



iTEC

Designing the future
classroom

Cycle 2 Evaluation Report

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Executive Summary

This report presents the preliminary findings following initial analyses of survey and case study data from Cycle 2.

Cycle 2 involved 420 pilots from 15 countries. Each teacher piloted a Learning Story with at least one group of students or cohort¹; in some cases, teachers piloted a Learning Story with more than one cohort completing a separate questionnaire for each. Responses were received for 298 cohorts in Cycle 1 (an overall response rate of 71%) from 261 teachers.

As the number of cohorts for which data were received varies from 4 to 42, survey data have been analysed on a country-by-country basis then subjected to a meta-analysis.

Two sets of Learning Activities together with three Learning Stories (narrative descriptions of innovative pedagogical approaches to learning including technological tools) were presented for piloting.

The Learning Activities were presented as two packages, both grounded in project-based learning approaches together with collaboration, presentation and reflection.

Package A: **Learning in teams** involves Learning Activities 1-7 (<http://itec.eun.org/web/guest/la1>).

Package B: **Learning individually** involves Learning Activities 2-7 (<http://itec.eun.org/web/guest/la2>).

LA1 Forming Teams: divide students into groups of four or five according to their chosen interests using TeamUp.

LA2 Ad-hoc Collaboration: individual or teams collaborate with students from other iTEC schools, sharing their work, using Twitter or Facebook.

LA3 Learning Oriented Browsing: searching the internet and gathering links on chosen topic, organised through social bookmarking tool.

LA4 Reflection: students update regularly on progress, challenges and plans through audio or video recordings using TeamUp (teams) or mobile phones (individuals).

LA5 Peer Feedback: students provide feedback (praise and criticism) on each other's work using blogs, wikis, Facebook, Twitter, TeamUp, Flickr or Picasa.

LA6 Information Grouping: students group information and findings visually using post-its and paper, mind-mapping, note gathering or other collaborative tools.

¹ Also referred to as a class or classroom

LA7 Prepare Results: students document findings and lessons learned using multimedia tools (as for LA5), communicating to others and receiving feedback.

The three Learning Stories chosen were:

- **Mathematics in a multicultural setting (MMS):** This scenario uses the language of mathematics to improve participation and communication in a multicultural setting. Groups explain mathematical concepts linking to online resources via a wiki using their own language and link to other group's explanations in native or other languages.
- **Embedding exam preparation in learning activities (EEP):** The scenario provides both teachers and students with useful and innovative ways of using technology to build a bank of resources that can be used for ongoing learning and revision. Students create resources for homework such as podcasts, puzzles, questionnaires, or notes in wikis. Students also arrange ad-hoc collaborative sessions with other students nationally and internationally.
- **Students creating (science) resources (SCR):** Students support one another to learn difficult concepts in science or other subject areas. They create exhibits (for example, posters, podcasts, simulations) for younger students to teach a concept from the curriculum, with mixed-experience teams focussing on different concepts.

A summary of the findings is now presented in relation to five evaluation questions.

1. To what extent does each iTEC Learning Story and relevant iTEC technologies benefit learning and teaching (for teachers, for learners, for others)?

- As in Cycle 1, most teachers were very positive about their experience, and reported a **wide range of benefits**.
- **The majority of teachers in six countries that piloted SCR were confident that SCR has potential to lead to innovation in the classroom (AT, EE, HU, IIT, LT, NO) while in two the majority of the teachers were positive but cautious (FR, PT).** (Countries with fewer than five teachers piloting SCR were not included in the analysis relating to this particular finding).
 - **The majority of teachers in three countries that piloted EEP were confident that EEP has the potential to lead to innovation in the classroom (HU, SK, TR) while in one the majority of teachers were positive but cautious (ES).** (Countries with fewer than five teachers piloting SCR were not included in the analysis relating to this particular finding).
- **There was an increased use of digital tools** with over two thirds of teachers using tools they had not used before and perceiving that their use was essential. In particular 60% of teachers used TeamUp and 52% used social networking tools such as Facebook or Edmodo. Use of ICT also emerged as a

benefit for a small number of teachers (main benefit: ES, NO; also noted by individual teachers in PT, LT, TR). Teachers from Germany felt that another benefit was **increased ICT skills for students** (also mentioned by individual teachers in ES, FR, HU, IT, LT, NO, SK).

- As in Cycle 1, teachers perceived that a main benefit was **the introduction of new pedagogical strategies facilitated by the Learning Activities**. Teachers from all but one of the countries involved in piloting suggested that main benefits of participation included either new approaches to learning in their classrooms or changes to pedagogical strategies:
 - **new approaches to learning** (main benefit: AT, EE, ES, IS, IT, LT; also noted by individual teachers in CZ, DE, HU, NO, PT, TR);
 - **collaboration and group work** (main benefit: ES, HU, SK; also noted by individual teachers in CZ, AT, EE, FR, IT, LT, PT, TR);
 - **increased variety of pedagogical strategies** (main benefit: NO; also noted by individual teachers in AT, IT);
 - **creating opportunities for learning that is individualised** (main benefit: SK; also noted by individual teachers in FR, IT, PT).
- **Enhanced student autonomy** was perceived to be a main benefit in six countries (main benefit: FR, IS, PT, SK, UK; also noted by individual teachers in ES, HU, IT, LT, TR).
- **Increased student motivation** was one of the main benefits cited by teachers in 11 countries (main benefit: EE, ES, FR, IS, LT; also mentioned by individual teachers in: AT, CZ, HU, IT, NO, PT, SK, TR). Interestingly student motivation was also perceived to be an enabler and lack of motivation was perceived to be a barrier. **Increased teacher motivation** was perceived to be a main benefit in Israel (mentioned by individual teachers in IT, LT).
- Teachers from the UK suggested that **new assessment approaches** was a main benefit (also noted by individual teachers in ES, FR, IT, PT). Students themselves also commented that they found **peer feedback and support** beneficial. These approaches were facilitated by the Learning Activity LA5 Peer Feedback and through the Learning Stories which all involved aspects of peer teaching and learning.
- Another main benefit noted by teachers (main benefit: ES, UK; also mentioned by individual teachers in AT, EE, IT, LT, PT, TR) was that **the resources were effective leading to improvements in learning outcomes** including attainment and subject knowledge, quality of work produced, ICT skills and 21st century skills. Teachers from the UK felt that improved knowledge acquisition was a main benefit whilst teachers from Israel felt that improved 21st century skills was a main benefit.

2. To what extent is each iTEC Learning Story and relevant iTEC technologies sustainable, transferable and scalable?

- The majority of teachers in two countries were confident that they would implement EEP again and that they would recommend EEP to other teachers (HU, TR). (Countries with fewer than five teachers piloting EEP were not included in the analysis relating to this particular finding). **Further consideration should be given to scaling up this Learning Story in these two countries.**
- The majority of teachers in six countries were confident that they would implement SCR again (AT, EE, HU, IT, LT, NO). (Countries with fewer than five teachers piloting SCR were not included in the analysis relating to this particular finding).
- The majority of teachers in five countries were confident that they would recommend SCR to other teachers (AT, EE, HU, LT, NO). (Countries with fewer than five teachers piloting SCR were not included in the analysis relating to this particular finding).
- It could be argued that **the Students Creating (science) Resources Learning Story will have the widest appeal to teachers across Europe** as most teachers chose it. Further consideration in relation to scaling up should be given in those countries in which the resources were most positively received: Austria, Estonia, Hungary, Lithuania and Norway.
- **MMS had a very low uptake** suggesting it is not appropriate for scaling up at the current time. Reasons given were that it would be difficult to manage with larger numbers of teachers, required more localization and did not align well with national curricula.
- There is some evidence that iTEC is beginning to have an impact on CPD and the teaching profession more generally through involvement of other teachers and sharing of ideas.

3. What are the enablers of and barriers to adoption of each iTEC Learning Story (including appropriate iTEC technologies)?

Enablers

- **The three most important enablers identified by teachers were:**
 - **Student motivation** (main enabler: AT, EE, ES, FR, IS, IT, LT, NO, PT, SK, TR; also mentioned by individual teachers in HU,UK).
 - **ICT (access and infrastructure)** (main enabler: FR, DE, HU, IS, SK, TR, UK; also mentioned by individual teachers in AT, CZ, EE, ES, IT, PT, LT). **Technologies facilitating communication and collaboration were perceived to be particularly helpful** including social networking tools, blogs and wikis. Digital tools for media recording were also seen to be important.

- **Teacher motivation** (main enabler: AT, DE, ES, IT, LT, PT, NO; also mentioned by individual teachers in EE, HU, TR).
- **School ethos and culture**, including the support of the head teacher, was an important enabler (main enabler: ES, HU, NO, SK; also mentioned by individual teachers in IT, PT, SK).
- The **support of colleagues** in school and across the project was also perceived to be helpful (main enabler: IS, IT; also mentioned by individual teachers in EE, HU, LT, NO, PT, SK). Local online communities facilitated sharing and communication between teachers within and across participating schools. In addition **ICT support** was identified as a main benefit in two countries (NO, ES; mentioned by individual teachers in EE).
- Teachers from one country suggested that **support from the NPC** had been a main enabler of the implementation (main enabler: SK; also mentioned by individual teachers in AT, ES, FR, IT, LT, NO, UK). For example, a teacher from France suggested that the face-to-face workshop and follow-up call from the NPC was particularly helpful. **iTEC resources** were also noted as an enabler by individual teachers in eight countries (EE, ES, HU, IT, IT, LT, NO, SK, TR). For example, a teacher in Hungary suggested that the design of the learning process, the Learning Story and Learning Activities, was an enabler. **Some teachers found TeamUp useful for forming groups and recording reflections**. In addition, **prior experience** of iTEC was perceived to be a main enabler in Slovakia (mentioned by individual teachers in ES, LT, PT).

Barriers/challenges

- **Insufficient time** to prepare and undertake the work was indicated as a main challenge in 11 countries (DE, EE, ES, FR, HU, IS, IT, LT, PT, TR, UK; also mentioned by one teacher in CZ).
- Over half the 10 main challenges that teachers identified in the survey are technology related; infrastructure is still not sufficient in most countries. They include:
 - **insufficient ICT access** (AT, ES, HU, IT, LT, NO, TR, UK, also raised by individual teachers in EE, DE, PT);
 - **unreliable Internet access** (ES, FR, HU, IT, NO, PT, TR; also raised by individual teachers in LT, SK);
 - **controlled Internet access** through filtering for example (NO, TR, also raised by individual teachers in DE, ES, IT);
 - **general software issues** and particularly site registrations (ES, NO, UK, also raised by individual teachers in AT, FR, HU, IT, LT, SK, TR);
 - **lack of teacher ICT skills** (UK; also raised by individual teachers in CZ, ES, HU, IT, LT, PT, TR);
 - **lack of home access** (ES, SK; also mentioned by individual teachers in HU, IT, LT, PT, TR);
- It is notable that **TeamUp was unstable** despite further development, although it is still presented as a prototype and not a finished product. However, this can be attributed to the use of outdated browsers by teachers so is a communication issue rather than a technical issue. It was raised as a

main challenge in nearly half of the participating countries (ES, HU, IS, IT, PT, SK, TR; also raised by individual teachers in CZ, EE, FR, LT). Examples of problems included difficulties editing student profiles and recording newflashes, and losing data (student profiles, groups).

- **Timetabling and curriculum constraints**, as in Cycle 1, were also challenges for teachers in nearly half the countries (AT, ES, HU, IT, NO, SK, TR, also raised by a small number of teachers in CZ, PT, UK). In two countries (IT, PT) teachers mentioned that running the pilot at the end of the academic year was a challenge.
- As in Cycle 1, **organising groups** was also a main challenge for teachers in five countries (ES, FR, HU, IT) and mentioned by individual teachers in a further six countries (AT, CZ, DE, LT, PT, SK, TR).

4. To what extent is each Learning Story and relevant iTEC technologies fit for purpose? (usability; connection to current practice; what works and what doesn't work)?

- Two thirds of teachers were able to adapt the Learning Stories and Learning Activities to suit their needs with little or no help. The Learning Stories, particularly SCR, were seen to fit current practice and be flexible (whilst still promoting innovation in the classroom). The Learning Story and Learning Activity resources were seen to be a main enabler in Turkey and noted as an enabler by individual teachers in four other countries (DE, HU, IT, LT).
- DotLRN was piloted by a small number of teachers in Austria and Turkey (14 teachers altogether). The majority of these teachers agreed that DotLRN enabled them to teach more efficiently and for their students to learn more efficiently. Similarly, the majority of teachers agreed that DotLRN improved access to educational content for students and improved management of educational resources.
- DotLRN has potential and now needs to be piloted on a larger scale and across more countries.
- TeamUp, as noted above, continued to be a challenge for teachers in the majority of participating countries. However, two out of five teachers felt that TeamUp was an essential tool and was beneficial compared to digital and non-digital alternatives.
- The challenges that teachers faced when using TeamUp were largely related to two issues. Firstly, server issues resulting from moving the TeamUp server from Aalto University to European Schoolnet. And secondly, some teachers attempted to access TeamUp via outdated browsers.

5. What are the benefits and shortcomings of the piloting process (including the development of technical and pedagogical knowledge and skills)?

- The Cycle 2 pilot was a success with 421 cohorts from 15 different countries.
- NPCs were able to identify suitable Learning Stories to meet national, regional and local needs from the resources provided. It was relatively straightforward to localize the resources (primarily through translating the documentation provided).
- Training and support were positively received by teachers who particularly enjoyed face-to-face meetings, networking with other teachers, opportunities for hands-on experience of tools, online discussion forums, webinars and video-tutorials.
- There was a tension between maximizing choice and flexibility (through offering all iTEC resources and wide range of digital tools) leading to greater teacher ownership and the management of the piloting together with the development of a community of practice sharing common aims.
- The reliance on voluntary participation together with the selection processes operated in some countries led to a bias towards early adopters of ICT and enthusiastic teachers (as in Cycle 1).
- Use of the centrally provided Teacher Community was still limited; local online communities were more highly regarded.
- It would be beneficial to involve teachers who have participated in earlier cycles in preparation and training activities. It may also be beneficial to involve more teachers from the same school so that local communities/support structures can be developed.
- Timing is still an issue in relation to the dissemination of iTEC resources prior to the pilot beginning.
- Exemplars of successful Learning Stories in practice would be beneficial.
- Greater involvement of head teachers and Ministries of Education in preparation and training activities could be beneficial.
- It would be helpful if WP6 could provide more support material that is easily accessible by teachers as well as NPC/NTCs.
- Teachers appreciate face-to-face workshops and meetings; ensuring that this occurs more than once in a cycle could be beneficial.

Recommendations

A number of recommendations are now presented in relation the findings reported below in the main body of the report.

Work package 2/3

- Scenarios and Learning Stories which are more likely to be scalable are those which are:
 - more generic
 - align closely with the national curriculum
 - are suitable for students across the age range
 - require minimal localization
- Teachers would like resources that are shorter, thus requiring less time to implement. Simpler and shorter guidance to enable rapid access would assist in reducing the time burden on teachers in relation to planning.
- Tools and widgets which are intuitive and purposeful should be identified, particularly in relation to audio and video recording which can facilitate a wider range of learning activities in the classroom.
- Alternatives to online services which require unique site registrations should be provided. Online services which can be accessed through single sign on should be highlighted.
- One third of teachers required support to adapt Learning Stories and/or Learning Activities to meet their needs. This may be addressed through the development of kits to facilitate national and local development of these iTEC resources.
- Parental support can be important and this could be fostered through informing parents about the project, and where possible involving them in Learning Activities.

Work package 3

- The known technical issues in relation to TeamUp (specifically the requirement to have an up-to-date browser) should be more clearly communicated to national coordinators and practitioners. Guidance on how to install TeamUp on local servers should be made easily accessible.

Work package 4

- Training and support at the national and local levels will be required to facilitate sustainability. Teachers appreciate opportunities to see how peers have used iTEC resources, gain hands-on experience of digital tools and

discuss ideas with peers. Face-to-face meetings are the best means of facilitating such engagement.

- It would be beneficial to involve teachers who have participated in earlier cycles in preparation and training activities. It may also be beneficial to involve more teachers from the same school so that local communities/support structures can be developed.
- The involvement of senior managers and MoE staff in training and dissemination events would help support innovation diffusion.
- There is a need to include a wider range of teachers in the piloting process (that is to move beyond teachers who are already innovative and/or early adopters of digital tools).
- Teacher motivation is an important enabler and could be enhanced through incentives. Incentives that can be taken to scale should be prioritised to maximise impact and sustainability.
- Student motivation is an important enabler and could be enhanced through greater involvement in the process (for example, contributing to the development of scenarios).
- In Cycle 2 the Teacher Community was not perceived to be useful or easy to use and therefore requires further development. (The Teacher Community was redesigned and relaunched for Cycle 3).

Work package 4/5

- It would be beneficial to collect detailed data on the awareness of iTEC beyond the project at national and local levels. This could include national dissemination activities, website hits and the impact on other staff in participating schools.
- Exemplars of Learning Stories in practice would be beneficial and support further dissemination.

Work package 6

- It would be beneficial to provide further support material easily accessible by teachers and national coordinators.
- It would be beneficial to provide guidance on the advantages and mechanics of single sign on for coordinators and practitioners.

Work package 7

- dotLRN has potential as a shell and now needs to be evaluated with a larger number of teachers.

Work package 11

- There is limited evidence on whether or not Learning Stories and Learning Activities could or should be taken to scale. There is a need to gather more evidence from key informants representing policy makers, industry and academia at a national level.
- There is however evidence that resources which are more generic and suitable for wide range of subject areas will be most likely to be adopted by teachers.
- Support of school leaders is an important enabler. They should be involved to a greater degree in later cycles of the project to facilitate dissemination and encourage scaling up at a local level.
- Some support structures (for example, training) will need to be in place at national level to facilitate scaling up. This should include face-to-face events and technology-enabled support structures.
- Infrastructure continues to be a major challenge for many teachers across Europe, even within countries which have made significant investments in ICT to date. It would be beneficial to consider Bring Your Own Device initiatives to address this barrier. This may require reconsideration of national, regional and local policies in relation to BYOD such as student-owned smartphones.
- National support structures will need to be continued beyond the lifetime of the project in order to maintain momentum. In countries where local ICT support is not commonplace it may be beneficial to put resources in place to facilitate this.
- Teacher attitude and motivation are key enablers of innovation. Embedding iTEC processes and resources in teacher training programmes at national, regional and local levels would be beneficial.
- National dissemination should involve teachers who have already participated in iTEC, and target audiences should include teachers and head teachers.
- Student access to technology outside school is still an issue in a number of countries. It would be beneficial to review national, regional and local policies in relation to home and community access to ensure that this challenge is minimized.

Introduction

The data collection and analysis undertaken by Work Package 5 at the end of a cycle represents the end product of a process to which many iTEC colleagues make substantial inputs. The Ministries of Education play the leading role in the setup and oversight of the pilots and the collection of the data.

To organise access to schools by native-speaking educationalists, familiar with national policies and priorities, each Ministry has identified a National Pedagogic Coordinator (NPC) and a National Technological Coordinator (NTC) who arrange and support the pilots. In a number of countries, it has been possible to identify persons able to combine these two roles, but where this has not been the case, the co-ordination of the piloting process and the data collection visits for the evaluation are undertaken by the nominated NPC.

The 10 detailed scenarios (narrative descriptions of innovative pedagogical approaches to learning including technological tools) developed for the second cycle by Work Package 2, followed a design methodology that builds on the Delphi method. This involved a group of experts and stakeholders who followed a series of prescribed steps and worked together to construct scenarios, which reflect the interests of the group and are designed to encourage and support the introduction of new practices.

Work Package 3 (WP3) then pre-piloted the Learning Stories and Learning Activities with teachers (in 9 classrooms² across 8 countries) following a participatory design methodology, with focus groups, and other activities, to produce prototypes. As in Cycle 1, these along with tools and other resources are thus also the outputs of an iterative process with a high level of user engagement, drawing on the significant pedagogical and technological expertise available to the consortium.

In iTEC, a Learning Story (LS) is a narrative overview of learning developed from the more abstract educational scenario. A Learning Story may include several Learning Activities (LA) and illustrates how they might work together. The Learning Activity is a concrete description of a learning sequence that can be used in teaching and learning. A Learning Activity can be supported, either partially or completely, by a set of provided technological tools.

WP3 also provided “TeamUp” as a technical prototype, together with a brief visual user manual to accompany it. This tool enables teacher to generate teams, either teacher-defined or randomly generated. Teachers and students can generate topics or themes and then the students can indicate their preference. Teachers can also identify other relevant characteristics such as gender. Teams can then be formed based on the team size required, whether or not students should be matched to their

² Engaging teachers in Cycle 2 pre-pilots proved challenging due to the first instance of pre-pilots running alongside full pilots.

chosen topic or assigned to groups based on certain characteristics. TeamUp also offers the facility for teams to record 60-second newflashes about their progress. Following its use in cycle 1, the team allocation feature was moved to the background and further development was undertaken with regard to facilitating reflection.

A small number of teachers in Austria and Turkey also piloted DotLRN. DotLRN is one of the supported shells in iTEC. It is a learning management system:

The DotLRN system is built around the concept of communities. DotLRN provides a collaborative space where users can communicate and collaborate using built-in applications tailored to learning needs as well as learning resources. Communities can be created on different levels: schools, classes, courses or even (sub)groups of students. (D6_2: iTEC environments manual – DotLRN, p1)

The teachers piloting DotLRN were supported directly by WP7 who offered face-to-face training and webinars to interested teachers in Austria and Turkey:

- 3 face-to-face demonstrations (overall participation: 50 Turkish teachers and 15 Austrian teachers)
- 3 online training sessions (overall participation: 47 Turkish teachers)
- 1 face-to-face training session for 12 Austrian teachers

Teachers from four schools in Austria and 31 schools in Turkey set up DotLRN to support teaching and learning, although only one school in Austria and five schools in Turkey had active learner accounts.

The NPCs and their pilot schools are supported by Work Package 4 (WP4) who have established the online teacher's community (re-developed following implementation in Cycle 1), plus a helpdesk for support with registration, technical problems etc. The registration process and structure of teacher community was greatly simplified for Cycle 2. WP4 also provided induction briefings and mid-pilot follow-up interviews. Drawing on the experience of Cycle 1, WP4 provided additional support for the learning activities, and guidelines for the operation of subsequent cycles. The complementary work on teacher skills and competence development for classrooms of the future is also undertaken within WP4.

Although they are education experts, NPCs are not professional researchers. Work Package 5 (WP5) has provided support for the data collection element of their role through induction briefings and the provision of a detailed Evaluation Handbook that was updated to reflect the experience gained in Cycle 1. Data collected in Cycle 2 included two teacher online surveys (about their current uses of ICT and about the implementation of the Learning Story), three case studies (lesson observation and interviews with teachers, students and the head teacher) and an NPC survey.

Technical support for the pilots is provided by Work Package 6 (WP6). During Cycle 2 WP6 facilitated four webinars for NPCs/NTCs during Cycle 2 (including one led by

Promethean) focusing on the use of different technologies. WP6 provided a demo course in Moodle, which teachers could access and explore. Finally, WP6 provided a website (<https://sites.google.com/site/itecmatrix/home>) detailing the different services that could be used to support each of the LAs, together with ideas for implementation from Promethean and SMART on using their commercial tools/services.

Promethean also ran pilots and as part of this process made the supporting documentation they created for teachers (for example explaining the piloting process) available to all NPCs and ran online workshops for interested teachers. In Cycle 2 support was provided to AT, LT, PT and TR. Teachers from AT, LT and TR attended the online workshops, although the level of interest was lower than expected. Regional staff also provided face-to-face workshops. In addition Promethean provided specific examples and facilitated forum threads in relation to the LSs offered in Cycle 2, technologies which could support the LSs and general queries about the piloting process. Promethean staff also provided guidance to NTC/NPCs on the use of relevant Promethean products. In March, Promethean provided a webinar for NTCs, demonstrating technologies which could be used to support Cycle 2 implementations (as noted above).

What follows in this report are the findings of the evaluation of Cycle Two pilots in relation to benefits, enablers, barriers, challenges and drawbacks. Evidence to support sustainability, transferability and scalability is presented together with recommendations for project partners and policy makers.

Context

15 countries participated in Cycle 2: Austria, Czech Republic (Associate Partner), Estonia, France, Germany (SMART partner), Hungary, Israel, Italy, Lithuania, Norway, Portugal, Slovakia, Spain (SMART partner), Turkey, United Kingdom (Promethean partner).

Two surveys were undertaken: 'About you and your school' which focused on teacher experience of ICT and the 'Teacher Questionnaire', which related to the implementation of the Learning Story. In a change from Cycle 1 it was decided not to match the two sets of data (thus excluding teachers who had not responded to both surveys) but rather to treat the data sets separately. 298 teacher questionnaires were completed. As in Cycle 1, in some countries, only a very small number of teachers participated. Considering the cultural differences between countries, the variation in implementation (choice of Learning Story, choice of Learning Activities, individual adaptations), it now seems inappropriate to only report aggregated data across countries. In Cycle 2, data from each country have been analysed separately (Appendix C) then subjected to a meta-analysis. Therefore, data analysis is primarily qualitative. However, where appropriate aggregated data are presented.

13 countries participated fully in pilot case study data collection, which included lesson observations, interviews with the teacher, head teacher and students. Each

NPC chose three teachers as case study teachers. The case study teacher was also asked to produce a multimedia story documenting the piloting experience. In Cycle 2, NPCs were asked to take responsibility for ensuring that the multimedia stories were made available via the Teacher Community. 32 were produced representing 12 countries. The NPCs produced a case study report for two of the three case studies that they conducted, and provided transcribed and translated raw data for the third case study.

Following pre-piloting and development by Work Package 3, iTEC presented two sets of Learning Activities for piloting in Work Package 4 together with three Learning Stories, although the Learning Activities could have been used with any of the ten detailed scenarios that WP2 produced for Cycle 2.

The Learning Activities were presented as two packages, both grounded in project-based learning approaches together with collaboration, presentation and reflection.

Package A: **Learning in teams** involves Learning Activities 1-7.

Package B: **Learning individually** involves Learning Activities 2-7.

LA1 Forming Teams: divide students into groups of four or five according to their chosen interests using TeamUp.

LA2 Ad-hoc Collaboration: individual or teams collaborate with students from other iTEC schools, sharing their work, using Twitter or Facebook.

LA3 Learning Oriented Browsing: searching the internet and gathering links on chosen topic, organised through social bookmarking tool.

LA4 Reflection: students update regularly on progress, challenges and plans through audio or video recordings using TeamUp (teams) or mobile phones (individuals).

LA5 Peer Feedback: students provide feedback (praise and criticism) on each other's work using blogs, wikis, Facebook, Twitter, TeamUp, Flickr or Picasa.

LA6 Information Grouping: students group information and findings visually using post-its and paper, mind-mapping, note gathering or other collaborative tools.

LA7 Prepare Results: students document findings and lessons learned using multimedia tools (as for LA5), communicating to others and receiving feedback.

The three Learning Stories chosen were:

- **Mathematics in a multicultural setting (MMS):** This scenario uses the language of mathematics to improve participation and communication in a multicultural setting. Groups explain mathematical concepts linking to online resources via a wiki using their own language and link to other group's explanations in native or other languages.

