A Tale of Two Cities

COSN SENIOR DELEGATION TO IRELAND AND NORTHERN IRELAND
SEPTEMBER 22–OCTOBER 1, 2016

The most recent CoSN delegation took place September 22–October 1, 2016 when a group of senior technology leaders traveled to Ireland and Northern Ireland. Thanks to HP for the support that made this delegation possible.

Ireland was selected for several reasons. The Republic of Ireland is a technology center for Europe with many major companies based there, as well as a leading player in the development of the Information and Communication (ICT) industry. Starting in the late 1990s, the country experienced a boom in technology advancement with considerable investments made in ICT infrastructure in primary and secondary schools, as well as professional development for teachers and other education professionals. Funding for technology declined sharply with the economic downturn in 2007/2008, but recent efforts to spark innovation are now taking place. In fact, the World Economic Forum 2016-2017 Global Competitiveness Report notes that Ireland has made progress over the past several years, a fact that can be correlated to a number of its recent policy initiatives and strategies. We also wanted to see the progress and programs in Northern Ireland and understand how this compared to the Republic of Ireland.

The goal of the delegation was to provide the participants with a rich professional advancement opportunity, allowing them to discover and learn about the most current innovative ICT policies and practices in the Irish and Northern Irish school systems and determine the applicability to the U.S. education system. While visiting Dublin, the delegation observed schools in session and learned first-hand about the approaches to ICT from school administrators, key policy-makers, and government officials. In Belfast, the delegation met with the Northern Ireland Department of Education officials and key ed tech leaders in Belfast, the Capital City.

“Given their leadership in advancing information and communications technology (ICT), this visit is an important opportunity to see how to spur innovation and support modern, personalized teaching and learning settings.”

—KEITH KRUEGER, CEO OF COSN
Several questions guided the delegation during our visit to Dublin and Belfast:

- How can an ongoing commitment to ICT investments in education be sustained in the face of economic shifts and cycles?
- What are the policies that are helping to transform schools in the Republic and in Northern Ireland into e-learning environments?
- How is the government in both the Republic and Northern Ireland sparking innovation by supporting programs such as the Maker Movement and coding?
- How are skills essential for the 21st century learner being developed and nurtured?
- What are the main differences between the ICT investment strategies in the Republic of Ireland and Northern Ireland?

The agenda afforded rich opportunities for engagement and first hand observations. The blog posts captured the shared impressions of the delegation; interacting with creative and dedicated education and government leaders; listening to the systematic plans for furthering digital learning in schools; learning about innovation in informal settings; witnessing the commitment to student voices; understanding the synthesis of the arts and sciences and attention to special needs and new immigrant students; seeing the respect for teachers and the high status of the teaching profession, and so much more. An equally important part of the delegation was the strong interest our hosts expressed in an exchange of ideas, exploring opportunities to learn about ed tech in U.S. schools and determining how our experiences might be applied in Dublin and Belfast.

After a full week in the Republic of Ireland and Northern Ireland, the delegation looked back on its experiences and noted several significant takeaways.

- **Vision and leadership are essential.** In both the Republic of Ireland and Northern Ireland there are clear statements and articulations of the vision with each guided by talented and dedicated leaders.
- There are, however, **significant challenges in implementing the vision.**
- **Exciting pockets of innovation** exist in both Dublin and Belfast offering inspiration and serving as models for U.S. educators.

What follows are the delegation’s collective insights, thoughts and discoveries. *The Tale of Two Cities* is designed to share these observations and views and pose related questions for policymakers and educators in the United States to consider.

> As we begin our delegation to Ireland to learn about education and technology in the schools I wonder what other connections we will find.
> 
> —DENISE ATKINSON-SHOREY
Context

History is an important backdrop to understanding the education system in the Republic of Ireland and in Northern Ireland. The remnants of the violent struggle for independence and the Catholic-Protestant conflicts are still apparent in daily life, and certainly in the school system.

Republic of Ireland: Education Overview
The Department of Education and Skills, under the Minister for Education and Skills, (currently Honorable Richard Bruton) is responsible for setting policy, funding and direction for the three levels of education—primary, secondary and higher (or “third” level) education. On a local level, the Education and Training Boards are important for administering secondary and adult education; recently, they assumed responsibility for a small number of primary schools.

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<tr>
<th>REPUBLIC OF IRELAND AT A GLANCE</th>
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<tr>
<td>Population » 4.5 million</td>
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<tr>
<td>K-12 students » About 1 million</td>
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<tr>
<td>Budget for education » €10.2 billion (includes some post-secondary funding)</td>
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<tr>
<td>% of students who graduate » 89%</td>
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<tr>
<td>% of students who go to post-secondary schools » 67%</td>
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The Republic is the size of many U.S. states with close to a million students in its K-12 schools. It is more centrally managed than our systems with one national set of standards, curriculum and assessments; national funding for all schools; and one contract for all teachers, negotiated with national unions (one for primary school and two for secondary school teachers).

