



Teacher education and teacher support associations for  
informatics and computing in schools:  
2024 Edition

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**An invitation:** If you are able to provide details for any country not represented in this document, or if you would like to add details to those already in the document, please do email me: [d.passey@lancaster.ac.uk](mailto:d.passey@lancaster.ac.uk). I will be very pleased to update a next edition of this document with further details.

**Please note:** All images in this document have been taken from Wikipedia Commons.

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## Background

The [Informatics for All \(I4All\) coalition](#) is exploring how informatics and computing in schools can be further developed and is currently focusing on how teachers are being supported in terms of teaching informatics and computing. Part of the exploratory work is a gathering of initial details about national and regional structures that provide such support.

This document has been created from responses to a consultation, circulated to I4All Steering Committee members and the International Federation for Information Processing (IFIP) Technical Committee 3 on Education (TC3) members and to IFIP TC Chairs (as IFIP is a member of the I4All coalition).

Details provided in this document are alphabetically ordered by country. The details, where provided, indicate:

- whether institutions of higher education (HE) provide pre-service informatics and computing teacher education, development or training.
- whether there are any associations of pre-service HE providers for informatics and computing teacher education, development or training, including their name and a uniform resource locator (URL) if possible.
- whether there is one association or more that provides in-service informatics and computing teacher support and education, development or training, including their name(s) and URL(s) if possible.

Please note that pre-service education/development/training supports students/teachers who want to formally become teachers of informatics, computing or computer science (CS), whereas in-service education/development/training addresses continuing support for teachers who have already gained qualifications to teach informatics or CS.

## Australia



### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- There are currently more than 300 accredited Initial Teacher Education (ITE) programmes operating in Australia across 48 higher education providers in, mostly, universities. These programmes include early childhood, primary and secondary education. Not all programmes offer early childhood, primary and secondary education. In terms of pre-service computing, some institutions offer a methodology in computing (secondary); however, not all universities offer this. This is not to be confused with the general capability of digital literacies or ICT literacies, whereby all teachers need to be proficient in using digital technologies in the classroom. Typically, pre-service teachers are offered a compulsory unit in their studies for digital literacies.

### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- There is no known specific organisation for this.

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- Each state has a subject association, which provides support to teachers of computing or digital literacies. They vary in terms of offerings and capacity to provide professional development. There are also many private companies that offer support or programmes.
- Teachers can gain support from:
  - DLTV (<https://dltv.vic.edu.au/>)
  - QSITE (<https://www.qsite.edu.au/>)
  - TASITE (<https://www.tasite.tas.edu.au/>)
  - InTEACT (<https://inteact.act.edu.au/>)
  - ICTENSW (<https://ictensw.org.au/>)
  - EDTechSA (<https://edtechsa.sa.edu.au/>)
  - ECAWA (<https://ecawa.wa.edu.au/about-ecawa-2/>)
  - Grok Academy (<https://groklearning.com/>)

## Austria



**Associations that provide in-service informatics and computing teacher support and education, development or training**

- ARGE Informatik (Federal Working Group on Computer Science - AHS Austria), <https://www.ahs-informatik.com/bundes-arge-informatik/>, represents all informatics teachers across Austria.

