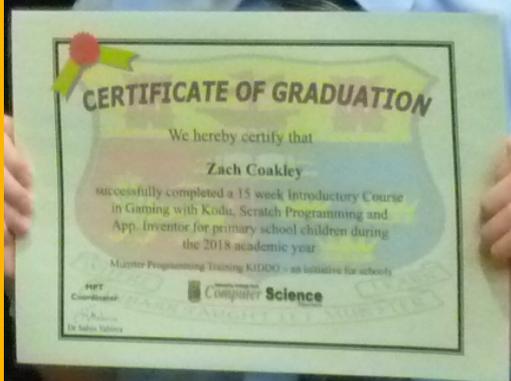




CHAPTER 8

CASE STUDY: MUNSTER PROGRAMMING TRAINING



8.1 Introduction to Munster Programming Training

Munster Programming Training (MPT) was established by Dr Sabin Tabirca in 2003 to promote ICT to secondary and primary school pupils. It is the most significant outreach activity run by the School of Computer Science and Information Technology (CSIT) and has introduced computing topics directly to approximately 1,300 second level pupils and thousands more indirectly. In fact, the seeds of the Coder Dojo movement³³ began in MPT, as James Whelton one of the founders attended MPT between 2006-2009. Initially, he brought elements of MPT activities in his secondary school as a mini Dojo club, where he ran it for 2 years. Today, there are now more than 1,900 verified Dojos in 93 countries, with new Dojos starting almost every day.

8.2 MPT programmes

MPT has grown and evolved over the years to cater for different groups of pupils. In 2018, five different programmes were offered by CSIT to second level pupils. All programme run on Saturday mornings from 10am to 1pm ranging in length from 16 to 24 weeks. In total, there are around 150 primary and secondary school students attending formal lectures and practical classes each week in computer science labs located in the Western Gateway Building.

The MPT outreach is structured so that the students have the opportunity to progress through the programmes from MPT Kiddo to MPT Cycle 3 learning different facets of computer science as they progress.

Many of the MPT tutors were themselves MPT students with others emanating from the school's staff, undergraduate and postgraduate programmes.

MPT Kiddo (30 pupils) from 5th and 6th class in primary school, aged 10-11. They cover topics such as scratch programming, app inventor and 3D gaming with Kodu.

Eimear Corby, one of three pupils who attended MPT Kiddo last year and is now in Cycle 1 told us, "the work is fun for my age group and is interesting, exciting and challenging, all at the same time. It is great to meet children with a similar interest from other schools, everybody is eager to help and explain, and we have a great time".

MPT Junior, (30 pupils), is for secondary school pupils in the first three years of the junior cycle, aged 13-15 years old. The topics covered include web scripting, web gaming with Minecraft and video production.

MPT Senior, (70 pupils) our flagship programme, is for secondary school pupils in the senior cycle, i.e. transition year, 5th and 6th year, aged 15 to 17 years old. The students learn python programming, web scripting, web

³³ <https://coderdojo.com/movement/>

gaming and video production. These students are also exposed to problem solving in preparation for the All Ireland programming competitions.

MPT Cycle 2 (20 pupils) is an advanced programme for the best students who have completed MPT Senior and who wish to further develop their programming skills. The topics covered include elements of advanced algorithms and data structures as well as advanced problem solving.

MPT Cycle 3 (10-15 pupils) is also an advanced programme and supports students who compete in programming competitions such as the All Ireland Programming Olympiad (AIPO) and the International Olympiad in Informatics (IOI).

8.3 Impact

More than 1,300 primary and secondary students have graduated the MPT programmes over the last 15 years. Perhaps, the most important outcome of the programme is that it opens up a career path for these students in computer science, mathematics or electrical engineering. Around 50% of the MPT senior graduates opt for STEMM degrees, with around 20% going on to study Computer Science. Furthermore, between 15-20 MPT graduates choose to study one of the undergraduate programmes in the School of CSIT. Those who have attended MPT training (3-5 years) perform excellently in our degrees and many go on to undertake a PhD. Currently, five students who started their computer science trajectory in MPT are undertaking or have completed their PhD in Computer Science at UCC. Many of the MPT students are a great asset to the school as undergraduates and PhD students as they are often become peer assisted learning assistants.

Ina Panayotova started MPT with her brothers in 2012 and returned each year until she joined the BSc Computer Science at UCC in 2016. Not only did Ina and her brothers undertake MPT, they also competed in the Irish Collegiate Programming Contest hosted by Computer Science. This competition is designed for third level students but has been won on at least one occasion by second level students. Ina told us how MPT influenced her life to date:

“MPT helped me see programming as an art form that could be useful in many areas of life. I enjoyed participating in programming competitions, and mentoring for MPT, which improved my technical interview skills. This even helped me secure an internship at Google in Switzerland for Summer 2018.”



Although predominantly male pupils attend MPT, approximately 30% are female which is helping to set the foundations for more female students taking up computer science as a career.

MPT encourages students to achieve excellence in computer science. Approximately, 20 MPT students have been awarded medals in the AIPO. Furthermore, the AIPO competition selects the Irish panel to participate in the IOI. For the past 15 years, one or two MPT students have been included in the Irish IOI panel. A former MPT student, David McCarthy (2007-2010), was the only Irish student to have won a medal in the IOI in recent years. David also won the science section of the BT Young Scientist competition

with a project based on Mathematics and Computing. He is currently a PhD student at UC Irvine.

Each year, the school holds a MPT graduation ceremony attended by the students, their parents and teachers. It is a wonderful event acknowledging the dedication and growth of these students over the year.



Prof Anita Maguire is Vice President for Research and Innovation at UCC.

Professor Anita Maguire, Vice President for Research and Innovation at UCC has this to say about the programme

"The MPT initiative is really excellent and impactful. Our son enjoyed the programme and the graduation event (March 2018) was extremely impressive and professional. Well done — a credit to UCC. Keeping an initiative like this at this standard over many years is very rare in a university environment."

"UCC is very proud of MPT," said Professor Cormac Sreenan, Head of Computer Science, at this year's graduation ceremony as he applauded the dedication of Sabin and his team on making an indelible impression on over 1300 young people over the past 15 years. Sabin has given them the opportunity to learn to code; an opportunity they would not have had but for MPT.

8.4 Workshops for ICT teachers

Another important dimension of the MPT outreach activities run by CSIT is the MPT Teachers Workshops. These tailored workshops have been running since 2009 for ICT teachers from all over Cork. The workshops are attended by 10-15 dedicated teachers, who are interested in upskilling or leaning new ICT technologies and computing fundamentals.

In 2017, the government set up a pilot programme introducing computer science as a leaving certificate (LC) subject in 40 schools nationally. Dr Tabirca reached out to the teachers in the Muster area involved in the pilot to offer workshops aligned to LC curriculum. These workshops run every second Wednesday covering topics such as python programming and algorithms.

MPT is a unique offering at Irish third level institutions as it provides a valuable insight for prospective students about computer science topics. For students who undertake a computer science degree, it provides them with a solid basis upon which to build their skills and offers them the opportunity to assist their peers in laboratory classes. MPT benefits the school through its connection with schools in particular career guidance teachers.