- **Embedding exam preparation in learning activities (EEP):** The scenario provides both teachers and students with useful and innovative ways of using technology to build a bank of resources that can be used for ongoing learning and revision. Students create resources for homework such as podcasts, puzzles, questionnaires, or notes in wikis. Students also arrange ad-hoc collaborative sessions with other students nationally and internationally.
- **Students creating (science) resources (SCR):** Students support one another to learn difficult concepts in science or other subject areas. They create exhibits (for example, posters, podcasts, simulations) for younger/other students to teach a concept from the curriculum, with mixed-experience teams focussing on different concepts.

SCR was offered to teachers in all but two of the participating countries. Six NPCs chose a single Learning Story (LS) to present to the teacher. Of these, four NPCs chose SCR with one explaining it was thought to be easier to manage with a larger number of teachers, and two NPCs suggesting it was based on teachers' opinions. Two of these NPCs also changed the LS so that it could be implemented in any subject area. Two NPCs chose to offer EEP only, because it was seen to be the best fit to the (national) curriculum in one country and the most appropriate LS given the national ICT infrastructure in another. Three NPCs offered two of the LS, with two suggesting this was based on fit to the curriculum. The remaining five NPCs let individual teachers choose for themselves from all three LSs on offer in Cycle 2. Ideas which are more generic and applicable across curriculum areas are being taken up rather than those with specific ties to curriculum areas (MMS brings together mathematics and language learning).

SCR was the most popular Learning Story with 212 cohorts (190 teachers) implementing it, followed by EEP implemented by 68 cohorts (56 teachers) with only 18 cohorts (15 teachers) undertaking MMS.

Only 103 cohorts piloted all seven Learning Activities within Package A, and no cohorts piloted all LAs in Package B (Table 1).

Table 1: Learning Activities undertaken by country

Country	Cohorts	LA1	LA2	LA3	LA4	LA5	LA6	LA7
Austria	18	16	11	13	12	8	13	14
Czech Republic	4	4	4	4	4	4	4	4
Estonia	26	24	20	8	12	21	20	18
France	14	11	10	8	13	6	8	10
Germany	8	7	4	2	3	2	2	6
Hungary	39	32	31	14	35	31	33	38
Israel	8	8	7	7	7	6	8	7
Italy	41	39	36	29	39	32	33	37
Lithuania	45	34	31	33	37	37	34	38

Norway	10	7	5	4	9	4	10	6
Portugal	27	27	25	18	25	25	23	24
Slovakia	10	10	5	1	10	10	10	5
Spain	17	17	15	14	13	13	13	9
Turkey	19	18	15	17	15	18	17	14
UK	12	2	9	10	2	12	8	5
Total	298	256	228	182	236	229	236	235
Percentage	100%	86%	77%	61%	79%	77%	79%	79%

When taking in account country and choice of Learning Story the sample sizes are too small to undertake reliable comparative analysis using statistics (the largest being for SCR in Italy: 23, Portugal: 16 and Lithuania: 17) (Table 2).

Table 2: Teacher questionnaires received by country and Learning Story selected

Country	Mathematics in a multicultural setting	Embedding exam preparation in learning activities	Students creating science resources	Total
Austria	5	2	11	18
Czech	0	4	0	4
Estonia	0	0	26	26
France	1	1	12	14
Germany	0	3	5	8
Hungary	1	14	24	39
Israel	0	4	4	8
Italy	0	0	41	41
Lithuania	4	0	41	45
Norway	0	0	10	10
Portugal	0	0	27	27
Slovakia	0	10	0	10
Spain	6	5	6	17
Turkey	1	16	2	19
UK	0	9	3	12
Total	18	68	212	298

Use of technology

The LA resources present pedagogical ideas (for example, collaboration) which could be perceived as being innovative by teachers together with recommendations for different types of technological tools which teachers could use to support/enable the pedagogical ideas. For Cycle 2, the tools suggested are summarised in Table 3.

Table 3: Digital tools recommended to support Learning Activities

Learning Activity		Tool(s)
Ad-hoc Collaboration	In teams	Twitter
	Individually	Facebook
Learner Oriented Browsing		Social bookmarking such as Diigo, Delicious, Storify
Reflection	In teams	TeamUp
	Individually	Voicethread, Audioboo, YouTube
Peer feedback		Blogs, Twitter, Facebook, TeamUp, wikis, Google, Flickr, Picasa
Information grouping		Mindmapping tools, collaboration tools
Prepare results		TeamUp, Voicethread, Audioboo, YouTube, data capture devices

The majority of teachers used between 5 and 9 different digital tools to support the implementation (Table 4). Due to e-safety issues, in some cases teachers used alternatives to Facebook such as Edmodo. Additional tools referred to in survey and case study data included Skype, Glogster, Geogebra, Prezi, MissionMaker (game maker software) and Scratch. Exemplars of how digital tools were used to support Learning Story and Learning Activity implementation are presented below.

Table 4: Reported use of digital tools in Cycle 2 by tool type

Type of digital tool used	% of teachers reporting use to support Learning Story
Digital resources	86%
Communication tool	72%
Data capture device	71%
Music/photo/video/slide sharing sites	64%
Interactive whiteboard	64%
Collaboration tool	63%

TeamUp	60%
Media authoring tool	57%
Mobile devices	47%
Virtual learning environment	30%
Game based learning	30%
Student information system	22%
Virtual experiments and Simulations	19%
Document camera/digital visualiser	13%
High tech instruments for science	8%

EQ1) To what extent does each iTEC Learning Story and relevant iTEC technologies benefit learning and teaching (for teachers, for learners, for others)?

Benefits

Data from the survey and case studies were examined to identify evidence relating to perceptions about the benefits of the LSs. They are presented here in relation to pedagogy (including technologies as a pedagogical tool) and in relation to teachers' and students' attitudes, ICT skills and knowledge.

Innovation

Teachers were asked in the survey whether the Learning Stories and Learning Activities would lead to innovation in the classroom. The responses from teachers (both aggregated and from the cross-case analysis) are presented below (Table 5 and Table 6³).

³ Data have only been included with regards to teachers being confident and positive but cautious if there are at least five teachers in one country piloting a single Learning story. Disagreement is reported irrespective of the number of teachers piloting.

Table 5: Potential of Learning Story to lead to innovation in the classroom – aggregated responses (n = 260)

Learning Story	Majority of Teachers confident	Teachers positive but cautious	Small number of teachers disagree
Maths in a Multicultural Setting (15)	53%	40%	7%
Embedding Exam Practice in learning activities (56)	64%	34%	2%
Students Creating (Science) Resources (189)	62%	37%	1%

Table 6: Potential of Learning Story to lead to innovation in the classroom – cross-case analysis of country responses

Learning Story	Majority of Teachers confident	Teachers positive but cautious	Small number of teachers disagree
Maths in a Multicultural Setting (15)			ES
Embedding Exam Practice in learning activities (56)	HU, SK, TR	AT, ES, IS, UK	DE
Students Creating (Science) Resources (190)	AT, EE, HU, IS, IT, LT, NO, UK	FR, PT	FR

Teachers in France (2 out of 12) who disagreed suggested that the SCR Learning Story was not appropriate for primary students and that the benefits did not outweigh time investment. The teachers in Germany (EEP) (1 out 3) and Spain (MMS) (1 out 6) who disagreed felt that the ideas were not novel.

Table 7: Summary of perceived benefits and reasons for innovation

	Benefits: Main	Benefits: Supplementary	Innovative: Main	Innovative: Supplementary
New approach to learning	AT, EE, ES, IS, IT, LT	CZ, DE, HU, NO, TR, PT	AT, DE, EE, IS, LT, UK	FR, HU, IT, TR, PT, SK
Increased student motivation	EE, ES, FR, IS, LT	AT, CZ, HU, IT, PT, NO, SK, TR	AT, EE, ES, IS, IT, LT, NO, TR	CZ, DE, FR, HU, PT, SK
Enhanced student autonomy	FR, IS, PT, SK, UK	ES, HU, IT, LT, TR	FR, IPT, SK	AT, DE, EE, ES, HU, IS, IT, LT, NO, TR
Increase in collaboration	HU, SK	AT, CZ, EE, FR, IT, LT, PT,	IS, IT	CZ, EE, FR, HU, LT, PT,

		TR		UK
Effective	ES, UK	AT, EE, IT, LT, PT, TR		ES, HU, IT, LT, PT, TR, UK
Development of group work	ES, SK	FR, IT, LT, TR	ES	DE, TR
Increased use of ICT	ES, NO	PT, LT, TR	ES, NO, PT, SK, TR	IT, LT
Increased ICT skills for students	DE	ES, FR, , HU IT, LT, NO, SK	AT, ES, FR, HU, IT	PT, IT, LT
New assessment approaches	UK	ES, FR, IT, PT		ES, FR, HU, TR
Individualised learning	SK	FR, IT, PT		HU, PT, LT, SK
Knowledge acquisition	UK	IT, LT		ES, IT, LT, PT, SK
21 st Century skills	IS	HU, PT		PT, IT
Increased teacher motivation	IS	IT, LT		ES, LT, SK, TR
Increase variety	NO	AT,	AT	IT, LT, NO
Challenging	IS	LT		
New digital tools	NO			IT, PT

With regards to perceived benefits and innovation (Table 7), the strongest themes emerging relate generally to the iTEC resources facilitating a new approach to learning, enhancing student autonomy and collaboration. These in turn lead to increased student motivation. The broad category of a new approach to learning reflects the perceptions of teachers that the combination of ideas (pedagogical and technological) presented through iTEC resources are innovative overall. 89% of teachers agreed that the Learning Story led to the incorporation of new pedagogical practices and presented exciting opportunities to do things differently in the classroom.

In terms of teachers' perceptions of why the iTEC resources have potential for innovation in the classroom two further themes emerge in relation to an increased use of ICT and students' increasing their ICT skills. However, the themes are by no means universal. Individual teachers have experienced participation in different ways and what has been innovative for one teacher is not necessarily innovative for other teachers. Indeed, the extent of innovation has also varied. Students also perceived that their experience had aspects of innovation but was not necessarily totally innovative.

I wouldn't talk about 'change'. I already felt close to this methodology. But my knowledge grew up thanks to this project, mostly because of the exchange of ideas

with other teachers involved in the pilot, and different technologies. Teacher interview, Italy

According to the teacher, using videos for learning is not new in itself, the novelty in this experiment is being to make use of the pupils' familiar and personal tools. [...] [T]echnological simplicity has made it no longer necessary to be an expert in order to use these tools. Case study report, France

The iTEC lessons weren't completely new because it's the second time for us, but we did new things, like Glogster for example, which I didn't know how to work with and now I do. [...] In the normal lessons, we don't usually work much with computers, or with Facebook. It's a bit of a new thing to work in class with Facebook. It was a very good experience and I hope there will be more. Student interview, Portugal

However, it is notable that only four of the 261 participating teachers indicated that the Learning Stories did not have potential for innovation in the classroom.

Pedagogy

Teachers reported an **increased use of digital tools** as one of the benefits of the iTEC resources, enabling teachers to do things differently in the classroom. Some teachers did not make much use of technology in the classroom prior to iTEC. Students also referred to learning about new tools such as TeamUp and Glogster (multimedia posters). In addition, they noted that they used technology more often in the classroom and tools such as Facebook (which was recommended to support the Learning Activities). As a result of participation 87% of teachers agreed that they would use digital tools more often in the future.

The majority of teachers found the digital tools easy to use and essential for the implementation (Figure 1). 69% of teachers used tools that they had not used before and 7 out of 10 teachers felt that the tools offered benefits both in relation to other digital tools and non-digital alternatives.

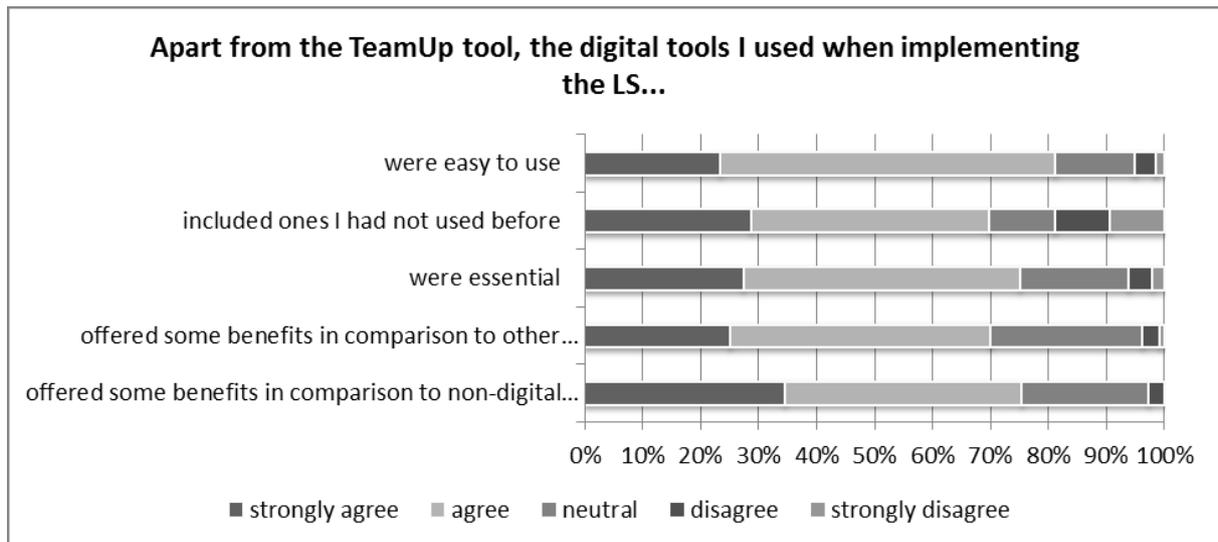


Figure 1: Teacher perceptions of digital tools used

The difference between the maths lessons and the other lessons is that in these lessons we work a lot with geogebra, with Facebook, and with Glogster and we record things and in other lessons we don't. In the other lessons the most we can do is some work on the computer once in a while. Student, Portugal

Many of the digital tools have specific features that are perceived by some to be beneficial. For example, Facebook was described as being 'more appealing' to students and with easier mechanisms for uploading images. Glogster was noted to develop students' creativity. In some cases, teachers experimented with allowing students to use their own devices such as smartphones.

Teachers reported that Facebook or Twitter was used at least once a week (by the teacher and/or students) with around a third of the 298 cohorts. Such posts most commonly received 2-4 comments (30% of posts) with 14% receiving 5 or more comments and 13% receiving one comment. These tools were used by at least 50% of teachers in EE, HU, IT (here an alternative to Facebook was provided to schools), LT, PT, SK and TR.

Typical activities included:

- Managing group work (finding partners, forming groups, sharing tasks)
- Generating ideas
- Communication with peers and teachers (group discussion, asking questions, receiving feedback)
- Sharing information, resources and links
- Documenting and communicating progress
- Sharing project outcomes such as presentations
- Assessment and evaluation (peer, teacher)

In Turkey (where most cohorts' subject area was English combined with other subjects such as ICT or Turkish), improving students' English was identified as an additional activity.

Although 60% of cohorts used TeamUp, teachers also reported that TeamUp was used to record reflections with only 30% of cohorts whilst an alternative tool was used with 33% of cohorts. The majority of students (75% of cohorts) were asked to record reflections 1-5 times. Teachers listened to the recordings made by 85% of cohorts and reported that 74% of cohorts also listened to the recordings.

The underpinning Learning Activities, as well as guiding teachers to try a wider range of digital tools in the classroom, support a shift to student-centred pedagogies and teachers perceive that generally this has introduced **new approaches to learning** and increasing diversity in the classroom. Many of the benefits emerging from the data can be attributed to this. Importantly, shifting the culture in the classroom was considered by some to be likely to last beyond the pilots.

I find that they volunteer much more, and are more independent in class in every way.
Teacher, France

The teachers (German and Art) worked together on one idea and collected useful [ideas] for the future. They are planning to collaborate more in the future and the students liked it very much. Case study report, Germany

Developing students' skills in **collaboration** (one of the underlying Learning Activities) was seen to be a benefit of the pilots (Figure 2). Students enjoyed working in groups and sharing tasks. They recognised benefits such as better relationships with their peers, mutual support and encouragement. In one example, a student described how he/she organised where members of the group sat in order to make sure that two disruptive members were separated. As in Cycle 1, it was noted that using TeamUp as a means of avoiding students working in friendship groups had the positive outcome of students learning to share views with a wider range of people. Students from Israel and Italy noted that working in groups was quite unusual compared to 'regular classes'.

Some of [the students] even didn't want to talk to their group mates. They have made a significant progress in this respect, they learnt to listen to each other and instead of quarrels, there are discussions. They also pay much attention to expressing themselves. Now they can talk about their own progress, about difficulties or problems – I do think it will be useful in other subjects. ICT co-ordinator, Hungary

You can see already there has been a change in the culture of learning. The children have changed their interaction with each other. There have been children together who do not work together otherwise. Head teacher, Germany

You don't have to think alone and if you don't know something, the others can help you and we complete one another. Student, Hungary

Working with a team could be an advantage and a disadvantage. We see it as an advantage – learning to compromise, sharing the learning activity - learning from each other. Student, Israel

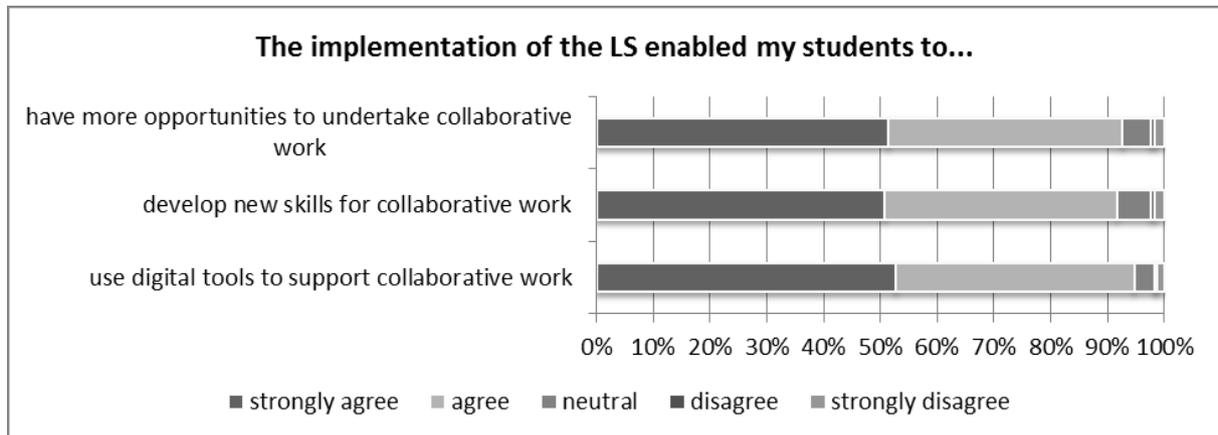


Figure 2: Teacher perceptions about the impact on students' collaboration

Tools used to support collaboration included blogs, Facebook and similar social media tools. In particular it was noted that technology made it easier to find groups to collaborate with in other schools, particularly where schools were connected through a regional or national online community. Use of such tools also opened up communication and collaboration possibilities with others beyond the iTEC projects.

An unexpected outcome of the blogs is that students from other classes and schools left comments and suggestions for the class' students. All of the posts were encouraging and constructive and students appreciated this feedback. Case study report, France

WP3 also set up an open iTEC Facebook group page to enable teachers and students to find other iTEC participants to collaborate and to share what they had been doing. During Cycle 2 many students posted links to the artefacts that they had created (through YouTube, Glogster, Prezi) and receive 'likes' and comments from others.

Example (EEP): In Slovakia, students searched for resources on the Internet to support revision of topics in Biology. They shared these links in groups using a social bookmarking tool and classroom Facebook site. They also handwrote their own notes, scanned them and uploaded them as Google docs, sharing the links. The students were positive about this experience, saying how useful it was particularly when not able to physically attend school. The students also shared information about when classroom assessments would take place and what would be covered. The potential for motivating students to engage more with homework and revision through the use of technology was perceived by the headteacher to be very innovative and beneficial.

Another benefit derived from collaboration and group work, was the development of **communication** (Figure 3) and the introduction of more oral work in subjects that previously had been dominated by written work such as science. For example, students were asked in many cases to explain what they were doing to others including peers, visitors and parents/carers. The students themselves felt that this was engaging:

In [the students'] opinion, the course is more original, livelier, easier to memorise; they feel more involved and under obligation to explain more precisely to others. [...] The most obvious main benefit is the incorporation, by means of ICT, of oral work in Physics/Chemistry teaching, subjects where the focus is more usually on written work.
Case study report, France

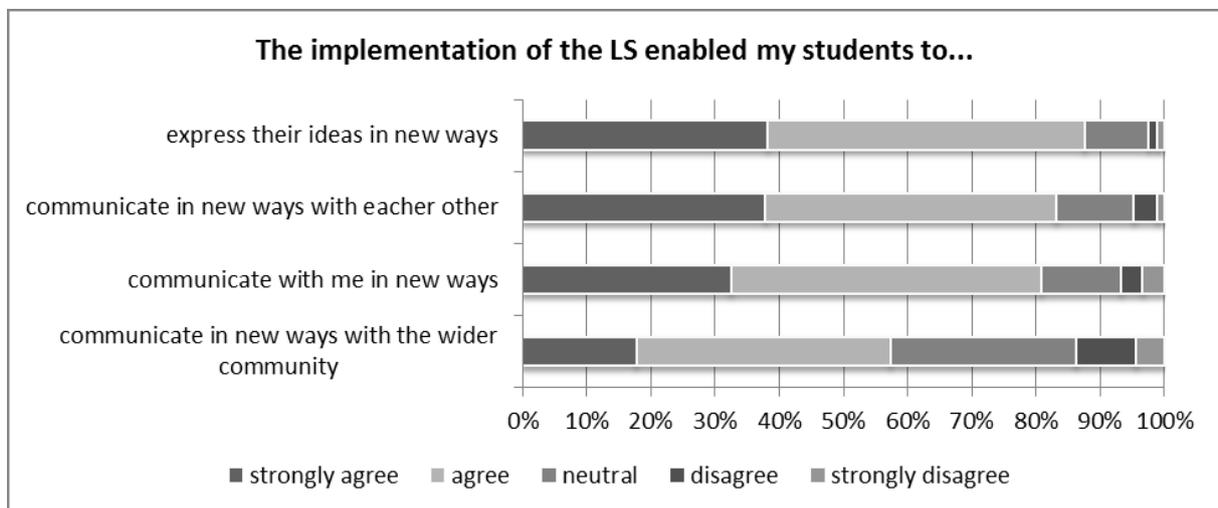


Figure 3: Teacher perceptions of the impact of the LS on communication

Technology is seen to enable easier and faster communication. For example, forums have been used to facilitate discussions. Technology also enables students to communicate in different ways. For example, by using Glogster to create posters or TeamUp to record and share reflections.

Example (SCR): In France, students created revision resources in Chemistry for peers by video-recording practical sessions with commentary and uploading them to YouTube, using smartphones or a camcorder to capture the video. TeamUp was used to form groups, plan the activity and record progress. Planning was also facilitated by mindmapping software. The students enjoyed the task which they perceived to be purposeful and useful, and also appreciated the greater degree of autonomy. They also enjoyed producing a video-based outcome which required clear and concise explanations on their part rather than a traditional written report.

Facebook was used to seek teacher support both within and outside the classroom. The 'like' feature was used by some teachers to motivate students who had posted

their work. In addition the VLE (Moodle) and discussion forums were used a tool for sharing work and communicating with the teacher.

I had never used Facebook before in a class and it can be very useful for communicating with the teacher, clearing up doubts, exchanging ideas, it was useful.
Student, Portugal

Peer feedback and support (one of the underlying Learning Activities) was seen to be a benefit. Students noted that they enjoyed this despite sometimes receiving critical feedback from peers, which can be uncomfortable. However, overall feedback was seen to be constructive and useful. Peer feedback was facilitated through collaboration tools such as TeamUp, blogs and Facebook, as well as face-to-face. Students particularly liked receiving feedback from peers at other schools or from other classes through technology. Positive aspects included making progress without having to wait for the teacher and learning and improving work through seeing the work of peers. A teacher noted that students knew which other students to approach when they needed assistance. Students really liked seeking help from their peers rather than the teacher. A student from Portugal commented that peer feedback was rarely undertaken in other lessons. Another noted that when you help your peers your own learning improves.

The significant progress was peer assessment – helped us greatly to see our work in the eyes of colleagues and examine our progress. Student, Israel

We did some things [we] believed to be wrong (asking other students for the answers), so we were doing it in a corner. But the teachers uncovered us, and told us it was not wrong! [They] encouraged us to do it again. It's way different from the traditional school. Student, Italy

If one student is not able to do something, another one is. Student, Estonia

Example SCR: In Portugal groups of students researched aspects of Pythagoras' theorem using GeoGebra, enabling them to learn through observation and manipulation. They then created Glogster posters and deposited their constructions in GeoGebraTube 'highlighting the steps of the construction process as well as some questions related to the manipulation itself' (teacher, lesson plan). They also undertook research on historical aspects of Pythagorus. They recorded their progress using TeamUp and shared their topic on the iTEC Facebook channel. The students used a class Facebook channel which the teacher noted was motivational. Groups provided peer feedback verbally in the classroom, after which the Glogster posters were finalised.

Students creating resources for peers to use, sharing their knowledge, was noted as being 'most worthwhile' and innovative.

We teach things to the others but we learn even more. Student, France

According to the students the main success was new ways to create knowledge. Case study report, Lithuania

As well as communication skills, some students benefited from the **development of language skills**, particularly English, which students recognised, was important for their future.

Opportunities for **authentic learning** were seen to increase by bringing experiences that were closer to 'real life'. 75% of teachers agreed that the implementation of the LS enabled students to engage with complex, real-world problems.

The **change in teacher and student roles** meant that students enjoyed a more relaxed relationship with their teachers, which they enjoyed. 83% of teachers agreed that they were able to explore different teacher and student roles and relationships. Teachers had to invest time preparing the pilot but then could adopt the role of facilitator, letting students lead and providing support such as feedback as appropriate. Students became responsible for their learning and appreciated this change. **Increased opportunities for student autonomy** such as independence in conducting research, taking responsibility, making choices, self-organising and ownership were seen to be very beneficial. 86% of teachers agreed that the implementation of the Learning Story promoted active and independent learning in which students take responsibility for their own learning activities or progress.

We know which material to use, in which order, we already know all the instructions, we no longer need reminders from the teacher, the less help we receive, the greater our independence. Student, France

I enjoyed the most that it was not given about what we should create the work but we could choose. Student, Hungary

It was more as if I was overseeing [their work]. I checked or guided, I adjusted, but they were the ones who went looking for the information, so I think that in their own school work, it changed a lot of things. It will be helpful for them at secondary school. Teacher, France

Example (SCR): In Norway, each group of students was assigned a topic area in science and asked to research it (with a set of questions as guidance) and then to prepare to teach their peers about it (both peer groups in their own classroom and those from other classes). Each group used a wiki to gather information and links to resources. Groups used a learning platform and the wiki to provide peer feedback on each other's work. The teacher used mindmapping software on the interactive whiteboard to summarise each group's outcomes and then each group prepared a presentation using Prezi.