## Bulgaria



### Institutions of HE providing pre-service informatics and computing teacher education, development or training

- Universities in Bulgaria provide pre-service informatics teacher education. There are national requirements for those obtaining teacher qualification. Pre-service teacher training is allowed for only those HE institutions with programmes accredited by the National Evaluation and Accreditation Agency (<https://www.neaa.government.bg/en/accredited-higher-education-institutions/higher-institutions>).
- Pre-service informatics teacher education is provided by 9 higher education institutions. Most of the bachelor programmes provided offer a double subject qualification:
  - Sofia University “St. Kliment Ohridski” (SU) provides double bachelor’s programmes in [Mathematics and Informatics](#), [Physics and Informatics](#), and [Chemistry and Informatics](#), master degree programmes in [Content aspects for Specialised Training in Informatics](#), [E-Learning](#), [Technologies for Education in Mathematics and Informatics](#), [Educational Technologies in Specialised Preparation for Information Technologies](#). There are also joint programmes run with South-West University Neofit Rilski and Shumen University “Bishop Konstantin Preslavki” developed through the project MODERN@ in [Innovation and Multidisciplinarity in Teaching Mathematics, Computer Modelling and Informatiton Technologies](#), and with South-West University Neofit Rilski, Trakia University Stara Zagora and Burgas University “Asen Zlatarov” developed through the project MODERN@.
  - South-West University “Neofit Rilski”, Blagoevgrad, (SWU) offers double bachelor’s programmes in [Pedagogy in Education in Mathematics, Informatics and Information Technology](#), and master’s degree programmes in [Information Technologies in Primary School Education](#), [Technologies in Mathematics and Informatics Education](#), and two joint programmes with the University of Sofia, detailed above.
  - University of Plovdiv “St. Paisii Hilendarski” offers a PhD programme, bachelor’s teaching programmes in [Information Technology, Mathematics and Educational Management](#), [Mathematics, Informatics and Information Technology](#), and master’s degree programmes in [Teaching Informatics and Information Technology in Schools](#), [Teaching Informatics and Information Technology in Schools](#), [Teaching Information Technology in Primary Schools](#), and [Teaching Information Technology in Secondary Schools](#)
  - University of Veliko Tarnovo “St. St Cyril and Metodii” offers bachelor’s programmes in [Pedagogy in Education in History and Information Technology](#), [Pedagogy in Education in Mathematics and Informatics](#), and master’s programmes in [Information and Communication Technology in Primary School](#), [Informatics and Information Technology](#), [Mathematics, Informatics and Information Technology](#), and [Technologies for Education in Mathematics and Informatics](#).
  - University of Shumen “Bishop Konstantin Preslavski” offers bachelor’s programmes in [Mathematics and Informatics](#), [Information Technology, Informatics and Mathematics](#), and master’s programmes in [Pedagogy of Education in Informatics and Information Technology](#), [Pedagogy of Education in Mathematics and Informatics](#), and [Primary School Pedagogy and Information Technology](#).

- University of Ruse in Silistra offers bachelor's programmes in [Pedagogy of Education in Informatics and Physics](#), [Pedagogy of Education in Mathematics and Informatics](#), and master's programmes in [Informatics and Information Technology in Education](#).
- Trakia University (TrU), Stara Zagora, offers a single bachelor's programme in [Pedagogy of Education Technology Education](#), a master's degree programme in [Information and Communication Technology in Primary School](#), and a joint programme with the University of Sofia, detailed above.
- Technical University Sofia offers a triple bachelor's programme in [Pedagogy of Teaching in Mathematics, Physics and Informatics](#), and a master's degree programme in [Pedagogy of Teaching in Mathematics, Physics, and Informatics](#).
- University "Prof. Dr. Assen Zlatarov", Burgas, offers a joint master's degree programme with the University of Sofia, detailed above.
- The MODERN-@ MSc programme – ([Innovations and Multidisciplinarity in Compulsory Training in Mathematics, Computer Modeling and Information Technologies](#)) – is a project (BG05M2OP001-2.016-0018 "MODERN-A: MODERNIZATION in partnership through digitization of the Academic Ecosystem"), financed by the Operational Programme "Science and Education for Intelligent Growth", co-financed by the European Union through European Structural and Investment Funds. Specific universities named above are partners in this project. Contact: [modern-a@uni-sofia.bg](mailto:modern-a@uni-sofia.bg).

#### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- There is no known specific organisation for this.

#### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- In Bulgarian schools, several subjects are taught that relate to informatics: computer modelling (in primary school); computer modelling and information technology (in lower secondary school); information technology and informatics (in upper secondary schools, gymnasiums).
- Short-term in-service informatics teachers' support and education is provided by:
  - Universities with accredited specialties in areas of informatics education (as detailed above).
  - The Institute of Mathematics and Informatics in the Bulgarian Academy of Sciences.
  - Many associations and private educational or IT companies accredited by the Ministry of Education and Sciences educational programmes. All approved programmes are available through the website of the Ministry of Education and Sciences (<https://rq.mon.bg/programs/approved-programs>) (in Bulgarian).
  - The Bulgarian Union of Teachers.
  - The Union of Mathematicians in Bulgaria.
  - Textbook publishers.
  - IT companies.
  - Private educational institutions.
- All universities listed above and universities with accredited specialties in informatics and computer science can provide a 1-year post-diploma qualification in "teaching informatics and information technology".
- Teachers in informatics and computer modelling have established two Facebook groups for support: [Group of teachers in informatics](#) and [Group of teachers in computer modelling](#).



