



Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Bridge21 Annual Report 2016-2017



Transforming Education



Welcome to Bridge21's Annual Report for 2017-17. It has been an exciting year for Bridge21 as we have continued to work with students, teachers and policy-makers both in Ireland and further afield.

Bridge21 is both an action research project and a highly innovative model of technology mediated, collaborative, 21st century teaching and learning.

Our mission statement is that all young people should have the opportunity to raise their educational aspirations and fully reach their potential. Thanks to your generosity and support over the last 10 years, we have been able to provide thousands of students with the opportunity to unlock that potential.

“A core principle of the project is that issues of disadvantage, lack of interest in STEM and gender issues cannot be tackled by outreach activities alone, a multi-layered approach is needed across students, schools, the provision of professional development for teachers and work at the policy level to help shape a national agenda in which a 21st century model of teaching and learning is used rather than the current didactic, rote learning, focused model.”

*Professor Brendan Tangney,
Academic Director, Bridge21*

Bridge21 is 10!

Bridge21 will celebrate its 10th birthday this year. From the first Bridge2College student workshops in Goldsmith Hall through to providing Continuous Professional Development, CPD, for hundreds of teachers in 21st Century Teaching and Learning, Bridge21 has been built around ideas about collaboration and the transformative power of technology.



The Bridge21 learning space in October 2007 and what it looks like at present

To date, we have worked with 13,208 students and 1,905 teachers from over 100 different schools. We've covered topics from computer programming to philosophy and the full spectrum of the secondary school curriculum. We have published papers on our learning model, on student motivation, skills development and 3rd level progression. We have helped schools re-design their classrooms, change their approach to teaching and learning and to integrate technology into everyday life in school. We have worked with the National Council for Curriculum and Assessment and the Dept. of Education to help reform the Irish education system.

In April this year Bridge21 founding director John Lawlor received a PhD for his work on the development of the Bridge21 learning model and Grace Lawlor Bridge21 received a M.Sc. in Technology and Learning based on her work with Bridge21. It was a fantastic achievement for John and Grace and a testament to their hard work in pioneering education innovation.

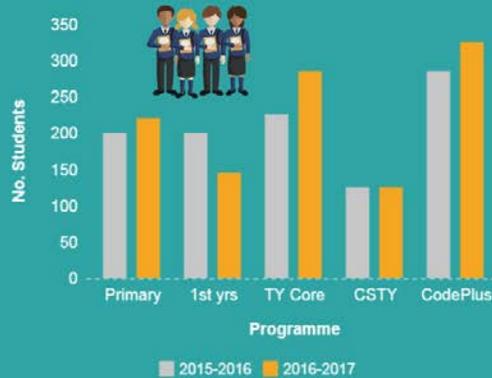


Prof Brendan Tangney with Dr John Lawlor and Grace Lawlor Programme Coordinator, Bridge21



Bridge21 in Numbers The Power of Learning

School and Student Engagement - 2017



Teacher Engagement - 2017



24

School Workshops



197

Practising Teachers



120

Trainee Teachers



120

PG Cert Graduates

10 Years at Bridge21



1,905
Teachers



13,208
Students



Bridge21 Student Activity

The Transition Year Programmes

In 2016/17, over 300 students took part in a week long experience of collaboration, innovation, creative thinking and technology. Working in teams, students brainstormed, investigated, planned, created and presented on different tasks each day. Over 150 students were then invited to take part in additional workshops, each on a different theme including Media, Philosophy, English, Science, Gaeilge and of course Computing. These workshops gave students a taste of university life and a chance to try their hand at something new.

The year was capped off with a graduation ceremony for all 300 students in the Dining Hall in Trinity College. Dr Katriona O’Sullivan spoke about her educational journey from teenage mother to TCD Ph.D. graduate. There was also an award ceremony to recognise the star performers from the year

Computer Science Transition Year Workshops (CS-TY)



Grace Lawlor, Bridge21 with Bridge21 TY award winners

CS-TY 2017 saw 125 young people take part in one-week computer science workshops. With support from the School of Computer Science & Statistics and volunteers from Google Ireland and Workday, students tackled a range of projects including animation, game design and computational thinking. 20 of these students moved on to product design and prototyping during our advanced Invent Week, covering topics such as the Internet of Things, Home Automation and Wearable Technology. The EmoTee (a t-shirt that lets you display emojis) was one of the products created during Invent Week 2017.



