

Transforming teaching and learning: changing the pedagogical approach to using educational programming languages

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Transforming teaching and learning: Changing the pedagogical approach to using Educational Programming Languages.

The aim of this paper is to explore the issues surrounding curriculum design for computer courses with a special focus on programming. Within the context of a European project exploring the development of programming skills in secondary education by means of modern educational programming languages, this paper proposes certain pedagogical methods, approaches and frameworks for enhancing the development of programming skills, thereby increasing the number of students studying computer science both at school and university level.

The pSkills project involves schools from four countries, Austria, Estonia, Greece and Italy. Examining the computer science curriculum in these countries required a common framework to standardise the different curricula and determine the various stages of schooling where the curricula was offered. The IFIP curriculum (van Weert, 2000) was selected because it provided a matrix to determine the stages of computer science delivery. Three areas were selected from the IFIP curriculum to differentiate the stages of computer science delivery; ICT Literacy, Applications of ICT and ICT specialisation.

The documentary analysis showed, that the core curriculum for each country in the computer sciences is centred on computer literacy. Furthermore, the analysis revealed that teachers' pedagogical methods depended upon their confidence and each country's curriculum structure. The direction for change with computer sciences may lie in the pedagogical approach and the use of Educational Programming Languages (EPL's) (Rai, Wong & Cole, 2006). Several EPLs were shortlisted on the basis of certain criteria that ensured alignments with the core aims of the project.

Learning design software tools give computer science teachers the possibility to create teaching and learning activities that will engage student learning and at the same time position students at the centre of the design process. Pursuing this theme, the next stage of the pSkills project is to propose a common European curriculum for computer science teachers and computer science courses while at the same time it will develop specific training scenarios for teachers and students in order to exploit the technology and pedagogical opportunities that the project may offer.

References

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