## Czech Republic



### Institutions of HE providing pre-service informatics and computing teacher education, development or training

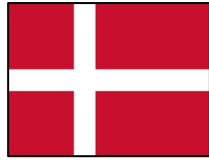
- In the Czech Republic, in 2021, a revision of the curriculum documents for primary and secondary schools was carried out, the result of which was the replacement of the compulsory subject ICT with the subject informatics. In the Czech Republic, an approved teacher must be a master's degree graduate; a bachelor's degree is not sufficient to practice the profession of primary school or secondary school teacher.
- In the Czech Republic, 14 faculties in nine public universities currently offer bachelor's and master's study programmes for informatics teacher education for lower and upper secondary schools. The study programmes of these faculties differ in the composition of subjects, but all must meet the criteria and requirements defined by the National Accreditation Office (<https://nauvs.cz/index.php/en/>).
- In 2021, informatics was included as a compulsory subject in education in elementary schools (primary education). All nine pedagogical faculties have included compulsory subjects in the 5-year master's degree programmes in teaching for primary education, in which student teachers of primary education become familiar with what and how to teach pupils computing.
- The faculties involved are:
  - Charles University Karlova (<https://cuni.cz/UKEN-1.html>)
    - Faculty of Education ([www.pedf.cuni.cz](http://www.pedf.cuni.cz))
    - Faculty of Mathematics and Physics (<https://www.mff.cuni.cz/en/faculty>)
  - University of West Bohemia (<https://www.zcu.cz/en/index.html>)
    - Faculty of Education (<https://www.zcu.cz/en/University/Faculties-institutes-departments/index.html>)
  - Technical University in Liberec (<https://www.tul.cz/en/home-page/>)
    - Faculty of Science, Humanities and Education (<https://www.tul.cz/en/university/fp/>)
  - University of Hradec Králové (<https://www.uhk.cz/en/university-of-hradec-kralove/about/about-university>)
    - Faculty of Science (<https://www.uhk.cz/en/faculty-of-science/about-faculty>)
  - University of South Bohemia in České Budějovice (<https://www.jcu.cz/en/university/about-university>)
    - Faculty of Education (<https://www.pf.jcu.cz/en/>)
    - Faculty of Science (<https://www.prf.jcu.cz/en>)
  - Jan Evangelista Purkyně University (<https://www.ujep.cz/en/>)
    - Faculty of Science (<https://prf.ujep.cz/en/>)
  - Palacký University Olomouc (<https://www.upol.cz/en/>)
    - Faculty of Education (<https://www.pdf.upol.cz/en/>)
    - Faculty of Science (<https://www.prf.upol.cz/en/>)
  - University of Ostrava (<https://www.osu.eu/>)
    - Faculty of Education (<https://pdf.osu.eu/>)
    - Faculty of Science (<https://prf.osu.eu/>)
  - Masaryk University (<https://www.muni.cz/en>)
    - Faculty of Informatics (<https://www.fi.muni.cz/index.html.en>)
    - Faculty of Education (<https://www.ped.muni.cz/en>)

### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- There is no specific single organisation for this.

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- There is a shortage of informatics teachers in schools to teach the newly introduced compulsory subject of informatics in the basic and secondary school curricula. Each faculty of a public university can offer various courses to teachers who are in-service within the system of teacher professional training. Courses on various topics from informatics are organised not only at the faculties of education, but also at the faculties of technical universities, etc.
- A number of courses in or about computer science are also offered to teachers by other institutions:
  - AI dětem (<https://aidetem.cz/>)
  - DigiKoalice při NPI (<https://digikoalice.cz/>)
  - NPI (<https://en.npi.cz/>)
  - ČSKI – Czech Society for Cybernetics and Informatics (<https://www.cski.cz/homepage/en>)
  - JČMF – Society of Czech mathematicians and physicists (<https://www.jcmf.cz/>)
  - JŠI – Union of School Informatics ([jsi.cz](http://jsi.cz))



## Denmark

### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- All except one of the eight universities in Denmark provide pre-service informatics teacher education for upper secondary school, simply as a by-product of a degree in computer science.
- In addition, some universities offer – also as pre-service education – a minor degree in informatics for students from other fields who want to complement their degree with one in informatics.
- For teachers in upper secondary school, the requirement is at least 120 ECTS in informatics (including support subjects).
- Links to webpages (in Danish):
  - [Aarhus University](#)
  - [University of Copenhagen](#)
  - [University of Southern Denmark](#)
- In addition to subject matter knowledge (which is what the above programmes provide), future teachers must take a one-year course in pedagogy as part of their (ideally first year of) employment at an upper secondary school.

