The Committee on European Computing Education (CECE) established by ACM Europe and Informatics Europe has undertaken the major task of mapping out Informatics education in schools, for curricula and teaching training and methodologies, across Europe.

This interactive map visualises the data collected over the past year, providing an unprecedented level of detail and coverage, as well as a wealth of fundamental information on the status of Informatics (and Digital Literacy) teaching in Europe. The map currently presents advanced results and allows for contributions and verification by invited academics and other stakeholders.

The data presented was gathered by sending detailed questionnaires to relevant contacts in all European countries. The questionnaires were broadly divided into two main sections: one collecting information about the status of Digital Literacy teaching and another about the status of Informatics teaching. Digital Literacy is defined here as the skills to use IT and its devices intelligently. Informatics is defined here as the scientific discipline enabling IT, with its own concepts, methods, body of knowledge and open issues, parallel to other fundamental scientific disciplines such as Mathematics and Physics. Note that in some European countries Informatics is known as Computer Science or Computing.

We have relied on, and are grateful for, community contribution. In the absence of official governmental sources in many countries, we have relied on input from academics, researchers, practitioners and teachers who are at the forefront of a slow, but irreversible, movement across Europe to promote the teaching of high quality Informatics to the young. The educational, social and economic future of Europe relies on the success of this movement.

Below you can access all data gathered in this study and learn more about the status of Informatics education in Europe.

Data Availability
Which countries have provided data? How well are we covering Europe?

View it on the map
Informatics education:

Europe cannot afford to miss the boat

Report of the joint
Informatics Europe & ACM Europe Working Group
on informatics education
February 2013

Working group members

Informatics Europe:
Walter Gander (chair), ETH Zurich, Switzerland
Antoine Petit, Inria & ENS Cachan, France
Gérard Berry, Collège de France
Barbara Demo, University of Turin, Italy
Jan Vahrenhold, University of Munster, Germany

ACM Europe:
Andrew McGettrick, University of Strathclyde, Scotland
Roger Boyle, University of Aberystwyth, Wales
Michèle Drechsler, INRP, Lyon, France
Avi Mendelson, Microsoft, Israel
Chris Stephenson, Comp. Sc. Teachers’ Association, USA

ACM Europe and Informatics Europe liaison:
Carlo Ghezzi, Politecnico di Milano, Switzerland
Bertrand Meyer, ETH Zurich, Switzerland, ITMO, Russia, and Eiffel Software, USA
Various European countries had introduced successful informatics elements into their curricula starting in the 1970s, but in many cases these efforts have been dropped due to insufficient awareness of the importance of informatics and the frequent misunderstanding that digital awareness is all that needs to be taught. The forthcoming supplementary reports will provide country-by-country descriptions of the state of affairs, based in part on the direct experience of committee members.
Practically, informatics is a necessary skill for European students to get the informatics-intensive jobs of the 21st century. Educationally, informatics is an invaluable intellectual tool for developing essential conceptual skills that will serve students through their careers and through all areas of work.

The state of informatics education

Given the importance of informatics as the scientific and engineering basis for the information society, and the ubiquitous political discourse about the importance of innovation, high technology and IT, one might expect that informatics education would by now have found its natural place in the curriculum of industrialized countries, particularly in Europe. Unfortunately and paradoxically, this is not the case. In fact, informatics education has retreated in most European curricula since pioneering efforts in the 1970s and 1980s. In the US, reports by the ACM and the Computer Science Teachers Association (CSTA) [2] showed that while some progress has been made in digital literacy, informatics education lags sorely behind.

Various European countries had introduced successful informatics elements into their curricula starting in the 1970s, but in many cases these efforts have been dropped due to insufficient awareness of the importance of informatics and the frequent misunderstanding that digital awareness is all that needs to be taught. The forthcoming supplementary reports will provide country-by-country descriptions of the state of affairs, based in part on the direct experience of committee members.

