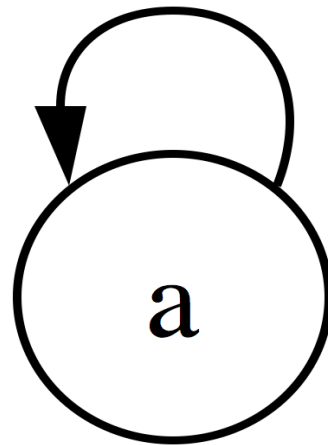# Massive Open Online Coding:
Exploring the role of **MOOCs** for post-primary computing education in Ireland

Eamon Costello, Mark Brown, Monica Ward, Enda Donlon, Deirdre Butler
Dublin City University

16th June 2016 – Science and Mathematics Education Conference, Dublin

New Kid on the Block

The National Council of Teachers of Mathematics	1920
The National Association for Research in Science Teaching	1928
ACM's Special Interest Group in CS Education	1970
Computer Science Teacher Association	2004
International Computing Education Research Workshop	2005
Koli Calling Conference on Computing Education	2001

Wilson, C., & Guzdial, M. (2010). How to make progress in computing education. *Communications of the ACM*, *53*(5), 35-37.
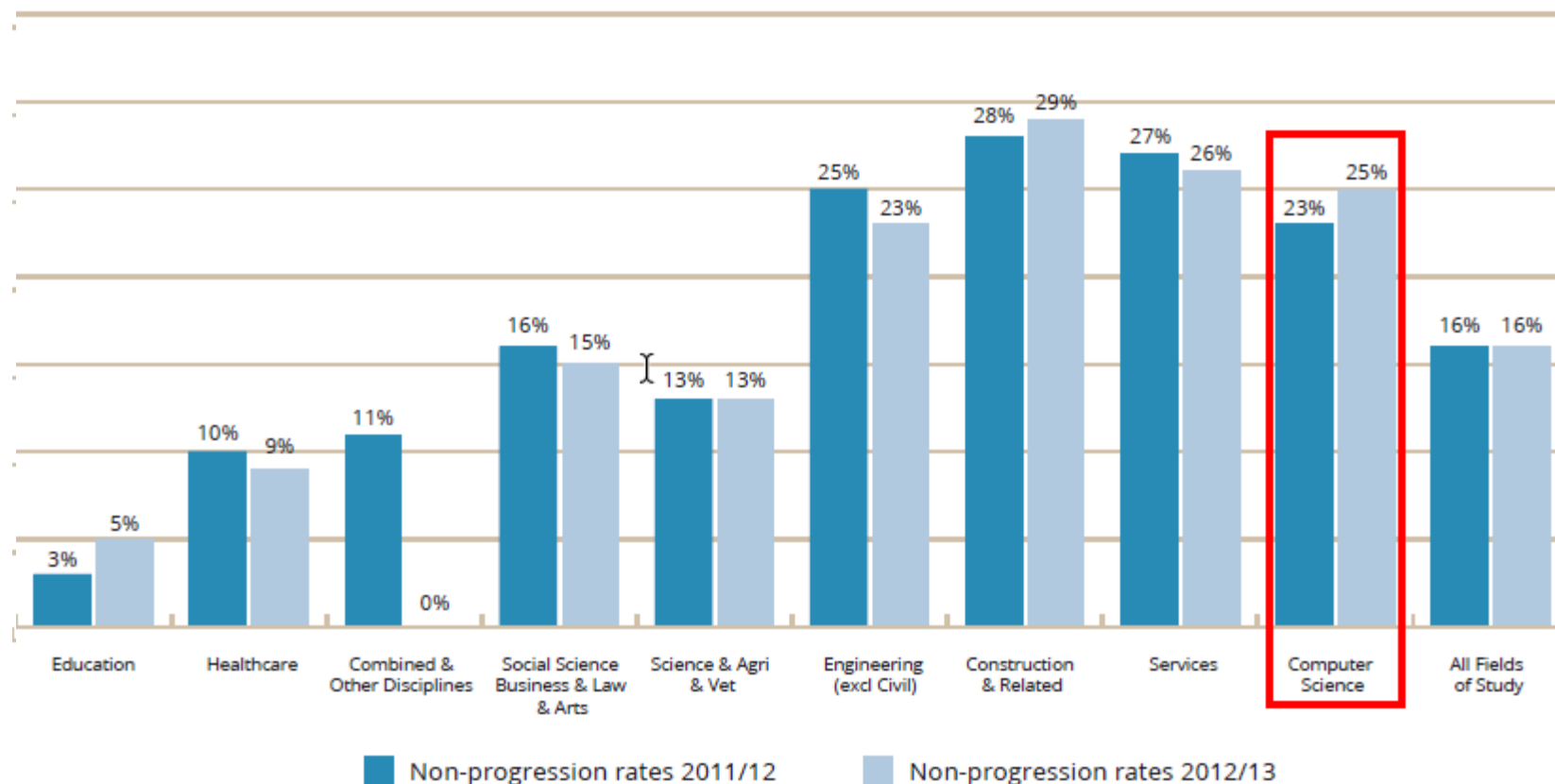
Three Paradigms

