**[Draft 2015 Joint Report of the Council and the Commission on the implementation of the Strategic framework for European cooperation in education and training (ET2020)](https://dl.dropboxusercontent.com/u/15733592/%CE%94%CE%99%CE%91%CE%9B%CE%9F%CE%93%CE%9F%CE%A3%20%CE%A0%CE%91%CE%99%CE%94%CE%95%CE%99%CE%91%CE%A3/et-2020-draft-joint-report-408-2015_en.pdf)**

**Ευρωπαϊκή Επιτροπή – European schoolnet “Computing our Future”** [**http://www.eun.org/publications/detail?publicationID=481**](http://www.eun.org/publications/detail?publicationID=481)

This is because coding has started to leave the realm of computer geeks to enter the mainstream. In fact, basic coding skills are increasingly seen as a fundamental skill for all students, not just computer scientists.

“**Computational thinking** is typically associated with coding and computer programming, but is more than that, involving solving problems, designing systems, and understanding human behaviour,” acccording to the European Schoolnet report. They now form part of so-called “21st century skills”, like problem-solving and logical thinking.

For Engelhardt, Europeans should now try to determine the computational skills every student should acquire in order to be prepared for tomorrow’s digital world. One key challenge she emphasises is how to make coding more exciting for students, especially girls.

**[**[**http://www.euractiv.com/section/social-europe-jobs/news/coding-classes-trending-across-eu-schools**](http://www.euractiv.com/section/social-europe-jobs/news/coding-classes-trending-across-eu-schools)**]**

2.1. Quality and relevance of learning outcomes is key for skills development

… To enhance employability, innovation and active citizenship, basic competences must go hand in hand with other key competences and attitudes: creativity, entrepreneurship and sense of initiative, **digital skills (including coding)**, foreign language competences, critical thinking including through e-literacy and media literacy, and skills reflecting growing sectors, such as the green economy.

**Britain**, however, [plans to become the first country in the world](http://www.telegraph.co.uk/technology/news/10410036/Teaching-our-children-to-code-a-quiet-revolution.html) to mandate learning to code in **primary and secondary schools**. British Education Secretary, Michael Grove, [announced](http://www.bbc.co.uk/news/education-16493929) that he would be introducing this new tech curriculum as early as September 2014 and that this change would impact students as young as 5 years old.

Programming and **computational thinking** skills are becoming ever more important in our society and working life. Today, a growing number of countries in Europe and internationally are refocusing their ICT curricula on developing students’ computer programming and coding skills, and introducing the topic in national, regional or school curricula. So what lies behind this emerging trend?

[<http://www.schooleducationgateway.eu/el/pub/latest/news/computer_programming_and_codin.htm>]

[<http://theinstitute.ieee.org/career-and-education/preuniversity-education/computer-science-classes-for-kids-becoming-mandatory>]

[<http://www.bbc.co.uk/schools/0/computing/28972462>]

[<http://www.telegraph.co.uk/education/educationnews/10166020/Michael-Gove-new-curriculum-will-allow-my-children-to-compete-with-the-very-best.html>]

[[https://next.ft.com/content/c84b9704-f744-11e5-96db-fc683b5e52db#axzz4DIJP0jd5](https://next.ft.com/content/c84b9704-f744-11e5-96db-fc683b5e52db%23axzz4DIJP0jd5)]

[<https://www.theguardian.com/technology/2014/sep/04/coding-school-computing-children-programming>]

Some **German** states have introduced coding for high school students while **Denmark** is considering doing the same. Meanwhile, some schools in **Estonia** are teaching programming to pupils as young as six. Just one month ago, schools in Britain started teaching pupils how to program. For children aged five and upwards, coding is now part of the new national curriculum for computing that is being introduced this term. **The British government wants to ensure “that all pupils can understand and apply the fundamental principles and concepts of computer science. Apart from meeting future needs of businesses and industry, coding in the UK is also seen as a tool to make pupils think more creatively.** Secondary schools in the UK have already done much of the work, but in primary schools, the teaching has been more ‘revolutionary’.

[<http://www.euractiv.com/section/digital/news/five-years-olds-learn-coding-in-schools-to-prepare-for-future-labour-market>]

# Coding in school: Finland takes lead in Europe

The Finnish national curriculum takes coding farther than any other European country. In Finland, starting fall 2016, **coding is a mandatory, cross curricular activity that starts from first year of school**. Coding becomes another learning skill for pupils to utilize when appropriate. No other European country has taken as advanced an approach to coding.