The needs, context and history of computing in each country are indeed different, and each should devise its specific curriculum solution. The general requirements and principles are the same, however, and considerable country-independent material is available to help devise national informatics curricula. The next section highlights such material and presents the committee’s conclusions on what a successful curriculum should include.

4 Principles for an effective informatics curriculum

The committee performed a comprehensive review of the considerable existing material on building informatics curricula, including among many others the (UK) Royal Society report [7], the CSPrinciples site, Snyder [1, 2], the Computing at Schools Initiative [5], and the work of the CSTA. Two major conclusions follow from that review.

The first is the sheer number of existing experiences demonstrating that it is indeed possible to teach informatics successfully in primary and secondary education.
Various European countries had introduced successful informatics elements into their curricula starting in the 1970s, but in many cases these efforts have been dropped due to insufficient awareness of the importance of informatics and the frequent misunderstanding that digital awareness is all that needs to be taught. The *forthcoming supplementary reports* will provide country-by-country descriptions of the state of affairs, based in part on the direct experience of committee members.
Year One (July 2014 - July 2015)

[January 2014]

Image: © iStock.com / Alexander Chernyakov, Dmitri Shironosov, deimage, shironosov, Chris Rogers
Year One (July 2014 - July 2015)

[January 2014]

July 2014

November 2014

Image: © iStock.com / Alexander Chernyakov, Dmitri Shironosov, deimagine, shironosov, Chris Rogers
Year One (July 2014 - July 2015)

[January 2014]

Image: © iStock.com / Alexander Chernyakov, Dmitri Shironosov, deimagine, shironosov, Chris Rogers
Year One (July 2014 - July 2015)

[January 2014]  

Education

[Image: © iStock.com / Alexander Chernyakov, Dmitri Shironosov, deimagine, shironosov, Chris Rogers]
Year One (July 2014 - July 2015)

[January 2014]

Education

ACM Europe, JTB in Europe Committee on European Computing Education (CECE) and Informatics Europe are continuing the work they began last year to identify key issues impacting on computing education in Europe and to articulate a vision of the future, which highlighted the need for increased investment in CS education for Europe to remain competitive in the global technology arena. With the new name “Committee on European Computing Education (CECE),” the group plans to supplement this report by mapping out information education both for curricula and for teaching methodologies across Europe and by analysing selected case studies. The focus will be on secondary education, with primary education to be added at a later stage. In the meantime, CECE will commission case studies as well as obstacles to implementation of informatics curricula in schools.

March 2015

July 2014

November 2014

Image: © iStock.com / Alexander Chernyakov, Dmitri Shironosov, deimage, shironosov, Chris Rogers
Year One (July 2014 - July 2015)

[January 2014]

Education

ACM Europe, JB Form Committee on European Computing Education

ACM Europe and Informatics Europe are coordinating the work they began last year, which highlighted the need for increased investment in CS education for Europe to remain competitive in the global technology arena. With the

new name “Committee on European Computing Education (CECE),” the group plans to supplement this report by mapping out Informatics education both for curricula and for teaching methodologies across Europe and by analysing

selected case studies. The focus will be on secondary education, with primary

school education to be addressed in future reports, as well as obstacles to implementation of Informatics curricula in schools.

March 2015

July 2014

November 2014

July 2015

Image: © iStock.com / Alexander Chernyakov, Dmitri Shironosov, deimagine, shironosov, Chris Rogers
Year Two (July 2015 - July 2016)

August 2015
Year Two (July 2015 - July 2016)

August 2015

[Diagram]

October 2015

CECE’s Map of Informatics in European Schools

[Map Image]
Acknowledgements

This mapping project would not have been possible without the dedication and contributions of many European volunteers:


CECE acknowledges the support of ACM Europe and Informatics Europe and the members of the respective boards.
Year Two (July 2015 - July 2016)

August 2015

October 2015

CECE’s Map of Informatics in European Schools

A joint project by ACM Europe and Informatics Europe

Image: © iStock.com / Alexander Chernyakov, Jana Krcmarova, RaffaeleVannucci, shironosov, clu, Dmitri Shironosov, Pali Rao
Year Two (July 2015 - July 2016)

