iTEC

Designing the future classroom

Intermediate Public Report

Designing the future classroom

October 2012

Purpose of Report

iTEC (Innovative Technologies for Engaging Classrooms) is a major EU-funded project in which European Schoolnet is working with education ministries, technology providers and research organisations to bring about transformation in learning and teaching through the strategic application of learning technology. With 26 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. The project lasts from 2010 to 2014.

This report fulfils a contract commitment (deliverable D1.3.1) to provide a mid-term report for public consumption by a diverse group of stakeholders outlining the progress made by the project together with interim project results and findings.

You have here an abridged version of the report; you can find the full report online at: *http://tiny.cc/itec-report2012*

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Technology and the future classroom

iTEC explores the fundamental question of how technology can be used effectively and successfully by both learners and teachers and is seeking to define the nature of the future classroom. The project brings together policy makers from 14 education ministries across Europe together with some of the key learning technology providers and experts from leading research organisations and universities. Their diverse knowledge and experience 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 the firm intention of delivering impact and sustainable system improvement.

> *The key aim is to develop engaging scenarios for learning in the future classroom that can be validated in alarge-scale pilot and be subsequently taken to scale.*

Over one thousand classrooms

The initial impact of the project is provided through piloting learning and teaching scenarios which are being tested and evaluated in more than 1,000 classrooms across 17 countries.

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 is allowing us to better understand the constraints and opportunities of actual physical environments as well as teachers' attitudes and aptitudes. By linking this analysis with education policy objectives at national level and with evolving technical capabilities provided by the suppliers participating in the project, a reliable vision of the future classroom is emerging. The iTEC project, therefore, has started to act as an "Ideas Lab" for both ministries and technology providers which enables them work together in order to rethink and test designs that really appeal to current and future generations of learners.

iTEC is now forging ahead with eleven work packages stimulating the development of new tools and services more attuned to the needs of learners, teachers and others involved in the education process. Investment is being made in iTEC to identify the value of this technology and establish new models which allow easy access to resources. Collaboration amongst commercial providers and research establishments is making the development of fit-for-purpose tools and resources easier and faster. iTEC is now tackling exciting concepts and opportunities for using technology to support learning, including:

◻ the trend towards the integration of widgets or apps to create a personal learning environment;
◻ multi-touch and multi-user interactive devices;
◻ growth in the use of social networks and media sharing services;
◻ the semantic web as a powerful mechanism for connecting users to the most appropriate resources.

Teacher skills and institutional maturity – the challenge of mainstreaming

Adoption of advanced approaches to learning and teaching using new scenarios to integrate technology can't be left to chance. Many previous research projects have demonstrated the significant value technology plays in learning and teaching when applied well, but have found wide-scale adoption to be an insurmountable challenge. Mainstreaming outcomes and finding long-term solutions for taking the work forward beyond the project is therefore also a central objective for iTEC.

Ensuring value for money and return on investment

iTEC's work on defining an achievable vision of technology-supported learning compatible with European schools will enhance the ability of education systems to focus investment in technology. There are proven risks associated with investment in technology when an informed strategy is not in place. By ensuring that users and suppliers of technology are fully engaged in continuous dialogue regarding 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.

To find out more about more about iTEC and become involved visit the website at: http://itec.eun.org

The iTEC school pilot cycles

The iTEC project is being delivered over four years (2010-2014), involving five cycles of design and testing of learning activities.

The iTEC project has eleven work packages: work packages 2-5 deal with large scale piloting of engaging pedagogical scenarios including initial development, preparation, piloting and associated CPD (continuing professional development), and the evaluation of pilots. This core part of iTEC comprises:

Scenario-building: *building novel learning and teaching scenarios which maximise the engagement of learners in the future classroom through the effective use of ICT.*

Scenarios are based on an analysis of various trends affecting the way in which education is expected to change. These include trends in education policy and strategy, trends in the development and use of technology, and social trends. Throughout the process learners, teachers, policy makers, technology providers, and pedagogical experts collaborate in designing these scenarios.

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PROTOTYPE LEARNING ACTIVITIES: *building and testing innovative collections of learning activities, based on novel scenarios, and making practical use of a variety of familiar and new communication and collaboration tools.*

The initial learning scenarios are used as a stimulus for further analysis and design, with teachers, in order to produce suitable learning activities. This design process starts with workshops to identify the challenges teachers would face delivering the scenarios, and to guide the development of learning activities. The teachers then test these activities in the classroom at small scale to refine them.

LARGE SCALE CLASSROOM PILOTS: *collections of learning activities produced in the design stages are provided to teachers in 17 European countries. The learning activities are tested in a much larger number of classrooms to evaluate their potential value and impact on the future classroom.*

Trainings and support are provided to the teachers involved, who become members of the iTEC community of practice.

EVALUATION: *assessing the potential of the iTEC learning activities, and identifying supporting factors and barriers.*

Teachers provide feedback on the potential of the learning activities to bring innovation to the classroom. This evaluation process involves a combination of methods including data collection, observations, case studies and multimedia journals produced by the teachers involved.

