Transforming education in Europe
European Schoolnet at work
Foreword

A word from the Chairman and the Executive Director

This report is the result of 15 years of European Schoolnet activity. During this period, European Schoolnet has evolved to become one of the key organisations involved in transforming teaching and learning at school and in using the integration of ICT as a force for improvement.

Consider this paradox. On the one hand, we are experiencing an explosion of technology and the rapid development of new devices and tools: smart phones, interactive whiteboards, netbooks, tablets, social networking platforms, video sharing portals, etc. and yet research reveals that teachers do not feel confident in the pedagogical use of ICT.

Since our inception, we have worked with innovative teachers and pioneers of ICT in schools. Through many pilot projects, these "ICTinnovative schools" generated a first baseline in understanding the enablers and inhibitors affecting integration of ICT into pedagogical practice.

The main challenge for our Ministries of Education (MoEs) is scaling up innovative ICT practice and, in that context, the Policy and Innovation Committee set up by the MoEs within European Schoolnet will have an important contribution to make. Our education systems in Europe are heterogeneous: some are very centralized and "top-down" while others are decentralized and innovation tends to be bottom-up. However, we can discern some common patterns:

- schooling is organised around three main pillars: curriculum, teaching process, and assessment;
- more and more autonomy is being granted to schools;
- finally, teachers themselves are the driving force of change.

These shared features mean that European Schoolnet makes a powerful contribution through our activities, we support teachers and school heads in their transformation processes. Technology alone does not transform teaching practices. Any transformation process has to be the result of a strategy and a vision where the heads of school will assert their key role alongside the teaching community as the driving force for change.

Considering the roadmap for the future, three things are foremost in our minds:
1. there is an increased need to assemble more concrete evidence and data on the effective use of ICT in schools on which we can base policy recommendations.
2. there is a need, in conjunction with MoEs, to support schools and teachers in their teaching practices. A key priority for the future must certainly be professional development, particularly in the pedagogical use of ICT and supported by a new vision of teaching and learning.
3. it is important to develop and sustain a network of schools engaged in the validation of innovative approaches in using ICT in the classroom.

As we work towards this, European Schoolnet is becoming more and more a multi-stakeholder network which provides Ministries of Education, schools, head teachers, teachers, researchers and industry with an "ideas lab" and collaboration space where they can:

- explore and implement designs for the future classroom
- share experience and stimulate good practice
- enable schools, teachers and pupils to work together at European level
- rethink educational policy related to ICT in schools
- benefit from content exchange and work on interoperability
- examine and demonstrate how ICT can underpin teaching and learning in all school subjects
- take concerted actions at European level related to eSafety.

Giovanni Biondi & Marc Durando
Chair & Executive Director of European Schoolnet
Executive summary

The journey so far

After 15 years of activity, European Schoolnet has reached a more mature state and is currently one of the key organisations involved in transforming teaching and learning at school, and in using the integration of ICT into learning and teaching as a force for improvement.

The technology background

The background to European Schoolnet work is educational technology, which continues to evolve and offer new opportunities for improving teaching and learning. These emerging technologies include:

- Social media and their potential for user-generated content, crowd-sourcing knowledge and creating communities of practice
- Virtual learning environments, or learning platforms, hosting a range of tools, content and services
- Digital games, including simulations, virtual worlds, augmented reality as well as active games, authoring games and serious games
- Mobile learning based on personally owned smart phones, netbooks, etc.
- 1:1 computing, including e-books, netbooks, e-readers, tablets and iPad-type products
- Learning beyond a single setting: learning taking place across multiple institutions or locations (school, home libraries, museums, employers)
- Learning resources for supporting teaching and learning across different platforms

Educational trends

In this environment, key trends and issues in compulsory education are emerging across countries - with national variations:

- Autonomy and accountability of schools: a move towards devolving budgets and responsibilities to schools from central government and, consequently, to the increased importance of effective school leadership. This is related to greater parental involvement in schools.
- Teacher quality: apart from social class, the strongest influence of learning outcomes. Issues include recruitment, retention, qualifications, effective and relevant professional development, and mainstreaming ICT amongst the majority of teachers.
- Inclusion: of immigrants, of the socially deprived, of those with disabilities or learning difficulties. Gender differences also affect integration and success.
- e-Skills and 21st century skills for the future economy: digital skills and competences, and also innovation, creativity, problem solving, teamwork, learning to learn, summarising information, issue-based enquiry. Maths, science and technology continue to be a particular issue.
- The crucial role of technology in educational reform: how and under what circumstances technology can support wider educational reform.

Project work

European Schoolnet’s project work is divided into two main activity types: policy, research and innovation; school services. These two types of activities are developed in several areas, but during the last few years particularly in three main areas (STEM, eSafety and interoperability).

Policy, research and innovation

European Schoolnet is a knowledge-building network, enabling Ministries of Education to share experiences and problems and to learn from each other. It strives to demonstrate how ICT can support change in teaching and learning. However, innovation in practice is difficult without policy support. One of European Schoolnet’s objectives is to identify evidence, scalable and transferable practice and emerging priorities in education in Europe.

Successful collaborative projects and initiatives here include:

- The Insight portal: a respected and widely used knowledge base containing regularly updated country reports and studies.
- Comparative monitoring research and developments in the use of virtual learning environments and digital games in schools.
- The Educational Netbook Pilot on 1:1 computing in education.
- The Digital Competence working group, created by our MoEs, investigating how ICT is addressed in the curriculum for students and teachers and what are the most recent initiatives in the field.

School services

Teachers and pupils have always been at the centre of our actions for schools, and European Schoolnet has offered many opportunities for teachers to become actively involved in exploring how ICT can enhance the teaching and learning experience.

In recent years we have focused on raising awareness among teachers of the benefits of school collaboration activities for both the pupil’s learning and the teacher’s own professional development.

Successful initiatives in this area include:

- eTwinning: the European Commission’s community for schools in Europe; with more than 135,000 schools registered and 40,000 projects since its launch in 2005.
- U4Energy: a competition for primary and secondary schools to improve energy education in schools.
- FuturEnergia: a good example of collaboration with industry, in this case PlasticsEurope, to raise awareness and change the landscape of energy.
- Spring Day for Europe: an awareness raising campaign on the EU institutions and their policies.
- The eLearning Awards: awards for the best teachers and projects in Europe utilising new pedagogies and technologies.

Science, Technology, Engineering and Mathematics

Since 2007, Science, Technology, Engineering and Mathematics (STEM) has been one of the major thematic domains for European Schoolnet. Among the factors identified as central to implementing change and supporting the STEM agenda are: the need to have motivated and recognised teachers, the need to have more innovative pedagogy and a creative curriculum, the need for a better recognised role for business and the active engagement of the private sector and the need to work more on the demand side.

2 As at 2 February 2011
Successful initiatives in this area include:

- Prominent in our efforts is the European Coordinating Body (also known as Ingenious) set up with leading industrial organisations, including the European Round Table of Industrialists (ERT), to support cooperation between the education sector and industry in stimulating interest in STEM studies and careers.

- Another major initiative launched in 2010 is Scientix, the community for science educators in Europe, run on behalf of the European Commission’s DG Research and Innovation.

- Spice where teachers and science education experts collect, analyse, validate and share innovative pedagogical practices, particularly focused on inquiry-based learning, whilst enhancing pupils’ interest in the sciences.

- Xperimania on changing teachers’ and students’ perceptions on Chemistry, women in Chemistry and careers in Chemistry.

- e-Skills week promoting interest and access to studies and careers in ICT.

Promoting responsible technology use

European Schoolnet coordinates the European-wide Insafe network and runs many projects dedicated to promoting safe, effective use of technology by children and young people of all ages as well as by teachers and schools.

Through work in the field, we have forged a leading role in Europe and internationally, collaborating with institutions such as the European Commission and the Council of Europe and actively participating in policy dialogues within the worldwide Internet Governance Forum.

Safer Internet Day, organised since 2004, now involves thousands of local, national and international events across more than 73 countries. Resources such as the Family eSafety Toolkit and activity book created by the eSafety coordination team are being taken up internationally.

The Insafe network, funded by the European Commission, is at the heart of our eSafety activities, and is enriched by several satellite projects supported by industry. Insafe is a rapidly expanding network in both size and remit. In five years it has doubled in scale to a total of 30 national centres, reaching across the whole of the EU to Russia, Norway and Iceland.

Interoperability and content exchange

“Interoperability” aims to enable heterogeneous ICT systems and software to join up and work together. Our network sets a high priority on improving the interoperability of teaching materials so that they can be shared and exchanged across Europe.

This involves participating in developing content standards and specifications at international level through collaboration in the main standards bodies such as IMS and the CEN/ISSS.

Work on interoperability and content exchange continued in a number of projects, often with EU funding:

- The ASPECT best practice network to encourage adoption of learning technology standards and specifications
- Learning Resource Exchange – enabling schools to find educational content from many different countries
- The eQNet project to develop quality criteria for educational resources that ‘travel well’
- The Interactive Whiteboard working group, created by our MoEs, supporting the use of a common file format.

The road ahead

Looking into the future, there are three critical issues that European Schoolnet must address:

1. The increasing need to assemble more concrete evidence and data on the effective use of ICT in schools on which policy recommendations can reliably be based.