As commonly reported in international research, teachers found themselves as learners on occasions when students shared their technical knowledge.

Creative teaching refers to doing things differently and having opportunities to experiment in the classroom. This is evidenced by much of the data reported in this section. Teachers benefited from exchanging ideas with colleagues and others involved in iTEC leading to greater knowledge and understanding about new approaches.

The teacher was very resourceful regarding the creative design of the learning story. She used lots of different approaches to the tasks. She was also very open-minded to which approaches her pupils could use. Case study report, Norway

Now I'm way more convinced of the need to push the school practice in this direction, because this enriches the students, offers new learning possibilities, and makes my teaching more interesting. Teacher, Italy

Engagement with the wider community was seen as a benefit through broadening horizons beyond the local context, finding out what students from other countries were doing. In relation to smaller schools in rural communities, this was seen to be important. 57% of teachers agreed that the implementation of the LS enabled students to communicate in new ways with the wider community.

The iTEC project was seen to **improve transition** as primary students from a number of schools presented their work at the secondary school.

Technology facilitates differentiation/individualisation in different ways (Figure 4). For example, open-ended tools such as wikis can be used to produce complex or simple documents depending on a student's ability and/or ICT skills. Indeed, different tools could be used depending on student preferences. Different aspects of presentation such as audio and graphics could be used by teachers to meet individual's learning style preferences. From the student perspective, they can choose the tools, which best support their learning (including non-digital tools as appropriate). The Learning Stories/Activities enabled students to work at their own pace (although this brought challenges with it also – see below). As students had more choice and control, they were able to draw on their personal experiences to a greater degree.

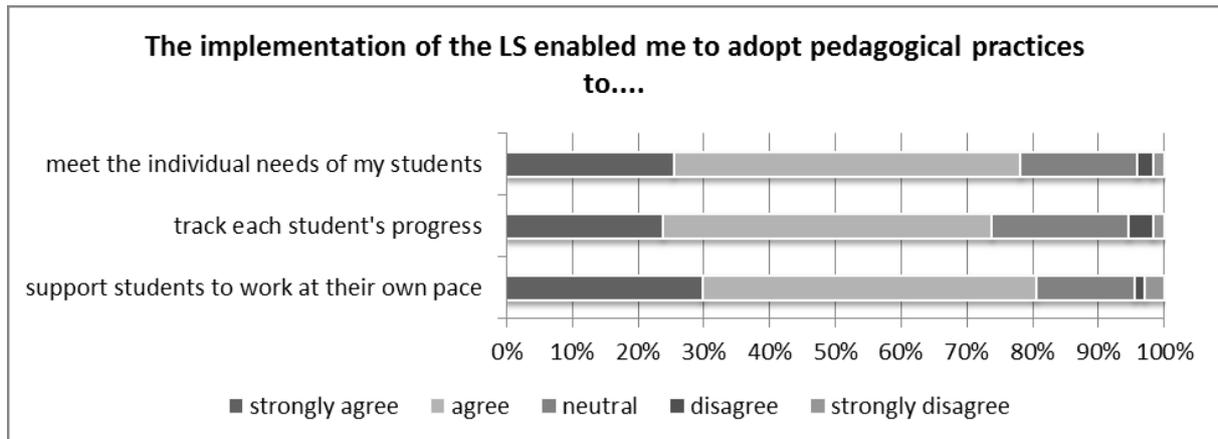


Figure 4: Teacher perceptions of the impact of the LS on individualisation

One aspect of supporting students to work at their own pace is facilitating access to learning resources beyond the classroom. 86% of teachers agreed that the implementation of the LS enabled them to create opportunities for students to learn beyond the boundaries of the classroom.

Example (EEP): In the UK a teacher addressed issues relating to exam revision in Design and Technology, and in particular low achievement of boys, by incorporating iPod touch technologies and Edmodo into her pedagogical practice. Students used the iPods as learner response systems in the classroom, enabling the teacher to conduct assessment more easily and to provide immediate feedback. The teacher also used QR codes so that students were able to easily access relevant information on the internet via the iPods. The use of quizzes through the iPods and Edmodo was seen to be beneficial and to facilitate knowledge acquisition. Students enjoyed being able to repeat questions if they needed further revision and the teacher commented that it was beneficial that students could access the quizzes anywhere and progress at their own pace. The teacher also commented that using Edmodo as a communication tool was beneficial enabling her to provide timely guidance, support and reminders as necessary.

Cross-curricular links were perceived to be easier to facilitate using Learning Stories and Learning Activities.

Teacher attitudes, ICT skills and knowledge

Teacher motivation was perceived to have increased and been a main benefit of participation. The pilots were described as making teaching more interesting. 79% of teachers agreed that their experience in Cycle 2 led to them becoming more enthusiastic about their pedagogical practice

Many teachers felt that they had **increased their ICT skills** (Figure 5), sometimes learning from the students, leading to more regular use in the classroom and *'enriching [their] professionalism'* (Teacher, Italy). Their knowledge and

understanding of new pedagogical approaches also developed (partly due to opportunities to share experiences with colleagues in school and across the project). Teachers involved in collaboration with colleagues in other schools valued the opportunity to ‘share views with other teachers doing the same things’ (case study report, Italy).

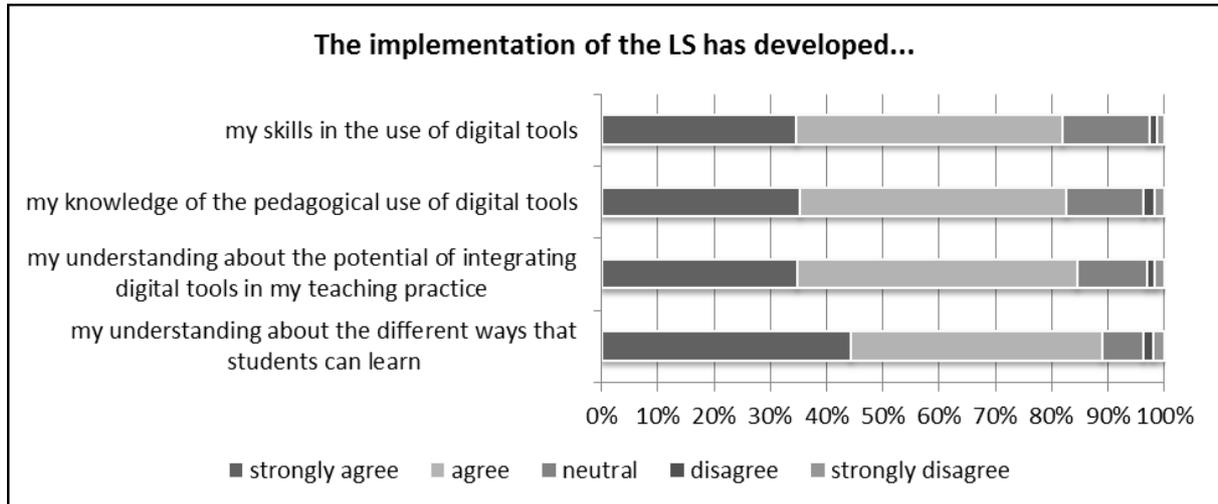


Figure 5: Teacher perceptions of the impact of the LS on ICT skills and ICT pedagogy

Student attitudes, ICT skills and knowledge

Increased ICT skills were noted by some teachers and students. They said that they acquired many skills at home but had learned new things through participation in the pilots. Staff and students noted that students’ digital literacy skills and internet navigation improved. In addition, some students became more aware of e-safety issues.

When you learn to create [multimedia posters] it could be used in the future. We have learned to use computers, to create your own profile and self-publish in the internet.
Student, Lithuania

One Norwegian teacher described how students learn how to use new tools quickly but also discover features, which the teacher is not necessarily aware of. Such students are encouraged to share their new knowledge with their peers.

I am totally convinced that the digital learning outcomes have been very substantial, and I think that doing the learning story has prepared the class for using some of the tools in a good way later on. I think that may help increase learning also. Teacher, Norway

Students learned how to use tools they had not used before including blogs, Glogster, TeamUp, URL, Prezi, interactive whiteboards, and QR codes.

As with Cycle 1, one of the most prevalent themes emerging from the data (both case studies and the survey) related to **student motivation and engagement**. 84% of teachers agreed that the implementation had a positive impact on student engagement and 80% perceived that there had been a positive impact on student attitudes to learning. The pilots were described as being fun, exciting and interesting, leading to more attentive students. In particular, it was seen to be beneficial for low achieving pupils and boys. It was evidenced not only through engagement in the classroom but students' willingness to work in their 'free time'. It was attributed to aspects such as presenting work to the 'public' (mainly peers and parents), the use of 'innovative' technologies, engagement in purposeful activities, different learning approaches and students having more responsibility. It was noted that parents appreciated the increased motivation for learning.

Students liked it. The children wanted to do all activities, worked as passionate, joyous, spoke with parents at home. It was a new experience. Its success led to a good script, children's desire, willingness and innovation pace. Teacher, Lithuania

They even get notices on their telephone every single time one of their friends posts something, so in my view, trying to use a few more methods and resources that pupils are interested in and enthusiastic about, leads to increasing their motivation. Teacher, Norway

Teachers perceived that **learning outcomes improved** noting in the surveys that the ideas were effective. 66% of teachers agreed that their students' levels of attainment (as indicated by assessment data) had improved. For example, the quality of work was raised because outputs were shared publicly and/or because students took responsibility and worked effectively. It was also noted that outputs were well structured and organised. Students perceived that they improved their subject knowledge as a result of participating. Some teachers also felt that attainment (as reflected by their assessment data) increased. This was attributed to providing students with alternatives such as different learning pathways, choices of tools and means of presenting knowledge.

We remember and know more about what we learned – because we had to do newsflashes which means that we had to summarise and learn by heart what we learned through the lesson. Student, Israel

This approach allows pupils who struggle with written work, but perform better orally to show their true merit. Case study report, France

I think that the benefit was learning to work in a group and help people who found it more difficult. We had an opportunity to help them, to improve their marks and we also improved ours. We learned a lot of things. Student, Portugal

Other teachers, who were not sure if the pilot had led to improved attainment, commented that students' soft skills had improved.

Teachers from Germany and Norway perceived that the pilots improved learning outcomes for lower ability students particularly boys who found the use of technology motivating. Students in Portugal felt that their involvement contributed to higher attainment.

...but [iTEC] essentially conveys to the pupils the idea that particular kinds of knowledge can be developed through the practice of using ICT... Head teacher interview, Portugal

EQ2) To what extent is each iTEC Learning Story and relevant iTEC technologies sustainable, transferable and scalable?

Sustainability

Teachers from both Cycles have found the ideas inspiring and hope to participate again in future cycles.

So it makes me want to continue. I think that in the future, I will try to make use of projects like that, ones which put them to work researching, with the updates, critiques, peer review, to help guide them afterwards. I think it's more interesting. Teacher, France

Being part of the first cycle pilot as well, I can tell you that there has been an active exchange between my teachers about pedagogical approaches. So I guess, the impact on the pedagogical side is noticeable. Teacher, Austria

Teachers were asked in the survey whether they would use the Learning Stories and Learning Activities again (Table 8)⁴.

⁴ Data have only been included with regards to teachers being confident and positive but cautious if there are at least five teachers in one country piloting a single Learning story. Disagreement is reported irrespective of the number of teachers piloting.

Table 8: Likelihood of implementing the Learning Story again in the future

Learning Story	Majority of teachers confident	Teachers positive but cautious	Small number of teachers disagree
Maths in a Multicultural Setting (15)			AT
Embedding Exam Practice in learning activities (56)	HU, TR	ES, SK	AT
Students Creating (Science) Resources (190)	AT, EE, HU, IT, LT, NO		FR, HU, NO, PT

Teachers explained that they felt it was beneficial, effective, and innovative (as described above) and had been a good experience. As well as enhancing student motivation, many teachers felt that it enhanced their own interest in teaching and learning. Of those teachers who said that they would not implement the Learning Story again, reasons given included: that the approach was not appropriate for primary-aged students, that the benefits did not outweigh the time investment required, and that students need to learn individually rather than in groups.

Transferability

Yes, they are ready to become members of a community where they need to share their views. Luckily teachers are opening the doors of their classrooms. [...] I feel [it is] necessary to have such communities where the members can exchange their ideas, discuss the merging problems while getting handy tools and methods that they might use in other projects too. ICT co-ordinator, Hungary

One head teacher (Estonia) suggested that if the ideas (from the SCR LS) worked well in one subject area then with a little bit of organisation it should be adaptable to other subject areas. A head teacher in France said that the projects would be shared through the district training plan, with presentations to the teachers at the start of the next academic year. Another head teacher (Portugal) was emphatic when asked if the ideas should be disseminated to other teachers. A teacher in Norway explained that he/she would be participating in a large-scale project to develop digitally competent schools and that *'iTEC will be kind of a blueprint for that project, our experiences from iTEC will be important in shaping what we do'*.

I am convinced that iTEC is an innovation not only here, in our school but also throughout Hungary. Finally we have something useful in hand as we don't have learning stories like that, which give us guidelines, step by step description and ideas. I feel strongly that this is something that fills a gap. So I'm pretty sure this will lead to more and more joining us who will incorporate modern technologies and use them in a deliberate way. ICT co-ordinator, Hungary

An ICT co-ordinator from Hungary explained that some LAs were simplified, particularly ‘Learner Oriented Browsing’ due to limited prior experiences of the students. However, the expectation was that the project would be run again without modification.

Scalability

Teachers were asked in the survey whether the Learning Stories and Learning Activities should be made widely available to other teachers (Table 9)⁵.

Table 9: Likelihood of recommending the Learning Story to other teachers

Learning Story	Majority of teachers confident	Teachers positive but cautious	Small number of teachers disagree
Maths in a Multicultural Setting (15)			
Embedding Exam Practice in learning activities (56)	HU, TR	ES, IS, SK, UK	
Students Creating (Science) Resources (190)	AT, EE, HU, IS, LT, NO, UK	FR, IT, PT	EE, FR, IT, LT, PT

Teachers felt that the resources were innovative and beneficial and would have a positive impact on student and teacher motivation, as well as make a positive contribution to teacher professional development. Reasons given for not recommending the Learning Story to other teachers included that the ideas were already available, that the ideas are not appropriate for primary aged children, and that it was difficult to implement requiring a lot of adaption.

EQ4) What are the enablers of and barriers to adoption of each iTEC Learning Story (including appropriate iTEC technologies)?

Enablers

Teachers were asked to identify what factors had enabled the implementation of the Learning Story (Table 10).

⁵ Data have only been included with regards to teachers being confident and positive but cautious if there are at least five teachers in one country piloting a single Learning story. Disagreement is reported irrespective of the number of teachers piloting.

Table 10: Perceived enablers of iTEC Learning Stories

Enablers	Main ⁶	Supplementary
Student motivation	AT, EE, ES, FR, IS, IT, LT, NO, PT, SK, TR	HU, UK
ICT access/infrastructure	FR, DE, HU, IS, SK, TR, UK	AT, CZ, EE, ES, IT, PT, LT
Teacher motivation	AT, DE, ES, IT, LT, PT, NO	EE, HU, TR
Support of school leaders	ES, HU, NO, SK	IT, PT, TR
Support of colleagues	IS, IT	EE, HU, LT, NO, PT, SK
ICT support	NO, ES	EE
NPC	SK	AT, ES, IT, LT, NO, UK
Prior experience (Cycle 1)	SK	ES, PT, LT
Flexible timetable	NO	
Students' ICT skills		CZ, FR, HU, LT
Curriculum fit		HU, TR
iTEC resources and TeamUp		EE, ES, HU, IS, IT, LT, NO, SK, TR
Clear objectives		IT, PT, LT, TR
Flexibility of resources		IT, LT, TR
Groupwork		PT, LT, TR
Parental support		IT, LT
Communication/collaboration		LT, TR
Home access to ICT		HU
Teacher ICT skills		IT
School policies		LT
Creativity		TR
Planning		TR

Student motivation and engagement

Student motivation and engagement was the most commonly cited enabler of the Learning Stories/Activities by teachers participating in the survey. It was one of the main enablers (noted by at least 20% of the country sample) in nine countries and

⁶ Noted for at least 20% of cohorts from one country

also noted by a few teachers in four further countries. It did not emerge as an enabler from the NPC interviews and case study data

ICT Infrastructure

Unsurprisingly, adequate access to ICT and reliable internet access were seen to be essential for implementing the Learning Stories by teachers and head teachers from all participating countries. Technologies were seen to make the implementation easier and more efficient, as well as facilitate access beyond the classroom (with home access).

[...] because the learning here is developed through new technologies. We have a range of technologies here, spread throughout the entire school. In any area of the school the students have access to the internet, fast, high-speed internet, all linked by optic fibre. The school installed this, it wasn't done by anyone from outside, [...], it was us. Head Teacher, Portugal

Technologies facilitating communication and collaboration were identified as being particularly helpful. This is not surprising given the nature of the Learning Activities the guidance for which suggested the use of social media tools (specifically Facebook and Twitter). These tools were used to facilitate communication between students and the teacher(s), share resources and ideas

[The students] found appropriate resources on the web, then they share the links by shared bookmarking network and on classroom network site. Students also shared their notes made by handwriting, they scanned them and put them on the google docs and shared links to them. The students found this way for learning very positive, they said that they never share their notes and it was very helpful especially when they were not present at school. Case Study Report, Slovakia

And we also had a blog for corresponding with [another school]. So we were able to know what they had done and they could know what we were doing. (student interview, France)

I did like communicating with other classes. It's easy with technologies and very time saving... Think if we had to do it through letters... (student interview, Italy)

I think Moodle is important as well, because we used it to share the constructions we made with geogebra, that were then useful for Glogster. (student interview, Portugal)

Digital tools for recording media (sound, image) were also perceived to enable implementation of the Learning Stories/Learning Activities.

Smartphones were noted to be an enabler in Austria and France. Students used the devices to conduct research and capture video and digital images. It was noted in

France that national, local and school policies may need to be reviewed in order to realise the full potential of such devices for teaching and learning.

Examples of other tools used included Glogster (described as a graphic blog), mind mapping tools, Moodle, Geogebra.

Experienced and enthusiastic teachers

As in Cycle 1, teacher motivation was perceived by participating teachers to be an important enabler in 10 of the 15 countries engaged in piloting. Teacher ICT skills was only noted to be an enabler by a small number of teachers (less than 20%) in one country. Three NPCs (HU, SK, TR) noted that teacher experience was an enabler and five NPCs noted that teacher motivation was an enabler (IS, PT, SK, TR, UK). In Portugal, a head teacher noted that a strong partnership between the local university and the school had resulted in teachers developing stronger knowledge and understanding of how to use technologies in the classroom.

The teachers in [our school] are innovative so they are open and receptive to these new approaches and methods. They never hinder development and innovation. Head teacher, Hungary

iTEC: the resources, training and support

Individual teachers from all but three (Czech Republic, Estonia and Germany) of the countries participating in Cycle 2 suggested that iTEC resources and/or support from the NPC had been an enabler of the implementation of the Learning Stories. Case study participants felt that the initial face-to-face training events run by NPCs and the documents provided by them were particularly useful, ensuring that overall teachers understood what was expected of them.

It was a great help after all, as we got all the necessary resources and materials and the face-to-face meeting and workshop clarified many vague details. It was good to have conversations with people who are in the same shoes as me. All in all, I found the training useful. [...] The [Learning Stories are] detailed in a necessary degree, while leaving you enough freedom to adapt. ICT coordinator, Hungary

The teacher considered the face-to-face workshop (held in February) useful to understand the main goals of iTEC and to get to know the learning stories and activities better. [...] A follow-up call with the national coordinator (mid-March) helped her “see things more clearly” and reassured her about her plan. Case Study Report, France

Finally we have something useful in hand as we don’t have learning stories like that, which give us guidelines, step by step description and ideas. I feel strongly that this is something that fills a gap. (ICT coordinator interview, Hungary)

As in Cycle 1, local online communities were seen to be beneficial.

The Learning Stories were seen to be beneficial through, for example, facilitating personalisation of learning.

In Hungary and Norway, running the pilot at the end of the school year was perceived to be an enabler (although in others it was a challenge). In Norway for example, because it was the end of the academic year there was space in the curriculum to incorporate additional activities. In Hungary, the teacher made use of the assessment system to motivate engagement by students.

As in Cycle 1, some teachers found TeamUp useful particularly for forming groups and recording their work independently.

The support of other teachers in iTEC was also seen to be helpful.

My knowledge grew up thanks to this project, mostly because of the exchange of ideas with other teachers involved in the project, and different technologies. Teacher Interview, Italy

School ethos and culture

Teachers, head teachers and NPCs from all participating countries perceived that aspects of school ethos and culture that enabled the implementation of the Learning Stories: the support of colleagues, the support of school leaders, and school policies welcoming innovation and the integration of ICT (see Table 10: Perceived enablers of iTEC Learning Stories). In Israel for example, an individual innovative teacher who had participated in the first iTEC cycle was supportive of the Cycle 2 participant, particularly in relation to using technologies in the classroom. Prior experience of iTEC (either personally or through a colleague) was also noted to be an enabler in Lithuania, Portugal, Slovakia and Spain.

Then one of my students came up with an idea from the previous pilot and suggested to put it in a parliament setting, since some students took part in the first cycle and had fantastic memories in terms of cooperating with students from outside the school. (teacher interview, Austria)

It fits beautifully given that we increased our resources in that area over the last ten years. It won't lead to any changes but it contributes to our vision of what the school is going to be like in a few years from now. Head Teacher, Italy

This school is very innovative – and is very open to new technologies and pedagogies in learning. This made the experience of implementing the Learning Stories very quick to adjust – for the students and teachers involved. Case Study Report, Israel

The head teacher expressed his willingness to integrate ICT in education, equipping classes and encouraging teachers to use technology. Case Study Report, France

The school organisation was very open and co-operative. They just said: “we need this project and it shall come to a positive result”. This is not a matter of course in every school. Teacher Interview, Germany

Teacher and student ICT skills

A head teacher from Italy noted that teacher training and a strong belief in the value of integrating technologies in the classroom are essential.

[Training] is good, you can think certain things over, such occasions are always good because you do things in your own certain way and then you can reinterpret and expand, so any kind of such training is good and useful. (teacher interview, Hungary)

Student ICT skills was noted by individual school staff and students to be an enabler in six countries (CZ, FR, HU, IT, LT and NO). Home access to ICT was perceived to be an enabler in Hungary by teachers, head teachers and students. In Italy, students noted that home access meant that ICT skills were more developed and so adapting to the new approaches introduced through iTEC was made easier. Students in France commented that they had acquired their ICT skills by learning from parents and siblings.

My father gave me a computer in Year 4 and from then on I’ve been experimenting with things, although I didn’t understand anything at first of course. But I started discovering things over time and now it’s rare for anyone to help me with this kind of thing because I’ve got experience. Student Interview, Portugal

... how good the Wiki is depends totally on how much they work on it, how involved they are and how much they know. It might turn out to be a fantastic web page or a cool wiki, or it might be a sort of very simple and ordinary wiki. It’s very much a question of their ICT skills. (teacher interview, Norway)

Fit to practice/flexibility

Fit to current practices and the curriculum and/or the flexibility to adapt to local needs was perceived as a main enabler in one country (TR) and as an enabler by individual teachers in four countries (DE, HU, IT, LT). It was also noted in Lithuania that personalising the topics covered for students was a success factor.

In order to bring the project in itself a step forward, it even required a higher degree of flexibility to give children the feeling that there is a sense of achievement at the end. It is very important, especially in such projects. You need a high degree of flexibility when it shall come to a successful end. Teacher Interview, Germany

Engagement outside school

Individual teachers perceived that the support of parents was important in four countries (HU, IT, LT, NO).

There was a very good involvement of parents. [...] During the project they continued to support their children as they saw in the project a very good way to enhance their children's creativity. Case Study Report, Italy

[...] I think the parents see that it has been fun, since the pupils have talked a lot about it at home. We have received emails from parents saying that it has created enormous enthusiasm at home, too, so I think parents have been very positive towards iTEC and the Learning Story. Case Study Report, Italy

Parents and siblings were noted to help students with the development of ICT skills. In addition, home access to ICT was perceived to be an enabler by individual teachers in Hungary and a student in Portugal.

Barriers, Challenges and Drawbacks

Teachers noted a number of organisational, technical and other challenges that they faced when trying to implement the LSs (Table 11).

Table 11 : Challenges identified by teachers in relation to organization, technology and other

Challenges	Main ⁷	Supplementarily
Time required to prepare and undertake the work	DE, EE, ES, FR, HU, IS, IT, LT, PT, SK, TR, UK	CZ
Sufficient ICT access	AT, ES, HU, IT, LT, NO, TR, UK	EE, DE, PT
TeamUp	ES, HU, IS, IT, PT, SK, TR	CZ, EE, FR, LT
Timetabling/curriculum constraints	AT, ES, HU, IT, NO, SK, TR	CZ, PT, UK
Unreliable Internet access	ES, FR, HU, IT, NO, PT, TR	LT, SK
Organising groups	ES, FR, HU	AT, CZ, DE, EE, , IT LT, PT, SK, TR

⁷ Noted for at least 20% of cohorts from one country

Technical problems: Software glitches, site registration issues, lack of student email, VLE, blogs, Google docs, social networking tools, images	ES, NO, UK	AT, FR, HU, IT, LT, SK, TR
Lack of home ICT access (students)	ES, SK	HU, IT, LT, PT, TR
Security (filtering/internet controls)	NO, TR	DE, ES, IT
Lack of teacher ICT skills	UK	CZ, ES, HU, IT, LT, PT, SK, TR
Motivating students to engage	UK	AT, DE, HU, IT, LT, PT, TR
Lack of parental engagement/consent	TR	DE, IT, LT, PT
Lack of ICT support	NO	AT, FR, IT, TR
Difficulties engaging with colleagues in school and out	ES	DE, HU, IT, LT
Classroom management issues	TR	LT, IS
Timing (end of academic year), student absence at end of year	IT	PT, SK
Audio recording	ES	AT, FR, IS
Managing ICT	UK	IT
Lack of support from school leaders	NO	
Insufficient information about approach		IT, LT, PT, SK, TR
Requirement to use English language		HU, IT, LT, TR
Lack of student ICT skills		HU, NO, UK
Lack of student autonomy		FR, IT, LT
Students too young		IT, LT
Inappropriate classroom layout, space in school		IT, PT
iTEC Teacher Community		TR
Adaptations required to resources		TR
Lack of student knowledge		PT
Resistance to change		IT
ICT costs		FR
Maintaining compatibility with non-iTEC classes		IT

Time, timetabling and timing

Insufficient time to prepare and implement the project was identified as a main barrier by teachers (and students) in 11 of the 15 countries (all but AT, NO, SK, UK). Teachers from seven countries identified timetabling and curriculum constraints as a main barrier (AT, ES, HU, NO, SK, TR, UK). Finally, in two countries (IT, PT) the

timing of the pilot (at the end of the academic year) was considered to be challenging; this was also raised in the case study data by a teacher from Hungary and students from Portugal who were concerned about their final assessments.