"Is Computer Science a branch of mathematics, an engineering discipline or a natural science? Should knowledge about the behaviour of programs proceed deductively or empirically? Are computer programs on a par with mathematical objects, with mere data, or with mental processes?" (Eden, 2007*)*
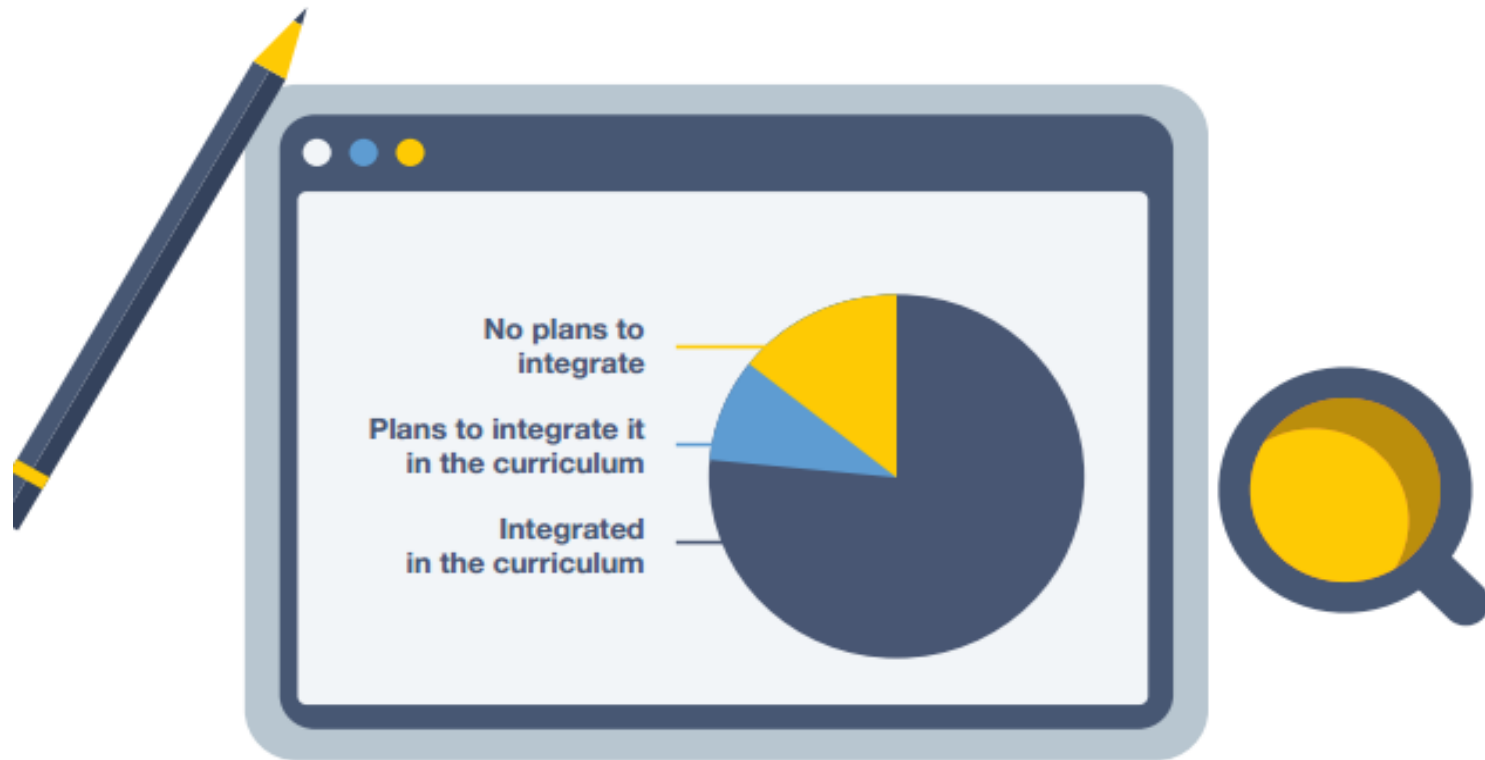
- **Rationalist**
- **Technocratic**
- **Scientific**