2. The need to support schools and teachers in their teaching practices. A key priority for the future must be professional development, particularly in the pedagogical use of ICT and supported by a new vision of teaching and learning.

3. Linked to this, the need to develop and sustain a network of schools engaged in the validation of innovative approaches in using ICT in the classroom.

Working towards this, European Schoolnet has evolved into a multi-stakeholder network to provide Ministries of Education, schools, school leaders, teachers, researchers, and industry with an “ideas lab and collaboration space where they can:

- explore and implement designs for the future classroom
- share experience and stimulate good practice
- enable schools, teachers and pupils to work together at European level.
1. Strategy background

Trends and issues in transforming education

What is the big picture for European Schoolnet? What are the issues and challenges it faces over the next decade? What are the key trends influencing educational reform that will in turn shape the agenda for European Schoolnet and its members?

The discussion of these questions takes place within a wider context of changing global political, social, and economic conditions. As reported in The Economist, examples of these megatrends are:

- Increased globalisation and competition and the growth of emerging economies
- Climate change and decarbonising economies
- Population growth and migration
- Surging demand for natural resources
- A rise in ethnic and religious tensions
- Financial instability and a global economic downturn, fewer jobs for school leavers
- Cuts in public spending on education despite, paradoxically, evidence that investment in education pays off in terms of higher Gross Domestic Product.

1.1 European priorities

The Lisbon Strategy, the predecessor to the EU 2020 Strategy, was an action and development plan for the European Union between 2000 and 2010. Its aim was to make the EU the "most dynamic and competitive knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion, and respect for the environment by 2010". The Strategy was adopted at the European Council in Lisbon in 2000 but its goals were not completely achieved.

The EU 2020 Strategy sets out a vision for Europe's social market economy over the next decade, and rests on three interlocking and mutually reinforcing priority areas:

- Smart growth, developing an economy based on knowledge and innovation;
- Sustainable growth, promoting a low-carbon, resource-efficient and competitive economy;
- Inclusive growth, fostering a high-employment economy delivering social and territorial cohesion.

In order to meet the targets, the Commission proposes a Europe 2020 agenda consisting of a series of flagship initiatives:

- Innovation Union
- Youth on the move
- A Digital Agenda for Europe
- Resource efficient Europe
- An industrial policy for the globalization era
- An Agenda for new skills and jobs
- European Platform against poverty

Alongside the Digital Agenda, the Communication also includes other references to the importance of ICT in the Strategy. For instance, in order to create a solid single internal market, it acknowledges that ICT has become one of the "main drivers of growth". The Commission states that the potential of ICT will only be fully exploited "by eliminating the fragmentation between online content".

Digital literacy and competences (e-skills) feature strongly in the EU 2020 flagship and multi-stakeholder efforts are called for. Of particular relevance to Ministries of Education (MoEs) and European Schoolnet is the call on Member States to "implement e-skills and digital literacy policies and promote relevant initiatives for [...] disadvantaged groups" and to "mainstream e-learning in national policies for the modernisation of education and training, including in curricula, assessment of learning outcomes and the professional development of teachers and trainers", and more generally, the development of the European Skills Passport and the integration of e-skills into core lifelong learning policies.

1.2 Beyond EU strategy papers

Around the world, governments and international organisations are grappling with common issues related to education in the 21st century and the role of technology in solving them. We give here only three examples:

- United States: published in November 2010, the National Educational Technology Plan sets out six goals:
  - Learning: Engage and Empower
  - Assessment: Measure What Matters
  - Teaching: Prepare and Connect
  - Infrastructure: Access and Enable
  - Productivity: Redesign and Transform
  - Research and Development: Innovate and Scale

  In February 2011, the White House published A Strategy for American Innovation: Securing Our Economic Growth and Prosperity, a strategy for improving K-12 education, in which technological innovation plays a strong role, rather than ICT as such. "The United States should foster innovation in technologies that have the potential to dramatically improve student performance, such as software that is as effective as a personal tutor, and increase access to lifelong learning and training for American workers. The President’s Financial Year 2012 Budget for the Department of Education includes a proposal to launch the Advanced Research Projects Agency – Education, a new organisation that will support research on breakthrough technologies to enhance learning."

- South Korea: amid concerns that its high-performing education system was not developing creativity and highly-valued competencies in school leavers, the Korean government’s “Go to the World, Go to the Future” strategy was launched in January 2011. Recognising that, under the previous system it was difficult for young Korean people to learn the skills such as problem solving and community communication in schools, which are required by a global information-based society, the Korean government included the creative experience activity in a new national education curriculum that will begin in 2011 in order to ‘train creative human resources’ that future society requires. South Korea was once one of the world’s poorest agrarian societies; now its GDP places it 13th in the ranking of the richest countries of the world, just behind the UK, France and Italy, (9th-11th), and one place above Spain.

References:

3 The Economist, 4 February 2011
4 http://ec.europa.eu/eu2020/index_en.htm
6 http://www.ed.gov/technology/help-2010
8 http://ec.europa.eu/europe2020/index_en.htm
1.3 International studies

Within the scope of this piece, we can only skim through the wealth of reports bearing on these issues.

Among the many OECD publications, five are particularly relevant in the current context:

- PISA 2009: PISA focuses on young people’s ability to use their knowledge and skills to meet real-life challenges. This orientation reflects a change in the goals and objectives of curricula themselves, which are increasingly concerned with what students can do with what they learn at school and not merely with whether they have mastered specific curricular content. PISA 2009 tested ‘15 year-olds’ performance in reading, mathematics and science. In Europe, only Finland, the Netherlands and Belgium performed consistently above average in all measures.

- New millennium learners making the grade:9 showed that while many (but not all) young people were digitally competent, there was a further digital divide between learners with competences to exploit ICT and those without them.

- “The Nature of Learning”10: this book brings together the lessons of research on both the nature of learning and different educational applications. It argues that the rapid development and ubiquity of ICT are re-setting the boundaries of educational possibilities. Yet, significant investments in digital resources have not revolutionised learning environments; to understand how they might require attention to the nature of learning. It also suggests that the sense of reaching the limits of educational reform invites a fresh focus on learning itself: education has been reformed and reformed again in most OECD countries, leading many to wonder whether we need new ways to influence the very interface of learning and teaching.

- Inspired by technology, driven by pedagogy: published in 2010, this publication11 highlights key issues to facilitate understanding of how a systemic approach to technology-based school innovations can contribute to quality education for all while promoting a more equal and effective education system. Its policy implications include the need to build a well-organised, formalised, easily accessible and updated knowledge base about technology in education; to supplement investments in technology-based innovations with the necessary efforts in monitoring and evaluation; and to support relevant research on technology in education according to national priorities and link these efforts to innovation.

- Teaching and Learning International Survey12: this focuses on lower secondary schools and provides data on school leadership, how teachers’ work is appraised, teachers’ professional development and their attitudes to teaching and their pedagogical practices. It stresses the importance of leadership and management in schools as well as of professional development and appraisal of teachers’ work in schools. TALIS also highlights teachers’ need for ICT training.

Innovative approaches to school: the impact of ICT policy and practice exchange

European Schoolnet is a knowledge-building network, enabling Ministries of Education to share experience and problems and to learn from each other. European Schoolnet strives to demonstrate how ICT can support change in teaching and learning. Innovation in practice is difficult without policy support. One of European Schoolnet’s objectives is to identify evidence, scalable and transferable practice and emerging priorities in education in Europe.

2.1 Insight observatory for new technologies and education

The Insight portal13 is a respected and widely-used knowledge base containing regularly updated country reports and studies, as well as reports and papers from our projects, all in one place for easy access.

About 20 country reports on ICT in education are regularly published on Insight. The reports are drafted based on the information provided annually by Ministries of Education. This is a major intelligence-gathering exercise on ICT in education for Ministries of Education across Europe.

Recently, the following in-house reports were published on Insight:

- Netbooks on the rise. European overview of national laptop and netbook initiatives in schools: this report is part of the project described below - gives an overview of national initiatives providing laptops/netbooks or netbooks to schools in several European countries.

- Virtual Learning Platforms in Europe: What can we learn from experience in Denmark, the United Kingdom and Spain? This in-depth study, commissioned by the French government’s Caisse des Dépôts, in cooperation with the Ministry of National Education, offers an analysis of policies and initiatives in the field of virtual learning platforms in Denmark, the United Kingdom and Spain (Andalusia and Catalonia).

- Review of national curricula and assessing digital competence for pupils and teachers. As part of the work programme of the Digital Competence Working Group, European Schoolnet carried out this survey in collaboration with Educa.ch, the Swiss member of European Schoolnet’s Steering Committee. Seven countries in all provided input: Czech Republic, Finland, Lithuania, Norway, Portugal, Slovakia and Switzerland. In addition to a curricular review, the report contains two examples from Norway and the Czech Republic describing new (as opposed to traditional) approaches to learning and constructing knowledge in a specific area. The curricula and assessment review is further complemented by five case studies on digital competence development.

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9 http://www.oecd.org/edu/talis
11 http://www.oecd.org/document/8/0,3343,38003749_49060941_4160649_1,00.html
12 http://www.oecd.org/edu/knowledge
13 http://insight.eun.org
2.2 EMINENT

EMINENT is the annual conference of European Schoolnet, bringing together member Ministries of Education, IT companies, researchers and educators. The 2010 Conference was organised in Copenhagen, Denmark on 8-10 November 2010.