The Emo Tee

Google TY Work Experience Programme

This year, Bridge21 helped Google run their TY Work Experience Programme. 80 students (including 20 from Bridge21 schools) spent one week in the offices of Google Ireland learning about how Google works. We assisted with the planning and delivery of the student workshops during these weeks.



Primary School Programme



Fifth class students in Bridge21

Bridge21 were delighted to welcome 12 TAP primary schools to participate in this year's Primary School Programme. A team of returning Transition Year students acted as mentors for the programme. We had three weeks of fun, excitement and creativity and the TY gang answered any questions the younger students had about what to expect when they start secondary school in September.

CodePlus

CodePlus aims to address an underrepresentation of women in Computer Science at 3rd level. The programme introduces teenage girls to coding, problem solving, computational thinking, and helps them develop an understanding of how technology influences the world around us now, and where it might lead in the future. All girls spent at least 20 hours on the programme.



Brendan Tangney and Caroline O'Reilly from Workday (left), students showcasing their games and Prof. Carol O'Sullivan (right) with a student



A graduation ceremony for 300 students took place in the Science Gallery in April. The students were addressed by guests of honour, Prof. Carol O'Sullivan, Senior Research Scientist at Disney, and Head of Computer Science & Statistics, and Prof. Linda Doyle, Director of CONNECT and Professor of Engineering and The Arts in TCD. CodePlus is supported by Science Foundation Ireland's Discover Programme.

We are looking for volunteer speakers from companies working in the Tech Sector to visit schools to give short presentations and Q&A sessions on career options for women in technology. We believe that promoting career pathways for females in Computer Science, and providing role models of women in the technology industry, will have a very positive impact on the students involved.



Working at the Policy Level

Writing the new Leaving Certificate Computer Science Specification

Our CS/STEM programme manager, Dr. Jake Rowan Byrne, was commissioned by the National Council for Curriculum and Assessment (NCCA) to lead the writing of the new Leaving Certificate Computer Science curriculum. A [full draft specification](#) has been completed in collaboration with the NCCA and the associated development group, and is available for public consultation now.



This is a very exciting opportunity as the draft specification aligns considerably with Bridge21's goals of promoting technology mediated, team-based project work in the classroom. This represents a significant step forward as we see Bridge21 pedagogical approaches integrated into formal education, especially in the senior cycle.

*Dr. Jake Byrne,
CS-STEM CPD
Programme Manager,
Bridge21*

Digital Strategy Implementation Advisory Group

In 2015 the Department of Education and Skills produced a strategy document outlining how digital technology should be used to enhance teaching & learning in Primary and Secondary Schools. A fund of €200 million was also announced to be used by schools over the period of the plan to invest in ICT infrastructure and devices. The Strategy document promotes a social constructivist approach to teaching & learning and aligns closely with the ongoing reform of the Junior Cycle in secondary schools and its emphasis on the development of 21st Century Skills.

In February of this year the Minister convened a group to advise (and accelerate) the implementation of the strategy. The group is made up of representatives from the Department, Schools, Universities and Industry and is chaired by Brendan Tangney.



Teacher Support

Postgraduate Certificate in 21st Century Teaching and Learning

The [Postgraduate Certificate in 21st Century Teaching and Learning](#), which is a key component of the TA21 project, is proving most effective in helping teachers change their classroom practice, make innovative use of technology and teach coding skills. Now in its 3rd year, **120 teachers** (up 50% on previous years) are on schedule to complete the course in 16/17 where they received formal training in the Bridge21 methodology as it applies to STEM/Computer Science education and educational disadvantage.

With some modules delivered in Google's offices in Dublin, it gave the participating teachers first-hand experience of a high tech working environment. Graduating teachers also have the option to progress onto the existing M.Ed. in the School of Education in TCD. The Computer Science and STEM modules from the certificate are available to teachers and educators for a small fee on a not-for-credit basis.