Having grown up in the U.S. after my grandfather emigrated from Lurgan, Co. Armagh in 1920, it was intriguing to meet the generations of family that remained in Ireland and to talk with them about ICT in education. One of my cousins has a daughter preparing to graduate high school. During our conversation over tea at the Titanic Museum, she pointed out that today’s primary and secondary students are the first generation in Northern Ireland to have grown up without violence. In her view, the absence of violence has had a significant impact on their quality of life and ability to focus on education.

—ED MCKAVENEY

Like the Public Gardens in Boston, Stephen’s Green was populated with reminders of heroes and events that helped to shape a country. I found myself stopping to admire a bust of Countess Markievicz in uniform. As I read about this commissioned officer of the Irish Citizen Army, and how she participated in the Irish Easter Rebellion of 1916, I couldn’t imagine the opposition she must have faced and the hardship she endured as a soldier and a woman. I tucked the feeling of inspiration away and continued on my way.

—CYNTHIA LARSEN
While the population in the Republic of Ireland is predominantly white, Catholic, and English speaking (with all students also learning Irish), in some areas, there are new immigrants from Eastern Europe (particularly Poland) and other areas of the Middle-East and Africa.

Although the Republic of Ireland has a large amount of centralization in regards to curriculum, that is not the case with school technology infrastructure or support. There has been no centrally funded investment in schools’ infrastructure since 2010 with the result that schools are left to using their budgets for refreshing and enhancing their infrastructure needs. Contracts for student information systems and network connectivity are currently left to the individual schools to negotiate. There is no centrally-provided technical support available to schools to maintain and service aging technology; in some instances, schools make use of privately run support services rather than employing their own full-time technician.

Teaching is a highly regarded profession and many teachers stay at the same school for their entire careers. Retention issues are of less concern than in the U.S., though there are challenges in finding STEM teachers with the appropriate content knowledge.

**Northern Ireland: Education Overview**
The Department of Education (DE) is responsible for Northern Ireland’s education policy with the exception of the higher education sector. Established in 2014, the Education Authority is a non-departmental body responsible for ensuring that efficient and effective primary and secondary education services are available for all students.

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### NORTHERN IRELAND AT A GLANCE

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
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<tbody>
<tr>
<td>Population</td>
<td>1.8 million</td>
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<tr>
<td>Primary School Enrollment</td>
<td>171,615</td>
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<tr>
<td>Secondary School Enrollment</td>
<td>140,417</td>
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<tr>
<td>Resource Budget</td>
<td>1,947.5 £m</td>
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<tr>
<td>% of students who graduate</td>
<td>95.5% of school leavers enter education, employment or training.</td>
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<tr>
<td>% of students attending post-secondary schools</td>
<td>42.3% of school leavers continuing on to higher education.</td>
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Reference

Education in Northern Ireland is similar to the structure set up in England. All schools follow the Northern Ireland Curriculum which is based on the national curriculum used in England and Wales. Northern Ireland has a highly segregated system with 95% of pupils attending either an exclusively Catholic school or a Protestant school. Protestants were the dominant religious group in Northern Ireland but the Catholic population has been growing and now outnumber Protestants.

Northern Ireland has its own significant history around the use of technology in education and a coordinated strategy for the effective use of ICT as an educational and a management tool. Classroom 2000 (C2k), on behalf of the Education Authority, provides a high quality, sustainable ICT infrastructure, connectivity and resources in support of school management, teacher professional development, and delivery of the Northern Ireland curriculum.
I. ARTICULATING THE VISION

A clear vision with a focus on the student is evident in both the Republic of Ireland and Northern Ireland. The vision is well articulated and researched with dedicated leaders guiding the vision. The delegation was honored to meet personally with Ciaran Cannon, TD, a Member of Parliament and Richard Bruton, TD, the Minister of Education in the Republic of Ireland and Peter Weir, Minister of Education in Northern Ireland. They exemplify great leadership and commitment to improving the education system, preparing students for the digital age and supporting active student engagement in the learning process.

Republic of Ireland

The delegation’s arrival in Dublin came just days after the publication of the Action Plan for Education 2016-2019, an initiative of Minister Bruton, TD, establishing the ambitious goal of making Ireland’s education and training services the best in Europe by 2026. The Action Plan brings together various parts of the reform efforts and provides specific objectives and actions for the next three years.

The Action Plan focuses on education of the “whole child” in its approach to learning which details five specific goals to be achieved through 139 actions and hundreds of additional sub actions.