It was the tenth EMINENT after successful events in Amsterdam, Lisbon, Stockholm, Geneva, Prague, Paris, Brussels, Rome and Vilnius. In 2010 EMINENT was organised in conjunction with Uddannelsesforum (Education Forum), a major symposium which attracts more than 2000 key people from the entire educational sector in Denmark including policy makers, teachers, ICT coordinators. Uddannelsesforum is organised by UNI-C, the Danish IT Centre for Education and Research.

Keynote speaker, Dr. Francesco Pedró, Senior policy analyst and principal administrator of the Teaching and Learning International Survey, OECD

2.3 Digital games in schools

European Schoolnet continues to monitor research and developments in the use of digital games in schools so as to have an authoritative and impartial overview of the field. This involves liaison with industry and the Interactive Software Federation of Europe as well as participating in key conferences and workshops on the topic.

In 2010 and 2011, the key activities were Games in Schools, IMAGINE, Poverty Is Not A Game (PING) and Foothie, while a strand in the LINKED project also related to research in games-based learning.

The IMAGINE project, funded by the European Commission under the Lifelong Learning Programme, sets out what we have learned about using digital games for learning, as they affect education policy-makers and decision-makers in school, vocational and adult education, and makes a series of recommendations.

Recommendations on using digital games for learning:

- Define the terms used in games for learning: A clear, agreed and well-publicised definition and classification of digital games for learning is needed, matched to learning objectives, together with evidence from research.

- Increase opportunities to bring together researchers, games developers, industry, education experts and learners: There should be more opportunities for bringing together research, practice and games development, to share perceptions and work towards common goals, increasing cooperation between the games industry and education around ambitious projects. A neglected aspect in games for learning is the actual learning design, rather than the technical or operational features.

- Link home and school learning through games: Exploit the installed base of equipment at home, the engagement of families and the motivation and skills of children to develop a systemic approach to learning outside school in informal settings. The focus should be on tasking ‘pinch points’ in the system (where in-school provision is ineffective), progressing through games-based activities towards assessed outcomes related to curriculum objectives.

2.4 Survey of Schools: ICT and Education

Launched in January 2011, this survey is the largest study ever undertaken of the use of technology in schools, involving over 30 000 schools in 31 countries (EU27, Croatia, Iceland, Norway, and Turkey). It focuses not only on assessing trends in the provision of ICT and broadband but also the use of ICT by classroom teachers and students.

The study collects and assesses information on the impact of ICT use in schools for the purpose of teaching/learning. To this end, surveys will be carried out in the 31 countries participating and the results presented in a study report which will include an extensive set of data charts and tables as well as country profiles on the situation in each country.

2.5 Educational netbook pilot

One-to-one (1:1) computing in education is a term used to describe the current trend for using low-cost computer devices - ranging from mobiles and handhelds to laptops or netbooks - in educational contexts. 1:1 indicates the ratio of items per user, i.e. one netbook per learner. Typically, these devices are connected to the internet and are owned by the learner, which means that they are used outside of typical school environments, potentially crossing the borders of formal and informal learning.

Netbooks can facilitate more engaging and motivating learning experiences anywhere, anytime, offering a wide range of collaborative opportunities. Supported and funded by ACER, the pilot is interested in exploring how the introduction of netbooks and 1:1 pedagogy in schools could change the processes involved in teaching and learning.

These 1:1 netbook scenarios highlight the fact that the learners have netbooks available at all times, taking advantage of a blended learning approach which alternates online and offline activities, as well as individual and collaborative ones. 1:1 netbook scenarios potentially blend the borders of formal and informal learning, as learners have the use of netbooks not only in the school environment, but also outside of school hours.

Such scenarios are intended to be inspirational, leaving room for teachers to adapt them for their own local curriculum needs. They are not necessarily subject-specific and are not as detailed as lesson plans. They include:

- short activities on 1:1 which can be incorporated in a larger pedagogical project
- outline organisational prerequisites (e.g. tools available, where and how the activity takes place)
- step-by-step instructions
- time estimates both for preparation and running the activities.

According to the pre-pilot evaluation, based on the feedback given by 240 teachers from the six participating countries (France, Germany, Italy, Spain, Turkey and the UK), 79% of the teachers think that netbooks will positively impact on learning, and about three quarters think that netbooks will also encourage students’ personalised learning. The evaluation of the full pilot is ongoing during May and June 2011, taking into account the feedback from all stakeholders including teachers, pupils and their parents.

2.6 Tellnet: Analysing learning in social networks

Through Social Network Analysis and large-scale visualisation of networks, the Tellnet project explores the question “How can social learning networks support teachers’ competence building in 2020?”. Currently, more than 135 000 teachers in 32 European countries have created their profiles on the eTwinning portal.

On the one hand, the Tellnet project helps to clarify how teachers use eTwinning and its tools to learn new skills and competences, for example new teaching ideas and ways to use ICT. On the other hand, Tellnet will create scenarios to explore the question “What could be the role of the eTwinning network for teachers’ professional development in Europe in 2020?”. Preparations are underway for a scenario-building workshop to take place at the Institute of Prospective Technology Studies in 2011.

14 http://minent.eun.org
15 http://www.netbooks.eun.org/web/acer/1to1pedagogy
16 http://www.tellnet.eun.org
2.7 Leveraging innovation for a network of knowledge on education

Leveraging Innovation for a Network of Knowledge on Education (LINKED17) culminates in 2011 and is funded under the European Commission’s Lifelong Learning Programme. This brokerage initiative aims at bridging the knowledge and communication gap between researchers, policy-makers and practitioners working in the area of ICT in education.

The main objective is to make research results on the topics of digital competence and digital games available to policy-makers and practitioners in understandable, user-friendly formats. Research partners in the project write short literature reviews summarizing the main recent research results available, looking at specific issues regarding digital competence and also digital games.

Using these literature reviews, European Schoolnet develops summaries and presentations, including classroom videos, as visual, accessible and less time-consuming alternatives for getting the results across to the project’s different target groups.

Still under development, the Linked platform 18 also provides getting the results across to the project’s different target groups. Using these literature reviews, European Schoolnet develops summaries and presentations, including classroom videos, as visual, accessible and less time-consuming alternatives for getting the results across to the project’s different target groups.

Much has been written about the design of the future classroom, and scenario-based approaches are by no means novel. However, iTEC is different in terms of the scale of the testing of future classroom designs. The practical application of technology in a diversity of classrooms across Europe will allow us to better understand the constraints and opportunities resulting from the available physical environments and such considerations as teacher attitudes. By mapping onto this the policy objectives at national level and the evolving technical capabilities provided by suppliers engaged in the project, a reliable vision of the future classroom will emerge. The iTEC project, therefore, will act as a Living Lab or Ideas Lab for both ministries and technology providers and enable them to jointly rethink and test designs that will engage the current and future generation of learners.

EUROPEAN SCHOOLNET Activity Report

iTEC special feature
Classrooms and beyond!

The Innovative Technologies for Engaging Classrooms (iTEC) project is perhaps the clearest and most significant example of the role European Schoolnet can play in working with Ministries of Education to bring about transformation in learning and teaching through the strategic application of learning technology. With 27 project partners, including 14 Ministries of Education, and funding of €9.45 million from the European Commission’s FP7 programme, iTEC is the largest and most strategic project yet undertaken by European Schoolnet and has the potential to be a flagship project for the design of the future classroom.

Technology and the future classroom

iTEC 19 explores the fundamental question of how technology can be used effectively and successfully by both learners and teachers, and through this activity seeks to define the nature of the future classroom. The project uniquely connects education policy-makers from Ministries across Europe with some of the key learning technology providers and experts from leading research organisations and universities. The diverse knowledge and experience this group brings together is used to design and take to scale 21st century learning and teaching scenarios. iTEC builds upon experiences and research carried out in the past but with a determination to deliver impact and sustainable system improvement.

A thousand classrooms

The initial impact of the project is provided by the largest pan-European pilot activity so far undertaken related to ICT use in schools, where learning and teaching scenarios will be evaluated in more than 1000 classrooms across a minimum of 12 countries.

Evolving technology to support learning

iTEC has a number of technical work activities aimed at stimulating the development of new tools and services more attuned to the needs of learners, teachers and others involved in the education process.

“...something like this happens.”
Luis Anido, University of Vigo, Spain

Investment is being made in iTEC to identify the value of this technology and establish a model for a technical architecture which allows easy access to resources. The long-term rapid growth of “fit for purpose” tools and resources can be supported by a sustained relationship created between commercial providers and research establishments with a focus on emerging technical capability and education requirements. iTEC particularly deals with some exciting concepts and opportunities in the evolution of technology in support of learning, including:

17 Project web: http://linked.eun.org/
18 http://linked.eun.org/
19 http://itec.eun.org/
Ensuring value for money and return on investment

The combined impact of the work started by iTEC in order to define an achievable vision of technology-supported learning and teaching compatible with European schools will result in a greater ability to focus investment in technology. There are proven risks associated with investment in technology where an informed strategy is not in place. By ensuring that users and suppliers of technology are fully engaged in an ongoing dialogue concerning development, adoption and use of technology aligned with a shared vision, investment can be focused where it will bring the greatest return in terms of educational impact.