...to implement the Learning Story it was necessary to slash the amount of time by also working from home as ordinary classwork couldn't be enough. So students had to start working at school but also continue at home to be able to finish the activities on time. This was also a source of problems as not everybody had a PC or laptop at home. (case study report, Italy)

Then we need time, even outside the school, because the teacher has to master all these technologies BEFORE using them in the classroom. But, if there is passion, this becomes a new opportunity for enriching professionalism. (teacher interview, Italy)

The not so good things were not having enough time and lots of pressure, lots of pressure from the maths teacher. In these last two weeks, knowing that [the NPC was coming to visit] there was even more pressure and we had tests as well. We tried our best we could to produce good work. I'd like to continue next year but, as the others have said, with more time. (student interview, Portugal)

The main difficulty is that [the teacher] does not have enough time to develop new projects in addition to her usual preparation. To overcome this challenge, she adapted activities already planned to take into account the activities required in iTEC. (case study report, France)

The impact of these pressures led to unplanned changes to the amount of time spent on curriculum areas – more time on the curriculum area in which the iTEC LS was implemented, less time in some other curriculum areas including history, geography and science.

Insufficient ICT infrastructure and support

Teachers in all but two countries (CZ, IS) identified insufficient infrastructure as a main challenge to implementation: insufficient access to ICT and/or unreliable internet access. In some cases teachers responded to this by splitting groups so that fewer students required access to computers at any one time. In Estonia, a head teacher commented that due to a lack of video recorders/digital cameras in school the students would have to provide their own. A student from Norway commented that he/she had brought his/her own PC to school, noting that as it was not compatible with the school network, he/she could not access the Internet. A teacher from Italy also brought in a laptop for learners to use together with others borrowed from friends. Insufficient access was not a barrier per se but required some additional planning and flexibility on the teacher's part to ensure that all activities could be completed.

In Italy, it was noted that in middle schools a tech-savvy teacher takes the role of the ICT coordinator.

iTEC Resources: Teacher Community, TeamUp, Learning Stories

TeamUp was noted to be a main barrier in ten countries (EE, ES, FR, HU, IS, IT, LT, PT, SK, TR). Some teachers noted it was better to use similar tools with which they were already familiar. Technical problems and lack of time to find out how to use the tool were also noted.

He said that TeamUp has no usability, it is too complex (there are easier tools to work with) and there were server or connecting problems. (case study report, Germany)

TeamUp was very problematic, it didn't always work properly – the groups changed. We formed groups in the first lesson – and when we went into our classroom in the TeamUp – the pictures and teams were scrambled. Also the newsflash didn't work very well. Sometimes it recorded – and sometimes not. (teacher interview, Israel)

The Teacher Community was described as having poor usability (even after further work had been undertaken to simplify it) and again lack of time on the part of teachers and lack of perceived relevance contributed to its limited use. It was not referred to as a barrier by teachers as their participation in the pilot did not require its use in Cycle 2 (although teachers were expected to access the links to the surveys via the Teacher Community). Limited teacher engagement with the community was referred to in seven countries (DE, FR, IL, LT, NO, TR).

A small number of teachers from five countries referred to challenges relating to the Learning Story documentation (AT, LT, PT, SK, TR) noting that there was insufficient information about the approaches. A teacher from Austria noted that the scenarios provided through iTEC were useful but would require a lot of adaptation in order to use them in the classroom.

Other technical issues

Filtering and access rights were noted as an issue in five countries (NO, TR, DE, ES, IT). Software glitches and site registrations particularly those requiring student email addresses for registration also presented challenges for teachers (UK, ES, FR, HU, IT, LT, NO, SK, TR). Recording and playing back audio and video files were noted as technical challenges by a few teachers in three countries (AT, ES, IT). Lack of students' home access to ICT was also noted by individual teachers in five countries (ES, HU, IT, SK, TR).

In Germany, teachers did not have administration rights to install new tools on school laptops. Similar problems were experienced in Norway, noted by both teachers and students.

Well, the biggest challenges have been that there have been a few problems with web browsers, actually; some of the tools work best with Internet Explorer, some with Google Chrome, some seem to require Firefox, and in addition, the web cameras and other new programs or new equipment we need to use drivers, and the pupils don't have access to install them on the user systems, so this means we have to log onto all of them and on every single machine in order to install the drivers and then log off again; those have been the biggest [problems]. (teacher interview, Norway)

There were security concerns in some countries (DE, IS, IT, NO, PT, TR). A primary teacher from Portugal was concerned about the age requirements for Facebook use and tried Twitter instead. However, the students preferred Facebook and the teacher realised that primary students from other schools were already communicating through the iTEC group on Facebook. Students noted in Norway that during mock examinations restrictions were placed on Internet use. These students also referred to not being allowed to show their faces in video recordings. In France, concerns were raised in relation to smartphone use.

The use of smartphones, normally forbidden in class, demands a new educational consideration of the attitude to adopt regarding this new situation. We need to choose between deactivating the telephone's communication function so that it is only a video tool, or renegotiating with the board of education its restricted use for an educational purpose, an option which will soon be discussed within the establishment. (case study record, France)

Lack of student access at home was noted to be an issue for a few teachers (ES, HU, IT, SK, TR).

Managing multiple tools each with its own account and login credentials was seen to be an issue.

At the beginning, there were difficulties to sign up to Glogster, as you need to know how to create an account. It's difficult to understand at start, but now we have learned. Sometimes it's difficult to decide what to create, what background, frame or pictures to choose for own work from the template. (student interview, Lithuania)

I do see that for someone who has a problem maintaining structure, it might be a problem when we begin working with seven tools and have seven user accounts and seven log-ins and we have to switch back and forth between things. (teacher interview, Norway)

Students were not always comfortable video recording their reflections.

The pupils admitted being a bit anxious at first at the idea of filming each other for video clips, but quickly overcame this feeling and became at ease with using the Smartphone in this situation. (case study report, France)

Students' learning how to use a range of new digital tools was also an issue, particularly in terms of time, as well as how to manage large amounts of information.

Glogster was to some extent new for everyone, I for example struggled for half an hour until I could manage to find how to write into it. (student interview, Hungary)

We also had difficulties organising information on Glogster because we had a lot of information. My group [...] had to do two Glogsters because we couldn't get all our information onto one. (student interview, Portugal)

Teachers also identified a lack of technical support as an issue. For example, in Italy a teacher noted that as the school did not have a technical coordinator it was challenging to seek advice on suitable hardware and software for the pilot implementation.

Motivating students to engage

A case study teacher from Portugal noted that the pilot had benefitted from additional curriculum hours that had been set aside. Had these hours not been available, the teacher would be more reliant on learners meeting in groups outside classroom. However, this would be a challenge for many students particularly those who are less engaged. In contrast, those students who were more engaged partially addressed the challenge of managing students who were not motivated to participate by putting pressure on their peers because the tasks should be shared. Had there been sufficient time, the teacher suggested that the project (implementation of LS) would be more successful if covered by the students' assessment criteria (presented to parents at the beginning of the school year).

Students in Estonia commented that the use of technology could sometimes be a distraction.

I: What if you had a choice between a textbook, and let's say, an iPad with a video running on its screen?

S1: It depends. All this iPad business – it's quite distracting ...

S2: The textbook would be better in that respect, you would only ...

S3: It shifts the focus and makes everyone check out the iPad itself instead of concentrating on the text.

(student interview, Estonia)

Organising groups, classroom management issues and adjusting to pedagogical change

The pedagogical changes and the increased use of ICT created more time pressures for teachers and students. In Portugal, one of the case study teachers asked students to use the classroom next door for recording reflections, one group at a time, to minimise noise disruption in the classroom. This teacher found the increased noise levels and general activity in the classroom that arose from group work particularly challenging. Similar issues were experienced by a teacher from Israel. In Portugal, a U-shaped classroom meant that members of groups were unable to sit close to each other, which contributed to the problems faced by the teacher.

I think it would have been helpful to have another teacher at the same hour as it was difficult having 6-7 groups learning at the same time – and I am all alone – when I had to go over all the newsflashes that the groups wanted to record – to make sure it’s understandable etc – I found it very hard. Also students wanted quiet places to record so they went to different areas of the school and I couldn’t oversee all of them at the same time.

Students found it challenging to adapt to group work and collaboration, and take responsibility for their own learning. Some students did not contribute equally (some trying to do all tasks, others reluctant to contribute at all); some students did not have good relationships; and some students did not listen to others. Teachers also found it ‘difficult to manage each pupil’s tasks individually and what the group together had to do or complete’ (teacher multimedia story, Portugal).

We were really struggling with group work a couple of weeks ago. Some of them didn’t even want to talk to their group mates. They have made significant progress in this respect, they learnt to listen to each other and instead of quarrels there are discussions. (ICT coordinator interview, Hungary)

The groups did not always work; some groups had a good dynamic between them – they learned how to be more flexible and work together. But in some groups there was the 2-3 that did all the work while others did nothing. Some groups also had a harder time working together because they didn’t get along. (case study report, Israel)

[...] there were four of us in the group [...] we were the ones who were the most active in the project, and [the other two] actually, they kind of kept to themselves, they didn’t help us much. We were the ones who came up with the most. (student interview, France)

Shifting pedagogies to student-centred approaches also presented challenges for teachers (as in Cycle 1). Difficulties noted included developing students’ critical thinking and ensuring that they took responsibility for the activities rather than

receiving explicit guidance, support and information from the teacher. A particular issue noted was enabling students to become independent researchers through the development of critical internet search techniques. In some cases, students and teachers were resistant to change or lacked confidence in new approaches:

Pupil's feedback to the teacher: "It is unnecessary to make things so complicated. The teacher should create the exercises, she is the expert." (teacher multimedia story, Portugal)

This project scared me at first because, well, I wasn't the ICTE specialist at school, and then I landed at a school which is a rural digital school, and I wasn't very good with the IWB, I mean I didn't know how to use it at first.... (teacher interview, France)

For some, increasing the range of spaces in which learning took place (school/home, offline/online) was also challenging, demanding self-discipline from students and increasing pressures on time (although also providing opportunities to alleviate such pressures).

An Italian teacher also noted that it was a challenge to facilitate primary students collaborating with secondary students. This related to differences in amount of time devoted to projects (secondary students worked at home as well as at school) and the ability to respond to complex communications. In this case, the teacher adapted the Learning Story, requiring the (younger) students to develop web quests for the older ones.

Other issues

A small number of teachers and students from Hungary, Italy, Lithuania and Portugal commented on the requirement to use English language as a challenge. This related to iTEC tools, other tools (for example Glogster) and generally searching for information on the Internet

The only thing I didn't like was that some of the pages were in English and I couldn't do anything with those because I didn't understand them. (student interview, Hungary)

Drawbacks

There is very little data which suggests that the iTEC resources introduced in Cycle 2 had perceived drawbacks in addition to benefits. Of those few issues that emerged from the data, several are reported in more depth under barriers.

Students from Portugal suggested that drawbacks for them included increased assessment, increased work load and that undertaking the project activity was tiring. A teacher in Italy mentioned the required investment in time and the need to master lots of new tools.

This was part of the curriculum but the time it took us to do these stages was much more than if I would have taught it on a regular class teaching method. What I mean is that something would normally take me 2 lessons. (teacher interview, Israel)

Another potential drawback (although arguably down to personal preferences) identified by a teacher from Portugal was that perhaps too many new tools (with common functionality) were introduced. The same teacher and another from Israel also noted concerns about the increased noise levels in the classroom.

EQ4) To what extent is each Learning Story and relevant iTEC technologies fit for purpose? (usability; connection to current practice; what works and what doesn't work)?

DotLRN

DotLRN was piloted by a small number of teachers in Austria and Turkey. Specific support was given to these teachers prior to piloting in the form of face-to-face workshops focusing on DotLRN as a classroom tool and online coaching. Five teachers from Austria piloted with nine cohorts overall, and nine teachers from Turkey tried DotLRN each with one cohort. Teachers completed a Teacher Questionnaire for each cohort including questions on the implementation of DotLRN.

Most of the responses (15 of 18) agreed or strongly agreed that DotLRN enabled them to teach more efficiently, with two teachers strongly disagreeing.

The same number of responses (15 of 18) agreed that DotLRN enabled the students to learn more efficiently, with the remaining three teachers disagreeing with this statement.

Ten of the responses agreed that DotLRN improved access to educational content for all students with five disagreeing (the remaining three were not sure).

Of the 18 responses, 13 agreed that DotLRN improved management of educational resources with three strongly disagreeing (the remaining two were not sure).

When asked what the benefits of DotLRN were, the 14 teachers suggested a variety of reasons including integrating well with classroom practices, motivational for students, providing a reliable archive of learning resources, being clear and easy to use, and facilitating structured and student-centred learning approaches.

When asked about the challenges of using DotLRN, three of the five Austrian teachers and one teacher from Turkey suggested there were no challenges. Challenges noted included usability, and the time required to learn to use a new tool (particularly for primary-aged students). One Turkish teacher noted that there had been some initial translation problems.

TeamUp

Whilst some teachers identified TeamUp as an enabler, it was also identified as a main challenge in ten of the 15 countries participating in Cycle 2. TeamUp was used by 60% of the cohorts, taught by 162 teachers. As shown in Figure 6 below, 73% of teachers who tried TeamUp found it easy to use (despite the technical problems raised above) although only 44% felt that the tool was essential for implementing their chosen Learning Story. Of these teachers, 46% felt that TeamUp offered benefits as compared to other tools and 55% felt that TeamUp offered benefits compared to non-digital tools.

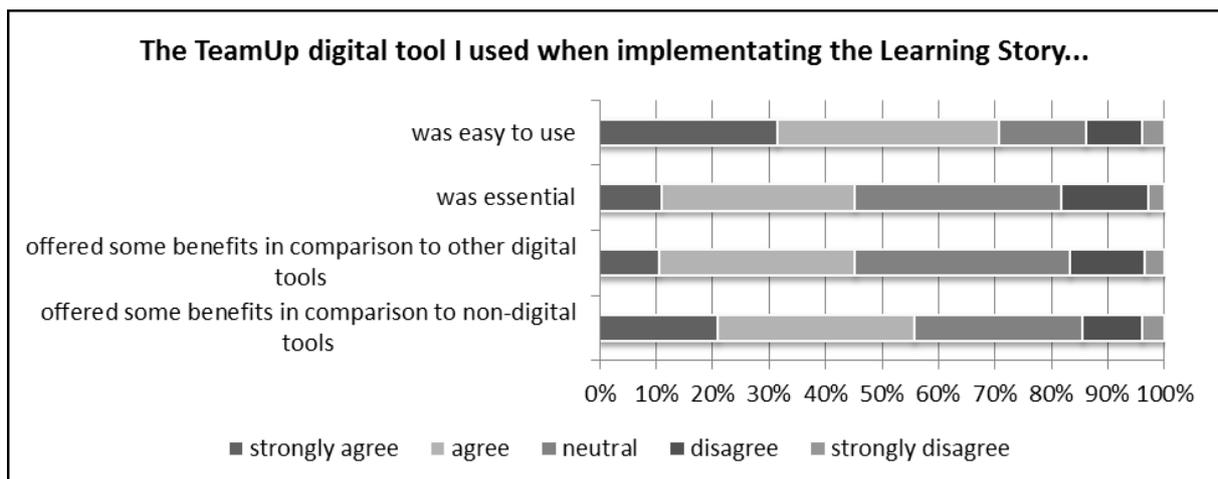


Figure 6: Teacher perceptions of TeamUp

In Cycle 2 TeamUp was moved to an EUN server. There were subsequent server issues which caused some of the difficulties teachers experienced. This could be overcome by installing TeamUp on local (national servers) although this requires technical expertise. Local hosting also improves privacy and security issues. Other problems related to teachers' use of outdated browsers which do not support the features that TeamUp requires.

Learning Stories and Learning Activities

As indicated above (EQ4), the LS and LAs were perceived to be flexible and to fit current practice in five countries.

A teacher from France overcame the main challenge of time constraints by adapting activities she had already planned to do in the curriculum, integrating blogs into the activity to support ad-hoc collaboration, peer feedback and preparation of the results. Thus, through adaptation she ensured that the Learning Story was usable and connected to current practice.

According to the new curriculum, students have to create their own study material and also teach others, so it fits in very well. Head teacher, Estonia

As in Cycle 1, two thirds of teachers (69%) agreed that with no help they were able to adapt the Learning Story to suit their needs.

EQ5) What are the benefits and shortcomings of the piloting process (including the development of technical and pedagogical knowledge and skills)?

Preparation, Training and Support

As highlighted above the NPCs knowledge of their national context is vital to the conduct of the project. For sound reasons six NPCs selected the Learning Story for use in the pilots, three limited their teacher's choice to two from three while a further five offered teachers a free choice. While SCR was clearly the more popular choice the mix of decision makers complicates the analysis.

Firstly, NPCs had to localise the resources, which mostly was simply a matter of translating into national languages. However, two countries changed the title of one of the Learning Stories (SCR) to signal applicability across a broader range of curriculum areas. Five NPCs noted that they had simplified and/or clarified the Learning Story materials and terminology, and adapted the resources to fit national pedagogical practices and curricula. These were minor adjustments and the essence of the Learning Story was not affected. Two NPCs provided more detailed guidance on suitable digital tools to minimise the burden on teachers to explore which tools to use. Two NPCs developed more general guidance for teachers to explain the project overall. One NPC noted that the process of translation was time-consuming although this is perhaps unavoidable in a European project. Another NPC noted that although translators had been employed to undertake this task, their work had to be revised subsequently by the NPC, NTC and iTEC project team.

Two NPCs noted that the matrix provided through the iTEC project (<https://sites.google.com/site/itecmatrix/>) developed by WP6 with contributions from Promethean and SMART was particularly useful, with one translating it for teachers to access directly.

In relation to choosing the Learning Story to present to teachers (where NPCs decided not to offer all three), reasons for selection included easy to implement whilst having potential for innovation, flexibility of the LS, fit with National curricula, and feedback from pre-pilot teachers. Those NPCs who left the choice to the teachers felt that this was the best approach as the teachers are best placed to know what will meet their needs.

Lessons learned reported by NPCs included:

- teacher choice and ownership contributes to success,
- focusing nationally on a single Learning Story facilitates the creation of a community of practice around the same theme,
- head teachers should be involved from the outset, face-to-face meetings, (training and events) are important and can incentivise teachers,
- there is a tension between the time required for preparing/localising resources and offering choices to teachers.

As in Cycle 1, schools were recruited in a variety of ways either selecting teachers or in some cases accepting all willing volunteers:

- Direct contact with schools and teachers which were known to the NPC (from Cycle 1, from other related projects or initiatives such as eTwinning, those involved with national ICT training provision, teachers known as innovative users of ICT)
- Presentations at conferences, seminars and workshops which were open to all teachers to tell them about iTEC
- Suggestions from the national Ministry of Education or regional Board of Education (or similar regional organisations relating to ICT in education)
- Calls for participation via websites, mailing lists, social networking sites.

Many NPCs noted that the support of the head teacher at the teacher's school was also required. In all cases, teachers chose which cohorts of students would be involved. Case study teachers were selected in a variety of ways: to ensure representation across types of school and subject area, those with prior experience from Cycle 1, teachers with a good command of English, teachers who were committed and enthusiastic, and teachers open to innovative approaches.

Success factors for selection of teachers include:

- voluntary participation (resulting in motivated and enthusiastic teachers participating),
- established relationships with schools and teachers,
- teachers' existing ICT skills and positive attitude to innovation,
- support from national and regional educational authorities,
- involvement of head teacher.

Other suggestions for successful approaches included making the original scenarios available for teachers, asking teachers who have participated already to continue in subsequent cycles and to encourage their colleagues to join the project.

Challenges included:

- keeping teachers motivated when they faced barriers (accessing the Teacher Community, technical problems with TeamUp),
- working with schools which were difficult to visit due to the location,
- attrition,
- the investment of time required to support teachers,
- the additional workload for teachers, and competition with other initiatives/projects.

Participating teachers were trained in various ways but were commonly introduced to the project and resources (including iTEC technologies) through a face-to-face meeting initially. Two NPCs provided initial information online (webinar, group email). Where NPCs already used established online communities and email distribution lists to communicate with teachers, training and support documentation (including video tutorials) was made available and online discussions facilitated as appropriate. One NPC noted that teachers with prior experience of iTEC responded to some queries raised in online discussions by newly recruited participants. Other NPCs produced further guidance documents explaining the aims of iTEC and introducing teachers to the Learning Stories. As in Cycle 1, the Estonian NPC implemented the Learning Story herself and documented her experience via a blog. In some workshops, teachers worked in groups to plan in more detail how to implement the Learning Story in their own classrooms.

The iTEC Teacher Community still proved to be a challenge for many teachers, despite the structure of the site and the registration process being simplified for Cycle 2 (Figure 7). In comparison with Cycle 1, perceptions did not improve (in fact they seem to have become less positive although comparisons are problematic as a much smaller sample responded to these questions in Cycle 1).

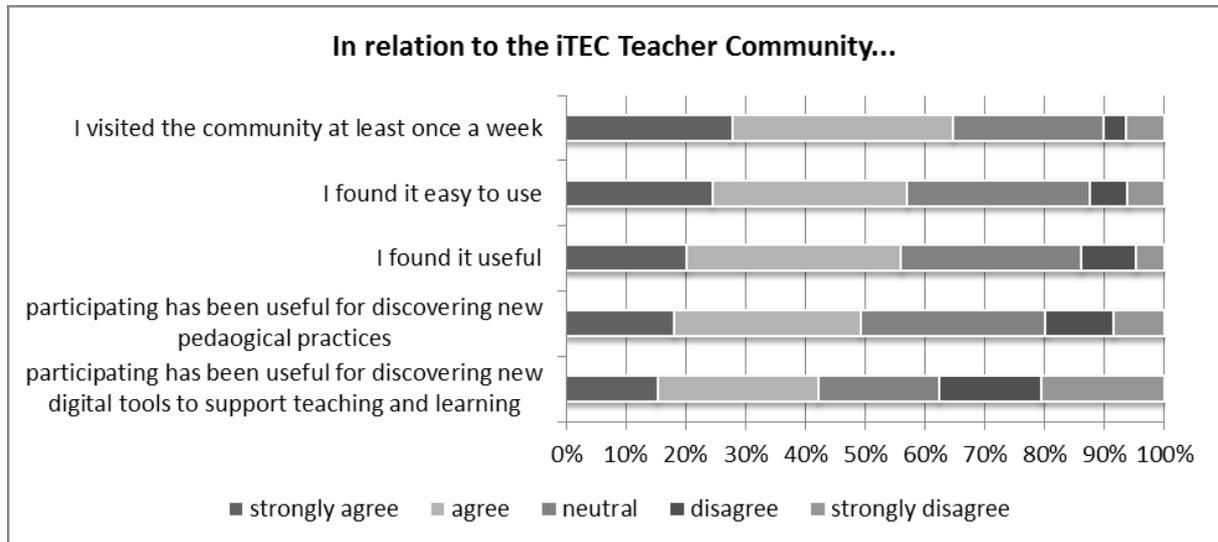


Figure 7: Teacher perceptions of the iTEC Teacher Community (261 respondents)

The majority of NPCs referred to national online support structures (online portals, Facebook, virtual meetings, Google+, Ning) as the primary means of communicating and supporting their teachers. Only four of the NPCs involved other stakeholders such as head teachers and ICT coordinators in training events. Student and parent/carer preparation was mainly undertaken by teachers although two NPCs described direct support of students.

Of the 261 teachers who completed questionnaires about their experience of piloting Learning Stories, 216 indicated that they had received training and support. The majority of teachers (Figure 8) were very positive although around 30% did not agree that the training provided appropriate technical skills or covered everything required.

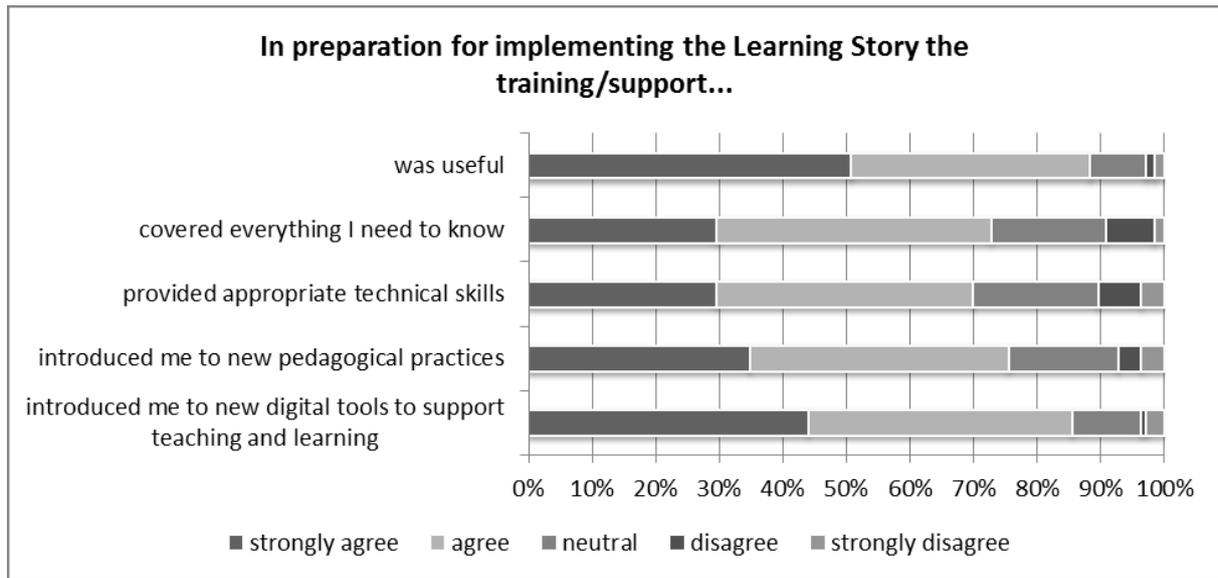


Figure 8: Teacher perceptions of the training and support offered through iTEC (216 respondents)

Success factors relating to preparation and training were noted to be:

- teacher motivation,
- face-to-face training including opportunities for hands-on experience of new tools,
- online discussion forums,
- specific technical training provided in relation to DotLRN and webinars run by Promethean,
- additional introductory documentation produced by NPCs,
- opportunities for teachers to network with each other,
- regular contact with teachers including online support provision, webinars and video tutorials, and,
- supportive head teachers.

Challenges included:

- creating a national community,
- finding suitable time to run workshops for teachers,
- maintaining relationships with teachers at a distance, ensuring teachers engaged fully (including motivating them during initial meetings and ensuring that evaluation surveys are undertaken),
- supporting less ICT-experienced teachers,
- finding sufficient time to support teachers.

One NPC noted that the local online environment set up to support teachers in the pilot did not engage teachers as fully as envisaged.

Future iTEC Pilots

Improvements suggested in relation to Learning Story selection and localisation included:

- making the LS and LA materials available earlier in the cycle,
- identifying how the resources could be adapted,
- enabling NPCs to choose from the whole range of scenarios put forward by WP2⁸,
- ideas which can be implemented over a shorter timescale,
- seeking advice on LS selection from teachers and other stakeholder groups,
- asking pilot and pre-pilot teachers to share their experiences with new recruits, and,
- asking a teacher to review the translated resources prior to sharing more widely.