August 2015

October 2015

March 2016

Image: © iStock.com / Alexander Chernyakov, Jana Krcmarova, RaffaeleVannucci, shironosov, clu, Dmitri Shironosov, Pali Rao
Year Two (July 2015 - July 2016)

August 2015

March 2016

October 2015

CECE’s Map of Informatics in European Schools

July 2016

Image: © iStock.com / Alexander Chernyakov, Jana Krcmarova, RaffaeleVannucci, shironosov, clu, Dmitri Shironosov, Pali Rao
Year Two (July 2015 - July 2016)

Image: © iStock.com / Alexander Chernyakov, Jana Krcmarova, RaffaeleVannucci, shironosov, clu, Dmitri Shironosov , Pali Rao
The Map

CECE's Map of Informatics in European Schools

March 2015

October 2016

[http://cece-map.informatics-europe.org]
The Map: Features

- Data overview
- Data listing
- Compare view

- Regions
- Collaborative editing
- “Report a problem”

- Updates / automated fact sheet generation

The Committee on Computing Education (CECE) established by ACM Europe and informatics Europe has undertaken the major task of mapping out informatics education in Europe, stressing training and methodologies, across Europe.

This interactive map visualises the data collected over the past year, providing an unprecedented level of detail and coverage, as well as a wealth of fundamental information on the status of Informatics and Digital Literacy teaching in Europe. The map currently presents advanced results and allows for contributions and verification by invited academics and the public.

The data presented was gathered by sending detailed questionnaires to relevant contacts in all European countries. The questionnaires were broadly divided into two main sections: one collection section focused on the status of IT education and another about the status of Informatics teaching. Digital Literacy is defined here as the skills to use IT and its tools for solving scientific and other problems, and enabling the development of Information and Communication Technologies (ICT), with its own concepts, methods, body of knowledge and open issues, parallel to other sciences such as Mathematics and Physics. Note that in some European countries informatics is known as Computer Science or Computing.

We have relied on contributions from academics, researchers, practitioners and schools to map out the status of Informatics education to the young. The educational, social and economic future of Europe relies on the success of this movement.

Below you can access all data gathered in this study and learn more about the status of Informatics education in Europe.
The Map: Data Overview

Informatics: Availability of Courses

Click to hide/show:
- No (3)
- Combined (4)
- Yes, but not for all (9)
- Yes, technically (2)
- Yes (23)
- Yes, compulsory I (5)
- Yes, compulsory II (5)
- N/A (10)

Physical map
The Map: Data Overview

Informatics: Availability of Courses

Click to hide/show:
- No (3)
- Combined (4)
- Yes, but not for all (9)
- Yes, technically (2)
- Yes (23)
- Yes, compulsory I (5)
- Yes, compulsory II (5)
- N/A (10)

Physical map

Hover over a country

Leaflet © OpenStreetMap contributors, Natural Earth ©, Credits and Licenses
The Map: Data Overview

Informatics: Availability of Courses

Hover over a country

Click to hide/show:

- No (3)
- Combined (4)
- Yes, but not for all (9)
- Yes, technically (2)
- Yes (23)
- Yes, compulsory I (5)
- Yes, compulsory II (5)
- N/A (15)

Leaflet | © OpenStreetMap contributors, Natural Earth, Credits and Licenses
The Map: Data Listing

## Hungary Listing

In Hungary Digital Literacy is referred to as *Digitális írástudás*. The term for Informatics is *Informatika*.

