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Setting Up and Mentoring in CoderDojo Dublin 15
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Abstract
Initially beginning in Ireland, CoderDojo is a non-profit organisation that has grown rapidly into a global network of community based programming clubs. Mentors teach coding skills to young people aged between 7 and 17. All classes are free of charge and clubs operate entirely on a volunteer basis. The first Dublin 15 based CoderDojo began just over two years ago and continues to thrive during weekend sessions held at The Institute of Technology Blanchardstown (ITB), which offers the use of its premises and resources for the sessions. This paper will chronicle the involvement of ITB staff and students with the CoderDojo, Dublin 15 branch from its inception. How the various contributions of all parties lead to a highly successful collaboration that ultimately led to classes becoming self-sustainable as a local facility for Dublin 15 children. Furthermore, this collaboration not only yielded benefits for the young people encountering coding for the first time, but spotlighted the previously untapped skillset of computing students and staff to engage in civic outreach in the wider community.

1 Introduction

While reports arise of a skills shortage in the Irish ICT Industry, it can sometimes be overlooked that there is no standardised means of teaching such skills in school at secondary level, and even fewer at national level. The recent mandate to include coding as part of the Junior Cert curriculum is a positive step to address this. Typically, formal training in coding is encountered for the first time when students enter college or university. This approach does have a certain amount of merit. An appropriate level of abstract and critical thinking is indeed required before one can attempt to code with confidence. However, there is little reason to suggest why such abstract thinking cannot be developed at a much earlier age. The first CoderDojo was founded in Cork by the then eighteen year old James Whelton and businessman Bill Liao. It was initially set up to address the multiple requests Whelton was receiving from classmates to teach them the same coding skills he had self-taught himself. It has since become a global movement. On any given month, between 10,000 and 20,000 young people are mentored worldwide by volunteers in more than 399 dojos in 43 countries. Various ‘belts’ are awarded to children, similar to those of a martial arts dojo, on successful creation of computer programs at cumulative levels of difficulty. Classes have been held at ITB for over two years now with no sign of declining popularity. In fact the fully booked sessions each weekend have led to further sponsorship and scaling up of resources. Due to the popularity of these weekend classes, a second dojo has also been formed elsewhere in Dublin 15 to facilitate weekday classes.

2 Why Coding?

Apart from providing an opportunity for children to learn how to code at an early age, perhaps one of the primary factors in CoderDojo’s success lies in the fact that it tends to embrace a dynamic method of learning required for ICT. Classes tend to be collaborative in
nature, with small groups of students working together alongside mentors, rather than a single facilitator. Even the content tends to be variable depending on the current skillset of the children and particular software that may be in use.

For example, CoderDojo, Dublin 15 at ITB has now expanded to the extent that its weekly range of classes includes:

- **Scratch Programming**
- **Arduino Development**
- **Robotics with Lego Mindstorms**
- **Mobile Applications using Android**
- **Web Development using HTML5 and JavaScript.**

Each of the above platforms provide an appropriate environment to learn the technical and creative skills necessary to build useful computer applications. Young students aged 8 and 9 years old are literally learning similar techniques and technologies that may be used in industry, albeit in more suitable and age appropriate packaging.

**Figure 1:** Which class are you joining today? A recent Twitter Post by @CoderDojoD15 outlining the classes currently on offer.

It should also be noted that unlike foreign language learning, knowing how to code in a variety of computer programming languages is very common. This is quite feasible once the fundamentals of general coding have been mastered to allow transfer between languages. For
example, a child who might have enjoyed Scratch coding initially, will have already gained enough experience to attempt another programming language with relative ease.

**Figure 2:** An ITB USB storage wristband to represent the Dojo ‘Belt’ system of awards. One white wristband was given to each of the first CoderDojo, Dublin 15 Participants

### 3 Setting up at ITB

In early April 2012, two experienced IT Professionals, Ivo Brett and Colm Ahern approached ITB with their concept of creating the first CoderDojo in Dublin 15. They had assessed a few locations such as community centres and local libraries, but determined that ITB would make the greatest sense to establish a branch. The initial plan would be simple but scalable. They met with ITB management and computing staff outlining their plan to setup a Dublin 15 branch which they would run and manage. ITB would provide the premises and help the initial setup by leveraging via marketing, insurance and child protection policies. ITB computing staff and students would add to the corps of mentors and act as liaisons with the branch on a number of levels.

**Figure 3:** Local children and mentors participating in one of the many fully booked sessions.
Several meetings ensued between the Dublin 15 organisers and ITB staff where course content was agreed upon, classrooms to be used selected as well as classroom design and format. The first classes were broken into two adjoining rooms. One of which would host a basic webpage development class using HTML, and the other, a more advanced class teaching internet coding skills through JavaScript. From the very beginning, all classes were (and continue to be) fully booked.

Tickets would be free of charge in keeping with the volunteer ethos and could be booked online each week via the online ticketing service, Eventbrite. Parents were asked to remain on campus during the classes although many would eventually contribute to both logistics and mentoring.

4 Mentoring

A crucial key to any programming club’s success is having a wide network of skilled mentors available who are trained and experienced in the complexities of programming and ICT applications. As module leader on the Data Structures and Algorithms course at ITB at that time, I suggested that students might try to participate through mentoring. Several of those initial students have since remained with the sessions for a number of years, and reported that the experience gained through mentoring gave them key skills and opportunities upon graduation. In particular they noted that at interviews, participation at CoderDojo was noted as a positive endeavour. An indication of increased awareness of the movement. Some of the ITB students would even progress to the point where they could independently lead full classroom sessions themselves. Ian Flood - 2013 BSc graduate now working for Ericsson in Athlone - was one of the first ITB student mentors to lead a full class, including managing a small group of other mentors. Children seemed to be responding very well to the interactions with college students.