- **Goal 1:** Improve the learning experience and the success of learners
- **Goal 2:** Improve the progress of learners at risk of educational disadvantage or learners with special educational needs
- **Goal 3:** Help those delivering education services to continuously improve
- **Goal 4:** Build stronger bridges between education and the wider community
- **Goal 5:** Improve national planning and support services

Our ambition in the Action Plan for Education is to make Ireland the best education and training service in Europe. ...In this plan, our high ambitions are matched by specific actions to deliver on them, across all parts of the education service. Actions are aimed at improving outcomes for the learners who depend on the service, at breaking cycles of disadvantage, at supporting teachers and institutions to continually improve, at building better links between education and the broader community, and at improving our systems on which we depend to deliver all this. There is no big bang solution. Rather, the cumulative impact of the implementation of the hundreds of actions and sub actions in the Action Plan will have a lasting and positive impact on the Irish educational and training sector.

—MINISTER FOR EDUCATION AND SKILLS, RICHARD BRUTON, TD

The first goal—improve the learning experience and the success of learners—is just one of at least a dozen areas in which the education reform efforts are similar to those being implemented in the U.S. The Department’s plan is rich in strategies and examples of success that seem fresh, bold, and worthy of close observation in the months and years to come. One such focus is to increase the use of ICT in teaching, learning, and assessment. Yet, another is a heightened focus on entrepreneurship, creativity, and innovation, including benchmarking entrepreneurial activity in higher education and work with the higher education authority to ensure an “ambitious and...
implementable plan to identify and address skills gaps, ICT, and STEM needs. The plan is also appropriately weighty with strategies for supporting the educator workforce through continuous professional development, reforms of initial teacher education and teacher induction, and a revision of entry criteria.

The Digital Strategy for Schools, 2015-2020: Enhancing Teaching, Learning and Assessment predates the Action Plan and is an important cornerstone to what the Republic is trying to accomplish. It outlines a clearly articulated vision for bringing the country’s education system into the digital age. The country is very much in the early stages of implementing this major education reform and the strategy, combined with the Action Plan, sets a clear pathway for moving ahead and embedding technology in all curricular areas, and providing students with access to digital resources both during the school day as well as after school hours.

A Visionary School
Le Chéile Secondary School in Tyrellstown just outside of Dublin has transformed the vision into a reality. The “School with No Books” uses tools like Wriggle digital school bag, Kahoot for quick and engaging formative assessments, and free Open Broadcast Software for recording and live streaming.

The National Council for Curriculum and Assessment (NCCA) is responsible for developing the national curriculum standards, curriculum resources, and student assessments, and also helps to implement the vision. Its current focus

It was wonderful to see students at Le Cheile Secondary School after spending the morning learning about the Digital Strategy for Schools 2015-2020 and the Junior Cycle. After all, they are the reason we do the work that we do.

This is not your typical school in many aspects, but a couple of things stood out. The first was that it is a “School with No Books.” Dr. Moran [the Principal] believes that books, even e-Books, hold teachers back from truly transforming instruction. She recruited teachers who would design their own teaching resources and be nimble, creative and student-focused to respond to whatever their student’s learning needs were. Many of us do not have the opportunity to recruit 100% of our teaching staff, but seeing what the Le Cheile teachers were doing in their classrooms, drives home the point that if we move towards a constructivist pedagogical orientation, effective use of digital technology will happen. Without this change in orientation, we will be simply substituting what we have been able to do with paper and pencil.

The second thing is that it all starts with good leadership. Dr. Moran is building this school (physically and academically). She is not just the administrator that is working around construction of a new building, but the Instructional Leader of the school. She quoted our Keith Krueger as saying “Educational software is only one tool in the learning process...not a replacement for well-trained teachers, leadership and parental involvement”. But we know that it takes the Principal to make the other 3 P’s (The People, The Policy and The Plant) to work effectively together.

—CYNTHIA NELSON

Ciaran Cannon,TD, in his articulate and passionate manner, relayed his desire for reimagining learning with technology that stemmed from his personal experience at home and observation that his own children felt a strong disconnect between their experience at school and outside of school, particularly around the use of technology.

Ultimately we have two choices: We can embrace the incredible new learning opportunities provided to us by the internet and modern technology, or we can slowly but surely turn our schools into museums of the 20th century, our last refuges of redundancy in a world being reshaped over and over again on a daily basis...by ones and zeros.

—CIARAN CANNON, TD

It is always a great day when we have the privilege of seeing and listening to the sounds of “active learning”!!

—BEVERLY KNOX-PIPES
is on revising the “Junior Cycle” curriculum, equivalent to the US middle school grades. A new framework will be applied through a multi-year plan that includes everything from “maths” to visual arts and home economics. In addition, a series of short courses is being introduced to provide flexibility for the schools to offer more choice for students. Finally, NCCA is involved in portfolio approaches to assessment, introducing computational thinking and coding into the schools, fostering collaborative learning and the overall integration of personalized learning supported by technology.

At the close of this day filled with idea sharing, I’m struck by the notion that there is much more to be learned from our gracious hosts than our short stay here will allow. —AMY STARZYNSKI

Northern Ireland

The Department of Education (DE) recently reorganized and consolidated programs bringing together all services for children into one agency. The Department of Education NI, led by the Education Minister Peter Weir, defined a new vision to see “Every young person achieving to his or her full potential at each stage of his or her development.”

