

INFORMATICS 4 ALL

**A glimpse at current Portuguese initiatives
towards integrating computing education
in the general curricula**

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Some History

- 90s
 - MINERVA project, integrating ICT in general education
 - Use of tools productivity tools, but also pilot programs in basic computing
- 2000s
 - widespread introduction of digital skills at the secondary level
 - various specialised ICT courses in secondary level vocational programs (programming, databases, internet, web).
 - Development of a specialised teaching staff body, and a formal “Informática” area along the “classical ones”.
- 2010s
 - Offer of some of the specialised courses mentioned above to the general curriculum (as electives)
 - Proliferation of extra curricular initiatives at the secondary (computing clubs, robotics clubs, clubs, programming competitions) driven by secondary level teaching staff and universities.
- 2015s -
 - The discussion started about the need to consolidate and integrate the several initiatives within the basic and secondary level curriculum, several instruments set, leading to current curriculum development efforts.

Key Actors

- Ministry of Education / DG Education
- Minister of Higher Education, Science and Technology
- Agência Ciência Viva (Live Science Agency)
- National Science Foundation
- INCODE 2030
- Academic University Community
- ANPRI (Informatics Teachers Association)



PORTUGAL INCoDe.2030

NATIONAL DIGITAL
COMPETENCES
INITIATIVE e.2030

INCODE 2030

- **INCLUSION** - Making sure the whole population has equal access to digital technologies to obtain information, communicate, and interact with others
- **EDUCATION** - Educating the younger population by stimulating and reinforcing digital literacy and digital skills at all levels of schooling and as part of lifelong learning
- **QUALIFICATION** - Qualifying the working population by providing them with the knowledge they need to become a part of a labour market that relies heavily on digital skills
- **SPECIALISATION** - Promoting specialisation in digital technologies and applications to improve employability and create higher added value in the economy
- **RESEARCH** - Providing the conditions for the production of new knowledge and an active participation in international R&D networks and programmes

INCODE Recom for 1st Cycle Curriculum

- “interpreting, producing and evaluating various kinds and forms of content, which will help students to understand diverse forms of cultural communication and to build their personal identity”
- “ability to use digital tools to collect, integrate and organize information, to assist creative processes, to communicate and socialize; while developing a critical perspective”

INCODE Recom for 1st Cycle Curriculum

- “Exposure to computational thinking from 1st grade on, using simple programming languages such as scratch and simple robotics, as well as more abstract concepts such as simple algorithmics”
- “Integration with interdisciplinary teaching models that exploit logical, analytical, and critical thinking, experimentation and problem solving”
- “Launch pilot introductory programming initiatives in the 1st Cycle as pedagogical projects proposed by schools to the DGE.”

INCODE Recom for 1st Cycle Curriculum

- “Continue this track all the way through the 12 year, progressing in the algorithmic complexity and programming languages used”:
- “Requires the complete reformulation of the current mandatory ICT curriculum in the 3th cycle, that currently consists in general introduction to productivity tools such as word, excel e PPT and notions of information management and ethics and (internet) security”

Current Status of Curriculum Development

- The basic 2 sec curriculum is being reformulated starting from the 1st cycle
- The formal introduction of ICT in the 1st cycle curriculum is very recent
 - Decreto-lei n° 55/2018
- The 1st cycle curricular guidelines are centred around four “pillars”
 - Digital citizenship
 - Search and Research
 - Communicate and collaborate
 - Create and innovate

Create and Innovate

- “Formulate everyday situations and problem solutions in terms of computational thinking and programming”
- “Develop digital artefacts that combine narratives with multimodal content such as music, video, and other”.
- “Create algorithms and/or programs that use mathematical, logical or geometrical concepts in calculations with objects such as sequences, patterns and regularities”

Create and Innovate

- “Construct interactive programs, simulating natural processes or phenomena related to the environment”
- Create algorithms and / or programs that involve interaction with virtual or tangible objects and the context (e.g. create simple games)

Related currently open initiatives

- Movimento Código Portugal (yearly event)
- Computing at school (public call for projects)
 - Promote the generalisation of computing in the first cycle
 - Funding of pilot programs targeting the education of teaching staff, development of educational collaborative platforms, syllabus, content and educational materials for computational thinking
- AI 2030: (public call for projects)
 - Promoting the awareness about AI in the general society
 - Introducing machine learning and data science in science dissemination activities mainly in the network of science clubs, Ciência Viva activities

Movimento Código Portugal



EDIÇÃO 2018



EDIÇÃO 2017



EDIÇÃO 2016



MOVIMENTO CÓDIGO PORTUGAL



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Outreach and Dissemination

