



Ireland ACM* SIGCSE[†] Chapter launch
UCD School of Computer Science
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† Special Interest Group on Computer Science Education

Slides at brettbecker.com/talks-panels-etc/

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Mission



- provide a unifying forum to foster and advance Computing Education in Ireland
- promote dissemination of best practices in Computing Education research & practice
- positively influence equality, diversity, inclusion & accessibility in computing

This mission transcends all stakeholders in Computing Education in Ireland including formal and informal educators and students as well as government, industry, volunteer and grass-roots stakeholders.

- Join if you aren't a member! [SIGCSEire.acm.org](https://sigcseire.acm.org). Free! Spread the word!
- Join SIGCSE too! Best \$25 (€22.61) you'll ever spend. sigcse.org

Who are we?



- 149 members
 - **Every level of education:** 3rd level (58%) 2nd level (18%) Primary level (7%)
 - Undergraduate & Postgraduate Students (6%)
 - Industry (<5%)
 - Voluntary (Coder Dojo, code clubs, etc.) (<5%)
 - Government (<5%)
 - PLC / VTOS (<5%)
- Officers
 - Brett Becker (UCD): Chair – www.brettbecker.com
 - Keith Quille (TU Dublin): Co-chair – www.keithquille.com
 - Catherine Mooney (UCD): Registrar / Treasurer – lisda.ucd.ie

Who are we?



- Membership is ~ 44% female, ~ 55% male
- Members from:
 - 8/8 Universities in Ireland
 - 9/11 Institutes of Technology
 - 1/3 Private Colleges (HECA with Computing Programmes)
- Members based in Northern Ireland are Welcome
 - Actually, if you have a reasonable connection to Ireland, you can join from any country

What do we do?



- A Community of Practice - Work with other existing groups
- Looking **inward** (domestic) and **outward** (international)
- Work on behalf of SIGCSE in Ireland
- Listserv (members only)
 - Please use it! Ask questions! Share resources!
- ~3 meetings per year?
 - 1 large, 2 smaller? (including 1 business meeting)
 - **Geographically distributed**
 - Any member can propose hosting an event, under almost any theme/model/etc.
 - As long as it's Computing Education including Equality/Diversity/Inclusion
- More – it's your chapter!

Thank You!



- Amber Settle (DePaul U) and the SIGCSE Board(s)
- UK SIGCSE Chapter (Steven Bradley, Sally Fincher, Quentin Cutts)
- UCD School of Computer Science & College of Science: Chris Bleakley, Pádraig Cunningham, Joe Carthy, Lorraine McHugh & Caitriona Power
- Barry Feeney (TU Dublin)
- Paul Dickson (Ithaca College)
- Keith Quille (TU Dublin), Catherine Mooney (UCD) & the original supporters: Rosemary Monahan & Kevin Casey & Aidan Mooney & Keith Nolan (MU), Karen Nolan & Roisin Faherty (TU Dublin), Thomas Fitzpatrick (UCD)
- All 149 members who have joined in the last 8 weeks
- EVERYONE WHO CAME HERE TODAY!
- Student helpers!

Computing Education in Ireland and elsewhere...

The Common Ground

Computing is great and is doing better than ever!



- More computing students now than ever
- More diversity than ever? (but improvement is still needed)
- More jobs than ever
- Computing is now truly affecting every industry, every discipline.
 - It's easy to forget that 20 or 30 years ago this was not so true.
- Computing is now facing new challenges. Challenges of a discipline that is maturing.
 - Computing for social good
 - Diversity
 - Ethics
 - Law & Legality
 - Energy and Green issues
 - Security
 - Digital Natives
 - ...

But...

We are far from mastering computing, how to teach it, and all of its implications...

Example: first language

- We aren't even close to agreement on what language is best for any given group of students
- The languages used, and the reasons for using them, vary greatly - even by country [1]
- Long-running surveys in Australasia, repeated in UK in 2017 (see [2])
- Repeated in Ireland in 2018 [2]
 - Covers all but one university and one IoT.

Myths & misconceptions



- Computing is new.
- We. Are. Not. Yet. Teaching. It. Best. - We just can't be.
- As computing educators, We all need to constantly challenge our own beliefs and 'truths' and knowledge.
 - **Teaching computing is a responsibility. (Teaching anything is a responsibility).**
- Do we harbour M&Ms about the M&Ms we worry about?
- Do I propagate M&Ms unknowingly?

Computing \neq Programming

Programming \neq Hard



- Programming is important - and problematic – but it's not everything
- Sime et al. (1977) “**Programming could be made easier**” [3]
- 40 years later, Andrew Luxton-Reilly “Programming is Easy” [4]
 - He was *trying* to convince the masses – Sime et al.’s message hadn’t yet caught on
- Me (today): Computing should be made easier, & more accessible, to anyone
- Why does the “programming is hard” mantra persist? Do Physics people walk around saying “calculus is hard”?
 - Not where I studied Physics. But even if they do, what good is that?

[3] Sime, M.E., Arblaster, A. T. and Green, T.R.G. Structuring the programmer's task. Journal of Occupational Psychology, 50: 205-216.