Five goals support the vision:

- raising standards for all
- closing the performance gap, increasing access and equity
- developing the education workforce
- improving the learning environment
- transforming the governance and management of education

The effective use of ICT plays a central role in defining the vision and policies at the Department of Education including the curriculum, literacy and numeracy strategy. Ensuring that young people acquire the skills to use ICT effectively, confidently, and safely is a key priority for the Department.

Education is at the core of any society, and is not just about schools—it is about the development of our children’s personalities, talents and abilities to their fullest potential. This can only be achieved by all government departments working together and with others to ensure the best outcomes for our children and young people. The future stability of our society and the success of our economy depend on there being a high quality education system that can stand alongside the best in the world.

I am ambitious for our children and young people and determined to ensure that educational outcomes improve across every part of Northern Ireland in every school in every sector.

—MINISTER WEIR, MAY 2016
What is so impressive about this work in Northern Ireland is that one central agency, C2k, is offering core ICT service for over 1,100 schools across the country. C2k is focused on providing a new set of services to all grant-aided schools.

- access for pupils and teachers to the dedicated Education Cloud
- personalized pupil learning and working environment (My School)
- secure online learning platform (Fronter)
- regional content management system (Equella) which works in tandem with Fronter
- superfast connectivity to the education cloud, with significantly increased bandwidth
- WiFi
- video conferencing (Collaborate), inbuilt eSafety for pupils and teachers
- data and administration systems (Schools Information Management System—SIMS) for schools.

With the challenge of figuring out infrastructure systems no longer falling to each individual school in Northern Ireland, principals and educators can focus on leveraging technology tools to change teaching and learning practices and leave the digital access issues in the schools to one agency, C2K.

In order for this type of change to become a reality—regardless of the location—visionary leadership, followed by action, is key. One of the great privileges of this journey was the opportunity to meet with so many leaders who are passionate about transforming learning and teaching to meet the needs of today’s students. We come away with great hope for the education systems in the Republic of Ireland and Northern Ireland and admiration for the visionary leadership of so many in both parliaments and education ministries as well as organizations like EXCITED and C2K. Special admiration and heartfelt thanks goes to the principals, teachers and students we met who are showing the world why this cause is so important. These are the people who meet this challenge every day and go forth with heroic determination and persistence.

—ANN MCMULLAN
III. Implementing the Vision: Challenges

Well-defined visions and plans exist in the Republic and Northern Ireland to leverage technology for the improvement of the learning process. However, there are challenges in implementing the visions. These challenges are not too different from the ones we experience in the U.S.—funding, infrastructure, support, and sustainability.

**Funding**

Initial and ongoing funding are crucial to successful implementation of any plans as ambitious and far-reaching as we heard about in both the Republic of Ireland and Northern Ireland.

Certainly, one of the big challenges in the Republic is the issue of decentralization.

The Department of Communications is responsible for building out the necessary infrastructure to support the connected learning needs of schools. Relying on multiple departments to meet the goals of the educational system creates a funding disconnect. In the North, services are funded centrally with technical support provided within the Department of Education.

**Building Infrastructure**

Wireless technology and the instructional benefits of a mobile environment are recognized and embraced in both the Republic and Northern Ireland. Wireless capabilities in the classroom require a connection to a strong, robust, and reliable wired infrastructure. In school buildings with lots of concrete and steel, similar to the one we visited in a Dublin suburb, a fiber backbone is necessary to connect all the wireless access points and distribute signals to each classroom. We saw or heard little understanding or planning for this crucial piece of network design during our visit at the schools. School principals and other site based educators are not trained for this work and overlooking this component will hamper the realization of any visionary plans for ICT.

**Broadband to School**

The growing need to shift from a copper broadband infrastructure and 100 megabits connectivity to gigabit or multigigabit fiber optic connections for schools is becoming increasingly apparent as adoption of digital tools, resources, and services for teaching, learning, and administration at all levels is more widespread.

According to CoSN’s 2016 national infrastructure survey in the U.S., projected growth in schools is 65%–100% per year in bandwidth needs with some schools with well-developed 1:1 or BYOD programs using 1Gbps or more. This is 10x the amount targeted for schools in Ireland. A school or teacher can have great vision and tremendous plans for ICT, but without addressing the broadband connection from the school out to the Internet, implementation will be problematic at best. Reliance on outside agencies to solve the connectivity needs of schools without educational input and understanding of the usage patterns and growth of bandwidth will undermine the vision.

**Technical Support**

Full-time technical support for ICT in schools in the Republic of Ireland was not readily observed. Schools are generally reliant on part-time, parent,
and community support and do not have sustained onsite professional technology support. Substantial benefits could result from a more focused approach to capacity building for technical support and professional development coordinated through the Regional Education Centres, in addition to expanded broadband connectivity and support delivered through the HEAnet Broadband for Schools Programme. Education leaders in schools could also benefit from a program similar to CoSN’s Certified Education Technology Leadership.