Improvements suggested in relation to school and teacher selection included:

- having more time to publicise the project prior to the cycle starting,
- ensuring that the online communities (local and central) are lively and engaging,
- involve teachers who have already participated in iTEC (pre-pilots and/or pilots) in the recruitment process,
- engage more teachers from a single school so that a local community can develop,
- offer a range of incentives for participation and,
- invite teachers from all schools across a country.

Improvements suggested in relation to preparation and training included:

- ensuring that all iTEC resources are ready in advance of training workshops and that there is plenty of time for preparation,
- involving case study teachers and/or active teachers in the preparation and training processes,
- ensuring that the LS/LA are feasible for teachers,
- more exemplars of LS in practice,
- more intensive online mentoring and email/telephone support following initial meetings,
- providing a local online community for teachers (or trying a different one),
- greater involvement of head teachers and Ministries of Education in preparation and training,
- more support material from WP6, and,
- more training events/face-to-face meetings for teachers.

⁸ This restriction is required in order to make the evaluation manageable.

Appendix A

Table 12: Overview of pilots and evaluation responses

Country	No. pilots	No. evaluations	No. teachers	Response rate (%)	Mathematics in a multicultural setting	Embedding exam preparation in learning activities	Students creating (science) resources
Austria	22	18	11	82%	5	2	11
Czech Republic	4	4	2	100%	0	4	0
Estonia	30	26	22	87%	0	0	26
France	25	14	14	56%	1	1	12
Germany	19	8	7	42%	0	3	5
Hungary	50	39	35	78%	1	14	24
Israel	18	8	5	44%	0	4	4
Italy	41	41	41	100%	0	0	41
Lithuania	67	45	45	67%	4	0	41
Norway	14	10	7	71%	0	0	10
Portugal	32	27	27	84%	0	0	27
Slovakia	14	10	6	71%	0	10	0
Spain	18	17	15	94%	6	5	6
Turkey	39	19	19	49%	1	16	2
UK	28	12	5	43%	0	9	3
Totals	421	298	262	71%	18	68	212

Due to changes in the registration process in Cycle 2, information about teacher gender, subject taught and age range of the cohort was collected via the pilot management tool provided by Work Package 4.

69% of the 261 teachers who participated in Cycle 2 were female, with 31% male.

Appendix B

Table 13: Overview of data collected in Cycle 2

Country	No. pilots	No. survey responses	No. teachers	No. case study reports	Raw data	No. iMmS	NPC questionnaire
Austria	22	18	11	2	3	3	Yes
Czech Republic	4	4	2	N/A	N/A	N/A	Yes
Estonia	30	26	22	2	1	3	Yes
France	25	14	14	2	1	2	Yes
Germany (SMART)	19	8	7	2	1	2 ⁹	Yes
Hungary	50	39	35	2	1	3	Yes
Israel	18	8	5	2	2 ¹⁰	3	Yes
Italy	41	41	41	3	1	3	Yes
Lithuania	67	45	45	2	1	0	Yes
Norway	14	10	7	2	1	2 ¹¹	Yes
Portugal	32	27	27	2	1	3	Yes
Slovakia	14	10	6	2	1	3	Yes
Spain (SMART)	18	17	15	N/A	N/A	N/A	Yes
Turkey	39	19	19	17	16	3 ¹²	Yes
UK (Promethean)	28	12	5	2	1 ¹³	2	Yes
Totals	421	298	262	42	31	32	15

⁹ In addition, there are links to two blogs containing posts/comments from students

¹⁰ Raw data provided for each of the two case study reports, thus only 2 case studies undertaken

¹¹ One of the multimedia stories was co-authored by 3 teachers

¹² 16 Turkish teachers produced multimedia stories but many only described the activities, with lots of photographs and students work, rather than including reflection. The three most reflective stories were selected for analysis.

¹³ Raw data provided for one of the case study reports

Appendix C: Analysis of data by country

Austria (18 pilots, 11 teachers – 6 males, 5 females)

The teachers involved in Cycle 2 pilots were teaching cohorts across the age range (from 13 to 15 years). They also covered a variety of subjects including Mathematics (7 cohorts), ICT (4 cohorts) and Physics (4 cohorts), German (1 cohort) and English (2 cohorts).

Eight of the 11 teachers indicated that they had received training and support. They were generally positive about the training and support that they had received.

The training I received...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was useful	0	0	0	2	6
Covered everything I needed to know	0	0	1	2	5
Provided appropriate technical skills	0	0	1	3	4
Introduced me to new pedagogical practices	0	0	1	4	3
Introduced me to new digital tools to support teaching and learning	0	0	0	5	3

For eight of the cohorts teachers agreed or strongly agreed that they were able to adapt the Learning Story to suit their particular needs, teachers felt neutral about this for five cohorts, and disagreed or strongly disagreed regarding a further five cohorts.

Teachers in Austria chose which Learning Story to implement and the cohorts experienced the following: MMS – 5, EEP – 2, SCR - 11. In terms of implementation, the teachers did not implement all the Learning Activities with the cohorts.

Learning Activity	No. cohorts
Forming teams	16
Ad-hoc collaboration	13
Learning oriented browsing	12
Reflection	11
Peer feedback	8
Information grouping	13
Prepare results	14

TeamUp was used with 6 cohorts. Teachers used a variety of other tools, most commonly (more than half of cohorts) digital resources, interactive whiteboards, mobile devices and a VLE, together with digital tools for data capture, media authoring, collaboration, communication and music/photo/video/slide-sharing.

The TeamUp tool ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was easy to use	2	0	2	0	2
Was essential	0	0	4	2	0
Offered some benefits in comparison to other tools	0	0	4	2	0
Offered some benefits in comparison to non-digital tools	0	0	4	2	0
The other digital tools					
Were easy to use	2	0	3	11	2
Included ones I had not used before	4	0	5	4	5
Were essential	2	2	7	4	3
Offered some benefits in comparison to other tools	0	4	8	3	3
Offered some benefits in comparison to non-digital tools	0	2	8	5	3

Only 5 of the student cohorts used Facebook or Twitter to support collaboration with 4 of these doing so at least weekly. Teachers only posted on Facebook or Twitter with 3 of these cohorts. When posts took place, for one cohort posts received an average of 2-4 comments, and for another cohort posts received five or more comments on average (the average number of comments were not specified for three of the cohorts). Typical activities included the exchange of information and communication. Two teachers noted that social networking tools were banned in their classroom and one teacher said that Skype was used for communication instead.

13 cohorts used an alternative tool to TeamUp to record reflections. The majority of these cohorts (8) were asked to record their reflections 1-3 times, with two cohorts being asked ten times and one cohort being asked 15 times. For 11 of the cohorts, both the teachers and the students listened to the recordings. Two teachers reported that technology was a challenge and one reported that the documentation was a challenge in relation to recording reflections.

In relation to organizational challenges, the main problem was fitting the activities into the school day (4 cohorts). In relation to technical challenges, the main problem was access to ICT (6 cohorts). Other technical challenges included: no school ICT support, incorporating the activities into the VLE and problems with recording and playback (in this case the teacher did not use TeamUp). Other challenges identified by individual teachers were: motivating the students and organising groups.

The main benefit was perceived to be a new approach to learning (7 cohorts). Others included: collaboration, increasing diversity in the classroom, easy to implement, increasing student motivation and effective.

The main enablers were perceived to be: student motivation (10 cohorts) and teacher motivation (8 comments), mainly because the ideas and technologies were new and different. Individual teachers mentioned ICT and support.

Teaching practices

The implementation of the Learning Story enabled....	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Me to incorporate new pedagogical practices	0	0	8	5	5
Me to assess students in a new way	0	2	5	9	2
Me to create opportunities to learn beyond the boundaries of the classroom	0	0	4	10	4
Me to explore different teacher and student roles and relationships	2	1	4	7	4
Students to engage with complex, real world problems	0	2	4	8	4
Me to meet the individual learning needs of my students	0	2	2	8	6
Me to track each student's progress	0	0	2	11	5
Me to support students to work at their own pace	0	0	5	3	10
Students to have more opportunities to undertake collaborative work	0	0	2	9	7
Students to develop new skills for collaborative work	0	0	2	13	3
Students to use digital tools to support collaborative work	0	0	0	11	7
Creative activities to take place	0	0	1	10	7
Students to develop their creative skills	0	0	3	9	6
Me to develop my creative skills	0	0	3	7	8
Students to express their ideas in new ways	0	0	4	11	3
Students to communicate in new ways with each other	0	0	5	7	6
Students to communicate with me in new ways	0	0	4	12	2
Students to communicate in new ways with the wider community	0	1	7	8	2
Based on my experience....					

I will use digital tools more often in the future	0	0	2	13	3
I feel that the investment required was worthwhile	0	0	4	4	10
I have become more enthusiastic about my pedagogical practice	0	2	2	7	7
I feel that the Learning Story presents exciting opportunities to do things differently in the classroom	0	2	0	6	10
The implementation of the Learning Story has developed...					
My skills in the use of digital tools	0	0	1	11	6
My knowledge of the pedagogical use of digital tools	0	0	2	9	7
My understanding about the potential of integrating digital tools in my teaching practice	0	0	8	8	5
My understanding about the different ways that students can learn	0	0	0	10	8
The implementation of the Learning Story...					
Promoted active and independent learning in which students take responsibility for their own learning or progress	0	0	3	8	7
Led to students being deeply engaged in their work (so that they did not notice time passing for example)	0	0	2	13	3
Has had a positive impact on students attitudes to learning	0	0	6	11	1
Has led to improvements in my students' levels of attainment (as indicated by my assessment data)	0	0	6	8	4

Of the 11 teachers, more than half of them (7: 1 EEP, 2 MMS, 4 SCR) said that they felt that the Learning Story and Learning Activities would lead to innovation in the classroom with the remainder (4: 1 EEP, 1 MMS, 2 SCR) suggesting that they probably would. The main reasons given were the introduction of new approaches to learning (3 comments), enhancing student motivation (3 comments) and developing student ICT skills (3 comments). Other reasons from individuals included: easy ICT, facilitating independent learning and a good experience.

More than two thirds (8; 2 MMS, 1 EEP, 5 SCR) of the 11 teachers said that they would definitely use the resources again with one indicating that he/she would

probably use them again (SCR) and two saying they would not (1 EEP, 1 MMS). When asked to explain their answer as well as the reasons given above (that it was innovative), teachers felt that the experience was good and the resources were useful. The two teachers who suggested that they would not implement it again felt that the approach was not appropriate in their schools.

When asked if the resources should be made widely available to other teachers, nine said definitely (3 MMS, 2 EEP, 4 SCR) whilst two said probably (2 SCR), again because the ideas/resources were perceived to be innovative.

The Czech Republic (4 pilots, 2 teachers – 1 male, 1 female)

The pilot in conducted in Czech Republic is small scale as this country is an Associated Partner and not funded through the project. Both teachers piloted the same learning story: Embedding exam preparation in learning activities, one with 2 cohorts of 11 to 12 year olds studying informatics and one with 2 cohorts of 15 to 16 year olds studying English. In terms of training, the two teachers were satisfied although one felt that he had not been introduced to any new pedagogical practices.

In terms of implementation, both teachers adopted the Learning in Teams package of activities. One teacher used TeamUp with both cohorts, suggesting it was easy to use and essential but that it did not offer benefits over other digital tools or non-digital resources. He also used other tools, for example for collaboration, communication and data capture. He did not try any digital tools he had not used before but suggested they were essential and beneficial. The other teacher tried TeamUp with one tool but found it difficult to use and unhelpful; she said she would not use it again. The male teacher used an alternative tool to TeamUp to get his cohort to record reflections. He asked each cohort to record reflections twice. The cohorts recorded 12-13 reflections but the teacher and students did not listen to them. Both teachers suggested that the main technical challenges related to TeamUp, one experiencing internal server errors and the other suggesting that a fast connection to the internet was required which wasn't always possible in her school.

In relation to facilitating collaboration, neither teacher used Facebook or Twitter as suggested in the Learning Activity Ad-hoc Collaboration.

The main organizational challenge was finding time in the curriculum. One teacher also noted that the amount of time required to explain the task and how to use the required tools was also an organizational challenge (although with regular use this would not be an issue). They both noted that TeamUp was the main technical problem (as noted above).

One teacher noted that the benefit was collaboration (increasing student engagement and motivation) and teaching in a different way.

One teacher suggested that the ICT skills of students and access to personal laptops were enablers.

Teaching practices

The implementation of the Learning Story enabled....	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Me to incorporate new pedagogical practices	0	0	0	1	3
Me to assess students in a new way	0	0	0	4	0
Me to create opportunities to learn	0	0	0	4	0

beyond the boundaries of the classroom					
Me to explore different teacher and student roles and relationships	0	0	2	2	0
Students to engage with complex, real world problems	0	0	1	3	0
Me to meet the individual learning needs of my students	0	0	2	2	0
Me to track each student's progress	0	0	3	1	0
Me to support students to work at their own pace	0	0	2	2	0
Students to have more opportunities to undertake collaborative work	0	0	0	2	2
Students to develop new skills for collaborative work	0	0	0	3	1
Students to use digital tools to support collaborative work	0	0	0	2	2
Creative activities to take place	0	0	0	4	0
Students to develop their creative skills	0	0	0	4	0
Me to develop my creative skills	0	0	0	4	0
Students to express their ideas in new ways	0	0	2	2	0
Students to communicate in new ways with each other	0	0	1	3	0
Students to communicate with me in new ways	0	0	3	1	0
Students to communicate in new ways with the wider community	0	1	2	1	0
Based on my experience....					
I will use digital tools more often in the future	0	0	0	4	0
I feel that the investment required was worthwhile	0	0	0	2	2
I have become more enthusiastic about my pedagogical practice	0	0	1	3	0
I feel that the Learning Story presents exciting opportunities to do things differently in the classroom	0	0	0	4	0
The implementation of the Learning Story has developed...					
My skills in the use of digital tools	0	0	0	4	0
My knowledge of the pedagogical use of digital tools	0	0	1	3	0
My understanding about the	0	0	0	4	0

potential of integrating digital tools in my teaching practice					
My understanding about the different ways that students can learn	0	0	0	4	0
The implementation of the Learning Story...					
Promoted active and independent learning in which students take responsibility for their own learning or progress	0	0	0	4	0
Led to students being deeply engaged in their work (so that they did not notice time passing for example)	0	0	0	2	2
Has had a positive impact on students attitudes to learning	0	0	1	3	0
Has led to improvements in my students' levels of attainment (as indicated by my assessment data)	0	0	3	1	0

Both teachers felt that they would probably use the Learning Story (EEP) and underpinning Learning Activities again, one explaining that it was a new way of teaching. They both felt that the Learning Story should probably be shared with other teachers. They both felt that the Learning Story had potential to lead to innovation in the classroom. The main reason was teaching in a new way (both teachers) and one commented that collaboration was innovative.

Estonia (26 pilots, 21 teachers – 3 males, 18 females)

The teachers involved in Cycle 2 pilots were teaching cohorts across the age range (from 8 to 19 years). They also covered a variety of subjects: English (7 cohorts), Estonian (3 cohorts), science (9 cohorts), art (1 cohort), ICT (1 cohort), music (1 cohort), technology (1 cohort), history (1 cohort), integration (1 cohort) and music (1 cohort).

The 21 teachers were generally positive about the training and support that they had received.

The training I received...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was useful	0	0	0	2	19
Covered everything I needed to know	0	0	2	10	9
Provided appropriate technical skills	1	1	3	6	10
Introduced me to new pedagogical practices	0	0	1	11	9
Introduced me to new digital tools to support teaching and learning	0	0	1	10	10

For 19 of the cohorts teachers agreed or strongly agreed that they were able to adapt the Learning Story to suit their particular needs, two teachers felt neutral about this, and five disagreed or strongly disagreed.

All teachers in Estonia implemented the Learning Story: Students creating science resources. In terms of implementation, the teachers did not implement all the Learning Activities with the cohorts.

Learning Activity	No. cohorts
Forming teams	24
Ad-hoc collaboration	8
Learning oriented browsing	12
Reflection	20
Peer feedback	21
Information grouping	20
Prepare results	18

TeamUp was used with 18 cohorts. Teachers used a variety of other tools, most commonly (more than half of cohorts) digital resources together with digital tools for

data capture, media authoring, collaboration, communication and music/photo/video/slide-sharing.

The TeamUp tool ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was easy to use	0	0	0	5	13
Was essential	0	0	7	6	5
Offered some benefits in comparison to other tools	1	0	2	12	3
Offered some benefits in comparison to non-digital tools	1	0	2	9	6
The other digital tools					
Were easy to use	0	1	0	15	10
Included ones I had not used before	4	3	6	7	6
Were essential	0	0	0	11	15
Offered some benefits in comparison to other tools	0	0	5	13	8
Offered some benefits in comparison to non-digital tools	0	0	4	12	10

15 of the student cohorts used Facebook or Twitter to support collaboration with 10 of these doing so at least weekly. Teachers only posted on Facebook or Twitter with 10 of the cohorts, with half of these taking place weekly. When posts took place, for five cohorts posts received an average of one comment, for five cohorts posts received an average of 2-4 comments and for one cohort posts received five or more comments on average. Typical activities included sharing what they were doing, discussions, coordinating tasks including the collection and analysis of online resources, sharing links, and collaborating with students in other schools.

Five cohorts used TeamUp to record reflections whilst five cohorts used an alternative tool. The majority of these cohorts (7) were asked to record their reflections once. For all cohorts, both the teachers and the students listened to the recordings. Two teachers reported that using YouTube was a challenge and one reported technical challenges generally. Another teacher noted that it was challenging to get the students to engage and concentrate on the task.

Teachers said there were no problems in relation to nine of the cohorts. The main organizational challenges were: lack of time/additional workload (12 cohorts). In addition, individual teachers noted difficulties with group work was mentioned (4 cohorts). In relation to technical challenges, there were no problems identified for 18 of the 26 cohorts. There were technical challenges for individual teachers relating to TeamUp (described as not working) (3 cohorts) and access to ICT/poor ICT infrastructure (3 cohorts). No other challenges were identified.

The main benefits were perceived to be: enhanced student engagement (7 cohorts) and a new approach for learning (7 cohorts). Others included: increased opportunities for collaboration (4 cohorts), greater opportunities for authentic learning, active learning, creative learning, inclusion and communication; more effective learning (3 cohorts) and greater flexibility.

The main enablers were perceived to be: student interest (11 cohorts) and students' willingness to collaborate (7 cohorts). Others included: teacher interest (3 cohorts), ICT infrastructure (3 cohorts), ICT support, support of other teachers and appropriate teaching resources.

Teaching practices

The implementation of the Learning Story enabled....	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Me to incorporate new pedagogical practices	0	0	1	12	13
Me to assess students in a new way	0	0	2	12	12
Me to create opportunities to learn beyond the boundaries of the classroom	0	2	3	10	11
Me to explore different teacher and student roles and relationships	0	0	3	14	9
Students to engage with complex, real world problems	0	1	1	14	10
Me to meet the individual learning needs of my students	0	1	5	10	10
Me to track each student's progress	0	0	0	12	14
Me to support students to work at their own pace	0	0	0	13	13
Students to have more opportunities to undertake collaborative work	0	0	0	4	22
Students to develop new skills for collaborative work	0	0	0	3	23
Students to use digital tools to support collaborative work	0	0	1	6	19
Creative activities to take place	0	0	0	6	20
Students to develop their creative skills	0	0	0	5	21
Me to develop my creative skills	0	0	4	8	14
Students to express their ideas in new ways	0	0	2	4	20
Students to communicate in new ways with each other	0	0	4	8	14
Students to communicate with me in new ways	1	1	3	12	9

Students to communicate in new ways with the wider community	3	3	6	10	4
Based on my experience....					
I will use digital tools more often in the future	0	0	1	13	12
I feel that the investment required was worthwhile	0	0	0	11	15
I have become more enthusiastic about my pedagogical practice	0	0	2	9	15
I feel that the Learning Story presents exciting opportunities to do things differently in the classroom	0	0	0	7	19
The implementation of the Learning Story has developed...					
My skills in the use of digital tools	0	0	2	15	9
My knowledge of the pedagogical use of digital tools	0	0	1	15	10
My understanding about the potential of integrating digital tools in my teaching practice	0	0	2	13	11
My understanding about the different ways that students can learn	0	1	5	10	10
The implementation of the Learning Story...					
Promoted active and independent learning in which students take responsibility for their own learning or progress	0	0	1	12	13
Led to students being deeply engaged in their work (so that they did not notice time passing for example	0	0	2	7	17
Has had a positive impact on students attitudes to learning	0	0	4	7	15
Has led to improvements in my students' levels of attainment (as indicated by my assessment data)	0	2	4	15	5

Of the 21 teachers, more than half of them (12) said that they felt that the Learning Story (SCR) and Learning Activities would lead to innovation in the classroom with the remainder suggesting that they probably would. The main reasons given were offering increased variety in the classroom (7 comments), new learning approaches (7 comments), and enhanced student engagement (7 comments). Individual teachers referred to: increased collaboration (3 comments), more active learning (2 comments), increased student autonomy (1 comment), authentic learning (1

comment), and creativity (1 comment). One teacher noted that potential for innovation would be subject to the new curriculum in his/her country.

More than two thirds (15) of the 21 teachers said that they would definitely use the resources again with the remainder indicating that they would probably use them again. When asked to explain their answer as well as the reasons given above (that it was innovative), teachers felt that the students had learned more, that they had enjoyed it and one teacher noted that it made teaching more interesting.

When asked if the resources should be made widely available to other teachers, about half the teachers (11) said definitely, eight said probably whilst two said no. Of the two who said no, one felt that the Learning Story was difficult to implement and the other felt that the quality of the work produced by students was low.

France (14 pilots, 14 teachers – 11 males, 3 females)

The teachers involved in Cycle 2 pilots were teaching cohorts across the age range (from 8 to 117 years) with 4 of the cohorts in their last year of primary education and 3 of the cohorts in their first year of secondary education. Six of the cohorts were from primary schools and the remaining were studying Mathematics (2), Physics (3) or Technology (3).

Only 8 of the 14 teachers perceived that they had received pedagogical and/or technical training/support.

The training I received...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was useful	0	2	2	4	0
Covered everything I needed to know	1	2	3	2	0
Provided appropriate technical skills	2	1	4	0	1
Introduced me to new pedagogical practices	2	0	2	2	2
Introduced me to new digital tools to support teaching and learning	0	0	4	3	1

For seven of the cohorts teachers agreed or strongly agreed that they were able to adapt the Learning Story to suit their particular needs, two teachers felt neutral about this, and five disagreed or strongly disagreed.

Most of the teachers in France implemented the Learning Story ‘Students creating (science) resources’ with one teacher implementing ‘Mathematics in a multicultural setting’ and one implementing Embedding exam preparation in learning activities. In terms of implementation, the teachers did not implement all the Learning Activities with the cohorts.

Learning Activity	No. cohorts
Forming teams	11
Ad-hoc collaboration	8
Learning oriented browsing	13
Reflection	10
Peer feedback	6
Information grouping	8
Prepare results	10

TeamUp was used with only 3 cohorts. Teachers used a variety of other tools, most commonly (at least half of cohorts) digital resources, digital tools for data capture and communication, and interactive whiteboards.

The TeamUp tool ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was easy to use	0	0	1	2	0
Was essential	0	1	1	0	1
Offered some benefits in comparison to other tools	0	1	1	0	1
Offered some benefits in comparison to non-digital tools	0	1	2	0	0
The other digital tools					
Were easy to use	0	1	1	8	0
Included ones I had not used before	5	0	4	4	1
Were essential	2	1	2	8	1
Offered some benefits in comparison to other tools	1	1	3	6	3
Offered some benefits in comparison to non-digital tools	0	0	5	5	4

The teachers in France did not use Facebook or Twitter to facilitate collaboration. Two teachers explicitly mentioned the use of a blog however.

Six cohorts used an alternative tool to TeamUp to record reflections. Half the cohorts were asked to record their reflections 2-3 times whilst two groups were asked 8-10 times. In four cohorts 8-12 students actually recorded reflections. Teachers listened to the reflections of five of the cohorts and students listened to the reflections from four of the cohorts. Three teachers noted that the students found this aspect (summarizing and structuring their responses) challenging.

In relation to organizational challenges, the main issues cited were lack of time (8 comments) and issues relating to organising group work (3 comments). Student autonomy was also noted by individuals.

In relation to technical challenges, the main one was reliable internet access (5 cohorts). Other technical challenges were TeamUp (2 cohorts), using blogs (2 cohorts), account management processes, ICT costs, using tablet computers, audio recording, lack of technical support and insufficient access to hardware (2 cohorts).

The main benefits were perceived to be: enhanced student autonomy (6 cohorts) and enhanced student motivation/engagement (6 cohorts). Others included: the development of group work, communication and collaboration skills; increased ICT skills; more opportunities for formative assessment, individualization and active learning.

The main enablers were perceived to be: ICT (7 cohorts) with one teacher noting that the ease of use of an iPad was an enabler; and student motivation (4 cohorts). One teacher noted that students' ICT skills was an enabler.

Teaching practices

The implementation of the Learning Story enabled....	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Me to incorporate new pedagogical practices	1	0	1	11	1
Me to assess students in a new way	2	3	3	6	0
Me to create opportunities to learn beyond the boundaries of the classroom	1	0	4	5	4
Me to explore different teacher and student roles and relationships	1	1	3	7	2
Students to engage with complex, real world problems	1	1	5	5	2
Me to meet the individual learning needs of my students	1	2	3	7	1
Me to track each student's progress	1	2	6	5	0
Me to support students to work at their own pace	3	0	3	6	2
Students to have more opportunities to undertake collaborative work	0	1	1	5	7
Students to develop new skills for collaborative work	0	1	3	4	6
Students to use digital tools to support collaborative work	0	1	2	5	6
Creative activities to take place	0	1	2	8	3
Students to develop their creative skills	0	1	3	6	4
Me to develop my creative skills	0	1	5	5	3
Students to express their ideas in new ways	0	2	1	5	6
Students to communicate in new ways with each other	0	3	1	7	3
Students to communicate with me in new ways	1	3	3	5	2
Students to communicate in new ways with the wider community	1	3	5	4	1
Based on my experience....					
I will use digital tools more often in the future	1	1	3	7	2
I feel that the investment required was worthwhile	2	1	4	4	3

I have become more enthusiastic about my pedagogical practice	0	1	6	3	4
I feel that the Learning Story presents exciting opportunities to do things differently in the classroom	1	1	3	7	2
The implementation of the Learning Story has developed...					
My skills in the use of digital tools	1	2	7	3	1
My knowledge of the pedagogical use of digital tools	1	1	5	4	3
My understanding about the potential of integrating digital tools in my teaching practice	0	0	5	6	3
My understanding about the different ways that students can learn	0	1	4	4	5
The implementation of the Learning Story...					
Promoted active and independent learning in which students take responsibility for their own learning or progress	2	0	2	5	5
Led to students being deeply engaged in their work (so that they did not notice time passing for example)	1	1	2	5	5
Has had a positive impact on students attitudes to learning	0	2	2	7	3
Has led to improvements in my students' levels of attainment (as indicated by my assessment data)	1	2	9	2	0

Five teachers said that they felt that the Learning Story and Learning Activities would definitely lead to innovation in the classroom (1 MMS, 1 EEP, 3 SCR) with seven (implementing SCR) suggesting that the resources would probably lead to innovation. The most common reason given was increasing student autonomy (4 comments) and the development of new ICT skills (3 comments). Individuals also mentioned new approaches to learning, the importance of feedback (peer, evaluation), increased opportunities for collaboration, engagement, benefits and active learning. Two teachers (implementing SCR) disagreed. A primary school teacher felt that the resources were not appropriate for primary-aged students. Another teacher felt that benefits achieved did not reflect the time investment required.