Teacher skills and institutional maturity

Adoption of advanced approaches to learning and teaching based upon future scenarios for the integration of technology cannot be left to chance. Many previous research projects have demonstrated the great value technology plays in learning and teaching when applied well, but have fallen short of ensuring wide scale adoption. Mainstreaming the iTEC outcomes and a long-term solution for taking the work forward beyond the project is therefore also a central objective.

With this in mind, the project has established a high-level group of decision shapers under the Chairmanship of Eduardo Marçal Grilo, a former Minister of Education in Portugal. This group will act as a gatekeeper and information broker in relation to the Ministries of Education in Europe and help ensure that iTEC results impact on the educational reform process at national level.

Q. What will the High-Level Group do?
Grilo: In the first year, the Group will provide feedback on the iTEC evaluation methodology and then, throughout the project, review the criteria that will be used to decide what iTEC scenarios will be taken forward for large-scale testing by Ministries of Education. Once we have results from the large-scale validations in the project, a really key task for the High-Level Group will be to advise on the scalability and viability of iTEC scenarios from a policy-making perspective.

Q. Who will be invited to join the High-Level Group?
Grilo: We are asking Ministries of Education in the European Schoolnet Steering Committee to propose members who can provide really strategic advice to the project. Ideally a High-Level Group expert should be a senior person with excellent contacts both in the education system (for schools), national agencies, and the Ministry of Education. We are also asking Ministries to propose educational experts as well as ICT experts but, most importantly, we need Group members who really have a solid background and experience as decision shapers and/or decision makers. Although good knowledge of the situation in his or her own country is expected, experts will not be representing their country. They will be nominated and act in their personal capacity. At the end of the selection process, we hope to have appointed 8-9 very influential experts who are prepared to ‘speak their minds’ and help iTEC really impact on the educational reform process.

Q. Why is mainstreaming project results so important?
Grilo: When the European Commission issued the original call for project proposals, it emphasised the need for very large-scale piloting in order to help demonstrate that future classroom designs had the potential to be taken to scale. This is understandable. We have all witnessed many innovative national and EC-funded projects using ICT in recent years but very few of these have moved beyond small-scale pilots or become an integral part of most schools’ practice. A key issue here from a policy-making perspective is not to treat ICT innovation in isolation or to think that new ways of doing things will completely replace existing forms of learning and knowledge building that have proved to be very effective. Mainstreaming iTEC results will only happen if the project, with help from the High-Level Group, can start to show that iTEC’s future classroom designs have the potential to improve and enhance what schools are already doing well.

Q. Why do you think the High-Level Group is important in iTEC?
Grilo: It is inevitable that ICT will be used in education but it still remains unclear how engaging teachers and learners through the use of ICT actually improves the quality of teaching and learning. It is very important, therefore, that iTEC does not lose sight of this issue. The High-Level Group will be a group of independent experts who will review the scenario development and validation, maybe ask some ‘awkward questions’ and perhaps also challenge some of the assumptions that project partners are making with regard to iTEC future classroom designs.

“Teachers will be designers with us on those scenarios and applications and prototypes that we will then build and test with the teachers.”
Teemu Leinonen, Aalto University, Finland

”The visions we come up with should be based on reality. We must accompany reality with visions and not just visions for nobody really to implement.”
Leo Højsholt-Poulsen, UNI-C, Denmark

Eduardo Marçal Grilo, Chair of the iTEC High-Level Group

Eduardo Marçal Grilo is a former Minister of Education in Portugal (1995-1999) and is currently the administrator of the Calouste Gulbenkian Foundation which develops and supports projects and initiatives in the fields of education, science, health and fine arts. He has agreed to chair the iTEC High-Level Group that will have a key role in helping to mainstream project results and in ensuring that iTEC’s designs for the future classroom impact on the educational reform process at national level.

Eduardo Marçal Grilo, Chair of the iTEC High-Level Group
3. School services

Reaching out to schools in Europe

The range and variety of services offered to the school sector is considerable. They range from the eTwinning Action for teachers and pupils to Scientix (a portal for teachers) and the examination of Nanotechnologies in the Nanoyou project. There are also a number of competitions for schools in the field of energy conservation as well as the highly regarded eLearning Awards competition which European Schoolnet has organised for the past seven years to reward innovation and practice in European schools. All of this provides our supporting Ministries of Education with a rich set of resources to support new curricula in schools.

3.1 eTwinning, the community for schools in Europe

eTwinning creates an online community for primary and secondary school teachers across Europe to facilitate working across borders with pupils, finding resources and ideas, exchanging experience on pedagogic practice and engaging in a range of professional development activities. The current number of teachers involved in eTwinning stands at 135 00020 and continues to grow.

eTwinning is a project coordinated by European Schoolnet on behalf of the European Commission. It is an action of the European Union’s Lifelong Learning Programme under the Comenius Programme involving teachers, pupils and schools which began in 2005. Amongst all the services offered to schools in Europe by European Schoolnet, eTwinning is the largest and most varied in terms of the tools and activities offered to participants.

Underlying all of these activities is a European principle: pupils and teachers in Europe need to have an understanding of what it is to be European in a united Europe as well as a national of whichever country they belong to. Since its inception in 1997, European Schoolnet has fostered this European dimension in education and has helped schools to celebrate their community of culture as well as their diversity.

“The use of ICT in Swedish schools needs to be developed and European Schoolnet offers good opportunities for us to share experiences and exchange ideas with other European countries.”

Christina Szekely, The Swedish National Agency for Education, Sweden

“The networking activities such as eTwinning allow our teachers and pupils to reach their goals more easily and in a more efficient way.”

Nathalie Terrades, Ministry of National Education, Youth and Community Life, France

The centre of the activities is to be found in the highly sophisticated eTwinning portal21. The portal has a public area, which provides a wealth of eTwinning information and resources. Each registered teacher is provided with a personal Desktop, equipped with a wide range of social networking tools, such as a search tool for finding other eTwinners, a personal profile page, and so on. When a teacher finds a partner for a project, further resources become available to the project partners, allowing teachers and pupils to work together online and store all the documents, images, videos etc. concerning their project. This area is called the TwinSpace. Finding a partner can sometimes take time and often, when embarking on a project, teachers need more knowledge or extra skill in a certain area. This is where the Professional Development side of the eTwinning portal comes into play. Teachers can get in direct contact with other like-minded teachers through the eTwinning Groups or improve their skills through the Learning Lab, which offers a series of Learning Events.

eTwinning currently involves teachers from 32 countries, and one of European Schoolnet’s roles is to coordinate the work of the National Support Services for eTwinning (NSS) based in these countries. This work includes face-to-face professional development experiences in the form of European Professional Development Workshops (usually about seven a year involving 120 teachers per workshop), contact workshops organised by two or three NSS together, the eTwinning Annual Conference and the European Prize. Some countries are mainstreaming eTwinning activity both in terms of curriculum as well as in the formal recognition of the work and professional development experience undertaken by teachers. eTwinning is becoming a recognised force for promoting project-based and inquiry-based learning in Europe’s schools as well as a recognised channel for providing relevant and efficient in-service teacher professional development.

3.2 Spring Day for Europe

The European dimension in education is at the heart of European Schoolnet’s activities for schools. The flagship has been the Spring Day for Europe22, an annual event held over the past five years.

The aim of Spring Day for Europe is to raise awareness of the European Union and its policies, while encouraging dialogue between pupils, teachers and EU policymakers on their vision of Europe and its future. In the 2010 edition of Spring Day for Europe, the main focus was to engage school communities in...
discussions, debates and activities on European citizenship and fundamental rights; both of which are central for the European Year of Combating Poverty and Social Exclusion. Teachers and pupils can use their own ingenuity in deciding on what type of event to take part in, such as:

- information sessions followed by a discussion
- meetings with a person involved in European affairs
- debates within the school
- online exchanges of views between pupils from schools in different regions or countries
- lessons using the tools provided on the Spring Day website.

Prominent in this project was the range of pedagogical materials made available to teachers. Spring Day for Europe also afforded high visibility to schools for their activities, making it an attractive proposition for school managers to support.

3.4 FuturEnergia

FuturEnergia\(^3\) is a fine example of European Schoolnet’s collaboration with an industry partner. Working with PlasticsEurope - the association of European plastics manufacturers and official associate of the Sustainable Energy Europe campaign to raise awareness and change the landscape of energy - the attractive “Energy is our Future” website was launched.

The project provides direct support and curriculum resources for teachers involved in energy education across the EU and beyond. It is based on the idea that pupils will inspire energy-efficient behaviour within wider society.

FuturEnergia invites schools to take part in a number of online debates with special guests and to organise events about energy efficiency. FuturEnergia encourages new teaching and learning opportunities in the field of energy and sustainable development.

3.5 eLearning Awards

The eLearning Awards\(^26\) are for teachers who have organised the best projects in Europe using teaching methods and the new technologies in an innovative way. The Awards, launched in 2001, are an annual event, organised by European Schoolnet in conjunction with its corporate partners.

The eLearning Awards give visibility to teachers’ creative and technical skills, while at the same time demonstrating to a wider audience how ICT helps improve methodology, enriches their classroom work, and can impact positively on children’s learning.