**Editors:** András Benczúr, Zsakó László

<table>
<thead>
<tr>
<th>Data Mode</th>
<th>Data Value</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Availability</strong></td>
<td>2ndQ, Data available</td>
<td>Report, History</td>
</tr>
<tr>
<td><strong>Digital Literacy: First Contact</strong></td>
<td>Primary</td>
<td>Compulsory in the last year of primary school, specialization from grade 10 onwards.</td>
</tr>
<tr>
<td><strong>Digital Literacy: A Separate Subject?</strong></td>
<td>Separate subject</td>
<td>Separate subject from age 12, integrated in other subjects from age 10.</td>
</tr>
<tr>
<td><strong>Digital Literacy: Curriculum Consistency</strong></td>
<td>Country</td>
<td>Consistent national curriculum standards compulsory for state supported schools, optional curriculum for advanced specializations, 10% local freedom.</td>
</tr>
<tr>
<td><strong>Digital Literacy: Enrolment</strong></td>
<td>all students</td>
<td>Courses are compulsory for students at age 12.</td>
</tr>
</tbody>
</table>
The Map: Data Listing

Hungary Listing

In Hungary Digital Literacy is referred to as Digitális írásstúdás. The term for Informatics is Informatika.

Editors: András Benczúr, Zsakó László

<table>
<thead>
<tr>
<th>Data Mode</th>
<th>Data Value</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informatics:</td>
<td>Country</td>
<td>Consistent national curriculum standards compulsory for state supported</td>
</tr>
<tr>
<td>Curriculum</td>
<td>Report, History</td>
<td>schools, optional curriculum for advanced specializations. 10% local</td>
</tr>
<tr>
<td>Consistency</td>
<td></td>
<td>freedom. Common subject for Digital Literacy and Informatics.</td>
</tr>
<tr>
<td>Informatics:</td>
<td>N/A</td>
<td>It is up to the decision of the school to start special classes with</td>
</tr>
<tr>
<td>Enrolment</td>
<td>Report, History</td>
<td>informatics courses. Two levels of requirements for matriculation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>examination in informatics.</td>
</tr>
</tbody>
</table>

Digital Literacy: all students
Courses are compulsory for students at age 12.
The Map: Compare View

Teacher Training: Entry Requirement

Do teachers at secondary schools need a degree to teach? What are the requirements in each European country? Where do teachers need a university degree, a specialisation, or even a Master degree?

This map shows the formal, i.e., academic, entrance requirement for the teaching profession.

The scale is as follows:
- none - No degree
- B.Sc. - Bachelors' degree with no educational focus
- B.Ed.B.Sc.pgc. - Bachelors' degree with educational focus OR Bachelors' degree with no educational focus together with a postgraduate certificate
- M.Sc. - Masters' degree with no educational focus
- M.Ed.M.Sc.pgc. - Masters' degree with educational focus OR Masters' degree with no educational focus together with a postgraduate certificate
- PhD

In Hungary Digital Literacy is referred to as Digitális Ifjúság. The term for Informatics is Informatika.

Question: What is the typical formal requirement for entrance to the teaching profession for secondary schools (across all subjects)?

M.Ed.M.Sc.pgc. - Masters' degree with educational focus OR Masters' degree with no educational focus together with a postgraduate certificate
The Map: Compare View

Teacher Training: Entry Requirement

Do teachers at secondary schools need a degree to teach? What are the requirements in each European country? Where do teachers need a university degree, a specialisation, or even a Master degree?

This map shows the formal, i.e., academic, entrance requirement for the teaching profession.

The scale is as follows:
- none - No degree
- B.Sc. - Bachelors' degree with no educational focus
- B.Ed.B.Sc.pgc. - Bachelors' degree with educational focus OR Bachelors' degree with no educational focus together with a postgraduate certificate
- M.Sc. - Masters' degree with no educational focus
- M.Ed.M.Sc.pgc. - Masters' degree with educational focus OR Masters' degree with no educational focus together with a postgraduate certificate
- PhD

In Hungary Digital Literacy is referred to as Digitális űrsúlyás. The term for Informatics is Informatika.

Question: What is the typical formal requirement for entrance to the teaching profession for secondary schools (across all subjects)?

M.Ed.M.Sc.pgc. - Masters’ degree with educational focus OR Masters’ degree with no educational focus together with a postgraduate certificate
The Map: Compare View

Teacher Training: Entry Requirement

Do teachers at secondary schools need a degree to teach? What are the requirements in each European country? Where do teachers need a university degree, a specialisation, or even a Master degree?

