



Computational Thinking for Fun: Role-play, Magic, Games and Puzzles

Invited talk (in English), Joint final session Progra-MEER 16-17,
Paul Curzon, Queen Mary University of London,
UC Leuven-Limburg, Campus Hertogstraat, 2017-05-31

Abstract

Computational thinking is being introduced as a core part of Computing curricula in schools in many countries. It is a fundamental skill set that students supposedly learn by studying Computer Science. Through our Computer Science for Fun project, we have been exploring ways to inspire and enthuse students about interdisciplinary Computer Science including computational thinking.

In this talk, we demonstrate how computational thinking ideas can be introduced in a fun way using a mixture of ‘unplugged’ activities away from computers, including role-playing, magic tricks, games and puzzles. We explore how these activities can be used to introduce ideas such as:

- algorithmic thinking (thinking of the solutions to problems as being algorithms),
- abstraction (hiding details to make problem solving easier),
- generalisation and pattern matching (using solutions for more than the original problem),
- decomposition (breaking problems down in to simpler easier to solve parts),
- evaluation (checking solutions do the right thing, do it fast enough and are usable),
- and logical thinking.

Our approach also helps emphasise that computational thinking is about problem solving for people, not just about technology.

Supporting resources for teachers are available at www.teachinglondoncomputing.org and for students at www.cs4fn.org and at www.abitofcs4fn.org

About the speaker

Paul Curzon is a Professor of Computer Science at Queen Mary University of London, known for his work inspiring students and teachers about interdisciplinary computer science. He co-founded the internationally reputed public engagement project *Computer Science for Fun* and co-leads both the *UK Computing at School (CAS) London Regional Network* and *Teaching London Computing* creating inspiring classroom activities.

He regularly gives shows and workshops for both students and teachers on computer science including magic shows teaching computational thinking. He has won several awards for excellence in teaching and public engagement. His book with Peter McOwan, “The Power of Computational Thinking” was published in March 2017.

He also leads research on the formal verification of human-computer systems, developing ways to highlight design that leads to systematic human error. Most recently his work has concerned the design of safer medical devices.