Nearly half (6, 1 MMS, 1 EEP, 4 SCR) of the 14 teachers said that they would definitely use the resources again with five (SCR) indicating that they would probably use them again. When asked to explain their answer as well as the reasons given above (that it was innovative), one teacher noted that it would develop students' communication skills and another commented that it was closely related to curriculum requirements and therefore would be useful in the future. One teacher suggested it was not novel to them and something that they did already in their normal teaching practice. Three teachers (SCR) said that they would not use the resources again, two repeating concerns that they are not suitable for primary-aged children and that the benefits did not reflect the time investment required. The third indicated a lack of time and limited ICT skills.

When asked if the resources should be made widely available to other teachers, only three teachers (SCR) said definitely, 10 said probably (1 MMS, 1 EEP, 8 SCR) whilst one (SCR) said no. The teacher who said no was the person who commented that the resources were not suitable for primary-aged children.

Germany (8 pilots, 7 teachers – 6 males, 2 females)

The teachers involved in Cycle 2 pilots (recruited through SMART) were teaching cohorts across the age range (from 6 to 19 years) with three of the cohorts from primary education and five of the cohorts from secondary education. Subject specialisms were: Biology with German (2 cohorts), English, German, Mathematics, Music, Politic/Media and Science.

Only five of the seven teachers perceived that they had received pedagogical and/or technical training/support.

The training I received...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was useful	0	0	2	2	1
Covered everything I needed to know	0	1	1	2	1
Provided appropriate technical skills	0	1	1	2	1
Introduced me to new pedagogical practices	2	1	1	0	1
Introduced me to new digital tools to support teaching and learning	1	0	1	3	0

For six of the cohorts teachers agreed or strongly agreed that they were able to adapt the Learning Story to suit their particular needs, for one cohort the teacher felt neutral about this, and for one cohort the teacher disagreed.

Five teachers in Germany implemented the Learning Story ‘Students creating science resources’ with three implementing ‘Embedding exam preparation in learning activities’. In terms of implementation, the teachers did not implement all the Learning Activities with the cohorts.

Learning Activity	No. cohorts
Forming teams	7
Ad-hoc collaboration	2
Learning oriented browsing	3
Reflection	4
Peer feedback	2
Information grouping	2
Prepare results	6

TeamUp was not used with any cohorts. Teachers used a variety of other tools, most commonly (at least half of cohorts) interactive whiteboards, digital resources, mobile

devices, and digital tools for data capture, communication and music/photo/video/slide-sharing.

The other digital tools (not TeamUp)	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Were easy to use	0	0	3	3	2
Included ones I had not used before	0	1	2	3	2
Were essential	0	0	2	2	4
Offered some benefits in comparison to other tools	0	1	3	0	4
Offered some benefits in comparison to non-digital tools	0	0	2	1	5

Only two cohorts in Germany used web 2.0 tools to facilitate collaboration. For both cohorts the teacher posted less than once a week (one teacher used blogs). Students posted every day in one cohort, receiving on average 2-4 comments per post, and 2-3 times a week in the other cohort, receiving on average 1 comment per post. The tools were used to support exchanges between members of the group. Another teacher used a VLE to support similar activities.

Only one cohort used TeamUp to record reflections (with none using an alternative). Students were asked to record reflections on five occasions. 20 students recorded reflections and both the teacher and students listened back to them. The teacher noted that image quality and copyright issues were challenges faced when recording reflections.

In relation to organizational challenges, the main one noted was insufficient time (two cohorts). Individual teachers noted others: organising groups across classes, and motivating students to continue working outside the classroom.

In relation to technical challenges, individual teachers noted sufficient access to ICT and school controls of the network preventing teacher installation of software. Individuals commented on other challenges in relation to seeking parental consent and coordination with colleagues.

The main benefit was the development of students' ICT skills (2 cohorts). Individuals identified: new approaches to learning, peer learning, cross-age learning, and the integration of technology and pedagogy as benefits.

The main enablers were perceived to be: teacher motivation (5 cohorts) and ICT (2 cohorts).

Teaching practices

The implementation of the Learning Story enabled....	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Me to incorporate new pedagogical practices	1	2	2	3	0
Me to assess students in a new way	1	1	3	3	0
Me to create opportunities to learn beyond the boundaries of the classroom	1	1	2	3	1
Me to explore different teacher and student roles and relationships	2	1	2	3	0
Students to engage with complex, real world problems	1	0	2	3	2
Me to meet the individual learning needs of my students	1	0	3	4	0
Me to track each student's progress	2	1	3	2	0
Me to support students to work at their own pace	2	0	0	3	3
Students to have more opportunities to undertake collaborative work	1	1	0	6	0
Students to develop new skills for collaborative work	1	1	2	4	0
Students to use digital tools to support collaborative work	1	5	0	0	2
Creative activities to take place	1	2	1	4	0
Students to develop their creative skills	1	1	1	5	0
Me to develop my creative skills	1	1	1	5	0
Students to express their ideas in new ways	1	0	1	6	0
Students to communicate in new ways with each other	1	1	3	3	0
Students to communicate with me in new ways	1	1	2	4	0
Students to communicate in new ways with the wider community	2	2	3	1	0
Based on my experience....					
I will use digital tools more often in the future	0	1	0	5	2
I feel that the investment required was worthwhile	1	1	3	2	1
I have become more enthusiastic about my pedagogical practice	1	0	4	2	1
I feel that the Learning Story presents exciting opportunities to do things differently in the	1	1	2	3	1

classroom					
The implementation of the Learning Story has developed...	1	3	0	4	0
My skills in the use of digital tools					
My knowledge of the pedagogical use of digital tools	0	0	5	3	0
My understanding about the potential of integrating digital tools in my teaching practice	0	0	5	3	0
My understanding about the different ways that students can learn	1	1	3	3	0
The implementation of the Learning Story...					
Promoted active and independent learning in which students take responsibility for their own learning or progress	1	1	3	1	2
Led to students being deeply engaged in their work (so that they did not notice time passing for example)	1	2	1	4	0
Has had a positive impact on students attitudes to learning	1	0	3	4	0
Has led to improvements in my students' levels of attainment (as indicated by my assessment data)	2	1	3	2	0

One teacher did not complete the last section of the survey. Therefore, the responses of six teachers are now presented.

Only one teacher felt that the Learning Story and Learning Activities would definitely lead to innovation in the classroom (1 EEP) with four suggesting that the resources would probably lead to innovation (1 EEP, 3 SCR). The main reason was that the ideas led to new approaches to learning (2 comments). Other reasons included increasing student autonomy, motivation, and new ways of composing groups. One teacher noted that students needed to be willing to engage fully with the activities in order for them to be successful. One teacher disagreed (1 EEP) suggesting that such practices were already in place.

One teacher said that they would definitely use the resources again (1 EEP) with five indicating that they would probably use them again (2 EEP, 3 SCR). When asked to explain their answer various reasons were given: increasing variety in the classroom, useful, effective and having further potential to be innovative. One teacher cautioned that the implementation required a lot of effort.

When asked if the resources should be made widely available to other teachers, three teachers said definitely (2 EEP, 1 SCR) and three said probably (1 EEP, 2 SCR) giving similar reasons to those noted in relation to whether or not the LS would lead to innovation in the classroom.

Hungary (39 pilots, 35 teachers – 5 males, 30 females)

The teachers involved in Cycle 2 pilots were teaching cohorts across the age range (from 7 to 18 years) with three quarters of the cohorts aged between 12 and 15 years. They also covered a variety of subjects including ICT (10 cohorts), English (8 cohorts), science (8 cohorts), history (2 cohorts), electronics (1 cohort), French (1 cohort), German (1 cohort), literature (1 cohort), marketing (1 cohort) and primary (1 cohort)

Only four teachers perceived that they had not received training and/or support, the remaining 31 indicating that they had.

The training I received...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was useful	0	0	4	12	15
Covered everything I needed to know	0	1	4	14	12
Provided appropriate technical skills	0	1	7	12	11
Introduced me to new pedagogical practices	0	2	5	11	13
Introduced me to new digital tools to support teaching and learning	0	0	4	12	15

For 35 of the cohorts teachers agreed or strongly agreed that they were able to adapt the Learning Story to suit their particular needs, two teachers felt neutral about this, and two disagreed.

24 of the cohorts experienced SCR, 14 of the cohorts experienced EEP and one cohort experienced MMS. In terms of implementation, the teachers did not implement all the Learning Activities with the cohorts.

Learning Activity	No. cohorts
Forming teams	32
Ad-hoc collaboration	14
Learning oriented browsing	35
Reflection	31
Peer feedback	31
Information grouping	33
Prepare results	38

TeamUp was used with 15 cohorts. Teachers used a variety of other tools, most commonly (more than half of cohorts) digital resources together with digital tools for

data capture, media authoring, collaboration, communication and music/photo/video/slide-sharing.

The TeamUp tool ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was easy to use	0	2	5	6	2
Was essential	0	4	7	4	0
Offered some benefits in comparison to other tools	2	6	4	2	1
Offered some benefits in comparison to non-digital tools	3	3	2	3	4
The other digital tools					
Were easy to use	0	0	6	20	13
Included ones I had not used before	2	4	3	14	16
Were essential	0	1	8	16	14
Offered some benefits in comparison to other tools	0	1	13	19	6
Offered some benefits in comparison to non-digital tools	0	2	7	15	15

All but six of the student cohorts used Facebook or Twitter to support collaboration with 27 of these doing so at least weekly. Teachers posted on Facebook or Twitter with all but four of the cohorts, with most of these (27) taking place weekly. When posts took place, for five cohorts posts received an average of one comment, for 29 cohorts posts received an average of 2-4 comments and for nine cohorts posts received five or more comments on average. Typical activities included forming groups, sharing and coordinating tasks, documenting progress, sharing resources and links, discussing issues and asking questions (both to their peers and teacher), and peer feedback/assessment. Some teachers noted issues such as some students being less active than their peers, some not having internet access at home preventing continuation of the activity outside the classroom, and some students finding the activity challenging because it was so different to traditional activities.

Three cohorts used TeamUp to record reflections whilst 17 cohorts used an alternative tool. The majority of these cohorts (14) were asked to record their reflections 1-3 times. Teachers listened to the recordings from 13 of the cohorts and students listened to the recordings from 12 of the cohorts. Technical challenges were reported for four of the cohorts with one teacher uploading recordings for the students. For four cohorts it was noted that the students either did not take the task seriously (refusing to record the reflections) or spoke very little. One teacher noted that finding time was a challenge.

In relation to organizational challenges, the main issues raised were time (10 cohorts) and the difficulties of organising groupwork (9 cohorts) such as unequal

effort, relationship problems, coordination problems. One teacher mentioned the difficulties of working with partners from other countries both in terms of finding a suitable partner with shared interests and also of working in English when it is not a language you are fluent in. For six cohorts, teachers said they had not experienced any organizational challenges.

In relation to technical challenges, the main ones were reliable internet access (16 cohorts) and access to ICT (9 cohorts), and technical issues relating to TeamUp (9 cohorts). Other technical issues included site registrations, Google Docs, lack of ICT skills of both students and teachers, and lack of home access. Teachers said they had not experienced any technical challenges in relation to 6 cohorts.

Other challenges identified included lack of student motivation and engagement (4 cohorts), particularly as the projects were run towards the end of term when everyone was tiring.

The main benefit was perceived to be the development collaboration skills (10 cohorts) In addition, teachers noted ICT skills (7 cohorts), student motivation and engagement was enhanced (7 cohorts), there were more opportunities for autonomous learning (6 cohorts), the Learning Stories facilitated new approaches to learning (5 cohorts), creativity (4 cohorts) and peer learning (3 cohorts). Other individual comments included: flexibility, learning outside the classroom, authentic learning, transferable skills, and learning to learn. One person suggested that there were no benefits.

The main enablers were perceived to be: sufficient ICT infrastructure (11 cohorts), school support (8 cohorts). Others included: support of colleagues (7 cohorts), student motivation (6 cohorts), ICT skills (6 cohorts) and curriculum fit (4 cohorts), iTEC resources (2 cohorts), home access to ICT and teacher motivation.

Teaching practices

The implementation of the Learning Story enabled....	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Me to incorporate new pedagogical practices	0	0	2	17	20
Me to assess students in a new way	0	0	5	20	14
Me to create opportunities to learn beyond the boundaries of the classroom	0	0	4	13	22
Me to explore different teacher and student roles and relationships	0	1	6	14	18
Students to engage with complex, real world problems	0	1	4	21	13
Me to meet the individual learning needs of my students	0	0	4	23	12
Me to track each student's progress	0	2	8	19	10

Me to support students to work at their own pace	0	3	7	16	13
Students to have more opportunities to undertake collaborative work	0	0	1	16	22
Students to develop new skills for collaborative work	0	0	1	14	24
Students to use digital tools to support collaborative work	0	0	0	9	30
Creative activities to take place	0	0	0	11	28
Students to develop their creative skills	0	0	0	10	29
Me to develop my creative skills	0	0	4	18	17
Students to express their ideas in new ways	0	0	2	20	17
Students to communicate in new ways with each other	0	1	4	18	16
Students to communicate with me in new ways	0	1	2	17	19
Students to communicate in new ways with the wider community	0	2	12	20	5
Based on my experience....					
I will use digital tools more often in the future	0	1	3	17	18
I feel that the investment required was worthwhile	0	2	5	15	17
I have become more enthusiastic about my pedagogical practice	0	1	7	19	12
I feel that the Learning Story presents exciting opportunities to do things differently in the classroom	0	0	6	19	12
The implementation of the Learning Story has developed...					
My skills in the use of digital tools	0	0	1	21	17
My knowledge of the pedagogical use of digital tools	0	1	2	19	17
My understanding about the potential of integrating digital tools in my teaching practice	0	1	2	20	16
My understanding about the different ways that students can learn	0	1	5	23	10
The implementation of the Learning Story...					
Promoted active and independent learning in which students take	0	0	5	15	19

responsibility for their own learning or progress					
Led to students being deeply engaged in their work (so that they did not notice time passing for example	0	0	3	18	18
Has had a positive impact on students attitudes to learning	0	0	8	15	16
Has led to improvements in my students' levels of attainment (as indicated by my assessment data)	1	0	6	22	10

Of the 35 teachers, four out of five (28) said that they felt that the Learning Story and Learning Activities would lead to innovation in the classroom with the remainder (7) suggesting that they probably would. The most common reason given was providing students with relevant ICT skills (15 comments). Relatively fewer comments were received in relation to: facilitating new approaches to learning (7 comments), more opportunities for collaboration (5 comments), autonomy (4 comments) and facilitating learning beyond the classroom (4 comments), as well as increasing student motivation (3 comments). Other reasons from individuals included: new assessment approaches (3 comments – peer-assessment, evaluation), peer support, new teaching roles (2 comments), access to information (2 comments), effective learning (2 comments), knowledge acquisition, flexibility, creativity, active learning and individualized learning.

More than two thirds (25, 1 Mathematics in a multicultural setting, 10 Embedding exam preparation in learning activities, 14 Students creating science resources) of the 35 teachers said that they would definitely use the resources again with nine (2 Embedding exam preparation in learning activities, 7 Students creating science resources) indicating that they would probably use them again and one saying no (Students creating science resources). When asked to explain their answer as well as the reasons given above (that it was innovative), teachers more commonly mentioned that it was effective and that students were motivated. The teacher who said that they would not use the resources again suggested that “(Pupils) need to be able to gain new information and knowledge individually and in groups as well. They need to be able to rate/evaluate information according to their relevance”.

When asked if the resources should be made widely available to other teachers, more than three quarters of the teachers (27) said definitely, and eight said probably. Reasons given included increasing the use of ICT in teaching and learning, the potential benefits, and making teaching and learning more interesting for both teachers and students. Those who expressed caution were concerned that many teachers would not feel confident enough to use technology in the classroom or would not have sufficient access to technology and the internet in and out of school.

Israel (8 pilots, 5 teachers – 2 males, 3 females)

The teachers involved in Cycle 2 pilots were teaching cohorts from 10 to 12 years. They also covered a variety of subjects: Geography (4 cohorts), History (3 cohorts) and Science (1 cohort).

Four of the five teachers indicated that they had received training and support.

The training I received...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was useful	0	1	1	1	1
Covered everything I needed to know	0	2	0	1	1
Provided appropriate technical skills	0	3	0	0	1
Introduced me to new pedagogical practices	0	1	1	2	0
Introduced me to new digital tools to support teaching and learning	0	1	1	1	1

For seven of the cohorts teachers agreed or strongly agreed that they were able to adapt the Learning Story to suit their particular needs, whilst for one cohort the teacher strongly disagreed.

Teachers in Israel chose which Learning Story to implement and the cohorts experienced the following: EEP – 4, SCSR - 4. In terms of implementation, the teachers did not implement all the Learning Activities with the cohorts.

Learning Activity	No. cohorts
Forming teams	8
Ad-hoc collaboration	7
Learning oriented browsing	7
Reflection	7
Peer feedback	6
Information grouping	8
Prepare results	7

TeamUp was used with seven cohorts. Teachers used a variety of other tools, most commonly (more than half of cohorts) digital resources, interactive whiteboards, mobile devices and a VLE, together with digital tools for data capture and music/photo/video/slide-sharing.

The TeamUp tool ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Was easy to use	0	3	3	0	1
Was essential	0	1	0	4	2
Offered some benefits in comparison to other tools	0	1	1	3	2
Offered some benefits in comparison to non-digital tools	0	1	0	4	2
The other digital tools					
Were easy to use	0	0	1	5	2
Included ones I had not used before	0	0	0	6	2
Were essential	0	0	0	6	2
Offered some benefits in comparison to other tools	0	0	0	6	2
Offered some benefits in comparison to non-digital tools	0	0	0	6	2

None of the cohorts used Facebook or Twitter to facilitate collaboration.

Five cohorts used an alternative tool to TeamUp to record reflections. Three of the student cohorts were asked to record reflections three times and one cohort was asked to record reflections 15 times. The teacher and students of four cohorts listened to the recordings.

The main organizational challenges was insufficient time (7 cohorts), one teacher noting this was the case when students needed to learn how to use new technology. Individual teachers noted that it was difficult to oversee a whole class when they moved out of the classroom to work and it was challenging to find a quiet place to do the recording. In relation to technical challenges, TeamUp was mentioned in relation to 7 of the 8 cohorts who had used it particularly in relation to making recordings. No other challenges were identified.

The main benefits were perceived to be: a new approach to learning (3 cohorts), increasing student autonomy (4 cohorts), developing student higher-order thinking (2 cohorts), challenge (3 cohorts) and teacher motivation (3 cohorts), student motivation (2 cohorts). Benefits noted by individuals were: authentic learning and a different teacher role.

The main enablers were perceived to be: access to ICT (5 cohorts), student motivation (3 cohorts) and the support of colleagues (3 cohorts). One teacher said that TeamUp was an enabler, another suggested that new technologies had been helpful.

Teaching practices

The implementation of the Learning Story enabled....	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Me to incorporate new pedagogical practices	0	0	1	5	2

Me to assess students in a new way	----	----	----	----	----
Me to create opportunities to learn beyond the boundaries of the classroom	0	0	2	6	0
Me to explore different teacher and student roles and relationships	0	0	1	6	1
Students to engage with complex, real world problems	0	2	0	5	1
Me to meet the individual learning needs of my students	0	1	0	7	0
Me to track each student's progress	0	0	3	5	0
Me to support students to work at their own pace	0	0	0	8	0
Students to have more opportunities to undertake collaborative work	0	0	0	6	2
Students to develop new skills for collaborative work	0	0	0	8	0
Students to use digital tools to support collaborative work	0	0	0	8	0
Creative activities to take place	0	0	1	7	0
Students to develop their creative skills	0	1	1	6	0
Me to develop my creative skills	0	1	1	6	0
Students to express their ideas in new ways	0	0	1	7	0
Students to communicate in new ways with each other	0	0	0	8	0
Students to communicate with me in new ways	0	0	0	8	0
Students to communicate in new ways with the wider community	1	2	4	0	1
Based on my experience....					
I will use digital tools more often in the future	0	0	1	2	5
I feel that the investment required was worthwhile	0	1	0	2	5
I have become more enthusiastic about my pedagogical practice	0	1	0	2	5
I feel that the Learning Story presents exciting opportunities to do things differently in the classroom	0	1	0	1	6
The implementation of the Learning Story has developed...					
My skills in the use of digital tools	0	0	1	7	0

My knowledge of the pedagogical use of digital tools	0	0	4	2	2
My understanding about the potential of integrating digital tools in my teaching practice	0	0	1	6	1
My understanding about the different ways that students can learn	0	0	1	4	3
The implementation of the Learning Story...					
Promoted active and independent learning in which students take responsibility for their own learning or progress	0	0	3	2	3
Led to students being deeply engaged in their work (so that they did not notice time passing for example)	0	0	1	4	3
Has had a positive impact on students attitudes to learning	0	0	1	4	3
Has led to improvements in my students' levels of attainment (as indicated by my assessment data)	0	1	5	2	0

Of the 5 teachers, three (1 EEP, 2 SCSR) said that they felt that the Learning Story and Learning Activities would definitely lead to innovation in the classroom with the remaining two (2 EEP) suggesting that they probably would. The most common reasons given were the introduction of new approaches to learning (3 comments), enhancing student motivation (2 comments). One teacher noted that student autonomy was innovative and one teacher noted that there were increased opportunities for collaboration.

Two of the five teachers said that they would definitely use the resources again (1 EEP, 1 SCSR) with the other three indicating that they would probably use them again (2 EEP, 1 SCSR). When asked to explain their answer, teachers felt that the experience challenged them as it was different and new. Individuals mentioned it was easy to implement, beneficial and offered individualized learning.

When asked if the resources should be made widely available to other teachers, three said definitely whilst two said probably, again because the ideas/resources were perceived to be innovative. Three teachers felt that the approaches were relevant, bringing teaching and learning into the 21st century: *“The teacher should move forward and adjust the student’s learning needs and interests.”*

Italy (41 pilots, 41 teachers – 13 males, 28 females)

The teachers involved in Cycle 2 pilots were mainly (36) teaching cohorts from 11 to 14 years with five cohorts from 7 to 11 years. They also covered a variety of subjects mainly mathematics and sciences (27 cohorts) but also primary (4), English (3), Italian (3), history (2) and technology (2).

35 of the 41 teachers indicated that they had received training and support.

The training I received...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was useful	1	0	4	14	22
Covered everything I needed to know	1	4	10	13	13
Provided appropriate technical skills	2	5	8	16	10
Introduced me to new pedagogical practices	2	2	5	19	13
Introduced me to new digital tools to support teaching and learning	3	0	5	13	20

31 teachers agreed or strongly agreed that they were able to adapt the Learning Story to suit their particular needs, whilst five teachers felt neutral about this statement and five disagreed.

All teachers in Italy implemented SCSR. In terms of implementation, the teachers did not implement all the Learning Activities with the cohorts.

Learning Activity	No. cohorts
Forming teams	39
Ad-hoc collaboration	29
Learning oriented browsing	39
Reflection	36
Peer feedback	32
Information grouping	33
Prepare results	37

TeamUp was used with 36 cohorts. Teachers used a variety of other tools, most commonly (more than half of cohorts) digital resources, interactive whiteboards and mobile devices, together with digital tools for media authoring, data capture, collaboration, communication and music/photo/video/slide-sharing.

The TeamUp tool ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Was easy to use	1	5	6	16	18
Was essential	1	5	22	7	1
Offered some benefits in comparison to other tools	1	9	18	6	2
Offered some benefits in comparison to non-digital tools	0	7	13	12	4
The other digital tools					
Were easy to use	0	4	6	26	5
Included ones I had not used before	2	6	2	18	13
Were essential	0	2	7	24	8
Offered some benefits in comparison to other tools	0	0	22	12	7
Offered some benefits in comparison to non-digital tools	0	2	9	16	14

37 of the cohorts used Facebook or Twitter to facilitate collaboration with 19 cohorts and their teachers posting at least weekly. In line with the Learning Activities, typical activities included finding partners, organising the group tasks, sharing resources and links, discussion, peer feedback and collaboratively producing outputs such as presentations. Not all cohorts used Facebook or Twitter however, with some using blogs and collaborative tools in the VLE. The average number of comments that posts received varied (5+: 18 cohorts, 2-4: 13 cohorts, 1: 9 cohorts, 0: 7 cohorts).

23 cohorts used TeamUp to record reflections and 13 cohorts used an alternative tool. Students were most commonly asked to record their reflections between 2 and 4 times (24 cohorts). 33 teachers listened to the recordings along with 23 of the student cohorts. A number of teachers reported technical challenges such as TeamUp not working, the site being down, poor audio recording, and poor or slow internet access. In addition a number of teachers suggested that it was challenging for students to present their reflections concisely (in a minute) and some did not feel comfortable recording themselves (with some writing them on blogs instead).

In relation to organizational challenges, the main problems were the constraints of the curriculum (16 comments), and time (22 comments) - the time-consuming nature of the Learning Activities and the timing of the piloting (at the end of the school year when many teachers and students were tired). Relatively fewer comments were made about managing groups (6 comments). Individual teachers also mentioned: student autonomy (2 comments), parental concern/resistance (2 comments), understanding the iTEC resources, lack of student motivation and seeking partners to work with.

In relation to technical challenges, the main problems were with slow internet access (12 cohorts), TeamUp (13 cohorts) and ICT access (13 cohorts). Six teachers said that they did not experience any technical problems. Others mentioned: home access, technical support, learning how to use the technology, VLE, no interactive

whiteboard, management of ICT, site management, using blogs, difficulties using social networking tools, and filtering.

Other challenges identified in addition to those already mentioned included the age of the students (too young) (3 cohorts), maintaining compatibility with other classes in the year group (not involved in iTEC) (2 cohorts), classroom space not suitable for collaborative activities, lack of common ground with other groups, reluctance or unavailability of students to continue working outside normal classroom hours, the use of English to communicate with others and students finding it difficult to communicate concisely (when recording reflections).

The main benefit was perceived to be a new approaches to learning (9 cohortss). Relatively fewer comments were made in relation to: student motivation (8 comments), making planning easier (six cohorts), increased opportunities for collaboration (8 cohorts), creativity (3 cohorts), modeling good practice (3 cohorts), active learning (3 cohorts), effective (3 cohorts). Other benefits from individuals were noted to be: knowledge building, autonomy, reflection, groupwork, communication skills, ICT skills, peer review, cross-curricular suitability, positive experience, individualized learning and working with colleagues.