5 Sponsorship

Two years on in April 2014, the current head organiser for the Dublin 15 Branch, Larry O’Brien announced that in addition to ITB, both Bentley Systems and the Hello World foundation would be contributing significant sponsorship. This would allow for the acquisition of further equipment, in particular Lego Mindstorm and Arduino units. According to O’Brien in an ITB press release in April 2014:

"CoderDojo has experienced an enormous success in Dublin 15 so far. We have had fully booked classes every Saturday since we started, and it has been great to see the enthusiasm of the kids as they learn new skills. Our biggest challenge is that we don’t have enough places to hold classes, and we are heavily oversubscribed. We would love to see CoderDojo extended to other areas in Dublin 15 so that we can accommodate more kids. In order for this to happen, we need more mentors, and we would welcome any mentors contacting us"

Simon Horsley, Bentley Vice President, EMEA Regional Sales, added,

"CoderDojo provides a wonderful opportunity to help young students explore the world of software coding and its multiple applications. Our colleagues at Bentley Systems recognize the importance of encouraging young people to engage in STEM-based studies to help ensure a steady supply of engineering talent entering the workforce to help address the world’s many challenges, including advancing infrastructure for improved
quality of life. Therefore, it is our pleasure to support CoderDojo’s extremely worthwhile endeavours.

Each of the initial founders; Ivo Brett, Colm Ahern and Larry O’Brien have noted the fact that without ITB support in the form of resources, staff and students, such scalability would never have been possible. According to Brett:

“ITB was instrumental in providing an excellent location and also in providing a cohort of excellent mentors in the form of students from the computing/technology classes. We also had huge support from many of the lecturers. This support from the ITB provided some level of certainty so that we could advertise the first term of classes knowing that we would have enough mentors.”

6 A Mentor’s Perspective

The Data Structures and Algorithms course in third year was perhaps the most logical source of mentors given that those computing students would have attained enough expertise at that point in order to teach children. During the first year of classes, over a dozen ITB students from the Data Structures module mentored, and many more from the BSc, MSc and Higher Diploma in computing courses have since volunteered. Many have also continued on as weekly mentors since that time. One such graduate is Neha Theti (MSc 2013) who is now currently completing a PhD in the Information Security and Digital Forensics research group at ITB. She outlines her experience below:

“I initially went to one of the Javascript classes to observe and get an overall idea of how the sessions were conducted. It was great to see experienced professionals and graduates as mentors sparing time to share their knowledge with young kids. Observing the mentors for several sessions helped me hone my teaching skills, especially teaching in a way that is enjoyable and interesting to the kids.

It is incredible to see these kids who have immense curiosity and desire to learn coding. They get great satisfaction from developing or building something on their own. Their parents are very supportive as well and some of them sit through the whole session. Coderdojo is an excellent initiative that not only helps kids discover their coding potential and logic building capability, but also enables IT professionals and graduates to gain teaching experience and contribute to the society. With tremendous support of institutions like ITB, Coderdojo continues to be a huge success!”

7 Coding the Future

While each club inevitably has its own unique culture and choice of software options, it is worth noting the sheer speed at which success has come since that first class in April 2012. A clear indicator if ever there was one of the realistic need for training in coding techniques for younger children. At the time of writing, there are now two additional clubs in the Dublin 15 area. One of which is headed by Ivo Brett and runs weekday classes in a separate location in Castleknock, while the ITB club runs at weekends. Inspired by the rapid success of CoderDojo in Dublin 15, a group of second year students studying Creative Digital Media at ITB in 2013, decided to create a documentary about the movement in general. They worked closely with the Dublin 15 branch at ITB and several scenes were filmed on campus. The documentary is now a featured video on the main CoderDojo YouTube channel, with 91,000+ views and counting. See Figure 4 below:
Figure 4: ITB CDM students, Niall O'Sullivan, Jonathan Doyle, Martyn Mills & Guitar Egbon made a film in 2013, featuring several scenes from the Dublin 15 club. [https://www.youtube.com/user/coderdojo/featured](https://www.youtube.com/user/coderdojo/featured)

It seems that once word had circulated and a regular cohort of children were attending weekly classes, the club was more than capable of sustaining itself. It has now expanded towards its initial vision. With the help of ITB, around 100 to 120 kids every week are now learning to code in Dublin 15.

Links

**CoderDojo - Dublin 15** (Institute of Technology Blanchardstown - *Weekends*)  
Website: [https://zen.coderdojo.com/dojo/44](https://zen.coderdojo.com/dojo/44)  
Twitter ID: @CoderDojoD15  
[https://twitter.com/CoderDojoD15](https://twitter.com/CoderDojoD15)

**CoderDojo - Castleknock** (Castleknock Community College – *Weekdays*)  
Website: [http://www.coderdojocastleknock.com/](http://www.coderdojocastleknock.com/)  
Twitter ID: @CoderDojoD15  
[https://twitter.com/coderdojocastle](https://twitter.com/coderdojocastle)

**Documentary – “Coding the Future”**  
Website: [https://www.youtube.com/user/coderdojo/featured](https://www.youtube.com/user/coderdojo/featured)