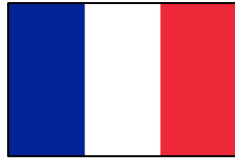
### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- There is no specific organisation for this.

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- It is not an association, but six universities collaborate to offer in-service education for teachers. The programme, which is approved by the government, is based at Aarhus University.
- Aarhus University collaborates with five other universities to offer this programme. The total requirement is 120 ECTS, but 90 ECTS is sufficient for teachers with degrees in neighbouring disciplines (currently defined as the natural sciences): [Master in informatics education](#)
- In addition, and most importantly, [IFTEK](#) is the association for informatics teachers in upper secondary schools in Denmark.

## France



### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- Since 2020, as for all other disciplines, informatics teachers (who will teach in high schools) are educated in the Institut National Supérieur du Professorat et de l'Éducation (INSPE), which are contained as a specific part of universities. These INSPEs are dedicated to the education of pre-service teachers for primary and secondary schools. However, only a few universities offer the specific curriculum (Master MEEF Parcours NSI (Numérique et Sciences Informatiques)) because of the very limited number of positions available in France. The main INSPEs offering this curriculum are Université de [Toulouse](#), [Grande Ecole Toulouse](#), Université de [Lyon](#), Université de [Montpellier](#), Université de [Lille](#), Université de [Bordeaux](#), [IFSEC Bordeaux](#), Université de [Rennes](#), [IFSEC Rennes](#), Université de [Versailles](#), and the Université de [Nancy](#).

### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- There is no specific association of the INSPEs regarding informatics or computing teacher education.

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- The Société Informatique de France ([SIF](#)) has organised, since 2018, a curriculum as an Inter-Academic Diploma dedicated for science teachers who want to teach informatics in high schools. This was a foundation for the current curriculum of the informatics teachers' education programme, which is still used for training in-service teachers.

## Germany



### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- GI Fachausschuss Informatische Bildung in Schulen (IBS) (The Committee on Informatics Education in Schools), <https://fa-ibs.gi.de/>, provides in-service support for informatics teachers and education in schools.
- Contact lead - Peer Stechert ([peer.stechert@gi.de](mailto:peer.stechert@gi.de)).

## Hungary



### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- Institutions of HE that provide pre-service informatics and computing teacher education are:
  - Debreceni Egyetem (<https://unideb.hu/en>).
  - Eötvös Loránd Tudományegyetem (<https://www.elte.hu/en/>).
  - Eszterházy Károly Katolikus Egyetem (<https://uni-eszterhazy.hu/en>).
  - Evangélikus Hittudományi Egyetem (<https://uni.lutheran.hu/>).
  - Miskolci Egyetem (<https://www.uni-miskolc.hu/en>).
  - Nyíregyházi Egyetem (<https://www.nye.hu/>).
  - Pannon Egyetem (<https://international.uni-pannon.hu/>).
  - Pécsi Püspöki Hittudományi Főiskola (<https://pphf.hu/english/>).
  - Pécsi Tudományegyetem (<https://international.pte.hu/>).
  - Sapientia Szerzetesi Hittudományi Főiskola (<https://sapientia.hu/>).
  - Szegedi Tudományegyetem (<https://u-szeged.hu/english>).
  - Veszprémi Érseki Főiskola (<https://www.ersekifoiskola.hu/index.php/hu/>).

### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- There is no association of this kind.

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- Some universities provide in-service informatics and computing teacher support:
  - Debreceni Egyetem (<https://unideb.hu/en>).
  - Eötvös Loránd Tudományegyetem (<https://www.elte.hu/en/>).
  - Eszterházy Károly Katolikus Egyetem (<https://uni-eszterhazy.hu/en>).
  - Miskolci Egyetem (<https://www.uni-miskolc.hu/en>).
  - Nyíregyházi Egyetem (<https://www.nye.hu/>).
  - Pannon Egyetem (<https://international.uni-pannon.hu/>).
  - Pécsi Tudományegyetem (<https://international.pte.hu/>).
  - Szegedi Tudományegyetem (<https://u-szeged.hu/english>).
- There is an accessible list of HE providers for informatics teacher training ([https://www.felvi.hu/felveteli/szakok\\_kepzesek](https://www.felvi.hu/felveteli/szakok_kepzesek)).
- Additionally, in-service support is also provided by:
  - The ISZE Association (<https://isze.hu/english/>).
  - The John von Neumann Computer Society (<https://njszt.hu/en>).