The main enablers were perceived to be: student motivation (14 cohorts), teacher motivation (12 cohorts) and the support of colleagues (8 cohorts). Other enablers mentioned included: ICT, clear objectives, flexibility of resources, iTEC materials, parental support, school support, teacher ICT experience and the support of the NPC.

Teaching practices

The implementation of the Learning Story enabled....	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Me to incorporate new pedagogical practices	1	1	3	20	16
Me to assess students in a new way	1	2	7	20	11
Me to create opportunities to learn beyond the boundaries of the classroom	0	1	2	20	18
Me to explore different teacher and student roles and relationships	1	2	1	19	18
Students to engage with complex, real world problems	1	1	6	19	14
Me to meet the individual learning needs of my students	0	1	9	21	10
Me to track each student's progress	0	3	8	23	7
Me to support students to work at their own pace	0	1	10	21	9
Students to have more opportunities to undertake	1	0	3	17	20

collaborative work					
Students to develop new skills for collaborative work	1	0	4	16	20
Students to use digital tools to support collaborative work	1	0	4	19	17
Creative activities to take place	0	1	0	19	21
Students to develop their creative skills	0	1	1	18	21
Me to develop my creative skills	0	1	4	18	18
Students to express their ideas in new ways	0	1	3	23	14
Students to communicate in new ways with each other	0	1	4	17	19
Students to communicate with me in new ways	1	1	5	19	15
Students to communicate in new ways with the wider community	1	2	9	17	12
Based on my experience....					
I will use digital tools more often in the future	0	1	5	15	20
I feel that the investment required was worthwhile	1	1	3	12	24
I have become more enthusiastic about my pedagogical practice	1	0	9	12	19
I feel that the Learning Story presents exciting opportunities to do things differently in the classroom	1	0	4	17	19
The implementation of the Learning Story has developed...					
My skills in the use of digital tools	2	1	6	19	13
My knowledge of the pedagogical use of digital tools	2	1	7	18	13
My understanding about the potential of integrating digital tools in my teaching practice	2	1	3	22	13
My understanding about the different ways that students can learn	2	1	7	22	9
The implementation of the Learning Story...					
Promoted active and independent learning in which students take responsibility for their own learning or progress	1	0	4	22	14
Led to students being deeply engaged in their work (so that they	1	2	6	15	17

did not notice time passing for example					
Has had a positive impact on students attitudes to learning	1	3	4	17	16
Has led to improvements in my students' levels of attainment (as indicated by my assessment data)	1	1	11	18	10

26 teachers felt that the Learning Story (SCSR) and Learning Activities would definitely lead to innovation in the classroom whilst the remaining 15 felt they probably would. The main reason given was increased collaboration (10 comments) and enhanced student motivation (10 comments). Relatively fewer comments were made in relation to a new approach to learning (7 comments), increased student autonomy (3 comments), active learning (4 comments), authentic learning (5 comments), effective (particularly for lower ability students) (3 comments) and opportunities to use new digital tools (6 comments) and increase ICT use (3 comments). Other reasons included: increases ICT skills, promotes creativity, learning beyond the classroom, increases variety, and facilitates knowledge building, problem solving, learning to learn, language learning, inquiry learning, communication and peer learning.

24 teachers said that they would definitely implement it again in the future whilst the remaining 17 teachers said that they would probably implement it again in the future. Reasons given included: a new approach to learning, and opportunities to use new technologies and develop ICT skills (both students and teachers). In addition, it was suggested that it was a good way to increase student motivation, particularly for reluctant learners. Some teachers noted that it made teaching more interesting for themselves. Others suggested that it had been a positive experience and also that they felt it was an effective approach. Those expressing caution noted that students needed to be interested in this approach to reap the benefits, that some students could be distracted by the technology, and that technical support would be required to make it feasible to continue.

16 teachers suggested that they would definitely recommend the resources to other teachers, whilst 24 said that they would probably recommend the resources to other teachers. Most teachers referred to sharing good ideas with others and the benefits of further development when collaborating with teaching colleagues. Those who were cautious noted that some teachers may be resistant to change, that benefits would be dependent on context. One teacher said no, suggesting that he/she had made many changes from the original materials.

Lithuania (45 pilots, 45 teachers – 3 males, 42 females)

About half the teachers involved in Cycle 2 pilots (22 cohorts) were teaching at primary level (6-11 years) with the other half teaching cohorts from 11 to 14 years (lower secondary). Those teaching at secondary school also covered a variety of subjects mainly mathematics and sciences (6 cohorts) but also German (2), history (2), English (1), Lithuanian (1) and ICT (1). These data were not available for 10 teachers.

44 of the 45 teachers indicated that they had received training and support.

The training I received...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was useful	0	0	7	14	23
Covered everything I needed to know	0	3	14	15	12
Provided appropriate technical skills	1	1	5	22	15
Introduced me to new pedagogical practices	0	0	7	17	20
Introduced me to new digital tools to support teaching and learning	0	0	0	18	26

24 teachers agreed or strongly agreed that they were able to adapt the Learning Story to suit their particular needs, whilst 14 teachers felt neutral about this statement and seven disagreed or strongly disagreed.

Most teachers in Lithuania implemented SSR with only four choosing MMS. In terms of implementation, the teachers did not implement all the Learning Activities with the cohorts.

Learning Activity	No. cohorts
Forming teams	34
Ad-hoc collaboration	33
Learning oriented browsing	37
Reflection	31
Peer feedback	37
Information grouping	34
Prepare results	38

TeamUp was used with 27 cohorts. Teachers used a variety of other tools, most commonly (more than half of cohorts) digital resources, interactive whiteboards, game-based learning and mobile devices, together with digital tools for media

authoring, data capture, collaboration, communication and music/photo/video/slide-sharing.

The TeamUp tool ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was easy to use	0	2	3	14	8
Was essential	0	4	7	12	4
Offered some benefits in comparison to other tools	1	0	9	12	5
Offered some benefits in comparison to non-digital tools	0	2	8	10	7
The other digital tools					
Were easy to use	0	2	9	24	10
Included ones I had not used before	1	4	4	24	12
Were essential	0	1	11	23	10
Offered some benefits in comparison to other tools	0	1	10	19	15
Offered some benefits in comparison to non-digital tools	2	0	11	18	14

29 of the cohorts used Facebook or Twitter to facilitate collaboration with 20 cohorts and their teachers posting at least weekly. In line with the Learning Activities, typical activities included sharing information between members of the group, sharing resources such as photographs, planning work, discussing activities, preparing the project presentation and evaluating the activities. One teacher from a primary school noted that primary aged students (particularly the younger ones) would not be able use Facebook. The average number of comments that posts received varied (5+: 6 cohorts, 2-4: 11 cohorts, 1: 5 cohorts, 0: 17 cohorts).

13 cohorts used TeamUp to record reflections and 21 cohorts used an alternative tool. Students were most commonly asked to record their reflections 1-2 times (16 cohorts). 27 (of 34) teachers listened to the recordings along with 25 of the student cohorts. A number of teachers reported challenges such as students being able to produce concise reflections within the time allowed (one minute) and younger students being able to draw conclusions independently. Technical challenges included not being able to record sound (either because no equipment was available or because of technical difficulties). Students also found it difficult to choose the background music.

In relation to organizational challenges, many teachers (16 cohorts) felt that there had been no problems. The main problem identified was a lack of time (12 cohorts). Some comments were noted about a lack of knowledge/insufficient information about the approach (5 cohorts) and organizing groupwork (4 cohorts). A few comments noted: the tension between group work and individualized approaches to learning and a lack of student engagement.

In relation to technical challenges, many teachers (17) felt that there had been none but also referred to lack of access to ICT (11 cohorts). Some comments referred to a lack of ICT skills (5 comments), software errors (5 comments), Internet access (4 cohorts), lack of home access (3 cohorts) and TeamUp (4 cohorts). Other teachers mentioned that younger pupils did not have an email account which meant that it was not possible to register to an online community and a lack of funds to purchase ICT.

Other challenges identified in addition to those already mentioned included: engaging parental support, lack of student organizational skills, lack of engagement by other teachers, using English as a foreign language (resources, TeamUp) and a lack of experience.

The main benefits were perceived to be: increased student motivation (14 comments) and a new approach to learning (10 comments). Other benefits were noted to be: CPD (5 comments), collaboration (6 comments), teacher motivation (4 comments), student ICT skills (4 comments), increased use of ICT (4 comments), autonomy (3 comments), communication (3 comments) and group work (2 comments). Individual teachers mentioned: scenarios, international collaboration, active learning, increased development of subject skills, peer learning, learning beyond the classroom, new roles, effective, flexible and challenging. One teacher noted that it was too early to tell.

The main enablers were perceived to be: student motivation (16 cohorts) and teacher motivation (13 cohorts). Other enablers mentioned included: ICT (3 cohorts), the NPC (3 cohorts), prior experience (2 cohorts), the support of colleagues (2 cohorts) and group work (2 cohorts). Individual teachers mentioned: TeamUp, cross-curricular approaches (school policy), communication, parental engagement, individualized approach, collaboration and ICT skills.

Teaching practices

The implementation of the Learning Story enabled....	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Me to incorporate new pedagogical practices	0	0	2	20	23
Me to assess students in a new way	0	0	5	24	16
Me to create opportunities to learn beyond the boundaries of the classroom	0	0	0	22	23
Me to explore different teacher and student roles and relationships	0	0	2	25	18
Students to engage with complex, real world problems	0	0	4	22	19
Me to meet the individual learning needs of my students	0	0	4	29	12
Me to track each student's progress	0	1	7	25	12
Me to support students to work at	1	0	3	30	11

their own pace					
Students to have more opportunities to undertake collaborative work	0	0	3	23	19
Students to develop new skills for collaborative work	0	0	2	20	23
Students to use digital tools to support collaborative work	0	0	2	20	23
Creative activities to take place	0	0	0	19	26
Students to develop their creative skills	0	0	0	20	25
Me to develop my creative skills	0	0	3	23	19
Students to express their ideas in new ways	0	0	3	25	17
Students to communicate in new ways with each other	0	0	2	26	17
Students to communicate with me in new ways	0	0	3	25	17
Students to communicate in new ways with the wider community	0	0	11	26	8
Based on my experience....					
I will use digital tools more often in the future	0	0	2	24	19
I feel that the investment required was worthwhile	0	0	0	20	25
I have become more enthusiastic about my pedagogical practice	0	0	5	21	19
I feel that the Learning Story presents exciting opportunities to do things differently in the classroom	0	0	1	22	22
The implementation of the Learning Story has developed...					
My skills in the use of digital tools	0	0	0	22	23
My knowledge of the pedagogical use of digital tools	0	0	0	23	22
My understanding about the potential of integrating digital tools in my teaching practice	0	1	2	22	20
My understanding about the different ways that students can learn	0	0	3	22	20
The implementation of the Learning Story...					
Promoted active and independent learning in which students take responsibility for their own learning	0	1	3	29	12

or progress					
Led to students being deeply engaged in their work (so that they did not notice time passing for example)	0	0	5	24	16
Has had a positive impact on students attitudes to learning	0	0	3	28	14
Has led to improvements in my students' levels of attainment (as indicated by my assessment data)	0	1	10	27	7

Of the 41 teachers who implemented SCR, 36 teachers felt it would definitely lead to innovation in the classroom whilst the remaining 5 felt it probably would. The main reasons given were: new approach to learning (12 comments) and increasing student motivation (9 comments). Other reasons included: knowledge acquisition (3 comments), ICT skills (4 comments), use of ICT (4 comments), creativity (3 comments), collaboration (2 comments), communication (3 comments), new roles (3 comments), flexibility (2 comments), pace (2 comments), effective (2 comments) and scenarios (2 comments). Individual teachers mentioned: teacher motivation, achievement, active learning, autonomy, easy, learning a language, facilitating cross-curricular approaches and variety. One teacher noted that alternative approaches existed already.

Of the four teachers who implemented MMS, two felt that it would definitely lead to innovation in the classroom whilst the other two felt it probably would. Reasons given included student collaboration, knowledge acquisition and 21st century skills. Those expressing caution suggested it would depend on needs and technical settings.

Of the 41 teachers who implemented SCR, 30 said that they would definitely implement it again in the future whilst the remaining 11 teachers said that they would probably implement it again in the future. The main reasons given included: student motivation, teacher motivation and effective. Others included: creativity, the use of ICT, variety, autonomy, active, peer learning, flexibility and knowledge acquisition. Those expressing caution noted that there were time implications and further use would depend on needs.

Of the four teachers who implemented MMS, three said that they would definitely implement it again in the future whilst the remaining teacher said that he/she would probably implement it again in the future. Reasons given included: effective, promotes autonomy, creativity, teacher motivation, new approach to learning and student motivation. One teacher expressing caution noted that it would depend on needs.

Of the 41 teachers who implemented SCR, 34 teachers suggested that they would definitely recommend the resources to other teachers, whilst six said that they would probably recommend the resources to other teachers but one said that they would not. Most teachers referred to a new approach to learning, CPD opportunities, impact on student motivation and that the approach was effective. Others mentioned: useful

approach, innovation, creativity, variety, autonomy and teacher motivation. Those who were cautious noted that such approaches already exist and that collaborating with other teachers (sharing experiences as part of the process of recommendation) would be time-consuming.

Of the four teachers who implemented SCR, three teachers suggested that they would definitely recommend the resources to other teachers, whilst the remaining one said that they would probably recommend the resources to other teachers. Teachers referred to a need to move forward, to develop students' autonomy and individualise learning and that this approach was helpful.

Norway (10 pilots, 7 teachers: 3 male, 4 female)

The teachers involved in Cycle 2 pilots taught cohorts from 12 to 16 years. They also covered a variety of subjects mainly science (6 cohorts) but also Spanish (2), social science (1) and religion/ethics (1).

All seven teachers indicated that they had received training and support.

The training I received...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was useful	0	0	0	5	2
Covered everything I needed to know	0	1	2	4	0
Provided appropriate technical skills	0	2	1	4	0
Introduced me to new pedagogical practices	0	1	2	4	0
Introduced me to new digital tools to support teaching and learning	0	0	0	4	3

Teachers of 7 of the cohorts agreed or strongly agreed that they were able to adapt the Learning Story to suit their particular needs, whilst the teacher of one cohort felt neutral about this statement and teachers of two cohorts disagreed.

All teachers in Norway implemented SCSR. In terms of implementation, the teachers did not implement all the Learning Activities with the cohorts.

Learning Activity	No. cohorts
Forming teams	7
Ad-hoc collaboration	4
Learning oriented browsing	9
Reflection	5
Peer feedback	4
Information grouping	10
Prepare results	6

TeamUp was used with four cohorts. Teachers used a variety of other tools, most commonly (at least half of cohorts) digital resources and interactive whiteboards, together with digital tools for data capture, collaboration, communication and music/photo/video/slide-sharing.

The TeamUp tool ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was easy to use	0	0	3	1	0

Was essential	0	3	1	0	0
Offered some benefits in comparison to other tools	0	0	4	0	0
Offered some benefits in comparison to non-digital tools	0	0	3	1	0
The other digital tools					
Were easy to use	0	0	2	8	0
Included ones I had not used before	0	0	1	7	2
Were essential	0	0	5	3	2
Offered some benefits in comparison to other tools	0	0	1	9	0
Offered some benefits in comparison to non-digital tools	0	0	1	7	2

Five of the cohorts used Facebook or Twitter to facilitate collaboration with four cohorts and the teachers of three cohorts posting at least weekly. In line with the Learning Activities, typical activities included sharing links and discussions as well as teachers answering questions. The average number of comments that posts received varied (5+: 1 cohort, 2-4: 2 cohorts, 0: 2 cohorts).

One cohort used an alternative tool to TeamUp to record reflections. Students were asked to record their reflections between three times and 15 students did so. The teacher and the student listened to the recordings. There were no challenges identified in relation to recording reflections.

In relation to organizational challenges, the main problems were the constraints of the curriculum (3 cohorts) and lack of support from senior managers (2 cohorts).

In relation to technical challenges, the main problems were with access to ICT (8 cohorts), installing software (4 cohorts), internet access (2 cohorts) and difficulties navigating the social network site used. One teacher noted that the websites used and network were unstable. Another noted login issues and a lack of funds for software. In addition, the ICT skills of students were variable and one teacher said that his/her students did not have school email addresses which made it difficult to register them on the chosen website. In relation to other challenges the fit with the subject area was noted (2 cohorts).

The main benefits were perceived to be: the introduction of new technologies into the classroom (6 cohorts) and the variety and possibilities this brings (6 cohorts). Others included: new approaches to learning, student engagement, developing student and teacher digital literacy skills.

The main enablers were perceived to be: teacher motivation (2 cohorts), student motivation (2 cohorts), school management support (2 cohorts), technical support (2 cohorts), and having spare time in the curriculum (at the end of the year) (2 cohorts).

Other enablers mentioned included: being part of iTEC, support of colleagues, and the support of the NPC.

Teaching practices

The implementation of the Learning Story enabled....	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Me to incorporate new pedagogical practices	0	0	0	10	0
Me to assess students in a new way	0	2	0	8	0
Me to create opportunities to learn beyond the boundaries of the classroom	0	2	0	7	1
Me to explore different teacher and student roles and relationships	0	0	0	10	0
Students to engage with complex, real world problems	0	0	6	4	0
Me to meet the individual learning needs of my students	0	0	5	4	1
Me to track each student's progress	0	0	6	4	0
Me to support students to work at their own pace	0	0	3	7	0
Students to have more opportunities to undertake collaborative work	0	0	1	8	1
Students to develop new skills for collaborative work	0	0	0	9	1
Students to use digital tools to support collaborative work	0	0	0	9	1
Creative activities to take place	0	0	3	5	2
Students to develop their creative skills	0	0	5	2	3
Me to develop my creative skills	0	0	5	2	3
Students to express their ideas in new ways	0	0	1	8	1
Students to communicate in new ways with each other	0	4	0	5	1
Students to communicate with me in new ways	0	2	0	4	4
Students to communicate in new ways with the wider community	0	3	2	3	2
Based on my experience....					
I will use digital tools more often in the future	0	0	2	5	3
I feel that the investment required was worthwhile	0	0	2	5	3
I have become more enthusiastic	0	0	2	6	2

about my pedagogical practice					
I feel that the Learning Story presents exciting opportunities to do things differently in the classroom	0	0	0	8	2
The implementation of the Learning Story has developed...					
My skills in the use of digital tools	0	0	2	6	2
My knowledge of the pedagogical use of digital tools	0	2	0	7	1
My understanding about the potential of integrating digital tools in my teaching practice	0	0	2	6	2
My understanding about the different ways that students can learn	0	2	2	5	1
The implementation of the Learning Story...					
Promoted active and independent learning in which students take responsibility for their own learning or progress	0	2	3	5	0
Led to students being deeply engaged in their work (so that they did not notice time passing for example	0	4	3	2	1
Has had a positive impact on students attitudes to learning	0	0	7	2	1
Has led to improvements in my students' levels of attainment (as indicated by my assessment data)	0	2	5	3	0

Five teachers felt that the Learning Story (SCR) and Learning Activities would definitely lead to innovation in the classroom whilst the remaining two felt they probably would. The main reasons given were that it would promote more use of technology in the classroom (4 comments) and promote engagement (2 comments). Other individual reasons included: promoting student motivation, autonomy and variety.

Four teachers said that they would definitely implement it again in the future whilst one teacher said that he/she would probably implement it again in the future and two said not. Reasons given included: teacher motivation, student motivation, engagement and variety. Of the two teachers who said not, one was leaving the teaching profession and the other was not intending to participate in iTEC in the future.

Four teachers suggested that they would definitely recommend the resources to other teachers, whilst three said that they would probably recommend the resources to other teachers. The teachers all gave different reasons: authentic learning opportunities, new approaches to learning, to increase technology use in the classroom, teacher motivation and worth sharing with others.

Portugal (27 pilots, 27 teachers: 11 male, 16 female)

The teachers involved in Cycle 2 pilots taught 21 cohorts from 13 to 15 years and six cohorts from 11 to 13 years. They also covered a variety of subjects mainly science (17 cohorts) and mathematics (5 cohorts) but also technology (3), ICT (1) and geography (1).

20 of the 27 teachers indicated that they had received training and support.

The training I received...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was useful	0	0	1	8	11
Covered everything I needed to know	0	2	2	11	5
Provided appropriate technical skills	0	0	5	12	3
Introduced me to new pedagogical practices	0	0	4	7	9
Introduced me to new digital tools to support teaching and learning	0	0	2	10	8

Teachers of 19 of the cohorts agreed or strongly agreed that they were able to adapt the Learning Story to suit their particular needs, whilst five teachers felt neutral about this statement and teachers of three cohorts disagreed or strongly disagreed.

All teachers in Portugal implemented SCSR. In terms of implementation, the teachers did not implement all the Learning Activities with the cohorts.

Learning Activity	No. cohorts
Forming teams	27
Ad-hoc collaboration	18
Learning oriented browsing	25
Reflection	25
Peer feedback	25
Information grouping	23
Prepare results	24

TeamUp was used with 25 cohorts. Teachers used a variety of other tools, most commonly (at least half of cohorts) digital resources, VLE and interactive whiteboards, together with digital tools for media authoring, data capture, collaboration, communication and music/photo/video/slide-sharing.

The TeamUp tool ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Was easy to use	0	1	2	11	11
Was essential	1	6	7	10	1
Offered some benefits in comparison to other tools	1	2	9	13	0
Offered some benefits in comparison to non-digital tools	1	2	7	10	5
The other digital tools					
Were easy to use	0	2	1	17	7
Included ones I had not used before	3	2	1	14	7
Were essential	0	2	5	14	6
Offered some benefits in comparison to other tools	0	0	4	20	3
Offered some benefits in comparison to non-digital tools	0	0	4	17	6

22 of the cohorts used Facebook or Twitter to facilitate collaboration with 13 cohorts and the teachers of nine cohorts posting at least weekly. In line with the Learning Activities, typical activities included sharing links and information as well as facilitating student and teacher feedback. The average number of comments that posts received varied (5+: 4 cohorts, 2-4: 8 cohorts, 1: 5 cohorts, 0: 5 cohorts).

19 cohorts used TeamUp to record reflections and five cohorts used an alternative tool. Most students were asked to record their reflections between 2-5 times. All 24 teachers and 22 cohorts of students listened to the recordings. Challenges included: TeamUp (access and audio recording problems), access to ICT, students finding concise reporting difficult and students resistant to recording themselves. Individual teachers also noted that external noise was a problem, time was an issue and internet access was slow.

In relation to organizational challenges, the main problem was noted to be lack of time (14 cohorts, both in relation to teachers planning and students' activities) Specific reasons were that running such a project at the end of the year (with lots of deadlines across the curriculum) was difficult (3 cohorts), curriculum constraints and that students used digital tools they were already familiar with as they did not have time to investigate new ones. In many cases it was noted that students had to undertake more work outside the classroom than anticipated to cope with time pressures. Other organizational challenges included: group management was difficult (4 cohorts), with two teachers noting that groups progressed at different rates and one explaining that managing access to ICT became more challenging, lack of student knowledge, students unwilling to work outside the classroom, lack of appropriate spaces in school to undertake the work, and insufficient iTEC training (2 cohorts, suggesting a session mid-way through would have been helpful).

In relation to technical challenges, the main problems were TeamUp (11 cohorts) and sufficient internet access (6 cohorts). In relation to TeamUp, specific problems noted were: difficulties changing and reorganizing teams, the lack of facility to import/export

images and audio files, capturing images in TeamUp was time-consuming, and some teachers had audio problems when recording reflections. One teacher said that the ideas behind TeamUp were good but that as tool it was not flexible enough and other tools could be used instead. One teacher noted that sufficient access to ICT with microphones was a challenge.

In relation to other problems, a few teachers identified student motivation to undertake the work. One teacher said that he/she had not implemented Facebook as students would have to access it outside school and there could have been digital divide issues. Another said that obtaining parental consent for the activities was an issue. Another suggested that he/she had not fully understood the purpose of Learning Story.

The main benefits were perceived to be: increasing student autonomy (11 cohorts). Specific comments relating to new approaches included: new approaches to learning (5 cohorts), different roles (2 cohorts), collaboration (5 cohorts), pace (3 cohorts), creativity (2 cohorts), peer learning (2 cohorts), learning to learn, new assessment, authentic learning and reflection. Four teachers noted increased student motivation as a benefit, three suggested that increasing use of technology in the classroom was a benefit, and two teachers said that the approach was effective.

The main enablers were perceived to be: student motivation (12 cohorts) and teacher motivation (7 cohorts). Other enablers mentioned included: ICT (2 cohorts) and free software (1 cohorts), school support (2 cohorts) and colleagues (cohorts), groupwork, explaining the approach. Two teachers said that an enabler had been participating in cycle 1 so the teacher and students were familiar with some of the learning activities.

Teaching practices

The implementation of the Learning Story enabled....	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Me to incorporate new pedagogical practices	1	0	1	15	10
Me to assess students in a new way	1	0	2	18	6
Me to create opportunities to learn beyond the boundaries of the classroom	0	0	4	14	9
Me to explore different teacher and student roles and relationships	0	0	4	13	10
Students to engage with complex, real world problems	0	0	7	13	7
Me to meet the individual learning needs of my students	1	0	5	19	2
Me to track each student's progress	0	1	5	17	4
Me to support students to work at their own pace	0	0	5	15	7
Students to have more	1	0	2	12	12

opportunities to undertake collaborative work					
Students to develop new skills for collaborative work	1	0	2	13	11
Students to use digital tools to support collaborative work	0	0	2	13	12
Creative activities to take place	1	0	3	9	14
Students to develop their creative skills	1	0	4	8	14
Me to develop my creative skills	1	0	4	12	10
Students to express their ideas in new ways	1	0	3	12	11
Students to communicate in new ways with each other	1	0	6	9	11
Students to communicate with me in new ways	1	1	6	9	10
Students to communicate in new ways with the wider community	0	4	10	8	5
Based on my experience....					
I will use digital tools more often in the future	0	0	8	12	7
I feel that the investment required was worthwhile	0	1	1	14	11
I have become more enthusiastic about my pedagogical practice	0	2	8	9	8
I feel that the Learning Story presents exciting opportunities to do things differently in the classroom	1	0	2	13	11
The implementation of the Learning Story has developed...					
My skills in the use of digital tools	0	1	7	14	5
My knowledge of the pedagogical use of digital tools	0	1	6	15	5
My understanding about the potential of integrating digital tools in my teaching practice	0	1	8	11	7
My understanding about the different ways that students can learn	0	1	10	11	5
The implementation of the Learning Story...					
Promoted active and independent learning in which students take responsibility for their own learning or progress	0	0	3	16	8
Led to students being deeply	0	2	4	14	7

engaged in their work (so that they did not notice time passing for example)					
Has had a positive impact on students attitudes to learning	0	0	3	11	13
Has led to improvements in my students' levels of attainment (as indicated by my assessment data)	0	1	4	17	5

Ten teachers felt that the Learning Story (SCSR) and Learning Activities would definitely lead to innovation in the classroom whilst the remaining 17 felt they probably would. The main reasons given were: increased use of ICT (7 comments) and increased student autonomy (6 comments). A smaller number of teachers noted: increased student motivation (5 comments), new approach to learning (4 comments), students working at their own pace (2 comments) and learning to learn (2 comments). Individual teachers noted: knowledge construction, collaboration, creativity, authentic learning, TeamUp, improved ICT skills and the use of new technologies.