This map shows the formal, i.e., academic, entrance requirement for the teaching profession.

The scale is as follows:

- none - No degree
- B.Sc. - Bachelor's degree with no educational focus
- B.Ed.B.Sc.pgc. - Bachelor's degree with educational focus OR Bachelor's degree with no educational focus together with a postgraduate certificate
- M.Sc. - Master's degree with no educational focus
- M.Ed.M.Sc.pgc. - Master's degree with educational focus OR Master's degree with no educational focus together with a postgraduate certificate
- PhD

In Hungary Digital Literacy is referred to as Digitális űrőrsztudás. The term for Informatics is Informatika.

Question: What is the typical formal requirement for entrance to the teaching profession for secondary schools (across all subjects)?

M.Ed.M.Sc.pgc. - Master's degree with educational focus OR Master's degree with no educational focus together with a postgraduate certificate
The Map: Regions

[Map showing regions]
The Map: Collaborative Editing

**Collaborator's Dashboard**

Welcome, Jan Vahrenhold! What do you want to do today?

### Actions for logged-in contributors

- Show Reports (4)
- Inspect/Manage Map Data
- Grade-wise Informatics
- Country/region Data
- Log Out

### Special privileges only:

- Recent Data Changes
- User Listing
- Update Mode Data
- All Database Changes
Question: Is the digital literacy curriculum in your country consistent across all schools or are there local differences?

**State** - All decisions regarding topics and competences are made at the second administrative level (federal state/region).

There is a state-wide curriculum for Digital Literacy. It dates back, however, to 1990(!). As a consequence, many schools have updated the curriculum within the scope of the state-wide curriculum.

The exact way how Digital Literacy taught depends on the type of school; in high schools, for example, Digital Literacy is taught as an integrated subject. Students are expected to be taught 60 hours of Digital Literacy. The focus is in grade 8.

**New value**

State

**Explanation (Markdown)**

There is a state-wide curriculum for Digital Literacy. It dates back, however, to 1990(!). As a consequence, many schools have updated the curriculum within the scope of the state-wide curriculum.

The exact way how Digital Literacy taught depends on the type of school; in...
The Map: “Report a Problem”

Teacher Training: Engineering Teachers

Can Informatics be taught by Engineering teachers at secondary school in the different European countries?

To be able to offer Informatics classes even in the absence of fully trained Informatics teachers, schools may choose to (re-)train in-service teachers as part of continued professional development to teach Informatics classes. This map shows whether this option is available to Engineering teachers and - if so - which amount of additional training in Informatics is required.

For countries with different types of secondary schools, data is given for schools leading to university entrance qualification.

The scale is as follows:
- **No** - Only fully trained teachers are allowed to teach Informatics
- **Substantial Training** - Yes, with substantial additional training in Informatics
- **Minor Training** - Yes, with minor additional training in Informatics
- **Yes**

In Greece, the term used to describe Digital Literacy is Τεχνολογίες πληροφοριών και επικοινωνιών (Information and Communication Technology). Informatics is referred to as Πληροφορική.

Question: Is it possible to teach Informatics if you are an Engineering teacher?

N/A
The Map: “Report a Problem”

Report a problem

Your report will be presented to all academic stakeholders responsible for the last page and administrators. Thank you very much for your contribution!

Country: Greece, Data dimension: Teacher Training, Engineering Teachers

Your name

Your email address

Describe the problem (Markdown)

I'm not a robot

Priority

Standard

Submit report
The Map: “Report a Problem”

Collaborator's Dashboard

Welcome, Jan Vahrenhold! What do you want to do today?

Actions for logged-in contributors

- Show Reports (4)
- Inspect/Manage Map Data
- Grade-wise Informatics
- Country/region Data
- Log Out

Special privileges only:

- Recent Data Changes
- User Listing
- Update Mode Data
- All Database Changes

Data Availability
Which countries have provided data? How well are we covering Europe?