## Ireland



### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- A shortage of computer science (CS) teachers is a main barrier, but substantial progress is being made as the Department of Education and Skills, the Professional Development Service for Teachers, Higher Education Institutions (HEIs) and other bodies have worked together to support upskilling of teachers in computing.
- The first Leaving Certificate (an examination at the end of secondary school, with university places offered that are based on these results) in computer science was held in June 2020, with 40 pilot schools participating. There are now well over 200 schools, representing around one third of the post-primary schools. However, the main teacher training colleges do not run specialist courses in computing. Currently, four universities provide bachelor's degrees in computing/informatics in education.

### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- There is no association of this kind.

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- CESI (Computers in Education Society of Ireland) is the official teacher professional network (TPN) for computer science teachers. It also supports anyone with an interest in the potential of technology to enhance the teaching and learning experience for all involved in education. "CESI stands for the Computers in Education Society of Ireland. It was founded in 1973 and has continued to adapt and move forward in a speedily changing landscape. Technology has enabled the society to overcome the twin barriers to participation (distance and time) and facilitated the development of a strong community online" (<https://www.cesi.ie/>).
- Several universities run continuing professional development (CPD) computing courses for in-service teachers. Maynooth University runs a programme to support both primary and post-primary teachers (<https://pact.cs.nuim.ie/index.html>).
- A newly formed organisation, Oide (<https://oide.ie/>), is a support service for teachers and school leaders, funded by the Department of Education. As part of its support, it is continuing to run the very successful annual 'Computer Science Week'. The main aims of the week are to promote the discipline of computer science throughout Ireland and increase participation rates in schools.

## Italy



### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- Universities have a pre-service teacher training in informatics role for upper secondary schools, where some universities involved are mainly vocationally based. For primary and lower secondary school teacher training in informatics, there has been a very recent and limited educational requirement for teachers, where universities also have a role.

### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

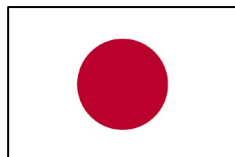
- There is no association of this kind.

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- In-service support for teachers of informatics is provided by some non-governmental and academic organisations, one being Laboratorio Informatica e Scuola, which is the Italian inter-university national consortium on informatics (CINI). CINI (<https://www.consortio-cini.it/index.php/it/lab-nazionali/info-scuola>) represents almost all Italian university professors in informatics and informatics engineering. All colleagues working in informatics education belong to the Laboratorio Informatica e Scuola. The Ministry of Education has just started to set up a 'High School for Professional Development and Lifelong Learning for School Headteachers, Teachers and Supporting Personnel', but this is still in its start-up phase.



## Japan



### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- There is no system in place for HE institutions to provide such training nationwide under the control of the central government by the law. It is possible, but not known for certain, that local boards of education and universities with a proven track record in teacher training in a region may work together to provide such training in a regional scheme.

### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- There are public interest corporations that aim to improve informatics education in private higher education in general, but not specifically concerned with pre-service teacher training, such as the Japan Universities Association for Computer Education (JUICE) (<https://www.juce.jp> – a Japanese language website).
- Another organisation, which is not specialised in pre-service teacher training but aims to promote ICT use in HE institutions, conducts research exchanges and workshops on informatics education, is the Academic eXchange for Information Environment and Strategy (AXIES) (<https://en.axies.jp>).

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- The Information Processing Society of Japan (IPSJ) has published an IPSJ MOOC, a website for training with self-study video materials for high school information science teachers. It provides online courses in video materials on topics that are included in the National Curriculum for high school informatics, such as programming, algorithms, modelling and simulation, information systems, information and communication networks, databases, fundamentals of data science, and data analysis. The IPSJ MOOC (<https://sites.google.com/a/ipsj.or.jp/mooc/>) was developed with a Ministry of Education, Culture, Sports, Science and Technology grant.

## Lithuania



### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- Vilnius University provides pre-service teacher training in informatics for lower secondary (grades 5 to 10) and upper secondary schools (grades 11 to 12). There are also some credits for informatics (computational thinking) in primary school study programmes (for grades 1 to 4).

### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- Lietuvos Informatikos mokytojų asociacija (LiNMA) (The Informatics Teacher Association), <https://linma.org/>, provides in-service support for informatics teachers and education in schools.

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- Lietuvos Informatikos mokytojų asociacija (LiNMA) (The Informatics Teacher Association), <https://linma.org/>, provides in-service support for informatics teachers and education in schools.