<https://10.1111/j.2044-8325.1977.tb00376.x>

[4] Luxton-Reilly, A. 2016. Learning to Program is Easy. In Proceedings of the 2016 ACM Conference on Innovation and Technology in Computer Science Education (ITiCSE '16). ACM, New York, NY, USA, 284-289. DOI: <https://doi.org/10.1145/2899415.2899432>

Computing \neq Mathematics



- At best: computing ability \sim mathematics ability (for some learners)
 - *There is very little evidence for mathematics = computing & mathematics = programming*
 - This could not only hurt the discipline, but discourage diversity [5]
- What about
 - Natural language ability and computing?
 - Creativity and computing?
 - Spatial reasoning and computing?
 - X and computing?
 - We simply have not yet explored many values of X
 - So how do we so confidently speak about mathematics?

Computing is a trading ground



- Computing in other disciplines
 - STEM, Humanities, ...
- Other disciplines and areas moving ‘into’ computing
 - Ethics, Forensics, **Education**, ...
- Areas ‘emerging’ from computing
 - Cyber Security, Quantum Computing, ...
- Nebulous concepts with seemingly infinite definitions, few of which are agreed, nor provided often enough when used (even if used a lot)
 - Computational Thinking, Problem Solving, Active Learning ...
 - We don’t even agree on what “Computer Science” means [6]

CS is for everyone

- What does this really mean?
 - I fear that messages like this often go in one ear and out the other.
 - May be counter-productive when not used with informed intention? There are many people and groups who *are* delivering this message effectively – but again, there is a responsibility.
- What “Computing is for everyone” means to me:
 - **Computing is for anyone**
 - *...who wants to do it or wants to use it* – no less so – and no more so – than for any other discipline.
 - Computing is just another discipline in a lot of ways. Let’s recognise that.
 - Of course there are unique aspects to computing as a discipline
 - but every discipline has unique aspects
 - That doesn’t make computing *more* different – it makes it just as unique *as every other discipline*
- SIGCSEire is a venue to explore ideas like this (including disagreeing with views like this 😊)

Computing Education in Ireland Today

The good, the bad and the quirky

People, participation, environment



- Lots of interest from parents, volunteers, young people
 - Coder Dojo started in Ireland!
- Ireland has similar diversity issues as other countries (particularly English-speaking Western countries)
 - Very high numbers of male students
 - Low participation from certain socio-economic groups
 - More...
- Fantastic computing job market (**Spectacular** when you consider a population of ~4.8 million).
 - Facebook, Google, Microsoft, Dell/EMC, Intel, IBM, Amazon have BIG operations here (many EMEA headquarters, many of these are the largest presence outside US)
 - Almost every tech player you can think of has a non-trivial presence in Ireland

Computing Education Research in Ireland



- Of the 57 countries that attended the SIGCSE Technical Symposium 2010-2018, Ireland ranked 20th in attendees
- Of the 47 countries who have had authors at the Symposium 2010-2018, Ireland ranked 14th in number of papers
- 9th in ICER papers (2005-15) - Per capita, 2nd. *This is probably higher now...*
- A handful of active research groups
- Two handfuls of PhD students (that's a lot – even on a global scale)
- Ireland is doing well, particularly given a small population, like:
 - Finland...
 - New Zealand...

Unique Opportunities



- In the last 3 years Keith Quille and his team at TU Dublin (with Karen Nolan and Roisin Faherty) have run micro:bit “camps” for:
 - ~7500 students at ~250 schools
 - They also ran CPD sessions for ~1000 teachers.
- About 40 hours per week! Every week!
- CSinc.ie

Unique Opportunities



- INGENIC, the Irish Network for Gender Equality in Computing
 - 2017 Catherine Mooney (UCD) and Susan McKeever (TU Dublin)
 - “Promoting gender balance through 3rd level collaboration”
 - Aim is at least one CS faculty member at each HEI in Ireland (very close to being realised)
 - Share information – Athena Swan, statistics, experience, ...

Leaving Certificate Computer Science



- Nationwide Curriculum
 - Not possible in many places, like the U.S.
- “Phase 1”
 - 40 hand-picked schools (out of ~120 applications)
 - Started Sept 2018, sitting LCCS June 2020
- Open to all schools September 2020

Leaving Certificate Computer Science



- Successes:
 - It exists
 - Good feedback from teachers & students
- Problems:
 - **Teacher supply**
 - **Lack of communication**
 - Transition to third level (university/college level)?
 - Gender & Diversity?

Leaving Certificate Computer Science



- Sample papers, sample coursework & more tinyurl.com/rz4pjst
- LERO interim report on LCCS Teachers' CPD Programme tinyurl.com/qsj9j5c
- A disappointingly brief mention in the ICT Skills Action Plan 2022 tinyurl.com/wfggofx
- A Framework for support of Computer Science at Leaving Certificate level has been developed by the DES (Dept of Ed & Skills) in collaboration with CESI* (cesi.ie)
 - EoI for participation in the forum set up to implement the framework will be issued on Dec 16.

Evolving landscape



- Several universities offering in-service and pre-service programmes for teachers
 - I don't think anyone has a complete (definitive) list – Tom Farrell (careersnews.ie) is working on one.
 - This sounds like a great thread for the SIGCSEire mailing list!
- How is the Leaving Certificate Computer Science going to go?
- What will the transition from second-level to third-level computing be like in 5 years? 10 years?
- Will we be teaching programming in STEM? Humanities?

Wrapping up



- Ireland ACM SIGCSE Chapter
 - a *truly national, truly inclusive* network, welcoming any and all stakeholders in Computing Education in Ireland
 - All levels, all sectors – even all disciplines – STEM? Humanities?
- It's the members' chapter. Help us shape it!