**Outside of School Access to Technology**

In the U.S., outside of school access to technology is becoming a major policy and educational issue, but we did not hear much discussion of this during the delegation. In fact, parents are the main source of funding for devices and access continuing a long tradition of families paying for textbooks. We heard several principals indicate it was an expectation, even for low income families, to purchase a device with charities often stepping forward for those truly in need.

**Teachers and Education Professionals**

Teachers are the key to transforming the learning process but there are challenges in both the Republic and Northern Ireland.

- The workforce is older with many teachers lacking STEM credentials; only recently were primary teachers required to take any Science courses
- At present, there is no continuing education requirement for teachers
- Little pre-service preparation for ICT exists
- While a healthy 15% of students entering higher education aspire to be teachers, many new teachers can’t find jobs and leave the country for positions in Dubai, England and other countries

**Sustainability**

In the Republic, sustainability will be a significant challenge because of the lack of coordinated and comprehensive education funding. In some schools, sustainability for end user devices/laptops has been transferred to the parents who are required to purchase the technology, in this case, iPads instead of the traditional texts. There also is a lack of coordinated funding for the infrastructure necessary to support the vision articulated in the national plan.

While Northern Ireland had a more robust sustainability model, it too lacked enough resources to scale to the expected level necessary to support the educational mission and vision. Both countries will need to make the hard policy decision required for transforming instructional models and realizing the visions.

The political situation in both the Republic and Northern Ireland is in flux, so that there is a lack of certainty about continuity of commitment and funding for digital learning. Comparing Ireland to other places, such as Portugal, Finland or Singapore is a reminder of the importance of sustainable commitments to well-defined plans to improve large-scale education systems. Education improvement is hindered when educators need to tack to ever-changing political winds. I hope our Irish friends are able to obtain the political support and the ongoing funding they need to continue to build upon what they have started and implement their plans successfully—that appears to be the major challenge they face, a challenge very familiar to those doing similar work here in the U.S.

GLENN KLEINMAN
III. Understanding Innovation

Throughout our visit to Ireland and Northern Ireland, we were impressed by “bubble-up” innovation strategies. These efforts were typically led by either innovative teachers or students or done outside of school through informal programs at museums, nonprofits or other non-school system organizations. We observed innovative ideas and practices at all levels of the education system. In many instances, these innovations were closely related to Ireland’s historic connection to the arts such as dance, theatre, literature, film or other creative endeavors. What is now being called STEAM—added the Arts to STEM—in the U.S. is the natural direction in Ireland, where the arts are a recognized part of the school curriculum.

Within the School Sector
In the Republic, Education Centres are important in stimulating innovation within the school sector. Similar to U.S. education service agencies, each Education Centre serves schools within a region of Ireland with some collaboration across regions. For example, the Education Centres are working with primary schools to motivate youth beyond the classroom by publishing student created Irish pictures and poems with My Heritage and The Magic Within. They also captured student voice in a book, Starting School, which is designed to help reduce anxiety in 4- and 5-year-olds entering school.

Similarly, in Northern Ireland the Nerve Centre’s Creative Centenaries project engages youth in the Decade of Centenaries highlighting important historical events in partnership with cultural and heritage groups. As part of its Future Classrooms initiative, they have created innovative graphic novels and digital historical resources that provide for deeper learning. There are three Future Classroom’s Creative Learning Centres that support teachers and parents in bringing innovation and creativity to the schools.

Given Northern Ireland’s strong background in film, there are online resources and suggestions for student projects in film making, journalistic recordings, and other options all tied to key curricular areas.

In Belfast we also heard about how a European Schoolnet initiative called CO-LAB is bringing together educators from multiple countries to better understand collaborative teaching and learning as a necessary skill for students from both a practitioner and policy maker point of view.

Out-of-School/Informal Learning
The Republic of Ireland has active communities fostering out-of-school learning to prepare students for the digital age.

One innovative effort, EXCITED, led by Ciaran Cannon, TD, a member of the Ireland’s lower House of Parliament (Teachta Dála), Dr. Frank Walsh, Bernard Kirk, Dr. Gerard McHugh, and Linda Cardiff is playing an important role in fostering changes, providing professional development, informing policymakers, and building learning communities among educators. The work of EXCITED is noteworthy from a number of perspectives. The fact that their leadership team embraces the goals of digital literacy and supports it through volunteer efforts is extraordinary.

An annual two-day EXCITED Digital Learning Festival for students and teachers at Dublin Castle has been held since 2014. Throughout the year students participate in coding and maker efforts (Refugee Code Week, Africa Code Week, Power Up, First Lego League, Hour of Code, EU Code Week, etc.).
The leaders of the “EXCITED,” are deeply dedicated and creative in addressing their mission, which includes:

- **Connecting:** building a national network of groups and individuals with a common vision for education and a desire to be powerful advocates for change.