## Poland

### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- There are a number of HE institutions (universities) and regional institutions that provide education/development/training for computer science (CS) teachers. According to ministerial regulations, only universities with 5 years of CS study (I+II stages in the Bologna system) can provide pre-service CS education. Only a few universities offer such study. However, the exception is that teachers of elementary education (grades 1-3) are educated at pedagogical faculties, also in ICT and CS use, and this is a quite popular study.

### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- There is no association of pre-service HE providers of informatics and computing science teacher education.

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- There are some nation-wide (governmental) projects (workshops) on development/training of ICT and CS use in education addressed to CS teachers and teachers of other subjects.
- There is no single association. However, in 2020 financial support was requested from the Ministry of National Education for in-service education/development/training of CS teachers and this request was successful. Six universities run in-service courses for: (1) education and development of teachers in elementary education (grades 1-3), 120 hours; (2) development and training of CS teachers (who have rights to teach CS), 120 hours; and (3) 'education of the futures CS teachers,' that is, the candidates are teachers of other subjects who will gain rights to teach CS, 360 hours.
- The situation is complicated, as there are several local initiatives and initiatives run by private HS schools.
- Contacts for any details about the general situation - Maciej M. Sysło ([syslo@ii.uni.wroc.pl](mailto:syslo@ii.uni.wroc.pl)) and Anna Beata Kwiatkowska ([aba@mat.umk.pl](mailto:aba@mat.umk.pl)).



## Portugal

### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- Institutions of HE do provide pre-service informatics and computing teacher education.

### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- There is no association of pre-service HE providers of informatics and computing teacher education.

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- The general association for teachers of informatics is ANPRI (<https://www.anpri.pt/>), which provides further/additional teacher education in informatics.



## Slovakia

### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- Institutions of HE have provided pre-service informatics and computing teacher education since 1987, when teachers of informatics first graduated from Comenius University. Currently, there are several universities running master's degree study programmes for pre-service informatics teachers.

### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- HE providers for informatics and computing teacher education are organised as a subgroup of the Slovak Informatics Society (<https://www.informatika.sk/web/en/app/sk>).

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- Several universities offer degree programmes for in-service teachers – to gain an additional specialisation for the informatics subject (for lower and upper secondary stages of school education). Additionally, several non-for-profit organisations are running accredited (certified) programmes to support informatics teachers. Often, these are partnered with universities. They often provide postgraduate diplomas for informatics teachers and also for all teachers interested in developing their digital literacy. These organisations/associations/NGOs include: Indicia (<https://www.indicia.sk/>); IT Akademia (<https://itakademia.sk/>); Aj ty v IT (<https://ajtyvit.sk/en/home/>); Informatika 2.0 (<https://informatika20.sk/>); Ucime s hardverom (<https://www.ucimeshardverom.sk/>); and Akademia Alexandra (<https://www.akademiaalexandra.sk/>).



## Slovenia

### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- Universities in Slovenia offer pre-service education for prospective informatics teachers. The Ministry of Education defines the qualifications required for individuals aspiring to become certified teachers. Pre-service teacher training is exclusively offered at higher education institutions with programmes accredited by the National Agency in Slovenia for Quality in Higher Education.
- A primary school informatics teacher has completed:
  - a university degree in computer and information science, in mathematics (with a major in computer science with mathematics or applied mathematics), in computer science with mathematics, in computer science, organisation and management of systems (with a major in organisation and management of information systems), in economics (with a major in business information), or in sociology (with a major in social science informatics); or
  - a second-level master's degree programme in teaching (with subject teaching in computer science), in educational computing, in computing and information technology, in computing and information science, in business informatics, in management informatics and electronic business, in organisation and management of information systems, in informatics in modern society, or in social informatics.
- Teachers of word processing, multimedia and computer networks may also be teachers who have fulfilled the requirements for a teacher in the primary school education programme and who have completed a further training programme in computer science and informatics.
- To become a teacher of informatics in vocational and professional education, the teacher must have completed:
  - a university degree in computer and information science, in mathematics (with a major in computer science with mathematics or applied mathematics), in computer science with mathematics, in computer science, organisation, and management of systems (with a major in organisation and management of information systems), in economics (with a major in business information), or in sociology (with a major in social informatics); or
  - a second cycle master's degree programme in teaching (with the subject area of teaching in computer science), in educational computing, in educational computing and informatics, in computing and informatics, in computing and mathematics, in computing and web technologies, in computing and information technologies, in information and communication technologies, in business informatics, in management informatics and electronic commerce, in organisation and management of information systems, in management information systems, in management information science, in management and informatics, in information and communication technologies, in informatics in modern society, or in social science informatics; or
  - a second-level single master's degree programme in subject teaching (with a major in educational computing).