View it on the map
The Map: “Report a Problem”

### Report Listing

<table>
<thead>
<tr>
<th>Priority</th>
<th>Location</th>
<th>Posted</th>
<th>Author</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>Report origin Teacher Training: Engineering Teachers Greece</td>
<td>Sep 27, 2016; 08:15:11</td>
<td>Mina Theofilatou</td>
<td>Close</td>
</tr>
<tr>
<td>Standard</td>
<td>Report origin Teacher Training: Number of Subjects Greece</td>
<td>Sep 27, 2016; 08:11:45</td>
<td>Mina Theofilatou</td>
<td>Close</td>
</tr>
<tr>
<td>Standard</td>
<td>Report origin Informatics: Enrolment Greece</td>
<td>Sep 27, 2016; 08:03:15</td>
<td>Mina Theofilatou</td>
<td>Close</td>
</tr>
</tbody>
</table>

Report: Most teachers are employed in permanent positions....
Report: Graduates of Electrical and Computer Engineering a...
Report: Starting school year 2014-15 all computer science ...
The Map: “Report a Problem”

### Report Listing

<table>
<thead>
<tr>
<th>Priority</th>
<th>Location</th>
<th>Posted</th>
<th>Author</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>Report origin Teacher Training: Engineering Teachers Greece</td>
<td>Sep 27, 2016; 08:15:11</td>
<td>Mina Theofiliatou</td>
<td>Close</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Graduates of Electrical and Computer Engineering are entitled to teach Informatics</td>
<td>Jan Vanrenhold</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>Report origin Teacher Training: Number of Subjects Greece</td>
<td>Sep 27, 2016; 08:11:45</td>
<td>Mina Theofiliatou</td>
<td>Close</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>Report origin Informatics: Enrolment Greece</td>
<td>Sep 27, 2016; 08:03:15</td>
<td>Mina Theofiliatou</td>
<td>Close</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Map: “Grade-wise Informatics”
Availability of Informatics Course by Grade:
The Map: "Grade-wise Informatics"

<table>
<thead>
<tr>
<th>Grade</th>
<th>No data</th>
<th>Not available</th>
<th>Not offered</th>
<th>Optional</th>
<th>Elective</th>
<th>Mandatory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade 13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The Map: Updates

Sectors: one collecting information about the status of digital literacy teaching and another about the status of informatics teaching. Digital literacy is defined here as the skills to use IT and its devices intelligently. Informatics is defined here as the scientific discipline enabling IT, with its own concepts, methods, body of knowledge and open issues, parallel to other fundamental scientific disciplines such as Mathematics and Physics. Note that in some European countries informatics is known as Computer Science or Computing.

We have relied on, and are grateful for, community contributions. In the absence of official governmental sources in many countries, we have relied on input from academics, researchers, practitioners and teachers who are at the forefront of a slow, but irreversible, movement across Europe to promote the teaching of high quality informatics to the young. The educational, social and economic future of Europe relies on the success of this movement.

Below you can access all data gathered in this study and learn more about the status of informatics education in Europe.

Data Availability

Which countries have provided data? How well are we covering Europe?

View it on the map
The Map: Updates
Recommendations: Informatics
Recommendations: Informatics

All students must have access to Informatics courses starting in lower secondary education if not earlier and continuing until graduation from secondary school.

Informatics courses must be recognized by each country’s educational system as on par with courses in science, technology, engineering, and mathematics. In particular, Informatics courses must be given the same credit.

Teaching of Informatics must follow agreed-upon requirements that emphasize the role of Informatics as a scientific subject.

Teaching of Informatics must be undertaken only by teachers who have obtained a formal education in Informatics and special methodological training.
Recommendations: Informatics

All students must have access to Informatics courses starting in lower secondary education if not earlier and continuing until graduation from secondary school.

Informatics courses must be recognized by each country’s educational system as on par with courses in science, technology, engineering, and mathematics. In particular, Informatics courses must be given the same credit.

Teaching of Informatics must follow agreed-upon requirements that emphasize the role of Informatics as a scientific subject.