The process for using iTEC learning activities involves a number of technical work packages (numbered 7-10) which provide ICT tools to support lesson preparation, learning and teaching. Finally, work package 6 focuses on providing the training and support for piloting partners in the project to use and adapt iTEC technology.

Where are we up to in September 2012?

iTEC is being delivered in five overlapping 18-month cycles. The project started in September 2010 with the timing of cycles arranged to fit the availability of teachers during the school year in each of the countries in which there are iTEC pilots. The following graphic is a simplification of the project activities to indicate key phases only.

| | 1st cycle | 2nd cycle | 3rd cycle | 4th cycle | 5th cycle |

Legend: Scenario building | Prototype testing | Classroom pilots | Evaluation

Years/months axis: 2010 (Sep–Dec), 2011 (Jan–Dec), 2012 (Jan–Dec), 2013 (Jan–Dec), 2014 (Jan–Aug)
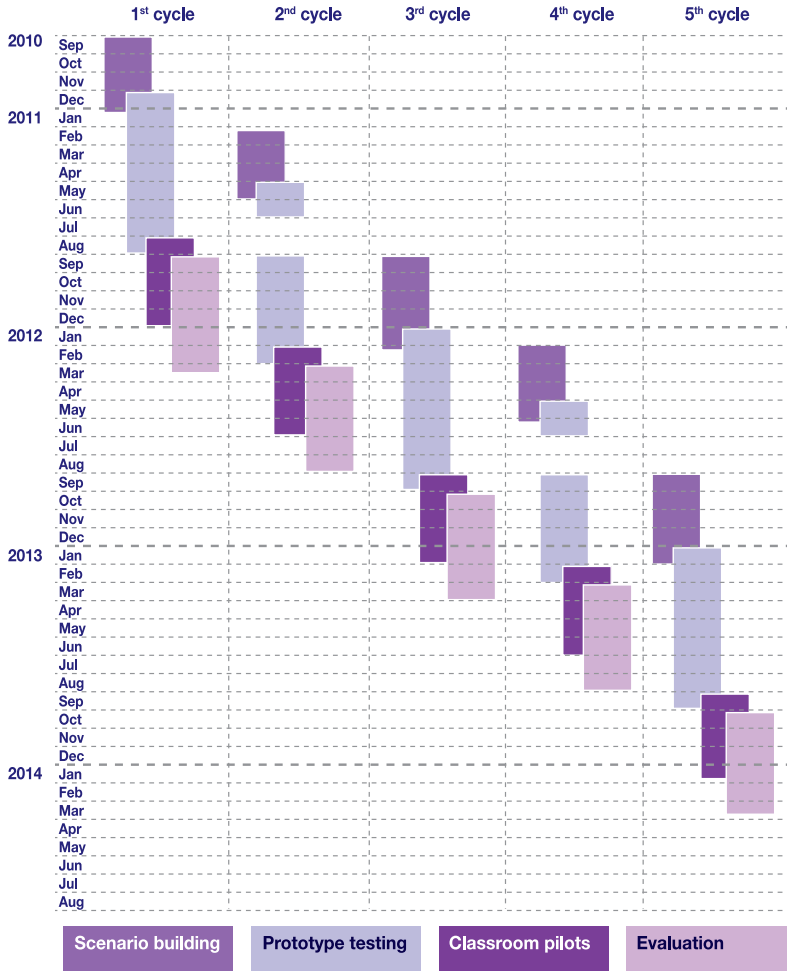
This report is therefore being published at a time when the project consortium has completed two out of the five piloting cycles and iTEC learning stories and activities have been delivered in almost 800 classrooms across 17 countries. Participating Education Ministries have considerably exceeded the minimum number of pilots that were originally anticipated at this point in the project, and the ambition is to scale up the adoption of these scenarios by schools across more European countries. The initial plans of the project included just 12 piloting countries, but pilots have now taken place in an additional five countries, namely Spain, Finland, the Czech Republic, Germany, and the United Kingdom.

Developing realistic and practical classroom scenarios

The design process for iTEC learning activities is in two main phases:

◻ the first phase involves the development of "innovative learning scenarios": these scenarios provide the initial stimulus for the development of iTEC learning activities. They are developed through an iterative process of research, surveys and trends analysis.

◻ the second phase is based on the principles of research-based design. Within this phase the learning scenarios are used as a stimulus for the design of the learning activities, through a process involving collaboration between technical and pedagogical design experts and teachers.