Eden, A. H. (2007). Three paradigms of computer science. *Minds and machines*, *17*(2), 135-167.

Local Contexts

Non-Progression Rates by Field of Study 2011/12 v's 2012/13

Mooney, O., Patterson, V., O'Connor, M., & Chantler, A. (2015). A study of progression in Irish higher education. Higher Education Authority

Computing at post-primary level

No plans to integrate

Plans to integrate it in the curriculum

Integrated in the curriculum

AUSTRIA, BULGARIA, THE CZECH REPUBLIC, DENMARK, ESTONIA, FRANCE, HUNGARY, IRELAND, LITHUANIA, MALTA, SPAIN, POLAND, PORTUGAL, SLOVAKIA, THE UK (ENGLAND), ISRAEL

BELGIUM FLANDERS, FINLAND

BELGIUM WALLONIA, NETHERLANDS, NORWAY

Balanskat, A. and Engelhardt, K., `2014). *Computing Our Future: Computer Programming and Coding-Priorities, School Curricula and Initiatives Across Europe*. European Schoolnet, Brussels, Belgium.

Computing Education in Ireland

September 2016

Short Course
Coding

Expectations for students

10   **Strand 1:** Computer science introduction

11   **Strand 2:** Let's get connected

12   **Strand 3:** Coding at the next level

13   **Strand 4:** Problem solving in the real world

Specification for Junior Cycle

Computing Education in Ireland
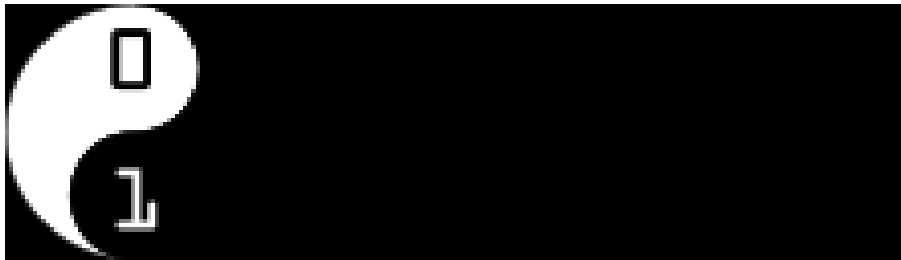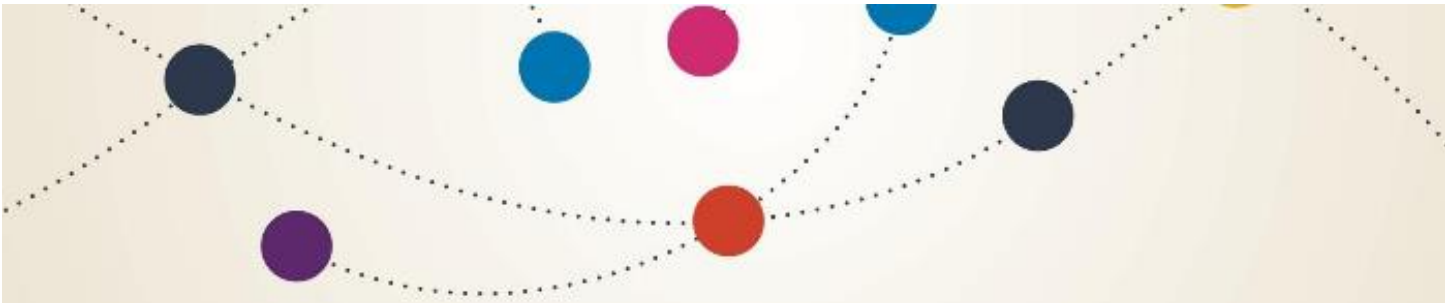
Coder-Dojos
Problems of the Co-curriculum

Computing Education in Ireland

- DCU - Programming Olympiad, Outreach - TY
- DCU - Google project with Irish Schools
             (Ward & McGuire, 2016)
- BSc. in Information Technology online

DCU Connected

Michael Connolly
BSc in Information Technology, Dundalk,
County Louth

What is Next?