Teaching of Informatics must be undertaken only by teachers who have obtained a formal education in Informatics and special methodological training.
All students must have access to Informatics courses starting in lower secondary education if not earlier and continuing until graduation from secondary school.

Informatics courses must be recognized by each country’s educational system as on par with courses in science, technology, engineering, and mathematics. In particular, Informatics courses must be given the same credit.

Teaching of Informatics must follow agreed-upon requirements that emphasize the role of Informatics as a scientific subject.

Teaching of Informatics must be undertaken only by teachers who have obtained a formal education in Informatics and special methodological training.
All students must have access to Informatics courses starting in lower secondary education if not earlier and continuing until graduation from secondary school.

Informatics courses must be recognized by each country’s educational system as on par with courses in science, technology, engineering, and mathematics. In particular, Informatics courses must be given the same credit.

Teaching of Informatics must follow agreed-upon requirements that emphasize the role of Informatics as a scientific subject.

Teaching of Informatics must be undertaken only by teachers who have obtained a formal education in Informatics and special methodological training.
Recommendations: Digital Literacy
Recommendations: Digital Literacy

Digital literacy needs be taught from the early stages of education. [...] 

Teaching of digital literacy must follow an agreed-upon, general curriculum that is periodically updated to reflect new developments in information technology.

Teaching of digital literacy must be undertaken with care and sensitivity by teachers who have undertaken appropriate training. [...] 

Teaching of digital literacy cannot substitute teaching of Informatics, the science underlying information technology, and must not be confused with it.
Recommendations: Teacher Training
Under all circumstances, **sufficient budget** must be guaranteed to train and hire **Informatics teachers**. Only this can break the vicious circle of a shortage of Informatics courses and Informatics teachers.

The hiring of Informatics teachers must follow the same standards as for all other disciplines. In particular, **neither formal requirements nor methodological training must be sacrificed**.
Under all circumstances, **sufficient budget** must be guaranteed **to train and hire Informatics teachers**. Only this can break the vicious circle of a shortage of Informatics courses and Informatics teachers.

The hiring of Informatics teachers must follow the same standards as for all other disciplines. In particular, **neither formal requirements nor methodological training must be sacrificed**.

Baden-Württemberg (German federal state):
- Fall 2015: State minister-president announces mandatory Informatics courses starting in grade 7.
- October 20, 2016: State secretary of education puts hold on implementation plans.
Under all circumstances, **sufficient budget** must be guaranteed to train and hire **Informatics teachers**. Only this can break the vicious circle of a shortage of Informatics courses and Informatics teachers.

The hiring of Informatics teachers must follow the same standards as for all other disciplines. In particular, **neither formal requirements nor methodological training must be sacrificed**.

Baden-Württemberg (German federal state):
- Fall 2015: State minister-president announces mandatory Informatics courses starting in grade 7.
- October 20, 2016: State secretary of education puts hold on implementation plans.
Recommendations: Teacher Training

Under all circumstances, **sufficient budget** must be guaranteed to **train and hire Informatics teachers**. Only this can break the vicious circle of a shortage of Informatics courses and Informatics teachers.

The hiring of Informatics teachers must follow the same standards as for all other disciplines. In particular, **neither formal requirements nor methodological training must be sacrificed**.

Baden-Württemberg (German federal state):
- Fall 2015: State minister-president announces mandatory Informatics courses starting in grade 7.
- October 20, 2016: State secretary of education puts hold on implementation plans.
Committee on European Computing Education
Committee on European Computing Education

http://cece-map.informatics-europe.org
Committee on European Computing Education

http://cece-map.informatics-europe.org
Committee on European Computing Education

http://cece-map.informatics-europe.org
A Prestigious Computing Ed Conference in Europe

CEd Researchers & CEd Practitioners

Overall goals

1. To establish a conference that integrates a thorough understanding of the evolving situation in Europe to develop and target the focus of the conference.

2. To open the conference to new European communities.
Int'l CEd Conferences in Europe

ITiCSE  CSERC  (ICER)

There are already quite a few!