Every year an international jury of educational experts evaluates all projects. Winners receive a prize for their school (cash and/or ICT equipment) and an invitation to the prize-giving ceremony that takes place during European Schoolnet’s annual EMINENT conference, held in 2010 in Copenhagen. There the teachers had the opportunity to meet leading policy makers from Europe’s Ministries of Education and key technology innovators from industry partners.

For Ministries of Education, the school services offered provide an inexpensive, safe and secure way for schools to access resources, communities and in-service opportunities which can be used to supplement and broaden what is on offer at national level. The growth of teachers using the various European Schoolnet resources brings, in turn, enhancement and inspiration to the national educational scene, which can only be to the benefit of all.

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\(^{23}\) http://www.u4energy.eu/

\(^{24}\) http://ec.europa.eu/energy/intelligent

\(^{25}\) http://www.futurenergia.org/

\(^{26}\) http://www.elearningawards.eun.org
36. Science, technology, engineering and mathematics

Teaching the next generation of scientists

High-quality education systems should enable young people to:
- develop key skills (linguistic, mathematical, scientific, technological)
- learn to learn
- be creative
- be an active citizen.

Science, technology, engineering and mathematics (STEM) is increasingly fundamental - as a form of basic literacy to equip young Europeans with the knowledge, skills and understanding to participate fully in society, influence and shape the future, and participate in economic activities where STEM skills are critical to success.

At European level, STEM plays a key role in ensuring economic and productivity growth, in supporting areas that are key to Europe’s future competitive position. Europe needs more technology-literate, high-skilled men and women to push back the frontiers of technology and drive innovation forward.

But there is a declining interest among young people in mathematics, science and technology (STEM) as revealed in a variety of research and policy reports, conferences and events over the last decade, including:

- OECD’s “Encouraging Student Interest in Science and Technology Studies”
- European Commission’s “Increasing Human Resources for Science and Technology in Europe” and “Science Education NOW: a renewed pedagogy for the future of Europe”

These have all fuelled the policy debate. Some EU Member State governments, for example, have already put or are currently in the process of putting national strategies in place to increase interest in STEM. Nevertheless, the problem remains, despite this growing debate and activity.

<image>

The more developed a country, the less young people are interested in education and careers in STEM. This was the finding of an international research project called The Relevance of Science Education (ROSE), which asked 15-year-olds from more than 40 countries for their views on issues regarding science and technology. Today’s young people wish to study and work on things that resonate with their values and concerns, and they don’t think that they will find this in STEM.

Negative stereotypes of scientists, engineers, researchers and other STEM careers do not help. There is a lack of attractive role models and a lack of information and understanding of what careers in STEM are like. In some cases, the job market is perceived as unstable and salaries are perceived as low relative to the amount of work involved. In several EU countries the number of young people opting for science studies is declining and there is a shortage of scientists and engineers in the labour market (and this will be exacerbated by ageing populations).

Our perspective on STEM education

Since 2007, STEM has been one of the major thematic domains for European Schoolnet. Projects are organised around policy and practice as well as awareness competitions for schools in specific areas, with a set of validation school activities testing new teaching and learning approaches for STEM classes.

European Schoolnet and its members have been at the forefront of the debate on STEM where four main factors have been identified as being key to implementing change and supporting the STEM agenda at European level.

- **Factor 1** – We need to have motivated and recognised scientists and mathematicians. This requires:
  - highly qualified and well-trained teachers
  - better recognition of the teaching profession, particularly in the STEM area
  - new approaches regarding the in-service teacher professional development.

- **Factor 2** – We need to have more innovative pedagogy and a creative curriculum. This requires a strategy to:
  - target the formal education system and embed actions in the curriculum
  - provide teachers with new content, tools and pedagogical approaches (access to new learning resources)
  - provide examples of transferable good practice.

- **Factor 3** – We need a better recognised role for business and the active engagement of the private sector. This requires a strategy to:
  - develop peer exchange and peer learning approaches
  - provide better information to teachers on what exists, on what industry offers, etc.
  - provide access to industrial facilities and company research labs and virtual facilities
  - contribute to strategic decisions about future skills needs in order to respond to evolving societal challenges and technological progress.

- **Factor 4** – We need to work more on the demand side. This requires us to:
  - have better role models
  - increase STEM teachers’ awareness of career opportunities in this field
  - insist on the role to be played by guidance counsellors in schools
  - have better information policies (such as a STEM career portal).
4.1 Scientix

Scientix is an excellent illustration of a project in STEM. It provides a web-based information platform for science education in Europe to disseminate and share know-how and best practices in science education. Scientix is managed by European Schoolnet on behalf of Directorate-General Research, and funded under the 7th Framework Programme. The Scientix portal is available in six European languages and targets anybody involved in science and maths education from policy-makers to science education researchers, and above all teachers. It offers:

- a repository of hundreds of teaching materials from EU-funded projects
- research reports and policy-making documents
- a translation on demand service for teaching materials into any of the 23 EU languages
- a forum and chat rooms
- an online news service and calendar of events and professional development opportunities
- a monthly newsletter.

"European Schoolnet provides the opportunity for each Ministry to benchmark its practice across Europe and to learn from the best performing education systems."

Doug Brown, Ministry of Education, United Kingdom

From its launch on 1 June 2010 to December 2010, the Scientix portal was visited 54,529 times. The percentage of returning visitors has been continuously increasing since the launch of the portal, which is a good indicator that the site content is engaging enough to keep visitors coming back.

4.2 Spice: towards inquiry-based learning

The Spice project, funded by the European Commission under the Lifelong Learning programme, aims to collect, analyse, validate and share innovative pedagogical practice, particularly focused on inquiry-based learning, whilst enhancing pupils’ interest in the sciences. The Spice project will single out good practice where teaching approaches in maths, science and technology are concerned and will share them throughout Europe. Testing the practices in different countries will provide guidelines to guarantee the quality and innovative nature of new projects. The Spice project is coordinated by European Schoolnet in partnership with Direcção Geral de Inovação e Desenvo (DGIDC) in Portugal and Dun zahrnrichich sluzeb MSMT (DZS) in the Czech Republic.

4.3 e-Skills Week 2010

European Schoolnet also focuses on specific sub-sets of STEM – in 2010, on the issue of technology and ICT skills, as the organiser of the European e-Skills Week. This major pan-EU campaign was coordinated by DIGITALEUROPE, a network of national ICT trade associations and major technology companies, in partnership with European Schoolnet, on behalf of the European Commission’s DG Enterprise and Industry.

With a focus week at the start of March 2010, e-Skills activities took place in 35 countries from the EU and beyond from October 2009 to June 2010. A total of 284 stakeholders and partners supported the campaign, reaching 445 225 people via 1 163 events such as conferences, workshops, training sessions and fairs. Through PR activities, a total of 65 million people were reached by the campaign.

The e-Skills Week also resulted in the publication of the e-Skills Manifesto, which has quickly become a common reference in the field.

4.4 Xperimania

Another good example of European Schoolnet’s partnership with industry is the Xperimania project devised in conjunction with the Association of Petrochemical Producers in Europe, and coordinated by European Schoolnet on their behalf. Aimed at pupils in the 10-20 year age group, the project provides teachers with a range of virtual hands-on activities in chemistry and physics. It demonstrates how the petrochemical industry has an impact on the development and manufacture of the most mundane items in our everyday lives.

The pedagogical basis of the activities is inquiry-based learning, and the natural curiosity of young people is stimulated by a range of challenging online activities, again featuring an interactive element with experts having online discussions with pupils.
Ingenious special feature: Fostering the new generation of scientists

Ingenious (http://ingenious-science.eu) is the European Coordinating Body (ECB) in Science, Technology, Engineering and Mathematics. It is a joined initiative launched by European Schoolnet and the European Roundtable of Industrialists (ERT) aiming to reinforce young Europe’s interest in science education and careers and thus address the future skills gaps. Through a strategic partnership between major industries and education ministries, Ingenious has the objective to increase the links between science education and careers and thus address the future skills gaps. By involving up to 1000 classrooms throughout Europe, Ingenious addresses the declining workforce with significant abilities in maths and science. European competitiveness is highly dependent on a skilled workforce with significant abilities in maths and science. Through the collection of best practice and the organisation of activities across Europe, Ingenious addresses the declining interest of young people for studying and working in maths, science and technology and takes stock of the state of research development in the field. Ingenious will achieve this by coordinating, leveraging and building upon existing school and business partnerships in the field of science, technology, engineering and mathematics (STEM) education across Europe.

The Ingenious virtuous circle: educate, communicate and inspire

"It is absolutely important that we collect the best practices, verify the achievements and disseminate them widely. But what I look forward to most is that our message about the importance of mathematics, science and technology topics will be heard in the member countries through our efforts within ECB."

Marko Mahkonen (NOKIA)

Ingenious is a multi-stakeholder consortium, associating Ministries of Education, businesses (major European companies, national science platforms, and organisations representing the interests of industry) and universities. Future European competitiveness is highly dependent on a skilled workforce with significant abilities in maths and science. Through the collection of best practice and the organisation of activities across Europe, Ingenious addresses the declining interest of young people for studying and working in maths, science and technology and takes stock of the state of research development in the field. Ingenious will achieve this by coordinating, leveraging and building upon existing school and business partnerships in the field of science, technology, engineering and mathematics (STEM) education across Europe.