First phase: creating innovative learning scenarios

Trends analysis

▶ *Trends are identified through a combination of desk research, including reference to other European-funded projects, and through consultation with the eclectic mix of partners iTEC provides. The trends include technological advancements, social trends, and current economic and political issues of pressing relevance to education* **OUTPUT:** *Internationally recognised trends*

Learner and teacher realities

▶ *Information is also gathered from teachers, through surveys, and from learners through a "ranking tool", designed by Futurelab, to establish the priorities of these key stakeholders.* **OUTPUT:** *Learner and teacher realities*

Expert and teacher workshops

▶ *Trends and teacher and learner realities are used as the source material and building blocks for designing learning scenarios. Innovation in iTEC is enhanced by bringing together partners with diverse perspectives. The scenarios are formulated in a series of workshops that bring together the technical, pedagogical, commercial and strategic partners, with teaching practitioners.*
OUTPUT: *Innovative learning scenarios*

Second phase: prototyping learning solutions

Teacher workshops and focus group sessions

▶ *Focus groups are used to introduce the scenarios to teachers and identify the challenges they would have in putting the scenarios into practice.*
OUTPUT: *Acollection of design challenges for each scenario*

Iterative design and prototyping

▶ *Production of pedagogical and technical prototypes in the form of learning activities which are delivered together according to a learning story, and tools for testing in the classroom*
OUTPUT: *Prototype learning stories, activities and tools*

Pre-pilots

▶ *Selected teachers across the pilot countries are asked to test out the initial learning activities before going to full scale pilots*
OUTPUT: *Teacher feedback*

Conclusion reporting

▶ *The results of the pre-pilots feed into the final design stage where the practical experiences are written up as a conclusion report and the learning activities are finalised with additional detail to overcome implementation issues and incorporate recommendations such as technologies*
OUTPUT: *Final learning stories and activities*

Techniques for designing learning activities

An important step in the design process is the selection of those learning scenarios and activities that are believed to be most likely to have a "positive impact". The project began with some relatively broad expectations concerning what constitutes an effective pedagogical approach:

> *"To evaluate the extent to which the iTEC scenarios have been successful in supporting collaboration as well as individualisation, creativity and expressiveness, identify those with maximum potential to have atransformative effect on the design of the future classroom, and the underlying change processes necessary to bring about this transformation."*

This led to a set of "selection criteria" with six dimensions in all:

- **Dimension 1**
  Is the scenario sufficiently innovative for the future classroom?
- **Dimension 2**
  Does the scenario add to the range of innovation provided through iTEC?
- **Dimension 3**
  Does the scenario have the potential to support teacher competency acquisition?
- **Dimension 4**
  Is the scenario innovative in its potential use of technology?
- **Dimension 5**
  Does the scenario address recognised focus areas for educational reform?
- **Dimension 6**
  Is the scenario currently feasible and sufficiently scalable for potentially large-scale impact?

These criteria play an important role in the design process both initially as a specification for the design of learning scenarios and later to assess potential learning stories and activities. To ensure that criteria have been met during the design process, project partners play a collective role in selecting scenarios which most closely meet the design profile. At this stage, half of the scenarios are rejected. Those that proceed further in the process receive feedback on how they should be improved so as to build on the strengths and address the weaknesses recognised during selection.

These criteria are underpinned by the research work carried out so far in the project, such as the trends analysis. This includes research into the meaning of innovation in the context of iTEC, and additional areas of research, including the relationship between recognised teacher competency frameworks and the iTEC learning activities.

Transforming education – Innovative Learning Stories and Activities

The key outputs of iTEC in the first phase of the project have been the learning stories and activities. The learning activities are intentionally simple for teachers to understand and therefore adopt, and it is through the adoption of these learning activities, at scale, that iTEC will provide the impact envisioned.

The learning activities on alone, provide elements or building blocks of innovative practice within the classroom, and need contextualisation for teachers so that they can assess

how they can be used to enhance the learning and teaching experience. This context is provided by a learning story. Learning stories provide a holistic, educationally focused description of how a collection of learning activities may be put to use. Teachers can select appropriate learning stories and activities, based on their learners' requirements and adapt them to their school, the learners, and the learning objectives.

The current iTEC Learning Activities

At this stage in the project, the following Learning Activities and been taken forward for large scale piloting and evaluation in different countries by iTEC partners.

Cycle 1	Learning individually	Learning in teams
	Learning individually facilitates students learning independently. With an emphasis on learning on their own initiative using Web 2.0 technologies, and collaborating with pupils from other countries as well as their own classmates. Learning individually allows students to develop competences outside of the traditional classroom context.	Teamwork and collaboration are skills fundamental to all stages of education, and in the world of work and employment. Learning in teams allows pupils to develop their interpersonal skills, collaborate with their peers, develop their critical faculties and use audio-visual learning tools (e.g. TeamUp). Teachers can use this Learning Activity as an opportunity to group together pupils that would not normally have much interaction with one another, increasing the class's overall cohesion.
Cycle 2	Collecting data outside of school	Working with outside experts
	This iTEC Learning Activity involves pupils gathering and collating data outside of the classroom; the data is then presented as a series of scientific observations, or as a multimedia presentation. Collecting data outside of school provides pupils with a novel change of scene from the everyday classroom environment, while also teaching them how to record scientific data in a methodical manner. The Learning Activity also serves to illustrate to the pupils the difference between empirical data, gathered in the field, and information learned from a textbook.	Working with outside experts is a Learning Activity that involves a class working with external specialist(s) from a discipline related to their course material. The Learning Activity demonstrates to pupils real-world applications of the subjects on the school curriculum. Working with outside experts usually provides pupils with experience using Web 2.0 communication tools, such as social networking sites (LinkedIn, Google +, Facebook), and voice over Internet Protocol (VoIP) tools, such as Skype or Viber. The activity also develops pupils' skills in collaborating on a project task.