ITiCSE  CSERC  (ICER)

Koli Calling  ISSEP  WiPSCE

IEE †
Int'l CEd Conferences in Europe

There are already quite a few!

Lots of activity, but fragmented; almost disjoint.

We don't need yet another one!
Process
Process

• Bilateral discussions (oral and in writing), 2014-15
  – Agreement of collaboration with a joint goal:
  – Establish a major conference in Europe by enhancing/recasting ITiCSE (and other conferences) – not by developing yet another CEd conference
  – A Federated Conference?
Process

• Bilateral discussions (oral and in writing), 2014-15

  - Agreement of collaboration with a joint goal:
    - Establish a major conference in Europe by enhancing/recasting ITiCSE (and other conferences) – not by developing yet another CEd conference
  
  - A Federated Conference?
Process

•**Bilateral discussions (oral and in writing), 2014-15**
  - Agreement of collaboration with a joint goal:
    - Establish a major conference in Europe by enhancing/recasting ITiCSE (and other conferences) – not by developing yet another CEd conference
    - A Federated Conference?

• **Joint meeting in Vilnius, July 2015**
  - Very positive meeting wrt. a federated conference, but...
  - afterwards (fall 2015) we experienced some friction but also legitimate concerns from some communities
Process

• **Bilateral discussions (oral and in writing), 2014-15**
  - Agreement of collaboration with a joint goal:
    - Establish a major conference in Europe by enhancing/recasting ITiCSE (and other conferences) – not by developing yet another CEd conference
    - A Federated Conference?

• **Joint meeting in Vilnius, July 2015**
  - Very positive meeting wrt. a federated conference, but...
  - afterwards (fall 2015) we experienced some friction but also legitimate concerns from some communities

• **Discussions with ACM SIGCSE, March 2016**
  - Major conference in Europe based on ITiCSE
  - Two ACM/IE representatives on future ITiCSE Committees
Process

• Bilateral discussions (oral and in writing), 2014-15
  - Agreement of collaboration with a joint goal:
    - Establish a major conference in Europe by enhancing/recasting ITiCSE (and other conferences) – not by developing yet another CEd conference
    - A Federated Conference?

• Joint meeting in Vilnius, July 2015
  - Very positive meeting wrt. a federated conference, but...
  - afterwards (fall 2015) we experienced some friction but also legitimate concerns from some communities

• Discussions with ACM SIGCSE, March 2016
  - Major conference in Europe based on ITiCSE
  - Two ACM/IE representatives on future ITiCSE Committees
Upcoming ITiCSE Conferences
Upcoming ITiCSE Conferences

• 2017: Bologna, 1-5 July
  – exploring the opportunity to implement an improved review process for ITiCSE 2017
  – similar to the one just implemented for SIGCSE 2017
  – https://eventi.unibo.it/iticse2017
Upcoming ITiCSE Conferences

• **2017: Bologna, 1-5 July**
  – exploring the opportunity to implement an improved review process for ITiCSE 2017
  – similar to the one just implemented for SIGCSE 2017
  – https://eventi.unibo.it/iticse2017

• **2018: Cyprus**
Upcoming ITiCSE Conferences

- **2017: Bologna, 1-5 July**
  - exploring the opportunity to implement an improved review process for ITiCSE 2017
  - similar to the one just implemented for SIGCSE 2017
  - https://eventi.unibo.it/iticse2017

- **2018: Cyprus**

- **2019: Helsinki?**
Upcoming ITiCSE Conferences

- **2017: Bologna, 1-5 July**
  - exploring the opportunity to implement an improved review process for ITiCSE 2017
  - similar to the one just implemented for SIGCSE 2017
  - [https://eventi.unibo.it/iticse2017](https://eventi.unibo.it/iticse2017)

- **2018: Cyprus**
- **2019: Helsinki?**

- **Next steps**
  - Work on future ITiCSE conferences
  - Work to establish a long-term Steering Committee for ITiCSE
  - Potential collocation with other CEd conferences...