CS and STEM innovations learning innovations in '21st Century Schools of Distinction' despite resource shortfall

Report on first year of Trinity Access 21 project supported by Google recommends Investment in resources and structural changes in schools required for progress

Dublin, May 13th, 2016: Fundamental reform in Ireland's education system is needed if the digital skills gap evident in Irish society is to be met, a senior academic from Trinity College Dublin said today.

Brendan Tangney, Professor in Computer Science & Statistics,Trinity College Dublin said that teachers need comprehensive resources, whole school supports, training and technology available in the classrooms in order to effect change in the classroom.

He was speaking at the inaugural '21st Century School of Distinction' Awards, which launched a new report from Trinity College Dublin today assessing the impacts achieved in the first year of the Trinity Access 21 (TA21) project based on research involving over 400 teachers and 800 students. TA21 is a three year (2014-2017) project, funded by Google through a €1.5 million donation, which aims to effect change in the Irish education system by preparing teachers to teach Computer Science (CS) and related topics through a collaborative learning model. It also aims to increase the number of students from DEIS schools pursuing STEM and CS focused college courses and careers.

"What we have seen clearly is that with the proper training teachers are more confident in teaching CS and STEM subjects to their students. 63% of teachers who participated in TA21 CS workshops introduced new CS content in their classroom, but they are limited in what they can achieve under current structures," he said. *"Ireland is not unique in this regard – educational systems across the globe face the same challenges and, if we get it right, we are giving our young people a huge advantage in the digital age."*

"Over 60% of the schools that participated in the T21 project reported having little access to the technology needed to make a real impact in their school. Some schools participating in TA21 had no access to wifi or the internet and one 500 student school had just one computer for every 20 students." he said.

Structural issues such as short class times and a pressure to teach to test and prepare students for exams were also identified by teachers as limiting their capacity to introduce their newfound CS skills
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Dr Katriona O'Sullivan, who coordinated the Trinity Access 21 research said that schools were attempting to address these barriers, *"Schools with supportive leadership structures were able to overcome the most commonly reported barriers. For example teachers formed after school clubs, while others developed classes within school time that were not restricted by timetabling issues to overcome the time constraints of the classroom. Schools*

where resources were limited would bring students to activities outside of the school and one school created an entire regime change throughout the school."

Fionnuala Meehan, Managing Director, EMEA SMB Sales, Google said that Computer Science must be introduced as a fundamental and rigorous subject throughout the entire school curriculum, starting in primary school.

"At second level, CS as a stand-alone module must be considered if we are to make a real difference. It is shocking that there are schools today without access to the internet and wifi. Investing in technology is just one part of the equation, but equally we must train our teachers in CS using 21st Century teaching methods such as experiential, technology-mediated, team-based models of teaching and learning across the curriculum. We need to see more joined up thinking across the system if we are to effect real change in the classroom and then across our wider society," she said.

"Despite these challenges, the reaction from teachers is phenomenal and we had applications from over 80 schools across 16 counties to participate in Year 2 of the Trinity Access 21 project. The enthusiasm of teachers and their desire to increase their skills in CS is inspiring. Students stand to benefit hugely if technology is harnessed in the right way by trained teachers. When part of the curriculum, CS/STEM can enrich both student and teacher experiences in the classroom, as this report shows," she said.

Schools leading the way in successfully undertaking changes in challenging conditions were recognised by Trinity Access 21 in the '21st Century School of Distinction' Award Showcase where the First Year report was launched. Cliona Hannon, Director of the Trinity Access Programmes said *"It is extraordinary to see the scale of enthusiasm, commitment to change and innovation happening in these schools, especially after such a challenging decade. It gives tremendous hope for meaningful progress on these structural barriers in the immediate future."* The awards recognise and showcase the hard work that schools nationwide are making to transform their schools, develop strong college-going cultures, engage with the community to support educational uplift and promote innovative approaches to teaching and learning, including in the areas of CS and STEM.