Cycle 3	Observe and design	Benchmark and design
	iTEC's Observe and design Learning Activity has been developed to provide pupils with an outlet to express their creativity, and to work together in teams to bring a design project from concept to completion. Pupils work together to fulfil a design brief, provided by the teacher. Pupils report on design challenges, and progress of the project using social media tools. Following a review with the intended users of the design project, pupils refine their design brief, and go forward to production of a prototype.	Benchmark and design is a Learning Activity in which pupils are presented with a design task. Pupils create and refine their design brief, with a focus in the final product, and the proposed end-user of the design project. Pupils document the progress of the design task using blogging platforms. Pupils then gather 10 or so examples of items similar to the artefact under design for the purposes of benchmarking and evaluating their design against the pre-existing articles. Having reviewed their design against existing examples, they then showcase their design to potential users of the product. Based on feedback received, the pupils refine their design, and produce a prototype.

All the Learning Activities and the Learning Scenarios related to them can be viewed and downloaded at: *http://itec.eun.org/web/guest/resources*

Within the third year of the project the full set of validated learning stories and activities will be published through the iTEC website for teachers outside of the project to use. A programme of promotional and training activities is planned to foster wider scale uptake.

The role of technology

iTEC is very much focused on learning and teaching, and not simply on introducing technology into the classroom, which has arguably been a weakness of many educational reform initiatives. With the future classroom in mind, iTEC has technology embedded within it, and a clear technical vision.

Learners and teachers will be able to access the information and resources required to allow them to plan and participate in engaging learning activities, making effective use of the technologies they currently have and providing them with additional and innovative resources. In addition, they will have access to people and events that can support learning. These resources will be brought together through a customisable user interface, in a way that meets learning requirements.

Various customisable interfaces will be available to users through the project, and each will give access to valuable resources including:

◻ A planning tool called the "Composer" which helps teachers find suitable learning stories and activities, and the resources needed to deliver them in the classroom.
◻ A "widget store" that provides a number of simple tools called "widgets" that are designed for learning activities.
◻ A service that links teachers and learners to "people" and "events" that can act as resources for learning activities.

Keeping technology simple

Quite often the simplest ideas are the most effective, and when it comes to providing teachers with technologies that can be used beneficially, simplicity is essential. This belief is at the heart of the iTEC technical vision.

The iTEC technical strategy provides teachers with access to a number of simple, customisable learning environments. These are online interfaces which have been kept as technically simple as possible, while retaining the facility to securely log in.

The value of the technology comes with the introduction of tools called "widgets". These tools provide simple functions such as a notepad, or calculator: you may be familiar with these things if you use a smart phone or desktop widgets or gadgets on your computer. They can also be far more sophisticated, providing access to online services and more powerful educational tools.

iTEC has developed two of these customisable learning environments based on the popular learning systems Moodle and DotLRN. These have been provided to schools for pilots, to give access to a growing bank of educational widgets called the "widget store". The project also provides the necessary training, but in fact, as with most popular web services, little training should be required.

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Practical tools for teachers

If we look at practical ways of supporting teachers, we would point to two examples of the type of tools iTEC has been developing:

The Composer

This is a planning tool, designed to make it easier for teachers to plan their use of iTEC learning stories and activities. As well as providing access to existing iTEC learning stories, the Composer, as its name suggests, allows users to compose their own learning stories either by reorganising existing activities, or by creating and adding their own.

TeamUp

This is the name given to one of the first technical tools, developed in support of the early iTEC learning stories and activities. It is a widget that allows teachers to organise students into teams, based on the skills and strengths of each student. Teachers can also quickly review each team's progress and record notes about the students for future reference. TeamUp provides a simple but more structured way of forming teams as well as supporting improved group collaboration and recording of progress.

In April 2012 TeamUp won the eEemeli competition, Apps4Learning, at the Finnish Education Conference ITK 2012 (Interaktiivinen Tekniikka Koulutuksessa).

TeamUp case study from Turkey:
Bring in the Expert in the English curriculum

This is the story of how a teacher and her 48 students used the iTEC TeamUp tool within the "Outdoor Study" learning story. The groups of students planned activities (which included meetings with experts related to their group's topic) with the following themes:

◘ Tourist attractions – Holiday activities
◘ Protecting our school – Improving one's look
◘ Practising English – How to improve English

The students shared their plans and communicated with each other via blogs and Facebook. As well as uploading videos and documents to their blogs, they also recorded "announcements to the voice thread and voki avatars." In her multimedia story, the teacher includes links to the students' blogs and shows screenshots of their communications. There are also photographs of her students talking to experts in their own workplaces. Students also used Skype to talk to experts as well as meeting them face-to-face. The students reviewed each other's work and provided feedback via the blogs. There is evidence in the students' work of social networking and collaborative learning.