[<http://legroup.aalto.fi/2015/11/coding-in-school-finland-takes-lead-in-europe/>]

**Italy**, is preparing to introduce digital education in primary schools. The goal is already set out in the guidelines for school reform presented by the minister of Education. The same minister launched “Programming the future,” a project with the National University Technology Consortium, that aims to have so-called “computing logic” in 40% of primary schools by 2017.

[<http://www.italy24.ilsole24ore.com/art/government-policies/2014-11-10/school-reforms-to-bring-digital-education-and-coding-lessons-to-primary-schools-185247.php?uuid=ABP7gJCC>]

**France’s** Minister of National Education, Benoît Hamon, said in a recent interview with Le Journal du Dimanche that programming courses will be offered to primary school students starting this fall.

[<http://www.itworld.com/article/2696639/application-management/france-to-offer-programming-in-elementary-school.html>]

Seeking to respond to these needs, the DGE of the Ministry of Education of **Portugal** launched the pilot project “Introduction Code in Primary School”, challenging public schools to take part in it in the school year 2015/16 with their students in the 3rd and 4th grade.

[<http://blog.scientix.eu/2016/02/19/code-in-primary-school-an-initiative-in-portugal/>]

**Canada**

The B.C. government unveiled plans Monday to introduce computer coding in its school curriculum, addressing a chronic skills shortage in one of the few areas of the Canadian economy that is doing well – technology. “Every kindergarten to grade 12 student will have…the opportunity to learn the basics of coding,”… The new B.C. coding curriculum will be introduced across all grades over the next three years, featuring new standards in mathematics and sciences and a new and redesigned “applied design, skills and technologies” (ADST) component to improve students’ abilities to solve problems and think creatively.

[<http://www.theglobeandmail.com/technology/bc-government-adds-computer-coding-to-school-curriculum/article28234097>]

[<http://www.tricitynews.com/opinion/editorial/editorial-about-time-for-coding-in-curriculum-1.2153312>]

**USA**

Computer science, if installed in all of Iowa's schools, should not replace other classes and instead be a main course, according to a committee with the Governor's STEM Advisory Council.

 [<http://www.desmoinesregister.com/story/tech/2016/07/01/panel-require-computer-science-but-dont-replace-other-classes/86557126>]

The new [standards](http://www.doe.mass.edu/boe/docs/fy2016/2016-06/item3-DLCS-Standards-TrackedChanges.pdf) have four "strands," or topics: "Computing and Society," digital tools and collaboration, computing systems and computational thinking. In each strand, the standards are designed to grow more complex and sophisticated as students progress from kindergarten on through to 12th grade.

Kindergartners, for example, could be asked to develop a simple algorithm, or sequence of steps, without using a computer: "Tell me how to make a sandwich." They'd learn the basics of computer safety, practice using a keyboard and create a simple program using a language like Scratch.
By fifth grade, they'd be knowledgeable about copyright issues, type 25 words per minute, be able to describe the differences between hardware and software and know how to use a spreadsheet. They'd also be able to discuss cyberbullying, including "harassment, flaming, excluding people, outing, and impersonation" and know how to combat it.

[<http://www.wbur.org/news/2016/06/28/mass-digital-standards>]

# Australia Replaces History And Geography With Coding In New Primary School Curriculum

“In ten years’ time, it will be the most common language in the world. You need to teach a language as early as possible to allow for maximum fluency in a child.”
Yet there is concern about whether Australian schools are prepared to respond to this challenge.  Around 20,000 teachers in science, maths and IT classes never studied these subjects at university. Australian kids risk missing out.
**Over 12 European countries already have computer programing and coding as part of their curriculum and a further 7 are in the process of introducing it. Countries, including New Zealand and Singapore are in the process including coding in the curriculum**. Computer programming and coding is already part of the primary curriculum in England, Belgium and Finland, Estonia, the Netherlands, Italy and Greece.

[<http://www.techtimes.com/articles/86669/20150921/australia-replaces-history-and-geography-with-coding-in-new-primary-school-curriculum.htm>]

[<http://www.alp.org.au/futuresmartschools>]

[<http://www.theaustralian.com.au/national-affairs/education/coding-in-curriculum-to-prepare-kids-for-techsavvy-future/news-story/7ba0c0702ad0ad9f5dba653a9a709f22>]

**Japan**

Plan to make programming mandatory at schools a step to foster creativity. It is essential that computer programming to be taught in schools will lead to improving children’s ability to think logically and creatively. The Education, Culture, Sports, Science and Technology Ministry has decided to make computer programming a compulsory subject at primary schools in fiscal 2020, followed by middle schools in fiscal 2021 and high schools in fiscal 2022.

[<http://the-japan-news.com/news/article/0002951918>]