- A teacher of informatics may also be a graduate of a bachelor's degree programme or a second-cycle master's degree programme who has completed a further training programme in informatics.
- The Faculty of Education, University of Ljubljana, offers a Bologna two-cycle degree programme (4+1). The first cycle, spanning 4 years, is the [Two-Subject Teacher programme \(Informatics and...\)](#), which covers professional subjects in informatics and another subject, along with (special) didactics and fundamental pedagogical studies. The second cycle, known as [Teaching](#), takes 1 year.
- The Faculty of Computer and Information Science and the Faculty of Education at the University of Ljubljana jointly offer a two-year second-cycle programme named [Pedagogical Informatics](#).
- The Faculty of Natural Sciences and Mathematics and the Faculty of Electrical Engineering and Computer Science, University of Maribor, offer a programme to train future informatics teachers. The integrated master's degree programme, "[The subject teacher](#)", which includes educational informatics, spans over 5 years.

#### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- There is no association of pre-service HE providers of informatics and computing teacher education.

#### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- There is no specific association that provides in-service informatics teacher support and development. Pedagogical faculties, faculties of mathematics, as well as faculties of informatics, and the National Education Institute of Slovenia, offer teacher training programmes.
  - The Faculty of Education, University of Ljubljana, runs programmes for further education, career teachers' development, and professional training within the framework of the [Center for Continuing Education and Training](#). The Faculty of Education, University of Primorska offers programme for permanent teachers' education, [Life-long learning \(upr.si\)](#). The Faculty of Education at University of Primorska conducts programmes for further teachers' education at the [Education Center for Pedagogical Education and Professional Development - Faculty of Education, University of Maribor](#).
  - The Faculty of Natural Sciences and Technology at the University of Maribor also runs programmes for teachers' education: [2023-Domov-Študij-CVU | Fakulteta za naravoslovje in matematiko \(um.si\)](#).
- Associations and projects that enable the professional development of informatics teachers are:
  - ACM Slovenia (<https://www.acm.si/>), which is an overarching association that supports informatics education.
  - The Institute of Education and Training provides study meetings in the Catalogue of continuing education and training programmes (KATIS) (<https://paka3.mss.edus.si/katis/KatalogProgramov.aspx>).
  - Project Napoj is a Project of the Faculty of Computer and Information Science, University of Ljubljana, which provides resources and events for teachers of informatics in primary and secondary schools (<https://napoj.si/>).
  - LUCY (<https://ucilnica.acm.si/>) provides a calendar of courses and events across all supporting associations.

- Lokar (<https://lokar.fmf.uni-lj.si/moodle/>) is the Moodle site that enables teachers of informatics and computing to interact with those providing support and courses.



## South Africa



### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- Pre-service teachers only receive a basic induction course, which is a two-week course at the University of Pretoria. Other large universities, University of Cape Town as well as the University of Johannesburg may have similar induction programmes.

### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- There is no association of pre-service HE providers for informatics and computing education. Individual university departments are responsible for the induction programmes, such as the Department of Education Innovation at the University of Pretoria.

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- Individual university departments are responsible for in-service education programmes, such as the Department of Education Innovation at the University of Pretoria. Universities may run post-graduate diplomas for teachers, but these are general training programmes for a year.



## Spain

### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- There are two specific degrees for Early Childhood and Primary Education (Grado en Educación Infantil and Grado en Educación Primaria, respectively). In addition, there is a master's degree aimed at Secondary Education (Máster Universitario en Formación del Profesorado de Educación Secundaria, Bachillerato, FP e idiomas).

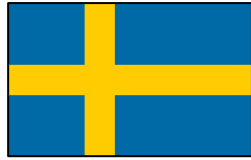
### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- There is no known organisation for this.

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- There is no known national teacher association in Spain, but there are several regional teachers' associations for secondary education. Three of these are listed here.
- In Andalusia: Asociación Andaluza de Profesores de Informática (AAPRI, <https://aapri.es/>).
- In Valencia: Asociación de Profesores de Informática de la Comunidad Valenciana (APICV, <https://www.apicv.net/>).
- In Castile-La Mancha: Asociación Regional de Profesores de Informática de Castilla-La Mancha (ARPICM, <http://www.arpicm.org/>).