See more iTEC technologies at: *http://itec.eun.org/web/guest/technologies*

Scaling up: wide-scale classroom pilots

Over the two piloting cycles already completed, iTEC learning stories and activities have been delivered in almost 800 classrooms across 17 countries indicated on the map below. The plan is to scale up the adoption of these scenarios within those countries and in schools across more European countries.

In each piloting country National Coordinators manage the piloting activities. Together with teachers, these coordinators play a critical role. Normally there is a National Pedagogical Coordinator that identifies and works with the schools and teachers involved and arranges workshops for the design activities, or training for the pilots. In addition, there is also a National Technical Coordinator, whose role is to provide support and guidance to teachers in the use of technology during the pilots.

The pilots are supported centrally by the project coordinator through an online community, online support and face-to-face training events. The National Pedagogical Coordinators and National Technical Coordinators play, arguably, the most important support role in ensuring that teachers are given sufficient guidance, through local online support and workshops, in order to effectively evaluate the iTEC learning stories and activities.
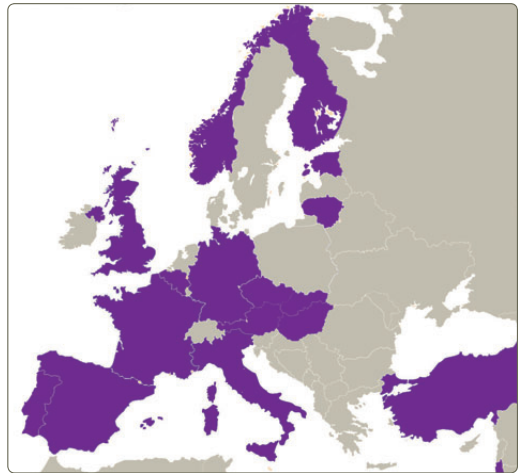
iTEC Pilots - An example from Portugal

During the past years Portugal has increased the availability of ICT for education through initiatives such as e.escola and Portal das Escolas (the Schools Portal). This has provided a fruitful basis for testing and implementing iTEC teaching and learning scenarios in Portuguese schools.

The Portuguese ministry launched a call for projects "Learning and Innovating with ICT" to be undertaken by Portuguese schools at all levels. 100 schools were selected as recipients for the equipment and infrastructure to be provided by the Ministry, consisting mainly of computers, interactive whiteboards and broadband Internet access. These were the schools chosen initially to be involved in the iTEC project.

The selection of the teachers was supported by Portuguese Competence Centres, units mostly based at universities and other tertiary education institutions around the country, contracted by the ministry to support schools in the use of ICT.
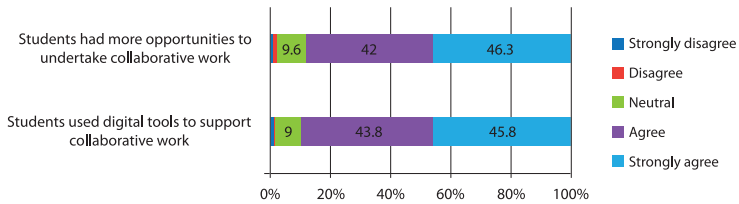
Evaluation programme and findings so far

The evaluation of iTEC pilot activities draws information from several sources including questionnaires and case study data collection which includes lesson observations and interviews with the teachers, head teachers and students. The case study teachers also produce a "multimedia story" documenting their piloting experience, and National Coordinators produce a case study report. This data and information from different sources and perspectives is used to verify and ensure the accuracy of the findings.

Improving teachers' skills

Teachers in the iTEC pilots, from the 17 countries involved in the first cycle, perceived that the learning stories had introduced a range of different pedagogical strategies. 86% of teachers reported that the learning story they piloted presented exciting opportunities to do things differently in the classroom.

> *"Here there are people who come into the class... people who are journalists, photographers, illustrators... I really like it because we discover lots about jobs which we didn't really know about before."*
> *France, student interview*

iTEC Learning Scenarios are intentionally designed to introduce 21st Century skills including, for example, opportunities for collaboration and creativity. The majority of teachers (88%) agreed that the Learning Stories led to more opportunities for collaboration and 89% agreed that students had used digital tools to support collaboration.

Chart: Strongly disagree / Disagree / Neutral / Agree / Strongly agree

- Students had more opportunities to undertake collaborative work: 9.6, 42, 46.3
- Students used digital tools to support collaborative work: 9, 43.8, 45.8

Many specific benefits of this approach emerged from the case study data including enhanced motivation, knowledge building and development, improvements to the social dimension of learning (for example, relationships and interactions, classroom ethos). Teachers in France referred to interactions being 'real' and students improving their relationships with their peers with whom they had not worked before. Students found it more fun than other (traditional) approaches which, for example, a Turkish student described as 'monotonous'.