- **Championing:** seeking trailblazing teachers and students across Ireland and encourage others to be inspired by their work and follow in their footsteps.

- **Creating:** collaborating with education and industry leaders to create a world-class digital learning ecosystem where innovation is nurtured and facilitated.

Another grassroots effort that has gained significant attention is CoderDojo, which grew from an initial school computer club started by a teenager in Cork, Ireland. There are now more than 175 CoderDojo clubs in Ireland and more than 1,000 worldwide that provide after-school or weekend events where basic programming and web development is taught. At these events, students are able to learn from each other in a sociable and creative environment. As part of the program, companies provide spaces and volunteer mentors.

Teacher Meet-Ups online have also been a “bubble-up” strategy to help connect teachers wanting to create an online community of practice.

While it was not part of our official visit, Dublin’s Digital Hub and its Future Creators Community Learning Initiative is in its sixth year and seeks to grow a STEM-focused workforce. Similar to CoderDojo, it builds both technical and creative digital skills that are blended through engagement with robotics, coding, filmmaking, animation and more. Similar to Northern Ireland’s Nerve Centres and the MIT FabLab network in Belfast, the Hub seeks to build a maker culture across Ireland through events such as the Dublin Maker Faire.

This growing maker culture was also evident at the Science Gallery Dublin’s Makeshop and the Probe Research Uncovered public event at Trinity College in Dublin. The Science Gallery is described as “where science and art collide” or “A particle accelerator for people, where ideas meet”. It is one of many examples of programs that are “more STEAM than STEM”. The Gallery is very much a hands-on interactive exhibit space with no permanent exhibits. Rather, there is an ever-changing set of exhibits and events targeted to young adults aged 15-25 in scientific issues critical to society today and in the future. This hands-on, personalized engagement educational philosophy is similar to places like the San Francisco Exploratorium and New York Hall of Science in the U.S.

**Science Foundation Ireland** (SFI), similar to the U.S. National Science Foundation (NSF), funds projects aimed at developing an engaged and
scientifically informed public. For example, SFI underwrites National Science Week which has 800+ events a year in schools, as well as colleges, universities, libraries, companies and other public places to make science more interesting and accessible to children and adults. Each of the 17 Science Research Centres funded by SFI are required to provide substantial and diverse education and public engagement programs including student placements, lab tours, web-based mentoring programs, games/videos/competitions, and school visits/workshops.

**Innovations in Data Management and Support**

We also explored how student information is currently used in these two countries. Across the Republic, Aladdin is being widely adopted by primary schools to improve the use of data for school administration, planning, coordination, analysis and reporting. Unfortunately, because there are separate school systems for primary and secondary, the data doesn’t flow once a student goes on to higher grades—they haven’t yet started a data quality program to address those types of issues. That being said, the robust feature set and apparent flexibility of the Aladdin schools system had the look and feel of a dynamic modern data system that did not have issues adapting and growing from a legacy system.

This implementation was in stark contrast to the centralized network and data services provided across Northern Ireland by the C2K center in Belfast. With a robust centralized EN(ni) Data Centre and Service Desk managed by the Capita ManageIT Solutions and the Fronter Virtual Learning Environment (VLE), recently acquired by itslearning, Northern Ireland has a robust set of innovative practices for data management, instruction, and support in place and delivered to over 1,100 schools and over 300,000 students.

**Business/Academic Partnerships to Foster Innovation**

Our visit included opportunities to meet with business leaders and to learn about their innovative strategies. HMH in Dublin is working to provide digital content and resources to schools across the country and around the world. TextHelp, headquartered in Belfast, is a leader in assistive technology solutions for reading, writing and language learning. Our lead sponsor, HP, is a world leader in helping to transform schools and institutions into a 21st Century learning environment.

Funded by Enterprise Ireland in partnership with IDA Ireland, Learnovate Centre. Is another example of innovation. This incubator Centre brings together business leaders and academics to support the development of learning technologies; planning for the successful marketing and support of those technologies; and research on the impact and effectiveness of the technologies.

One example demonstrated during our visit was a voice recognition system optimized for children’s voices developed by Soapbox Labs. We discussed with the system’s developer the frustrations experienced with other voice recognition systems; the educational potential of voice recognition technologies integrated into learning systems; and other ideas of applications and potential partnerships for the technology. Shortly after our visit, Soapbox Labs successfully completed a seed funding round of €1.2m ($US1.3m) from a small group of international private investors.