"It is a breakthrough that main international industry communicates directly and effectively together with ministries and other organisations, in order to leverage science and technology to the young people in Europe."

Andre van Asperen (SHELL)

Ingenious will establish a pan-European observatory of best practices in STEM supported by national public authorities and industries, and propose at the end of the project country synthesis reports.

- Develop a STEM education best practice repository
- Communicate and stimulate STEM best practice
- Impact on STEM education policy
- Change opinion about science
- Fostering careers among young people and encourage them to think about the opportunities STEM can bring in their future.

All the actions undertaken in the project ensure that education / industry cooperation initiatives improve the image of STEM careers among young people and encourage them to think about the opportunities STEM can bring in their future.

"I am delighted that ECB has been selected as one of the flagship programmes in FP7. The combined efforts and joint forces between industries and the educational world will make a difference in the European science education landscape."

Jan-Eric Sundgren (VOLVO / European Round Table)

"The importance of all of us involved in ECB is to collect as many actual practices as possible and develop in the schools those practices considered good ones enabling the creation of an ambitious and high-quality repository. Seeing such a portal alive and being used by many is very stimulating for me."

Roser Pinto (University Autonoma de Barcelona)

"With a lot of national Danish experiences gained it is a great opportunity to exchange best practices with others around Europe."

Mikkel Bohm (Danish Science Communication)

"It is a great opportunity to exchange best practices with others around Europe."

Mikkel Bohm (Danish Science Communication)
5. eSafety

A comprehensive, far-reaching eSafety programme

European Schoolnet has been running an extensive online safety programme for a number of years, including coordinating the pan-European Insafe network (www.insafe.net) as part of the European Commission’s Safer Internet Programme. It also leads many projects dedicated to promoting safe, effective use of technology by children and young people of all ages, as well as teachers and schools.

“…overall, schools’ approach to eSafety and related support is neither coherent, comprehensive, nor consistent.”
Byron Review, United Kingdom, 2008

Through its work in the field, European Schoolnet has forged itself a leading role in Europe and internationally, collaborating with institutions such as the European Commission and the Council of Europe and actively participating in major events such as the worldwide Internet Governance Forum where decisions are taken on the governance of internet for years to come. Safer Internet Day, organised since 2004, now involves such as the worldwide Internet Governance Forum where decisions are taken on the governance of internet for years to come. Safer Internet Day, organised since 2004, now involves thousands of local, national and international events across more than 73 countries, and resources such as the Family eSafety Toolkit and the recent activity book created by the eSafety team are being taken up way beyond the borders of the EU from Armenia to Russia and Nepal to Azerbaijan.

Through its work in the field, European Schoolnet has forged itself a leading role in Europe and internationally, collaborating with institutions such as the European Commission and the Council of Europe and actively participating in major events such as the worldwide Internet Governance Forum where decisions are taken on the governance of internet for years to come. Safer Internet Day, organised since 2004, now involves thousands of local, national and international events across more than 73 countries37, and resources such as the Family eSafety Toolkit and the recent activity book created by the eSafety team are being taken up way beyond the European Union, from Armenia to Russia and Nepal to Azerbaijan.

5.1 Insafe: promoting online safety

The Insafe network is at the heart of European Schoolnet’s eSafety activities, and is enriched by several satellite projects supported by industry. Insafe was set up by the European Commission in 2004 to spearhead awareness raising actions in the framework of its Safer Internet Programme. It is a rapidly expanding network in both size and remit. In just six years it has almost tripled in scale to a total of 30 national centres, reaching across the whole of the EU to Russia, Norway and Iceland. Each national centre now features a helpline and a youth panel. This has extended the role of the eSafety team, necessitating regular interaction with industry partners who produce online environments such as Facebook and Google. The whole approach is focused on young people, the most avid and innovative users of online technology.

5.2 Catering to very young users

Online safety awareness raising is a rapidly evolving area, and in 2010 it became apparent that a vast majority of children under 7 are already online, frequenting virtual worlds and using their own or their parents’ mobile phones to communicate and for financial transactions. This led European Schoolnet to approach Liberty Global Inc., a cable operator based in the Netherlands, to support the creation of an activity book to foster discussion between parents and teachers with their 4 to 8 year-old children and pupils about important issues in the online world: personal information, profiles, passwords, and separating the real from the virtual. The book “Play and learn: Being online”, which already exists in 9 language versions, is proving a “bestseller.”

The activity book “Play and learn: Being online” builds on the earlier success of the “Family eSafety Kit” (mentioned above) which targets 6-12 year old children and their parents and teachers. The kit covers four main themes: Security, Communicating, Cyberbullying and Entertainment and downloading. It comprises a “Family fun booklet” with 34 pages of information and exercises, a “Parental guide” that helps parents and teachers keep young users safe online, stickers and situation cards to trigger conversation about online risks as well as a “Family certificate” for the whole family to set its 9 golden rules about internet use. Over the past 2 years, almost 1 million copies have been produced in a total of more than 20 national versions in countries across and beyond the borders of the EU from Armenia and Egypt to Russia. Requests for almost 20,000 kits are received by email each year, from schools, libraries, orphanages, special needs centres and private citizens.

5.3 Peer advocacy with teens

Alongside this, work with national and pan-European youth panels has moved up a gear over the past year. It is not enough for one or two representatives from each national youth panel to travel to the Luxembourg Safer Internet forum or the Romanian summer camp each year. If young people are really going to advocate safe and effective use of the internet to their peers, they need their own platform where they can speak up and win support from their teachers in critically examining issues such as their virtual lives, their relation to media, and the skills they need to be digital citizens.

In November 2010, the eSafety team launched Pan-EU Youth38, an online platform targeted at 14-18 year-olds where they can discuss citizenship issues of concern to them. This was with the support of Vivendi, a France-based media company. Special role-play games for classroom discussion were developed thanks to another EU project PlayDecide which actively encourages debate on citizenship issues. The first of the role-plays was downloaded well over 800 times in just 2 months. A poll feature on the platform also enables young people to have a say in consultations such as the one launched by the Council of Europe in December 2010 on data protection and privacy.

Key achievements for 2010

Through its safety programme, European Schoolnet scored several other noteworthy successes over the year:

- participation in a Council of Europe publication entitled “Protecting children from sexual violence - a comprehensive approach”, with a chapter on awareness raising
- a Safer Internet Day award ceremony at an online safety summer camp in the Romanian mountains, thanks to sponsorship from Liberty Global and Microsoft - both are supporting the camp again in 2011
- a doubling of newsletter subscriptions and a trebling of web visits
- organisation of a geo-caching event (a high-tech treasure hunt) to launch the work of the pan-EU youth panel during the Commission’s annual Safer Internet Forum in Luxembourg
- creation of new awareness-raising products for very young users including a set of Pokemon-style cards which stole the show at the European Commission’s Open Day in the Berlaymont building on 9 May 2010.

37 see http://www.eatlkr.org
38 http://www.pan-EUyouth.eu
5.4 Working with teachers

More adventurous - and even mainstream - teachers often need a more structured framework to help them introduce such tools while still keeping to the curriculum. They can also benefit from expert advice to avoid the risks that online activities can engender. European Schoolnet’s project work tackles these issues:

- In September 2010, it launched a first safety Learning Lab in conjunction with eTwinning, proving so popular and effective that it will be repeated several times a year from now on.

- Another project, Teachtoday, offers teachers a wealth of information, lesson plans and classroom ideas. The content of the website is created and maintained by European Schoolnet in partnership with nine key players from industry including Vodafone, Microsoft, Google, yahoo, Deutsche Telecom and Facebook.

- In autumn 2010, a Teacher of the Month competition was launched to reward innovative online safety projects in the classroom. This in turn provides exciting content for the Teachtoday site.

With the Teachtoday project, European Schoolnet is making important inroads in providing teachers a platform where they can learn about and exchange information on protecting themselves online. With the huge take-up of online social networking by teens but also by young adults, a teacher’s privacy is more than ever before at risk and the smallest error can cost a career. Alongside the good practice examples and lesson plans, the site offers teachers invaluable support in this area too.

5.5 Setting up an online safety support service for schools

If teachers are to be encouraged to integrate online technology in teaching and learning, then they must be provided with a safe and secure environment in schools to permit them to give free rein to their creativity. Moreover, because young people use online technology more often out of school than within, many online safety issues that teachers have to deal with such as cyberbullying and sexting actually happen outside of the school gates but have serious repercussions in class.

Therefore governance (including Acceptable Use Policies, incident handling and use of mobile phones) is proving every bit as challenging as pedagogical practice and infrastructure, and requires not only in-depth investigation to pinpoint the main issues but also rigorously devised guidelines that can be shared across the school. This is the thinking behind the eSafety project, launched in spring 2010 and now well into its second research phase in the lead up to a pilot phase set for autumn 2011.