70% of teachers agreed that participation in the cycle 1 piloting had enabled them to develop their own creative skills. 77% of teachers agreed that there was a positive impact on students' attitude and 82% agreed that students were deeply engaged in their work.

Chart: Strongly disagree / Disagree / Neutral / Agree / Strongly agree

- Enabled teychers to develop their creative skills: 25.9, 38.2, 31.8
- Had a positive impact on student attitudes to learning: 21.7, 46.7, 30.2
- Led to students being deeply engaged in their work: 13, 43.8, 38.6
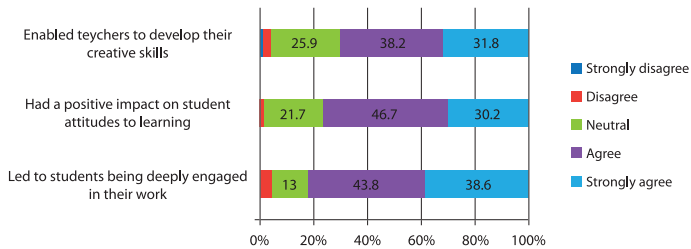
 "The iTEC project is important because it allows us to experiment with new learning scenarios so that we can develop alternative models compared with how we have traditionally worked." Head teacher

"So the pupils have the opportunity to experiment with new ways of learning and be protagonists in changing contexts and integrating new and old resources." Italy, head teacher interview.

The survey data suggests that teachers felt that the learning stories led to creative learning. 88% teachers felt that the learning story enabled creative activities to take place and enabled students to develop their creative skills. In addition, 87% of teachers agreed that the learning story enabled students to express themselves in new ways.

Student-centred pedagogical strategies and new methods of assessment

Through the evaluation, a range of themes emerged regarding active learning, learning to learn, knowledge building, student autonomy, drawing on students' interests, and student choice. 88% of teachers agreed that students were actively involved whilst 70% agreed that they could work at their own pace.

> *"The students that were interviewed explained that the commitment and motivation they felt was due to the fact that they were given much responsibility and freedom of choice and were dominant in the preparation of materials for the lessons." Israel, case study report*

> *"According to the school head teacher, experiments like this bring a positive new approach in schools, where teachers are no longer mere 'bearers of knowledge', and pupils 'become partakers of the construction of their knowledge'." Italy, case study report*

In the teacher questionnaire 80% of teachers agreed that the learning story had enabled them to assess students in a new way.

> *"Once in our history lesson we were part of a club, everybody was some historical person and teacher asked us questions and we had to react as the person would. This was assessed and it was very interesting." Slovakia, student interview*

> *"A discussion forum was started on [the VLE] for the students to give positive feedback on the materials. Students were given ground rules that they should give constructive feedback and positive comments. They really enjoyed using the forum to give comments about the resources and each other's resources." England, teacher evaluation*

The impact of technology

A variety of technological tools have been used during piloting to collect data (scientific measurement, photographic evidence), analyse data and create presentations and podcasts, and assess learning. In Belgium, the use of iPads was perceived to be 'easy ICT' and so seen to be an enabler. For the "Bring in the Expert" learning story, Skype and email were used to facilitate communication with experts.

Technology as such was not seen as the core focus of the project – most teachers understood that what is important is the way in which technology is integrated and the pedagogical strategies facilitated by such tools. Students and teachers reported that the technology was motivating, but they also spoke about working together and collaborating as equally important. In addition, technology was seen to make linking home and school easier.

> *"The teacher experienced that her pupils were very much motivated by the use of technology. [...] Pupils love the possibility to use technology and they told us that the English class is unique from this point of view: they don't use Web 2.0 tools in other classes, neither do they have online access to learning materials." Hungary, case study report*

> *"I did not need to use internet and computer out of curricular purposes with the application of this kind of learning. I was chatting and communicating for social purposes. Now I do not need social networking sites. Rather, I am doing school homework with my friends on the internet. Also, I'm using social networking sites to share information purposes with my classmates." Turkey, student interview*

Multiple positive impacts

The evaluation process covers several features of importance to the design of the future classroom. Whilst it is still early in the project, the evaluation results have been positive:

◻ 75% of teachers agreed that their knowledge of the pedagogical use of ICT had increased.
◻ 78% of teachers agreed that their understanding of the potential of ICT had developed.
◻ 77% of teachers felt that the learning stories had a positive impact on students' attitudes to learning.

The teachers' commitment to using iTEC learning stories and activities again, outside of the project, is a key indicator of their perceived value and benefit. 53% of teachers suggested that they would definitely implement the learning story they piloted again in the future, and of the remainder, 45% said that they would probably implement it. Only 3% of teachers suggested that they would not implement it again.

Making a sustainable impact across Europe

iTEC is clearly has the envisioned potential to ensure that the advances made in technology-supported education can be taken to scale in a way that can make a real impact in European schools. Too many projects in the past have delivered impressive outcomes, but have not managed to take hold in the wider education system beyond the end of the project.

iTEC is facing this challenge in a number of ways:

◻ providing and disseminating key analysis from experts
◻ linking up with national policy and practice
◻ building "bottom up" communities of practice and through model demonstration facilities
◻ exploitation planning.