The **five awardees** are Caritas College, Dublin 10; Fingal Community College, Swords, Co. Dublin; Mt Sion Primary School, Waterford; Portlaoise College, Co. Laois and St Aloysius College, Athlone, Co. Westmeath. This year's awards also recognised four schools that demonstrate 'Future Vison', having set out a clear vision for educational change which they will begin to implement in autumn 2016. These awardees are Coláiste de hÍde, Tallaght, Dublin 24; Mount Sackville, Chapelizod, Dublin 20; St Kevin's Community College, Dunlavin, Co. Wicklow and St Paul's Community College, Waterford. Winning schools demonstrated excellence in several core areas, including innovative approaches to 21st century teaching and learning as well as CS and STEM.
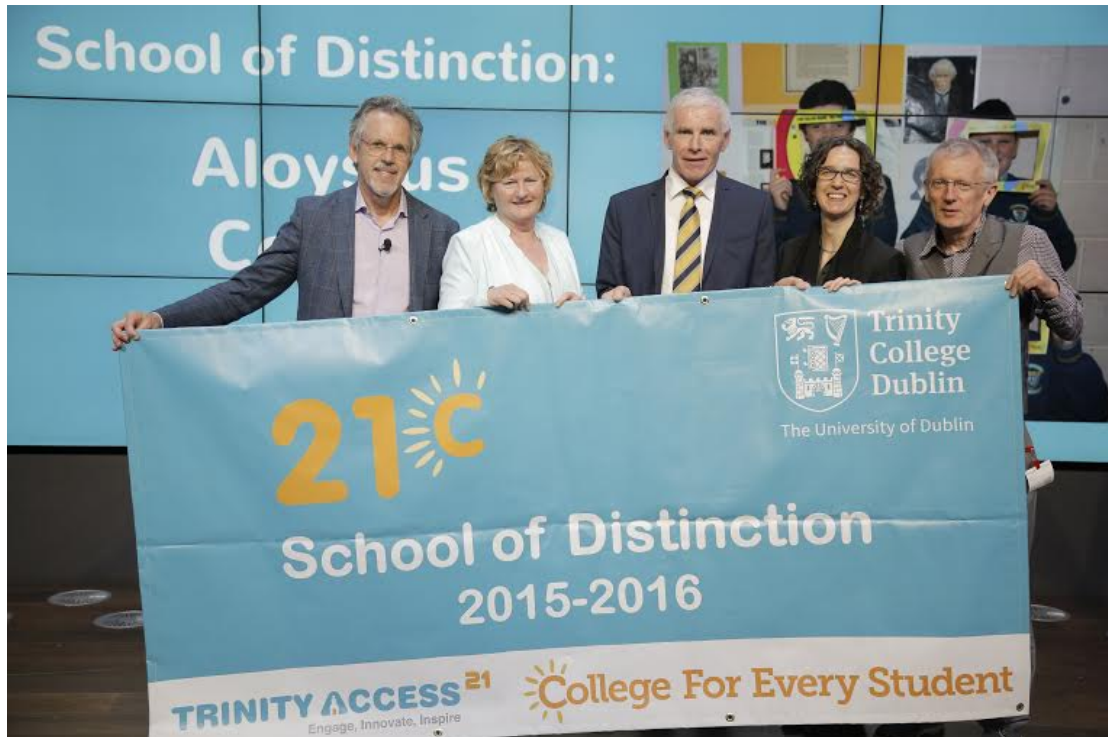
Pic 1 (l-r) Caritas College, Dublin 10: Professor Paul Reville, Caritas Principal Sandra Doyle, Caritas teachers Mary Carroll and Catherine Turley, Fionnuala Meehan, Professor Brendan Tangney

Pic 2 (l-r) St Aloysius College, Athlone, Co. Westmeath: Professor Paul Reville, St Aloysius teacher Liz Kennedy, St Aloysius Principal Gearóid Ó Conámha, Fionnuala Meehan, Professor Brendan Tangney