ICT courses in Upper Second Level Education

Request for Tender for Research on International Practice

May 2016

NCCA

MOOCs: Rising or Falling?
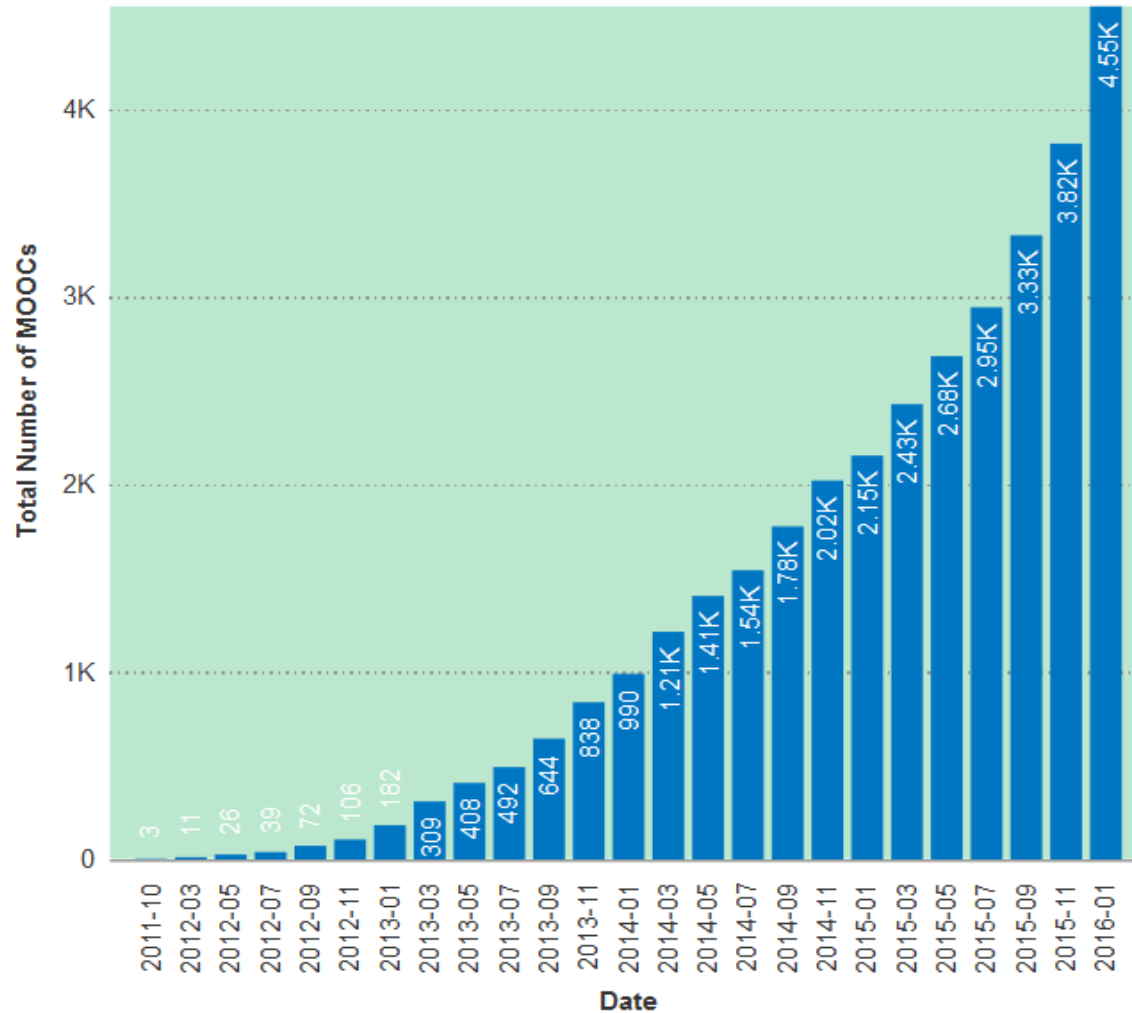
MOOCs at DCU

- Research
- Development

NIDL

National Institute
for Digital Learning

DCU

21Century Learning Design

"The problem that MOOCs are actually solving, therefore, is **how to provide free education to highly qualified professionals** – not a problem anyone had previously thought to identify…"
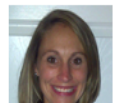(Laurillard, 2016a)

Laurillard, D. (2016). The educational problem that MOOCs could solve: professional development for teachers of disadvantaged students. *Research in Learning* Technology, 24

- "In CPD, we typically provide some form of updating on current issues and findings, invite participants to discuss and debate the application to their professional contexts, and then offer a certificate of attendance to put towards their professional development requirements. **It is a perfect fit with the capability and the demographic of the current MOOC…**" (Laurillard, 2016b)