## Sweden



### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- He institutions provide a competence development series of four courses that are based on nationally agreed framework course descriptions. There are basic and advanced courses in text and visual (block-based programming) for teachers at all levels of compulsory schooling.
- These course plans and other competence development initiatives can be found on the web (<https://www.skolverket.se/skolutveckling/kurser-och-utbildningar/utbildningar-i-programmering-for-larare>).

### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- In-service training is provided by Higher Education institutions in Sweden through an annual tender process.

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- Besides the formal educational offerings that are provided through tender via the higher education sector, there are a number of private companies and other actors that cater to the interests in programming among teachers. KTH the Royal Institute of Technology in Stockholm collaborates with the City of Stockholm and Stockholm University to provide many opportunities for competence development through their shared outreach centre, the House of Science ([www.vetenskapenshus.se](http://www.vetenskapenshus.se)).
- There are other companies and actors that also provide in-service support.

## Switzerland



### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- SVIA (The Swiss Association for Informatics in Education), <https://svia-ssie-ssii.ch/de/>, provides in-service support for informatics education in schools.
- Contact lead – President, Martina Vazquez ([svia@svia-ssie-ssii.ch](mailto:svia@svia-ssie-ssii.ch)).

## Ukraine



### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- There are 43 institutions of higher education that train teachers in the specialty 014.09 “Secondary education, Informatics teacher”.

### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- There is a developed network of training of informatics teachers, both at the level of higher educational institutions, state structures, and at the level of associations, communities, and professional societies.

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- IT companies of Ukraine, regional IT clusters, associations, institutes of advanced training, and professional communities provide comprehensive support to informatics teachers by offering free advanced training courses and methodological support.
- The national project “Updated Informatics – IT-studios” - [Дія.Освіта \(diia.gov.ua\)](http://diia.gov.ua) is being implemented on the initiative of the Ministry of Digital Transformation and the Ministry of Education and Science within the framework of the EU4DigitalUA programme, which is financed by the European Union. Resources “Updated informatics - IT-studio” are placed on a separate module of the national platform “Diia.Education” [Дія.Освіта — IT-студії \(diia.gov.ua\)](http://diia.gov.ua) and can be used across the entire system of general secondary education - in elementary, basic and high schools. The resources are flexible and can be used according to any curriculum chosen by the teacher.
- The IT Ukraine Association ([Home - Асоціація “IT Ukraine”](http://itukraine.org.ua)) is the largest national association of IT companies. The Association represents the interests of more than 80,000 IT professionals. One of the key objectives of the Association is a modernisation of IT education for sustainable growth of the IT-industry in Ukraine. This direction of the Association combines educational and social projects that develop the industry and solve pressing social problems. The IT Ukraine Association is the leader in the development of IT education in Ukraine ([Educational and CSR - Асоціація “IT Ukraine”](http://itukraine.org.ua)). Over the past 5 years, the Association has implemented 12 large-scale educational projects, which have attracted more than 50,000 participants ([PowerPoint \(itukraine.org.ua\)](http://itukraine.org.ua)).

## United Kingdom



### **Institutions of HE providing pre-service informatics and computing teacher education, development or training**

- Since England, Wales, Scotland and Northern Ireland have each adopted computing into their national curricula, but in distinct ways to match their wider curriculum aims and intentions, many universities and teacher training colleges across the UK provide pre-service education for computing, at bachelor's, Postgraduate Certificate or Diploma in Education, or master's levels.

### **Associations of pre-service HE providers for informatics and computing teacher education, development or training**

- The Technology, Pedagogy Teacher Trainers & Education Association (TPEA) has many members who specialise in computing from initial teacher education and training (ITT) institutions (universities and teacher training colleges), <https://tpea.ac.uk/>.

### **Associations that provide in-service informatics and computing teacher support and education, development or training**

- There are a number of associations involved, which have different memberships, and they have different aims and links to computing in school education.
- Computing at School (CAS) probably has the largest number of in-service computing teacher members, as it was formed by the British Computer Society (BCS) following the introduction of computing into the national curriculum in England, and its members form hubs across the UK and support teachers with courses, resources, etc., <https://www.computingatschool.org.uk/>.
- The National Association for Education Technology (NAACE) was originally formed as an association for advisors of computing education, and this membership has been largely retained, with advice and support provided to schools, <https://www.naace.co.uk/>.
- The National Centre for Computing Education (NCCE) is the latest government-funded centre to provide support for in-service teachers, <https://teachcomputing.org/>.
- The Scottish Teachers Advancing Computing Science (STACS) has a membership of teachers of computing from across Scotland, <https://www.stacs.scot/home>.