**Private Sector Recognition of Innovation**

The Digital Schools of Distinction is a flagship program of HP which aims to promote, recognize and encourage excellence in the use of technology in primary schools. HP has helped schools to implement a vision of what a digital classroom can look like. The purpose of this interactive experience is to help leaders, school staff and educators visualize the ways in which technology can be used in education.
IV. Lessons Learned

We left Dublin and Belfast inspired by the innovative work that educators are doing to transform education and the vision articulated by policymakers and leaders in the private sector. The history and culture of the Irish people are indelibly stamped on the education system... a unique history, filled with fierce battles for independence and a long cultural tradition of storytelling.

So what can U.S. educators learn from our experiences in Dublin and Belfast? How can we capture these experiences and offer our colleagues in the U.S. advice that will be helpful in transforming the educational process?

- **Listen to student voices** and be more student centric focusing on the whole student, rather than specific subjects and assessments. Both the arts and sciences are keys to shaping the student and both should be recognized within the curriculum.

- **Strong policymaker support and commitment are essential** to drive change of the magnitude necessary to reform and transform learning and integrate ICT in the process. Without vision and leadership, change will not occur. In both Northern Ireland and the Republic of Ireland, there is a clearly articulate and well researched vision that is being advanced in the public, private sector, and individual schools.

- **Vision without sustainable funding and implementation is merely a dream.** Have in place plans for sustainable funding and a timelines for implementation to make the vision a reality.

- **Honor and recognize innovative teachers and administrators** as examples for others. Take risks and think boldly.

- **Partnerships** involving industry, museums, startups/incubator centers, maker shops, and fab labs can play a critical role in transforming education and should be recognized as such.

*My experience in Ireland was amazing and will have a profound impact on the manner in which I approach my work in the future.*

—VINCE SCHEIVERT, CIO, ALBEMARLE COUNTY PUBLIC SCHOOLS, VIRGINIA
Attachment 1
COSN DELEGATION TO IRELAND

Thursday, September 22
Departure for Dublin Ireland via overnight flight

Friday, September 23, Dublin
Arrival in Dublin

Saturday, September 24, Dublin
Orientation

Sunday, September 25, Dublin
Goals and Expectations for Delegation
Setting the Context, Honorable Ciaran Cannon, member of Irish Parliament and former Minister of State for Training and Skills

Monday, September 26, Dublin
9:30 am . . . . . . . . . . . . . . . . . . . How curriculum and assessment impact policy
(Department of Education and Skills: National Council for Curriculum and Assessment)

11:00 am . . . . . . . . . . . . . . . . . . Meeting with Honorable Richard Bruton, Minister for Education

12:15 pm . . . . . . . . . . . . . . . . . . Tour of Leinster House, home of the National Parliament
(Oireachtas) and its two houses, Dáil Éireann (House of Representatives) and Seanad Éireann (the Senate)

1:30 pm . . . . . . . . . . . . . . . . . . Lunch
Leinster House, Kildare Street

2:30 pm . . . . . . . . . . . . . . . . . . Visit to Second Level School
Le Chéile, Tyrrellstown

4.00 pm . . . . . . . . . . . . . . . . . . The Maker Movement

5:00 pm . . . . . . . . . . . . . . . . . . Junior Cycle for Teachers

6:30 pm . . . . . . . . . . . . . . . . . . Dinner—hosted by HMH

Tuesday, September 27, Dublin
9.00 am . . . . . . . . . . . . . . . . . . Visit to St. Patrick’s N.S.

1.00 pm . . . . . . . . . . . . . . . . . . Drumcondra Education Centre

1:30 pm . . . . . . . . . . . . . . . . . . DES Statistical Unit—POD Demonstration

3.00 pm . . . . . . . . . . . . . . . . . . Science Foundation Ireland

4.30 pm . . . . . . . . . . . . . . . . . . The Education Centre Network

7.00 pm . . . . . . . . . . . . . . . . . . Dinner Hosted by Aladdin
**Wednesday, September 28, Dublin/Belfast**

8:30 am .......................... Departure by coach for Belfast

11:11-11:30 am ................. Welcome and briefing on the Northern Ireland Education system
Ray Gilbert, Senior Education Officer, Director of Education Authority

11:30-12:30 pm ............... Northern Ireland Policy for investment in Ed Tech and the School Development Service, (Director C2k, Tim Matchett)

12:30-1:30 pm ............... Buffet lunch and informal discussions with representatives from Department of Education, Education Authority and TextHelp
Kieran Moore and David Hughes, Department of Education
Martin McCusker,CEO and Mark McKay, CTO, TextHelp

1:30-2:30 pm ............... The development and application of Children’s Services Software (Capita MIS), Andy MacKay, Managing Director

2:45-3:45 pm .................. Data supported school management
Lois Stewart, VP St Malachy’s College

4:00-5:00 pm .................. Innovative initiatives delivered through the NI Creative Learning Centres (Nerve Centre), John Peto, Director of Education

6:00-7:00 pm ............... Reception at Stormont (Parliament) Buildings with Member of the Northern Ireland Assembly, Peter Weir, Minister of Education

