GÉANT

Teaching and learning goes global with e-Education and research networks

Education is being revolutionised by technology. From interactive teaching materials to videoconferencing and tablet computers in the classroom, it is changing how students and pupils learn and work together. Global collaboration between schools and colleges thousands of miles apart helps bridge the digital divide. Today's 'digital native' students expect e-Education to be at the heart of their experience, teaching new skills that are vital for their futures.

The ICT technologies driving education collaboration

e-Education is being driven by three distinct technologies – videoconferencing, school collaboration platforms and high bandwidth network links. Together they connect students, teachers and experts from around the world, enabling a more collaborative learning experience, introducing pupils to different cultures and allowing them to interact as if they were in the same classroom.

Collaboration platforms enable teachers to connect with their peers across the globe providing exciting, interactive collaborations that directly benefit their pupils. For example:

- **e-twinning** (etwinning.net)
- **Schools Online website** (schoolsonline.britishcouncil.org)
- **CAPSpace** (projects.twice.cc)
- **Muse** (k20.internet2.edu)

Networking links are critical to school collaborations. They rely on the reach, capacity and reliability of research and education (R&E) networks, such as GÉANT in Europe and in-country National Research and Education Networks (NRENs) such as Internet2 in the USA and CARNet in Croatia. They provide the guaranteed bandwidth required for technologies such as real-time videoconferencing, as well as the training and support schools need to connect simply and cost-effectively to each other.

Pupils from Horvati primary school, Croatia, participating in a videoconference on children's rights, 2013

The Challenge
Enable students and teachers across the world to embrace new ways of learning

The Solution
Research and education networks are working together to provide schools with reliable, cost-effective and high capacity links that allow real-time, interactive collaborations between students thousands of miles apart.

Key Benefits
Pupils are widening their understanding of other cultures, enriching the learning experience and mastering vital new skills through interactive communications delivered by e-Education technology and research networks

aarnet   CARNet   INTERNET2   janet   NYSERNet

e-Education in action – bringing pupils together

Here are just a selection of e-Education projects using high speed R&E networks to benefit students and teachers alike.

Primary collaboration

Scargill Infant School in Essex, UK has embraced videoconferencing to benefit its pupils and increase efficiency. Supported by R&E connectivity between the UK and the US, Scargill has organised videoconferences with Bell Top Elementary School, New York State. The first city-state partnership of its kind, it enables children on both sides of the Atlantic to learn more about different cultures and develop their wider understanding.

Sharing learning across the globe

Open to students aged between 5 and 23 across the world, Megaconference Jr provides the opportunity to communicate, collaborate and contribute to learning in real time using advanced multi-point videoconferencing technology. Running for over ten years, it covers a variety of subjects, with presentations given by schools that are then watched by other students around the world.

Collaboration between Internet2, AARNet in Australia, GÉANT, Janet and CARNet in Europe enables powerful learning through real time viewing of presentations.

Teaching and Learning Across the Pond

A partnership between NYSERNet (the New York State R&E Network), Video Conferencing for Learning in the London Borough of Redbridge and Janet, Teaching and Learning Across the Pond is designed to promote shared learning amongst children around the world by videoconferencing.

One major success has been the Cross Atlantic Alternative Energy Debates, first held in 2012. These bring together Croatian, Canadian, British and American students to discuss the pros and cons of alternative sources of energy, enabling everyone to give their opinions and help shape ideas for the future.

Continuing the Paralympic Legacy

One of the key aims of the 2012 London Olympics and Paralympics was to inspire a generation, not just in the UK but around the world. Sharing this legacy is vital, and e-Education has helped connect athletes with pupils across the globe. A videoconference in November 2012 featuring Paralympic medallists and coaches was watched by thousands of pupils, while hundreds of students in London and New York State were able to question the athletes and share opinions.

Horvati primary school pupils hosting a Megaconference Jr debate, May 2013

> **Research and education networks around the world are crucial for supporting international collaborations. I have experienced this first hand, through working with a number of the networks around the world, for individual school to school projects, with NYSERNet, Janet , and the London Borough of Redbridge, as well as large multipoint collaborations involving many network connections. R&E networks provide the infrastructure needed by education establishments to communicate with each other over a secure (e-safe) and interoperable environment – one that is especially required for videoconferencing connections. With R&E networks we are able to connect easily and safely to deliver content and partnerships around the globe.**
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> *Mina Patel, Video Conferencing for Learning, London Borough of Redbridge, UK*

> **Through e-learning and videoconferences our students improve their knowledge, meet counterparts in other countries and gain lots of friends from all over the world, friends who could eventually become their future business partners. Technology, including research and education networks, enable us to deliver the benefits of collaboration without the costs of travel or accommodation. In five to ten years from now I see our students becoming citizens of the world. Their teacher must be the one who will show them the first step to achieve that goal.**
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> *Suzana Delic,Teacher counsellor, Primary school Horvati, Zagreb, Croatia, CARNet (Croatian academic and research network) associate and Coordinator for MegaconferenceJr. – Europe*

connect • communicate • collaborate

The world is criss-crossed with high-capacity data communications networks, connecting and serving research and academic institutions across the globe. The most advanced of these is GÉANT, serving Europe. GÉANT interconnects with counterparts across the world, such as Internet2 in the USA.

Separate from the public Internet for reasons of security and performance, many of these networks are designed, deployed and run by the networking organisation DANTE and make an enormous practical contribution to research in a wide variety of areas – saving lives, building knowledge, establishing real-time collaboration between scientists all over the world.

GÉANT and its partners around the world underpin e-Education projects, providing the fast and reliable connections needed for real-time, interactive learning through technologies such as videoconferencing. The support and cost-effective connectivity provided by research networks ensure e-Education collaboration on a global scale.

SEVENTH FRAMEWORK PROGRAMME

DANTE