competence for continuous professional development:

- readiness to learn new subject and pedagogical knowledge and skills (teacher as a researcher)
- skills for reflective thinking and collaborative working