The project is helping European Schoolnet to forge even closer relationships with partners such as Microsoft, Telefonica and Liberty Global, whilst at the same time creating a new partnership with the leading online security company, Kaspersky Lab. This eSafety venture sets out to examine in depth the models that ensure an ideal school environment for using online technology, whilst discerning good practice and resources in seven pilot countries: Austria, Belgium, Estonia, Italy, Portugal, Spain, and the United Kingdom. Ministries of Education are highly supportive of the project which, by the end of 2011, will move beyond the pilot phase and be ready for progressive implementation in schools. The final version will probably be based on a self-assessment model, with professional development, organisational and good practice modules designed to help schools strengthen their weaknesses and build on their strengths.
Opening up our learning resources: interoperability and content exchange

6. Interoperability and content exchange

“Interoperability” is an ugly word for something we think is beautiful - when it works: the ability of heterogeneous ICT systems and software to join up and work together.

Because of the sheer range and diversity of learning resources provided by European Ministries of Education and other content providers, we give high priority to improving the interoperability of materials so that they can be shared and exchanged across Europe. A further way we help is by getting involved in developing content standards and specifications at international level: this takes the form of collaboration in the main standards bodies such as IMS and the CEN (European Committee for Standardization)/ISSS (Information Society Standardization System).

In 2010, European Schoolnet took a major step forward by ensuring that the Learning Resource Exchange service for schools becomes a self-sustaining initiative open to both public and private sector partners. Work on interoperability and content exchange continued also in two European Commission funded projects - ASPECT and eQNeT - and in the Interactive Whiteboard Working Group.

The European Schoolnet Learning Resource Exchange provides Ministries of Education with access to a network of learning content repositories and associated tools that allow them to exchange more easily high-quality learning resources that ‘travel well’: in other words, they can be used easily by teachers in other countries.

At the same time, we set to work redesigning the LRE portal (using Liferay, an open source portal) and improving the user experience. This new portal, available at http://lreforschools.eun.org, was launched in early 2011. In addition, in order to make it possible for more schools to get access to LRE content, LRE search capability was made available in two national portals: KlasCement (in Flanders, Belgium) and Porta Das Escolas (in Portugal).

With European Schoolnet we have a good working infrastructure in place to run common projects and to scale local initiatives to the European level. A perfect example is how our portal KlasCement was able to benefit from the work done in LRE and on standardisation. In return we received a lot of favourable attention at international level for our portal and this opened up new opportunities in terms of EU-funding, international contacts, professional development, etc. Furthermore we were able to benefit greatly from live, work done on Safer Internet, an issue which is also high on our policy agenda.

Jan De Craemer, Flemish Ministry of Education and Training, Belgium

6.1 Learning Resource Exchange

The LRE was initially launched in December 2008 as a public service for schools based on work in a number of EC-funded projects (CELEBRATE, CALIBRATE and MELT). In 2010, it became possible for users to search across and access about 200 000 learning resources/assets and seamlessly retrieve resources they deem useful from 25 content providers, including 20 Ministries of Education. Today, the LRE portal is available in 11 European languages.

There was growing interest in the LRE from regional education authorities and commercial content, learning platforms, and ICT tool vendors in 2010. Recognising this, the European Schoolnet Steering Committee put in place a new LRE Subcommittee in May 2010 under which:

- There is a commitment to the LRE as an ongoing European Schoolnet initiative which aims to provide a stable, public service for schools.
- A new governance and funding model opens up the LRE to other stakeholders including regional authorities and private sector organisations that will work as equal partners with Ministries in the future LRE development.

6.2 Adopting standards and specifications for educational content

The ASPECT project (Adopting Standards and Specifications for Educational Content), supported under the European Commission’s e-Contentplus programme, entered its final phase in 2010.

This large-scale Best Practice Network, which ended in May 2011, has brought together technology providers, standards’ experts, and content providers from both public and private sectors to develop best practices and help improve the adoption of learning technology standards and specifications, particularly those for learning content use and discovery.

In 2010, the project concluded its pilot with 40 schools in four countries. Teachers provided feedback on their use of learning resources to which different content packaging standards had been applied, including the new IMS Common Cartridge specification. European Schoolnet has been one of the first organisations in the world to test how teachers are responding to Common Cartridge content and an evaluation of these school pilots will be included in the concluding project deliverables to be published early in 2011.

In addition, European Schoolnet successfully organised the “Fourth International Workshop on Search and Exchange of e-Learning Materials (SE@M’10)” which was held from 27th - 28th September 2010 in Barcelona, Spain.

A final success is the strong response to a series of ASPECT webinars. Recordings of these can still be viewed on the project website41.

40 IMS GLC represents more than 160 member organisations from every sector of the global learning community. They include hardware and software vendors, educational institutions, publishers, government agencies, systems integrators, multimedia content providers and other consortia. IMS provides a neutral forum in which members work together to advocate the use of technology to support and transform education and learning.

41 The European Committee for Standardization (CEN) is a business facilitator in Europe, removing trade barriers for European industry and consumers. Its mission is to foster the European economy in global trading, the welfare of European citizens and the environment. Through its services it provides a platform for the development of European Standards and other technical specifications.

42 http://lreforschools.eun.org

43 http://www.aspect-project.org

44 http://aspect-project.org/node/652
Key ASPECT achievements

In 2010, ASPECT best practices - and the tools created to support them - resulted in a number of improvements to the LRE. Some of the most notable were:

- An improved LRE Metadata Application Profile (version 4.5), which supports the description of the different aspects of learning resources (e.g. versions and formats) and a set of test tools to validate metadata instances.
- An OpenID server that provides a unique username and password across most of the European Schoolnet websites including the LRE.
- A learning object identity server that makes it possible to uniquely identify the learning resources exchanged between the LRE repositories and portals.
- A URL checker that ensures the quality of the LRE metadata (broken links’ management).
- A Learning Object Repository Registry that helps to automate the discovery of and connection to the LRE repositories.
- A Metadata Transformer Service that transforms metadata from different formats into the LRE Metadata Application Profile.
- The Vocabulary Bank for Education in which all the LRE controlled vocabularies were loaded and translated into all the official languages of the European Union (with the exception of Gaelic) and the languages of the non-EU countries participating in the European Schoolnet Steering Committee: Norwegian, Icelandic, Hebrew and Turkish.
- The development of a Simple Publishing Interface target as an additional way of submitting metadata to the LRE.

6.3 eQNet

eQNet is a Comenius Multilateral Network supported by the European Commission’s Lifelong Learning programme. Over three years, its aim is to develop and sustain two networks of policy-makers and practitioners working together to improve the quality of educational resources in the European Schoolnet’s Learning Resource Exchange. A key result from the project will be the development of criteria enabling Ministries and teachers to more easily identify LRE content that ‘travels well’ and therefore can be used in many different countries and learning contexts.

By the end of the project in 2012, the most visible impact from eQNet will come from teachers in the project using these criteria to identify >3 500 ‘travel well’ resources from partners’ national content repositories and collections.

During the first two years of the project, teachers in eQNet have already identified more than 1700 resources with a high potential to “travel well”.

All these resources can be seen on the LRE for schools portal at http://lreforschools.eun.org/web/guest/travelwell

7. Governance

Governance and management

This section gives an overview of how European Schoolnet is governed and managed, with particular reference to its most recent activities.

7.1 Statutory Bodies

European Schoolnet is governed by Ministries of Education. Ministries represent the decision-making body of European Schoolnet through a number of groups, namely the Steering Committee (for the political and strategic orientations of European Schoolnet) and the Board of Directors (for administrative and financial operations).

The work programme, budget and annual report are adopted by Ministries of Education that meet three to four times a year.

In 2010 and 2011, priority was given to:

- Examining lessons learned from the past related to the use of ICT in school education in Europe
- Reaching a common understanding of new opportunities and challenges for schooling
- Building a vision, priorities and a roadmap for schooling in Europe
- Laying the foundations for the medium- and long-term strategies and activities of European Schoolnet

“Cooperation activities within schools represent an important achievement of European Schoolnet and eTwinning is therefore a great achievement as the laboratory of experimentation of school cooperation all over Europe.”

Janusz Krupa, Ministry of National Education, Poland

“More than ever education is challenged to improve results while budgets stay the same, or even shrink. This calls upon us to look for new ways of learning. We know by now that ICT helps to develop each talent of every student and to increase flexibility and efficiency in the educational system. We need to work together to make sure this knowledge is set into action. European Schoolnet is the network to exchange knowledge about and to explore new ways of integrating ICT in education. This is why we are happy to participate.”

Toine Maes, Kennisnet, The Netherlands

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Ministries of Education recommended that the iTEC project should position European Schoolnet progressively as the key organisation in Europe concerned with the development and demonstration of scenarios for the classroom of the future.

In addition to the above, Ministries of Education also emphasised the importance of strategic areas such as:

- School leadership
- Teacher training
- Serious games as teaching and learning tools
- The second form of digital divide, beyond the issue of access, between those who have the necessary competences and skills to benefit from technology use and those who do not
- Science, technology, engineering and maths education
- The development of a first eSafety pilot project targeted towards stakeholder partnerships in order to support schools.
7.2 Subcommittees

Policy and innovation committee

Activities are linked to the three areas of the work programme supporting policy, research and innovation.

The Policy and Innovation Committee (PIC) is open to all members of the Steering Committee and acts as a forum to discuss policy, research and innovation topics identified by the Steering Committee not covered by the Working Groups, for example e-books and digital games in 2010. PIC meets up to three times a year and members are invited to bring an expert on the subject to the meeting. Meeting reports and associated papers are to be found on the PIC areas of the ministry of education platform.