Key expert analysis

iTEC has established a High Level Group of decision shapers, made up of experienced and influential policy making experts, to ensure that the learning stories and activities that are successfully validated in the large-scale pilots are given the opportunity to impact upon the educational reform agenda at national level. Members of the High Level Group act as information brokers in relation to the Ministries and also provide advice and recommendations to project partners on how iTEC results can influence ICT policy development.

For more information on the iTEC High-Level Group, please see: *http://itec.eun.org/web/guest/high-level-group*

Linking up with national policy and practice

Understanding the value of iTEC at a national level is essential to wider scale adoption and impact. The relationship between iTEC with policy and practice within participating countries is usefully illustrated by the following two examples.

National example: Austria

The Austrian Federal Ministry of Education, Arts and Culture (BM:UKK) is one of the iTEC partners using iTEC to support their own nationally important initiatives in technology-enhanced learning in Austria. BM:UKK has developed a framework initiative, eFIT21, which aims to develop a new ICT strategy. eFIT21 pays special attention to the social web for Web 2.0 applications. eFIT21 has revealed that Austrian schools have a solid infrastructure for broadband Internet access (ranked 8th among 40 OECD countries and 2nd within the EU).

eFIT21: http://www.bmukk.gv.at/schulen/futurelearning/index.xml

National example: France

Another example of the value of iTEC at the national strategy level is provided by France. The range of innovative pedagogical approaches such as personalisation and mobile learning tackled within iTEC are perfectly in line with the goals of the French Ministry of Education. The strategy has the support of French teachers participating in the project. One teacher commented: *"I had never worked with outside experts such as a book writer from another country and I had a pleasant surprise when the author of a novel studied in class agreed to answer the students' questions. This experience was very rewarding to my students and me."*

Building "bottom-up" communities of practice and model demonstration facilities

The close involvement of teachers throughout the process of learning activity design and piloting is intended to increase the potential impact of iTEC learning activities and help ensure that they are taken up by teachers outside the project. The project has also been working to support the building of communities at national and international levels in order to foster peer exchange. The focus of the communication strategy in iTEC, in the second half of the project, is to provide teachers with easy access to the growing catalogue of learning stories and activities, and to facilitate the sharing of ideas and experiences. This approach is reflected in the project website, which also offers teachers the opportunity to participate in international information-sharing and training activities.

iTEC is coordinated by European Schoolnet *(http://www.europeanschoolnet.org*), an organisation that, with its 30 Ministries of Education, is well positioned to spread the value of the project through its work with other projects and stakeholders. There are several other initiatives underway that will provide certain aspects of the iTEC project with further long-term impact. EUN also views iTEC as the model for future validation of learning activities by both education ministries and technology providers and is supporting the iTEC dissemination activities by launching new initiatives such as the Future Classroom Lab demonstration facility that was opened in Brussels in January 2012.

iTEC

Example: Future Classroom Lab and CPDLab

An important resource for supporting this work is the EUN Future Classroom Lab. Located in Brussels, a fully equipped, reconfigurable, teaching and learning space developed by European Schoolnet. It has been designed as a "Living Lab' for showing how ICT can be implemented in schools and as a facility where policy makers, ICT suppliers, teachers and educational researchers can come together to continue and build upon the work started in projects, such as iTEC.

A further and closely related initiative being coordinated by European Schoolnet, and involving several iTEC partners, is the CPDLab (Continuing Professional Development Lab) project. Its aim is to improve the quality of ICT-related Continuing Professional Development available to teachers, school leaders and other school staff, by offering a portfolio of training courses directly related to the needs of teachers in the future classroom.

Future Classroom Lab: *http://fcl.eun.org/*
CPDLab: *http://cpdlab.eun.org/*

iTEC is not being delivered in isolation, and many of the partners have participated in previous or current projects with complementary aims to iTEC. iTEC sees itself as having a valuable role in ensuring that existing or emerging innovative ideas and practices are fed into the iTEC process. As an example of this, several other projects and activities have been - or are being - used to inspire iTEC scenarios. These include: the iTILT project, which specifically investigates good practice in teaching and learning using interactive whiteboards; the NEXT-TEL project, which is providing inspiration for highly innovative approaches to assessment; the STELLAR project which provided insight into the TEL domain; and eTwinning, the highly successful international collaboration of teachers exploiting the use of information technology in the classroom.

Exploitation planning

At the half way stage in this four-year project, all project partners have now begun to consider how iTEC results can be exploited and taken forward after the project ends in August 2015.

A very positive sign is that, along with partners from Austria and France, many education ministries in the project already see the piloting in iTEC as being well aligned with their existing ICT strategies and are considering how iTEC results can be incorporated within new national plans that are now being developed. In some countries this may involve actions to embed iTEC results within new initial teacher and in-service education programmes, while in others the national ICT agency is exploring how the most innovative iTEC learning activities, together with iTEC technology, can be introduced into pilots of future 'demonstration schools' as part of the new national ICT strategy. For yet others, the aim is to make more productive use of ICT in their classrooms by providing schools with "a set of iTEC validated, high quality practices".