7:30-10:00 pm ............... Dinner hosted by TextHelp

**Thursday, September 29, Belfast/Dublin**

8:30-10:00 am ............... Development of a Computer-based Assessment Strategy for NI
Richard Hanna, Director of Curriculum Strategy
Council for the Curriculum, Examinations & Assessment

Return to Dublin in late morning

1–4 pm ...................... Meeting at HP HQ (Dublin)
Liffey Park Technology Campus, Barnhall Road, Leixlip, Co. Kildare, Ireland
Presentations and discussion on Digital School Awards Program
Dr. Victor McNair, Validator
Anna Doody, Program Manager
Ann Marie Whelan, HP Education Manager

**Friday, September 30, Dublin**

9:30 am ...................... The Science Gallery

10:30 am ...................... Excited—The Digital Learning Movement

11:30 am ...................... Linking Edtech to Schools—an Irish Story (Learnovate)

4:30 pm ...................... Report Planning and writing

6:00 pm ...................... Social farewell event sponsored by CJ Fallon

**Saturday, October 1**

Return home from Dublin
Attachment 2
COSN DELEGATION TO IRELAND

Denise Atkinson-Shorey
President/CEO, e-Luminosity (CO)

Glenn Kleiman
Executive Director and Professor
Friday Institute for Educational Innovation
NC State University College of Education

Beverly Knox-Pipes
Distance Education Consultant (MI)

Keith Krueger
CEO, CoSN (DC)

Edward McKaveney
Technology Director
Hampton Township School District (PA)

Cynthia Larsen
Digital Learning Curriculum, Instruction and Assessment Coordinator
Nashoba Regional School District, MA

Ann McMullan
Education Consultant (CA)
amcmullan@outlook.com

Cynthia E Nelson
Technology Director
Edmonds School District (WA)

Vincent Scheivert
Chief Information Officer
Albemarle County Public Schools (VA)

Irene Spero
Chief Strategy Officer
CoSN (DC)

Amy Starzynski
Founder and Partner
Foresight Law + Policy (DC)
Background Information

**Irish Education Overview**

The levels of education in Ireland are primary, secondary and higher (often known as “third-level”) education. In recent years further education has grown immensely. Growth in the economy since the 1960s has driven much of the change in the education system. For universities there are student service fees (up to €3,000 in 2015),\(^1\) which students are required to pay on registration, to cover examinations, insurance and registration costs.\(^2\)(\(^3\))

The Department of Education and Skills, under the control of the Minister for Education and Skills, is in overall control of policy, funding and direction, while other important organisations are the National Qualifications Authority of Ireland, the Higher Education Authority, and on a local level the Education and Training Boards are the only comprehensive system of government organisation. The current Minister for Education is Richard Bruton.

**Northern Ireland Education Overview**

Education in Northern Ireland is similar to the structure set up in England.

The Department of Education (DE) is responsible for Northern Ireland’s education policy, with the exception of the higher and further education sector which is the responsibility of the Department for the Economy (DfE). The Department of Education’s main areas of responsibility cover pre-school, primary, post-primary and special education; the youth service; the promotion of community relations within and between schools; and teacher education and salaries. Its primary statutory duty is to promote the education of the people of Northern Ireland and to ensure the effective implementation of education policy.

The Education Authority\(^4\) is responsible for ensuring that efficient and effective primary and secondary education services are available to meet the needs of children and young people, and support for the provision of efficient and effective youth services. These services were previously delivered by the five Education and Library Boards (ELBs) until the creation of the Education Authority, which assumed these roles in 2015. Classroom 2000 (C2k), on behalf of the authority, is responsible for the provision of information and communications technology managed services to all schools in Northern Ireland. Each of the former ELBs is now a sub region of the Education Authority.
Useful Websites and Links

- National Digital Strategy
- High Speed Broadband in Schools
- Special School Projects
- Digital Awards for Schools
- Online continuing professional development courses for teachers
- Department of Education and Skills, ICT in Schools Programme
- Department of Education and Skills, Digital Strategies for Schools 2015-2020
- PDST Technology in Education
- 21 Century Learning—Teachers’ and Students’ Experiences and Views of the Bridge211 Approach within Mainstream Education
- Valuing Education Technology in Schools in Ireland/North and South: Report of Standing Conference on Teacher Education

We will be meeting with some key government officials. Here are links to their bios.

In Dublin:
- Ciaran Cannon, member of Irish Parliament and former Minister of State for Training and Skills
- Richard Bruton, Minister for Education

In Belfast:
- Peter Weir, Minister of Education

Newspaper articles

- The Brexit wild card? Ireland, Washington Post, August 8, 2016
- Ireland poised to exploit expansion in education technology, Irish Times, June 2015
- Coding may be introduced in primary schools

About our Sponsors

- HP is the lead sponsor of the delegation
- Aladdin is a dinner host in Dublin
- TextHelp is a dinner host in Belfast