Teacher Workshops in Bridge21 Schools - Educate Together Secondary Schools



Ciarán Bauer, Programme Manager, Bridge21 with teachers from new Educate Together partner schools

In August 2016 we commenced a yearlong partnership with four new Second-level Educate Together Schools, (ETSS); Stepside ETSS, North Wicklow ETSS, Bremore ETSS and Cork ETSS. The chance to get in on the ground floor with four brand new schools was an exciting one for all of us in Bridge21.

Introductory workshops for both teachers and students were held in Bridge21 and in each school. Throughout the year, teachers engaged in an online

Community of Practice and worked in subject groups with their colleagues in the other schools. Additional workshops, focused on assessment of 21st Century skills were held in Bridge21 during the year. Many of these teachers were able to fully embrace the Bridge21 model and has seen impressive levels of innovation and development in the classroom. We will continue to work with these schools as they grow and expand the Community of Practice to more schools in the future.



International Collaborations



Kevin Sullivan, Education Manager, Bridge21, visiting teachers in Mumbai, India in April 2017

TATA Institute of Social Studies and the ITE Project

In April 2017, Academic Director Brendan Tangney and Education Manager Kevin Sullivan visited Mumbai to work with 50 IT facilitators from schools and education projects across India. The [Integrated approach to Technology in Education](#) (ITE) project, with the support for the TATA Institute of Social Studies, aims to improve teaching and learning outcomes for young people in remote or underprivileged parts of India.

The participants had a range of experience in running project-based, technology-mediated activities with their students. The workshop aimed to help them build on this experience and help them integrate higher order skills such as analysis and critical thinking into their projects.

Erasmus+ Projects

Teaching for Tomorrow, (TFT), Ireland, Germany, Sweden, Estonia

The Erasmus+ [Teaching for Tomorrow project](#), led by the Bridge21 team, aims to foster collaboration and sharing experience between teachers from across Europe. The 16 teachers from four schools ([St Joseph's Rush](#), [Herman-Nohl-Schule](#), [Vändra Gümnaasium](#) and [Stenungsunds kommun](#)) met in Stenungsund, Sweden, in October 2016 to look at the Swedish approach to assessment. This was followed by a visit to Berlin in April 2017 to observe and engage in different teaching styles. To date the project has produced a set of teacher [resources](#) which are available online including our teacher [Introductory](#) and [Assessment](#) Handbooks. The final leg of the project, in Vändra, Estonia, will focus on developing Communities of Practice and what can be learned from the Estonian experience in this area.



Eurosole - (Ireland, UK, Finland, Belgium)

The [Eurosole project](#), based on research by the renowned Sugata Mitra in [Newcastle University](#), brought together second level students and teacher for workshops in Bridge21 (Oct 2016) and in Newcastle University (Feb 2017). The participants were able to compare and contrast different learning styles and “self organise” to answer some [big questions](#).

German Language Learning programme



Transition Year students from [St. Josephs'](#) Secondary School in Rush teamed up with students from [Carl-Friedrich-Gauß-Gymnasium](#) in Gelsenkirchen, Germany to improve their language skills. Both sets of students are studying German and English, respectively, as a second language. The students worked on developing fluency during several Skype sessions this year but the real excitement came from meeting up offline.

In February, the German students visited Rush, and the Bridge21 learning spaces, for workshops with the Irish students. Later in the year, the Irish made the return journey to Gelsenkirchen. Feedback from students and teachers was hugely positive and we hope to use this approach in St. Joseph's on a school-wide basis to include Spanish, French, German and even Japanese for the next school year.

Research Output

Publications and Conferences

This year, we published papers on topics including [21C Approaches to maths education](#), using [Hackathons to promote careers in Computer Science](#) and [Mentoring to promote aspiration and confidence to attend 3rd level education](#).

The [World Conference on Computer in Education](#) is a major international conference attended by hundreds of delegates from around the world. The Bridge21 team gave seven talks over the five days of the conference covering student outcomes from our various programmes, teacher CPD and assessment of 21C skills. The annual [Computers in Education Society of Ireland](#) (CESI) conference was an exciting event for Bridge21 this year as the new Leaving Certificate Computer Science subject was the hot topic of conversation. Brendan Tangney was the keynote speaker and several members of the Bridge21 gave talks and demonstrations during the conference.



Thank You

The Bridge21 team would like to thank Trinity alumni and friend's whose invaluable support has helped us achieve so much in the past 10 years.





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