At the same time, however, project partners are also providing serious food for thought for the iTEC High Level Group that is looking at how to upscale and mainstream iTEC innovative practice and the technology being developed in the project.

Conclusion

This interim report is being published at a time when we have completed two out of the five iTEC piloting cycles and iTEC learning stories and activities have been delivered in almost 800 classrooms across 17 countries. The first two years of the project have inevitably been dominated by setting up the structures and systems that drive the project, but these are now successfully in place and provide the foundations for the most fruitful phases of the project in terms of outcomes of educational importance. In reference to the technical developments, the first two years have provided the initial versions of the various tools and services described in this report. In the final years of the project, with 3 further cycles of piloting to go these technologies will be further tested in context, with teachers and learners, and iteratively refined to a point where those with proven value can be potentially sustained and exploited beyond the project.

The next two years of the project are planned to yield a wide range of important results and outputs, including:

◻ Final reports on the pedagogical design process, and a teacher toolkit for sustaining further design of learning stories and activities
◻ Two further cycles of design and the testing, and publishing of three more collections of learning stories and activities, with wider scale adoption by teachers.
◻ A teachers' guide to prototype learning activities and tools
◻ A flexible modular programme of training for teachers, including materials, in development and use of future classroom learning activities
◻ Three more cycles of pilot validation of learning stories, activities and tools, and subsequent reports on the validation process
◻ Reports on the evaluation of pilots, including a final report highlighting what has been learned from all five cycles of piloting.
◻ Final iTEC customisable learning environments fully deployable at scale
◻ Established and sustainable services, including the widget store, with growing access to widget tools through sustainable community activity.

- ◻ A completed iTEC Composer tool, to support teachers in finding and sharing innovative learning activities and resources, and the automatic "intelligent" configuration of learning environments with necessary tools.
- ◻ Increased levels of public and stakeholder awareness, as the project emphasis on exploitation, sustainability and impact increases.
- ◻ Further activity of the iTEC High Level Group to guide and support the strategic approach to wider scale adoption of iTEC outputs.

This is a formidable agenda for the challenging and ambitious iTEC project.

Discover more at the iTEC website

Evaluation results

For the evaluation results of each cycle, please go to:
http://itec.eun.org/web/guest/evaluation

Knowledge Map

The iTEC Knowledge Map documents existing innovative pedagogical practices in classroom contexts from across Europe and beyond. It contains a review of current innovative practices in classrooms, mainly in Europe, with a focus on teachers' actual use of technologies in the classroom. The Knowledge Map is available at: *http://itec.eun.org/web/guest/knowledge-map*

Glossary of terms

For the glossary of terms used in the report, please go to:
http://itec.eun.org/web/guest/glossary

Public deliverables

For the iTEC public deliverables that describe the project activities and outputs in greater depth, please go to: http://itec.eun.org/web/guest/deliverables

iTEC project partners

European Schoolnet (EUN), Belgium | www.europeanschoolnet.org
Promethean, United Kingdom | www.prometheanworld.com
University of Namur (FUNDP), Belgium | www.fundp.ac.be
SMART Technologies, Germany | smarttech.de
Institute of Education of University of Lisbon, Portugal | http://www.ie.ul.pt/
Direcção-Geral da Educação (DGE), Portugal | dgidc.min-edu.pt
Bundesministerium für Unterricht, Kunst und Kultur (BM:UKK), Austria | www.bmukk.gv.at
Centre of Information Technologies in Education (ITC), Lithuania | www.ipc.lt
National Ministry of Education, Turkey | www.meb.gov.tr
Aalto University, Finland | www.aalto.fi
Istituto Nazionale di Documentazione, Innovazione e Ricerca Educativa (INDIRE), Italy | www.indire.it
Tiger Leap Foundation, Estonia | www.tiigrihype.ee
UNI•C, Denmark | www.uni-c.dk
Norwegian Centre for ICT in Education (NCIE), Norway | http://iktsenteret.no/
University of Bolton, United Kingdom | www.bolton.ac.uk
Katholieke Universiteit Leuven, Belgium | www.kuleuven.be
University of Vigo, Spain | www.teleco.uvigo.es
Knowledge Markets Consulting, Austria | www.km.co.at/km/
Futurelab, United Kingdom | www.futurelab.org.uk
Manchester Metropolitan University, United Kingdom | www.esri.mmu.ac.uk
Swiss Agency for ICT in Education, Switzerland | www.sfib.ch
MAKASH Advancing CMC Applications in Education, Culture and Science, Israel | www.makash.org.il
elfa, s.r.o., Slovakia | www.elfa.sk
Centre National de Documentation Pédagogique (CNDP), France | www2.cndp.fr
Educatio Public Services Non-profit LLC, Hungary | www.educatio.hu
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