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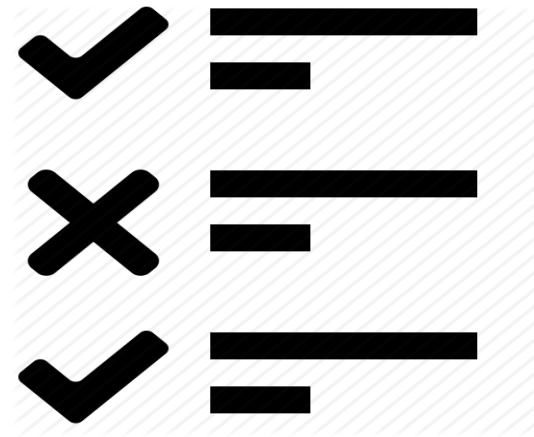coursera   ☰ Catalog   Search catalog

UNIVERSITY OF LONDON

ICT in Primary Education: Transforming children's learning across the curriculum

Why and how are teachers integrating ICT (Information and Communication Technology) into primary education? In this course we analyse examples from schools in different parts of the world, and bring professional teachers, headteachers and policymakers together to share their best ideas and inspiring stories. The materials in the course are based on studies carried out for the UNESCO Institute of IT in Education, Moscow.

MOOCs for K12 Computing Education

Finland - MOOCS as Semester Long Entrance Exam

Kurhila, J., & Vihavainen, A. (2015). A purposeful MOOC to alleviate insufficient CS education in Finnish schools. ACM Transactions on Computing Education (TOCE), 15(2), 10.

Thank you

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