

CS_{LINC}: A Nationwide CS MOOC for Second-level Students



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Introduction

This poster introduces CSLINC, a free scaffolded MOOC framework tailored to second-level students in Ireland that consists of: an online platform built for accessibility; a suite of modules developed upon international best practices with varying co-creators; and automated assessment and certificates of completion. Its aim is to provide content to promote national CS curricula to all second-level students in Ireland. In September 2021, CSLINC launched to 10,000 students across 100 schools. Future work will include collecting and collating research to validate CSLINC's goals, scaffolding that will build foundations for national curriculum learning outcomes, and measure its impact on students, their perceptions and follow on CS uptake at second-level in Ireland.

Goals

- Tracking student perceptions of CS at the start and the end of the program. The impact of a potential change in students perception would be the start of meaningful and hopefully lasting change for CS at second-level in Ireland.
- Measuring changes in student uptake of the national CS curriculum as an official subject.
- Determining the impact on student understanding of what CS is, to help inform decisions regarding CS third-level course choices. Current evidence suggests that many students choose CS at third-level without a full understanding of the area.
- Identifying challenging concepts via pre- and post-surveys which will inform further module design, content, and delivery.

Background

In Ireland, students from the ages of 12-18 attend secondary school, which is split into the Junior Cycle (1st, 2nd & 3rd year) and the Senior Cycle (4th, 5th & 6th year). The 4th year, referred to as Transition Year (TY), is not mandatory, and focuses on the personal growth of students, with each school devising its own unique program to meet the needs of its students.

Currently there is a void for TY CS modules, as identified by the Department of Education's Leaving Certificate CS Framework 2020 guidance document.

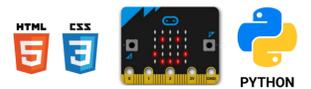
This poster presents a recently developed a free scaffolded MOOC to enable schools that may not have the facilities, resources, equipment, or qualified teachers to deliver formal CS curricula in the form of mini-courses to their TY students. The goal is to provide formal exposure to CS for TY students, that may encourage them to take CS as an official subject for 5th and 6th year.

CS_{LINC} Overview

1. Pilot:

In March 2021, three uniformly structured modules were piloted:

1) HTML & CSS 2) micro:bit and 3) Python

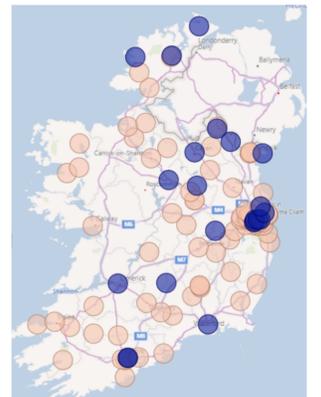


Each module was eight weeks in length and incorporated an automated assessment. Upon successful completion students received a certificate of completion of the module from TU Dublin and industry sponsors. The pilot gained significant adoption, providing formal CS curricula to 2,997 students from 50 schools. This pilot established an early viability and success indicators of the approach and logistical implementation of the program.

2. First Year:

Since September 2021, CSLINC is available with 11 modules (from multiple co-creators) and is been used by more than 10,000 students from over 100 schools. Our target audience was all TY students in Ireland. Current enrolment is approximately one third of all TY students in Ireland, with a more detailed breakdown in below table. Current student numbers (each module has 6,000–9,000 registered students out of over 10,000 total) demonstrates that multi-module sign up is common, and most students will have gained exposure to a broad range of fundamental CS topics.

22 Disadvantaged schools
58 Mixed, 23 Boys and 20 Girls schools
8 Fee paying schools
397 unique classrooms



Collaborators



Future Work

The intended outcome of the MOOC is to increase participation of students in CS, through the development of a broad range of CS modules that ensure equity of access for all students which is free of charge. The first year take-up has been significant, with over 10,000 students taking part across the country. The platform has the capacity to expand easily and support thousands more students.

Research to gauge the short- and long-term impact of the programme is being conducted. The details of all research outputs will be reported through future publications and collaborations.

We aim for this programme to become an integral part of the transition year structure nation-wide. We also hope that through sharing our experience we can collaborate with educators in other countries who have similar programmes or who are looking to establish them.