Key PIC Activities 2010-2011

- Report produced on Science, Technology, Engineering and Mathematics
- Comparative analysis of the main recent initiatives, policy actions and reforms in 13 countries to meet the challenges facing education systems: modernizing pedagogical methods; enhancing the professional profile of teachers; ensuring effective transitions from secondary to tertiary level; promoting partnerships between schools, universities and industry; and improving female participation in Maths, Science and Technology (STEM) studies and careers.
- Meeting on eBooks in education
- This meeting considered: the implications for policy makers of research into the impact of games on teaching and learning; and strategies for increasing the use of games in education, including the need for a taxonomy of games, mapped against key competences, skills and national curricula.

Learning resource exchange subcommittee

This new subcommittee was established in May 2010 to steer and manage the ongoing development of the Learning Resource Exchange (LRE) service for schools.

Key activities 2010-2011

- Providing technical support, training and expertise to LRE partners
- Redesign of LRE portal (to be launched early 2011)
- Enabling more MoE to provide LRE search capability within national portals
- Inviting participation in the LRE from other stakeholders such as territorial authorities and industry
- Exploring a new economic model to improve the level and quality of LRE content and services currently offered to schools in STEM.

7.3 Working groups

Working groups are set up by a group of MoEs to tackle a specific issue. The remit and duration are defined by the MoEs involved.

Interactive whiteboard working group

With support from the major IWB vendors, the aim of Ministries in this working group, established in September 2008, is to address areas of common concern, share good practice and develop policy related to innovative use of IWBs in Europe.

Membership of this very active working group continued to expand in 2010 so that, by the end of the year, 15 Ministries of Education were involved: Austria, Czech Republic, Denmark, Finland, France, Hungary, Italy, Ireland, Luxembourg, Norway, Portugal, Spain, Switzerland, Turkey and the UK.

Key activities 2010-2011

- Production of Guidelines for Effective School/Classroom Use of IWBs
- Publication of a brochure - Making the most of your interactive whiteboard
- Production of IWB Procurement Guidelines
- Discussions with IWB vendors and standards’ organisations aimed at supporting the take-up of an IWB common file format

Digital competence working group

By the end of 2010, 15 Ministries of Education were involved in this working group focused on digital competences for students and teachers: Austria, Belgium, Czech Republic, Cyprus, Finland, Italy, Lithuania, Norway, Poland, Portugal, Slovakia, Spain, Switzerland, Turkey, United Kingdom.

Key activities planned for 2011

- Online training for teachers on the integration of special needs pupils into mainstream education
- Issues in providing free and technical accessibility to multimedia learning objects by pupils with special needs
- Dyslexia: case studies and good practices.

Key activities 2010-2011

- Activities aligned with UNESCO’s project on ICT Competency Standards for Teachers to create a common core syllabus of ICT competency, provide a set of qualifications, advance skills in pedagogy, collaboration and school innovation using ICT and harmonize views and vocabulary for ICT in teacher education.

Special educational needs working group

This new working group targeting ICT policies for pupils with special educational needs has as a primary aim to share expertise and knowledge, define common interests and research needs and explore possibilities for setting up joint projects in this field. 9 Ministries of Education are involved: Austria, Belgium, Cyprus, Italy, Poland, Slovakia, Spain, Sweden, Switzerland.

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Key activities planned for 2011

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- Dyslexia: case studies and good practices.
I. European Schoolnet activities include three main platforms: I. A peer exchange platform: A Policy and Innovation Committee (PIC) functions as the European Schoolnet ‘radar’ that highlights emerging issues to be put on the European Schoolnet agenda, including both technical developments and social innovations that are likely to transform the education process. In addition, thematic working groups and committees provide other arenas for representatives of education ministries to concretely and regularly exchange information about their respective policies, reforms, initiatives, pilot projects, etc., and debate about lessons learned. This process leads to a cross fertilization of ideas and allows Ministries to leverage the experience gained in different countries. In some cases, these arenas are open to other stakeholders (industry, local or regional authorities, external experts, etc.) to enrich the debate and provide a wider perspective. Such a peer learning exchange platform is supported by a repository of country reports that is updated annually which frames and contextualises the debate by providing information on ICT policies across Europe.

II. A knowledge-building platform, acting as a brokerage service that filters and synthesises evidence on how ICT and digital media are helping to transform education. Such evidence is collected from different sources: research and study departments of ministries of education, scientific research, key international reports (OECD, UNESCO, IEA), statistics, investigations in non-European countries leading the way in the field, (Australia, USA, Korea), etc. Results and lessons learned from some specific projects developed by European Schoolnet (ITEC, ECB/Ingenious); action research (European Schoolnet/ACER 1:1 project); school and teacher networking (eTwinning), STEM content and methods (SCIENTIX project, ...). The rationale behind all European Schoolnet projects and their common aim is to produce a better understanding of the key challenges facing Ministries as well as operational results that can concretely support the transformation of education practice and systems. A major component of several of these projects is the inclusion of networks of innovative classrooms and schools as a way to facilitate the dissemination of innovation at European level and to move forward thinking related to the design of the schools of tomorrow.

The activities developed through these three platforms converge and underpin the role of European Schoolnet as a unique think tank (with both an advocacy and evidence brokering role) that is focused on how ICT and digital media can transform education.

III. An ‘innovative practice’ platform where ministries of education, researchers, industry and other stakeholders come together to implement projects that develop, investigate, research, design and test: innovative ways of teaching and learning, focusing on new relationships between all stakeholders in the educational value chain; assessment models aligned with new teaching and learning methods and 21st century key competences; new approaches to teacher professional development; effective school leadership that supports innovation; synergies between learning in and out of school; technical standards and specifications for better interoperability; Internet safety, responsible and ethical pupil behaviour, etc. These projects can be funded by European Commission programmes, industry, foundations and other organisations. They very much vary in nature, scope and focus: R&D projects (ITEC, ECB/Ingenious); action research (European Schoolnet/ACER 1:1 project); school and teacher networking (eTwinning), STEM content and methods (SCIENTIX project, ...). The rationale behind all European Schoolnet projects and their common aim is to produce a better understanding of the key challenges facing Ministries as well as operational results that can concretely support the transformation of education practice and systems. A major component of several of these projects is the inclusion of networks of innovative classrooms and schools as a way to facilitate the dissemination of innovation at European level and to move forward thinking related to the design of the schools of tomorrow.

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European Schoolnet members

- Federal Ministry for Education, Art and Culture (BMUKK) Austria
- Flemish Ministry of Education and Training Belgium
- Directorate General for Education and Research of the French-Speaking Community of Belgium
- Ministry of Education and Culture (MoEC) Cyprus
- Centre for International Services, Ministry of Education, Youth and Sports (DZS) Czech Republic
- Danish IT Centre for Education and Research (UNIK) Denmark
- Tiger Leap Foundation Estonia
- Finnish National Board of Education (FNBE) Finland
- Ministry of National Education, Youth and Community Life France
- Ministry of National Education and Religious Affairs (MOEERA) Greece
- Ministry of National Resources (NEFMI), Educational Authority, Hungary
- Office of Information and Service of the Ministry of Education, Science and Culture Iceland
- National Centre for Technology in Education (NCTE) Ireland
- MAKASH (ICT Implementations in Education) and Ministry of Education, Directorate for Science and Technology Israel
- National Agency to develop School Autonomy-ex Indire (ANSAS) Italy
- Ministry of Education, and Science, Centre of Information Technologies of Education (ITC) Lithuania
- Ministry of National Education and Vocational Training Luxembourg
- Kennisnet Foundation (Stichting Kennisnet) Netherlands
- Norwegian Centre for ICT in Education Norway
- Ministry of National Education, Director of ICT Department Poland
- Two departments of Ministry of Education: DGInD (Dirección Geral de Innovación e Desenvolvimento Curricular) and GEPE (Gabinete de Estatística e Planeamento) Portugal
- Ministry of Education, Science, Research and Sport of the Slovak Republic Slovakia
- Ministry of Education (Educational Technology Institute) Spain
- The Swedish National Agency for Education (Skolverket) Sweden
- Swiss Agency for ICT in Education Switzerland
- Ministry of National Education General Directorate of Educational Technologies Turkey
- Department for Education United Kingdom
About European Schoolnet

European Schoolnet is a not-for-profit organisation supported by 30 Ministries of Education dedicated to:

• support and enhance collaboration and networking among schools in Europe using new information and communication technologies and to foster the development of the European dimension in education,

• contribute to the development of technology enhanced learning in schools by disseminating examples of policies and good practices and investigating new models for schooling and learning,

• provide services, content and tools based on new information and communication technologies to members and partner networks and to facilitate the development of a common approach towards standards and interoperability.

European Schoolnet’s activities cover three main areas:

1. School services
2. Policy, research and innovation
3. Technical and semantic Interoperability and content exchange

In 2010, European Schoolnet expanded its remit while continuing to strongly engage its core players, Ministries of Education, industry and the European Commission. In 2011, European Schoolnet started two major projects, iTEC and the European Coordination Body (Ingenious) in the science, technology, engineering and mathematics area.

Both projects will impact on future European Schoolnet development.

Regions, universities, relevant non-profit bodies and others are also now invited to become European Schoolnet associate members. In this new, wider body the emphasis will remain on providing European added value and trans-national peer learning as well as experimentation, good practice and comparative work.