Eight teachers said that they would definitely implement it again in the future whilst 17 teachers said that they would probably implement it again in the future and two said not. Reasons for continuing that were given included: beneficial, effective, student motivation, independent learning, new approach to learning, autonomy, teacher motivation, student-centred approach and knowledge construction. Two teachers said it was part of their normal practices. Three teachers suggested they would implement it again if the project continued. If those teachers who said they would not implement it again both felt there was a lack of time and one added that students were not interested.

13 teachers suggested that they would definitely recommend the resources to other teachers, whilst 13 said that they would probably recommend the resources to other teachers. Reasons given were: beneficial, new approach to learning, effective, student autonomy, teacher motivation, student motivation, increase ICT in the classroom, variety, independent learning and impact on learning outcomes. One said they would not recommend the resources to other teachers, commenting that the ideas were not relevant.

Slovakia (10 pilots, 7 teachers – all female)

The teachers involved in Cycle 2 pilots taught 10 cohorts across a range of ages from 7 to 17 years. They also covered a variety of subjects: physics (3), biology (2), geography (2), Slovak (1), English (1) and mathematics (1).

Six of the seven teachers indicated that they had received training and support.

The training I received...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was useful	0	0	0	4	2
Covered everything I needed to know	0	1	0	5	0
Provided appropriate technical skills	1	0	4	1	0
Introduced me to new pedagogical practices	0	0	2	4	0
Introduced me to new digital tools to support teaching and learning	0	0	3	2	1

Three teachers of six of the cohorts agreed or strongly agreed that they were able to adapt the Learning Story to suit their particular needs, whilst two teachers felt neutral about this statement and two teachers (one cohort each) disagreed or strongly disagreed.

All teachers in Slovakia implemented EEP. In terms of implementation, the teachers did not implement all the Learning Activities with the cohorts.

Learning Activity	No. cohorts
Forming teams	10
Ad-hoc collaboration	1
Learning oriented browsing	10
Reflection	5
Peer feedback	10
Information grouping	10
Prepare results	5

TeamUp was used with nine of the ten cohorts. Teachers used a variety of other tools, most commonly (at least half of cohorts) digital resources with digital tools for communication.

The TeamUp tool ...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was easy to use	1	2	0	5	1

Was essential	0	0	2	7	0
Offered some benefits in comparison to other tools	0	0	8	1	0
Offered some benefits in comparison to non-digital tools	0	0	4	5	0
The other digital tools					
Were easy to use	1	0	2	7	0
Included ones I had not used before	1	5	2	2	0
Were essential	0	0	3	7	0
Offered some benefits in comparison to other tools	0	0	5	5	0
Offered some benefits in comparison to non-digital tools	0	0	4	6	0

Half of the ten cohorts used Facebook or Twitter to facilitate collaboration with students in four of the cohorts and the teacher of one of the cohorts posting at least weekly. In line with the Learning Activities, typical activities included sharing information such as notes, images, puzzles and presentations. The average number of comments that posts received varied (5+: 0 cohorts, 2-4: 2 cohorts, 1: 0 cohorts, 0: 2 cohorts).

Five cohorts used TeamUp to record reflections and one cohort used an alternative tool. Three cohorts were asked to record their reflections between three times and one cohort were asked to record their reflections once. All teachers of the six cohorts listened to the recordings and four of the six cohorts of students listened to the recordings. Challenges included: students taking responsibility for planning their work, students collaborating and sharing information.

In relation to organizational challenges, finding sufficient time was the main problem (3 cohorts), time-tabling (2 cohorts), and managing groups (3 cohorts). Other issues mentioned were: curriculum constraints, and insufficient yet complex information about the Learning Story.

In relation to technical challenges, the main problems were noted with TeamUp (6 cohorts) particularly in relation to recording and playing back reflections, difficulties with home access (4 cohorts) and insufficient ICT training (2 cohorts). Other challenges included the tension between group work and individualizing learning, the need for teacher training and student absence.

The main benefits were perceived to be: collaboration (6 cohorts), autonomy (4 cohorts), ICT skills (2 cohorts) and individualized learning (3 cohorts). Others included: student motivation and creativity.

The main enablers were perceived to be: ICT (4 cohorts), the NPC (2 cohorts), student motivation (2 cohorts), school management (2 cohorts), new approach to

learning (2 cohorts) and prior experience (2 cohorts). Other enablers mentioned included: iTEC resources and colleague support.

Teaching practices

The implementation of the Learning Story enabled....	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Me to incorporate new pedagogical practices	0	0	0	6	4
Me to assess students in a new way	0	0	3	7	0
Me to create opportunities to learn beyond the boundaries of the classroom	0	0	1	9	0
Me to explore different teacher and student roles and relationships	0	0	4	6	0
Students to engage with complex, real world problems	0	3	3	4	0
Me to meet the individual learning needs of my students	0	0	4	6	0
Me to track each student's progress	0	1	2	7	0
Me to support students to work at their own pace	0	0	0	10	0
Students to have more opportunities to undertake collaborative work	0	0	0	6	4
Students to develop new skills for collaborative work	0	0	0	6	4
Students to use digital tools to support collaborative work	0	0	0	5	5
Creative activities to take place	0	0	2	7	1
Students to develop their creative skills	0	0	2	6	2
Me to develop my creative skills	0	0	3	4	3
Students to express their ideas in new ways	0	0	2	6	2
Students to communicate in new ways with each other	0	0	0	6	4
Students to communicate with me in new ways					
Students to communicate in new ways with the wider community	0	0	0	9	1
Based on my experience....	0	0	6	4	0
I will use digital tools more often in the future	0	0	3	7	0
I feel that the investment required was worthwhile	0	0	4	6	0
I have become more enthusiastic	0	0	2	6	2

about my pedagogical practice					
I feel that the Learning Story presents exciting opportunities to do things differently in the classroom	0	0	0	10	0
The implementation of the Learning Story has developed...					
My skills in the use of digital tools	0	0	1	7	2
My knowledge of the pedagogical use of digital tools	0	0	2	8	0
My understanding about the potential of integrating digital tools in my teaching practice	0	0	3	5	2
My understanding about the different ways that students can learn	0	0	0	9	1
The implementation of the Learning Story...					
Promoted active and independent learning in which students take responsibility for their own learning or progress	0	0	0	5	5
Led to students being deeply engaged in their work (so that they did not notice time passing for example	0	0	1	4	5
Has had a positive impact on students attitudes to learning	0	1	1	5	3
Has led to improvements in my students' levels of attainment (as indicated by my assessment data)	0	1	4	2	3

Of the seven teachers, four felt that SCR would definitely lead to innovation in the classroom whilst the remaining three felt they probably would. The most common reason given was increasing student autonomy (3 comments) and the use of ICT (3 comments). Other reasons included: individualized learning, increased knowledge acquisition, new approach to learning, student motivation and teacher motivation.

All seven teachers said that they would probably implement it again in the future. Reasons given included: student autonomy, teacher motivation and student motivation. Teachers noted that it would depend on future cohorts' needs, timing and opportunities to develop their own ICT skills.

Three teachers suggested that they would definitely recommend the resources to other teachers, whilst four said that they would probably recommend the resources to other teachers. The main reason was that it was seen to be effective. Other reasons include those given in relation to the Learning Story being innovative.

Spain (17 pilots, 15 teachers – 8 male, 7 female)

The teachers involved in Cycle 2 pilots taught 6 cohorts from 10 to 12 years (primary) and 11 cohorts from 12 to 17 years. They also covered a variety of subjects mainly mathematics (11 cohorts) and science/biology (5 cohorts) but also history (1).

Seven of the 15 teachers indicated that they had received training and support.

The training I received...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was useful	0	0	0	6	1
Covered everything I needed to know	0	0	1	6	0
Provided appropriate technical skills	0	0	2	4	1
Introduced me to new pedagogical practices	0	0	4	1	2
Introduced me to new digital tools to support teaching and learning	0	0	2	3	2

Teachers of 12 of the cohorts agreed or strongly agreed that they were able to adapt the Learning Story to suit their particular needs, whilst five teachers felt neutral about this statement.

MMS was implemented with six cohorts, EEP with five cohorts and SCR with six cohorts. In terms of implementation, the teachers did not implement all the Learning Activities with the cohorts.

Learning Activity	No. cohorts
Forming teams	17
Ad-hoc collaboration	14
Learning oriented browsing	13
Reflection	15
Peer feedback	13
Information grouping	13
Prepare results	9

TeamUp was used with 11 cohorts. Teachers used a variety of other tools, most commonly (at least half of cohorts) digital resources, mobile devices, interactive whiteboards and learner response systems, together with digital tools for media authoring, data capture, collaboration, communication and music/photo/video/slide-sharing.

The TeamUp tool ...	Strongly	Disagree	Neutral	Agree	Strongly
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	Disagree				Agree
Was easy to use	0	1	1	4	5
Was essential	0	2	5	3	1
Offered some benefits in comparison to other tools	0	1	4	4	2
Offered some benefits in comparison to non-digital tools	0	1	5	0	5
The other digital tools					
Were easy to use	0	0	3	12	2
Included ones I had not used before	1	1	3	5	7
Were essential	0	0	5	9	3
Offered some benefits in comparison to other tools	0	0	3	7	7
Offered some benefits in comparison to non-digital tools	0	0	4	4	9

Only seven of the cohorts used Facebook or Twitter to facilitate collaboration with two cohorts and the teachers of four cohorts posting at least weekly. In line with the Learning Activities, typical activities included sharing information and presentations, as well as facilitating discussions of the learning process, evaluation and assessment. The average number of comments that posts received varied (5+: 0 cohorts, 2-4: 4 cohorts, 1: 3 cohorts, 0: 0 cohorts).

Four cohorts used TeamUp to record reflections and four cohorts used an alternative tool. Students were asked to record their reflections between 2-10 times. All teachers and six cohorts of students listened to the recordings. The main challenges was audio recording problems. Individual teachers also noted that students found concise reporting and reflection difficult, and recording in English.

In relation to organizational challenges, the main problems were sufficient time to develop the project (10 cohorts), timetabling (14 cohorts: issues relating to the end of the school year, students missing lessons for various reasons such as attending sports competitions), groupwork (6 cohorts: uneven contributions, communication) and the logistics of co-ordinating collaboration with another group of students at another school (5 cohorts).

In relation to technical challenges, the main issues were ICT access (8 cohorts), home ICT access (4 cohorts), Internet access (3 cohorts), sound recording (5 cohorts) and TeamUp (6 cohorts: recording and playing back reflections and choosing topics) . Other issues mentioned were: software bugs (3 comments), lack of ICT skills (teacher), filter/installation restrictions on school network and poor quality images.

The main benefits were perceived to be: groupwork (7 cohorts), increased student motivation (6 cohorts), a new approach to learning (4 cohorts), increased use of ICT (3 cohorts) and an effective approach (3 cohorts). Others included: increased student

autonomy (2 cohorts), new approach to assessment, development of student ICT skills, and an international collaboration (2 cohorts, raising profile of students and their awareness of other educational systems).

The main enablers were perceived to be: student motivation (15 cohorts), teacher motivation (5 cohorts), the support of school leaders (4 cohorts) and ICT support (3 cohorts). Other enablers mentioned included: ICT (2 cohorts), prior experience, the NPC and iTEC resources.

Teaching practices

The implementation of the Learning Story enabled....	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Me to incorporate new pedagogical practices	0	0	1	8	8
Me to assess students in a new way	0	0	1	6	10
Me to create opportunities to learn beyond the boundaries of the classroom	0	1	3	7	6
Me to explore different teacher and student roles and relationships	0	0	1	7	9
Students to engage with complex, real world problems	0	0	4	5	8
Me to meet the individual learning needs of my students	0	0	5	6	6
Me to track each student's progress	0	0	5	6	6
Me to support students to work at their own pace	0	0	7	4	6
Students to have more opportunities to undertake collaborative work	0	0	0	2	15
Students to develop new skills for collaborative work	0	0	0	2	15
Students to use digital tools to support collaborative work	0	0	0	3	14
Creative activities to take place	0	0	0	7	10
Students to develop their creative skills	0	0	1	7	10
Me to develop my creative skills	0	0	3	6	8
Students to express their ideas in new ways	0	0	2	7	8
Students to communicate in new ways with each other	0	0	4	5	8
Students to communicate with me in new ways	0	0	3	8	6
Students to communicate in new ways with the wider community	1	1	6	5	4

Based on my experience....					
I will use digital tools more often in the future	0	1	1	6	9
I feel that the investment required was worthwhile	0	0	1	6	10
I have become more enthusiastic about my pedagogical practice	0	0	0	8	9
I feel that the Learning Story presents exciting opportunities to do things differently in the classroom	0	0	1	7	9
The implementation of the Learning Story has developed...					
My skills in the use of digital tools	0	0	2	9	6
My knowledge of the pedagogical use of digital tools	0	0	2	9	6
My understanding about the potential of integrating digital tools in my teaching practice	0	0	4	7	6
My understanding about the different ways that students can learn	0	2	2	8	5
The implementation of the Learning Story...					
Promoted active and independent learning in which students take responsibility for their own learning or progress	0	0	0	9	8
Led to students being deeply engaged in their work (so that they did not notice time passing for example)	0	0	1	6	10
Has had a positive impact on students attitudes to learning	0	0	1	6	10
Has led to improvements in my students' levels of attainment (as indicated by my assessment data)	0	2	4	6	5

Of the four teachers implementing MMS, two believed that the Learning Story would definitely lead to innovation in the classroom whilst one felt they probably would, and one felt that it would not. Of the five teachers implementing EEP, one believed that the Learning Story would definitely lead to innovation in the classroom whilst four felt that it probably would. Of the four teachers implement SCR, three believed that the Learning Story would definitely lead to innovation in the classroom whilst one felt that it probably would. The most common reasons given were: the use of ICT (5 comments), group work (5 comments), the development of student ICT skills (3 comments) and increased student motivation (4 comments). Other reasons included:

effective, autonomy, new roles, knowledge acquisition, new assessment/peer assessment, learning beyond the classroom, communication skills/21st century skills, teacher motivation and international collaboration.

Of the four teachers implementing MMS, two said that they would definitely implement it again in the future whilst two teachers said that they would probably implement it again in the future. Of the five teachers implementing EEP, all five teachers said that they would probably implement it again in the future. Of the four teachers implementing SCR, two said that they would definitely implement it again in the future whilst two teachers said that they would probably implement it again in the future. The main reasons given included: impact on student and teacher motivation, effective and useful. Other reasons were: autonomy, groupwork and international collaboration.

Of the four teachers implementing MMS, one teacher suggested that he/she would definitely recommend the resources to other teachers, whilst three said that they would probably recommend the resources to other teachers. Of the five teachers implementing EEP, all five said that they would probably recommend the resources to other teachers. Of the four teachers implementing SCR, two teachers suggested that they would definitely recommend the resources to other teachers, whilst two said that they would probably recommend the resources to other teachers. The main reasons given were that it was useful, effective and offered good CPD for other teachers. Other reasons were similar to those given above. Two notes of caution were expressed, one in relation to the logistical challenges of organising international collaboration and the other relating to the need for teachers to find time to prepare and develop the ideas.

Turkey (19 pilots, 19 teachers – 8 male, 11 female)

The teachers involved in Cycle 2 pilots taught 19 cohorts from 8 to 15 years with most in the range of 12 to 14 years (lower secondary). They also covered either English or English combined with other subjects (ICT, Turkish), with the exception of one cohort studying design and technology.

14 of the 19 teachers indicated that they had received training and support.

The training I received...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was useful	1	0	0	6	7
Covered everything I needed to know	0	2	0	8	4
Provided appropriate technical skills	0	1	2	6	5
Introduced me to new pedagogical practices	1	0	0	7	6
Introduced me to new digital tools to support teaching and learning	1	0	0	6	7

Fifteen teachers agreed or strongly agreed that they were able to adapt the Learning Story to suit their particular needs, whilst four teachers disagreed or strongly disagreed.

Most of the teachers in Turkey (16) implemented EEP with one implementing MMS and two implementing SCR. In terms of implementation, the teachers did not implement all the Learning Activities with the cohorts.

Learning Activity	No. cohorts
Forming teams	18
Ad-hoc collaboration	17
Learning oriented browsing	15
Reflection	15
Peer feedback	18
Information grouping	17
Prepare results	14

TeamUp was used with 16 cohorts. Teachers used a variety of other tools, most commonly (at least half of cohorts) digital resources, together with digital tools for games based learning, data capture, collaboration, communication and music/photo/video/slide-sharing.

The TeamUp tool ...	Strongly	Disagree	Neutral	Agree	Strongly

	Disagree				Agree
Was easy to use	2	2	1	5	6
Was essential	1	2	3	5	5
Offered some benefits in comparison to other tools	0	1	4	8	3
Offered some benefits in comparison to non-digital tools	0	1	4	6	5
The other digital tools					
Were easy to use	1	1	0	13	4
Included ones I had not used before	3	2	1	7	6
Were essential	2	0	1	8	8
Offered some benefits in comparison to other tools	1	1	1	8	8
Offered some benefits in comparison to non-digital tools	0	0	3	8	8

All but three of the teachers used Facebook or Twitter to facilitate collaboration with 13 cohorts and all 16 teachers posting at least weekly. In line with the Learning Activities, typical activities included sharing information and outcomes with peers locally and internationally, improving students' use of English, providing feedback, planning activities, generating ideas, designing presentations and evaluation of activities. The average number of comments that posts received varied (5+: 6 cohorts, 2-4: 9 cohorts, 1: 0 cohorts, 0: 1 cohorts).

11 cohorts used TeamUp to record reflections and five cohorts used an alternative tool. Most students were asked to record their reflections between 1-5 times. 13 teachers and their cohorts of students listened to the recordings. Challenges included: access to suitable ICT tools and students' ability to record reflections concisely. Individual teachers also noted that student owned devices were not adequate and that records could not always be deleted.

In relation to organizational challenges, the main challenge was time (8 cohorts) – due to lack of time overall, curriculum and timetabling constraints, as well as the burden of co-ordinating work beyond the classroom, and securing parental support (4 cohorts). Other organizational challenges included facilitating groupwork (3 cohorts) and communication between students, student reluctance to participate (2 cohorts), using a foreign language (English) and a perceived lack of project support.

In relation to technical challenges, the main issues were TeamUp (10 cohorts: access and deletion of records), ICT access (10 cohorts), Internet access (4 cohorts) and internet filtering (7 cohorts). Other issues included: ICT support (3 cohorts), software glitches (3 cohorts), lack of home access (2 cohorts), the VLE, network issues, lack of teacher ICT skills (2 cohorts), the iTEC Teacher Community, lack of ICT training and the adaptations required to chosen ICT tools (2 cohorts).

A broad range of benefits were noted by individual teachers: increased student autonomy (3 cohorts), effective (3 cohorts), a new approach to learning (2 cohorts), groupwork (2 cohorts), creativity (2 cohorts), student motivation (2 cohorts), ICT, learning beyond classroom, communication, collaboration, innovative, international collaboration, CPD, new roles and active learning.

The main enablers were perceived to be: ICT (5 cohorts) and student motivation (4 cohorts). Other enablers mentioned included: curriculum fit (3 cohorts), teacher motivation (2 cohorts), groupwork (2 cohorts) and iTEC resources (2 cohorts). Individual teachers referred to: communication, innovation, creativity, flexible, collaboration, clear objectives, planning, effective and the school leader.

Teaching practices

The implementation of the Learning Story enabled....	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Me to incorporate new pedagogical practices	2	0	2	7	8
Me to assess students in a new way	2	0	3	6	8
Me to create opportunities to learn beyond the boundaries of the classroom	2	0	0	7	10
Me to explore different teacher and student roles and relationships	2	0	0	7	10
Students to engage with complex, real world problems	2	0	1	6	10
Me to meet the individual learning needs of my students	2	0	2	6	9
Me to track each student's progress	2	0	3	6	8
Me to support students to work at their own pace	3	0	0	8	8
Students to have more opportunities to undertake collaborative work	2	0	0	5	12
Students to develop new skills for collaborative work	2	0	0	5	12
Students to use digital tools to support collaborative work	2	0	0	5	12
Creative activities to take place	2	0	1	6	10
Students to develop their creative skills	2	0	1	7	9
Me to develop my creative skills	2	0	2	6	9
Students to express their ideas in new ways	2	0	1	6	10
Students to communicate in new ways with each other	2	0	0	7	10
Students to communicate with me	2	0	1	6	10

in new ways					
Students to communicate in new ways with the wider community	1	0	3	6	9
Based on my experience....					
I will use digital tools more often in the future	2	0	1	5	11
I feel that the investment required was worthwhile	2	0	0	8	9
I have become more enthusiastic about my pedagogical practice	2	0	1	6	10
I feel that the Learning Story presents exciting opportunities to do things differently in the classroom	2	0	1	6	10
The implementation of the Learning Story has developed...					
My skills in the use of digital tools	2	0	2	3	12
My knowledge of the pedagogical use of digital tools	2	0	2	3	12
My understanding about the potential of integrating digital tools in my teaching practice	2	0	2	5	10
My understanding about the different ways that students can learn	2	0	0	6	11
The implementation of the Learning Story...					
Promoted active and independent learning in which students take responsibility for their own learning or progress	2	0	1	5	11
Led to students being deeply engaged in their work (so that they did not notice time passing for example	2	0	2	4	11
Has had a positive impact on students attitudes to learning	2	1	0	4	12
Has led to improvements in my students' levels of attainment (as indicated by my assessment data)	2	1	0	7	9

Of the 16 teachers who piloted EEP, 12 teachers felt that it would definitely lead to innovation in the classroom whilst the remaining four felt they probably would. The teacher piloting MMS felt that it would probably lead to innovation in the classroom and both teachers implementing SCR felt that it would definitely lead to innovation in the classroom.

The most common reasons given were increased use of ICT (9 comments) and positive impact on student motivation (5 comments). Other reasons included: autonomy, teacher motivation, new assessment approaches, new approach to learning, CPD, efficient, groupwork and effective. Two teachers who felt more cautious felt that the resources and ideas were not innovative.

Of the 16 teachers piloting EEP, nine said that they would definitely implement it again in the future whilst seven teachers said that they would probably implement it again in the future. The teacher piloting MMS felt that he/she would definitely implement it again in the future. Of the two teachers piloting SCR, one felt that he/she would definitely implement it again in the future whilst the other felt that he/she would probably implement it again in the future. Reasons given included: effective, useful and a positive impact on student motivation. Individual teachers referred to: CPD, a new approach to learning, the development of 21st century skills, innovative and learning beyond classroom. One teacher noted that it would only be feasible if class sizes were not too large.

Of the 16 teachers piloting EEP, 10 teachers suggested that they would definitely recommend the resources to other teachers, whilst six said that they would probably recommend the resources to other teachers. The teacher piloting MMS felt suggested that he/she would definitely recommend the resources to other others. Of the two teachers piloting SCR, one felt that he/she would definitely recommend the resources to other teachers, whilst the other felt that he/she would probably recommend the resources to other teachers. Reasons given were similar to those above (for innovation and implementing again).

UK (12 pilots, 5 teachers – 3 male, 2 female)

The teachers involved in Cycle 2 pilots taught 12 cohorts from 11 to 17 years. They also covered a variety of subjects: biology (3 cohorts), geography (3 cohorts), mathematics (4 cohorts) and design and technology (2 cohorts).

Three of the five teachers who responded to the survey indicated that they had received training and support.

The training I received...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Was useful	0	0	0	2	1
Covered everything I needed to know	0	0	0	3	0
Provided appropriate technical skills	0	0	0	2	1
Introduced me to new pedagogical practices	0	0	1	1	1
Introduced me to new digital tools to support teaching and learning	0	0	0	1	2

The four teachers of 10 of the cohorts agreed or strongly agreed that they were able to adapt the Learning Story to suit their particular needs, whilst a teacher of two cohorts felt neutral about this statement and teachers of three cohorts disagreed or strongly disagreed.

Nine cohorts undertook EEP and three cohorts undertook SCR. In terms of implementation, the teachers did not implement all the Learning Activities with the cohorts.

Learning Activity	No. cohorts
Forming teams	2
Ad-hoc collaboration	10
Learning oriented browsing	2
Reflection	9
Peer feedback	12
Information grouping	8
Prepare results	5

None of the cohorts used TeamUp. Teachers used a variety of other tools, most commonly (at least half of cohorts) digital resources, interactive whiteboards and learner response systems, together with digital tools for data capture and music/photo/video/slide-sharing.

The other digital tools	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Were easy to use	0	0	3	2	7
Included ones I had not used before	0	0	0	5	7
Were essential	0	3	0	5	4
Offered some benefits in comparison to other tools	0	0	0	5	7
Offered some benefits in comparison to non-digital tools	0	0	3	0	9

None of the cohorts used Facebook or Twitter to facilitate collaboration. Instead, one teacher noted that Edmodo had been used but that the students had not posted anything, only responded to quizzes and questions that the teacher had posed. Another teacher said:

Pupils prepared a storyboard and script for an animated mini maths lesson. They then created an animation using xtranormal.com. After getting peer feedback on each of their draft animations, they refined their work.

Another teacher (implementing SCR) asked groups of three students to produce Prezi presentations on topics, to give the presentation to the rest of the class and then to peer review the content of the presentation.

3 cohorts used TeamUp to record reflections. Students were asked to record their reflections between 5 times. The teacher and each cohorts of students listened to the recordings. No challenges were identified.

In relation to organizational challenges, the main problem was time (5 cohorts) and the management of learner response devices which was seen to be time-consuming (3 cohorts). In relation to technical challenges, the main challenges were ICT access (7 cohorts) and software issues (5 cohorts: configuring the iPod touches, software bugs) and network glitches (4 cohorts). Other main challenges included student engagement (2 cohorts) and teacher ICT confidence (2 cohorts).

Main benefits were noted: knowledge acquisition (2 cohorts), student autonomy (3 cohorts), effective (2 cohorts) and students' better understanding of assessment (2 cohorts) .

The main enablers was perceived to be ICT (6 cohorts), student motivation (3 cohorts) and the NPC (2 cohorts).

Teaching practices

The implementation of the Learning Story enabled....	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree

Me to incorporate new pedagogical practices	0	0	0	5	7
Me to assess students in a new way	0	0	0	2	10
Me to create opportunities to learn beyond the boundaries of the classroom	0	2	0	3	7
Me to explore different teacher and student roles and relationships	0	0	5	0	7
Students to engage with complex, real world problems	2	5	5	0	0
Me to meet the individual learning needs of my students	0	0	0	5	7
Me to track each student's progress	0	0	3	4	5
Me to support students to work at their own pace	0	0	0	5	7
Students to have more opportunities to undertake collaborative work	0	0	2	2	8
Students to develop new skills for collaborative work	0	0	2	2	8
Students to use digital tools to support collaborative work	0	0	0	2	10
Creative activities to take place	0	0	0	7	5
Students to develop their creative skills	0	0	2	5	5
Me to develop my creative skills	3	0	4	3	2
Students to express their ideas in new ways	0	0	2	5	5
Students to communicate in new ways with each other	0	0	2	6	4
Students to communicate with me in new ways	3	0	2	5	2
Students to communicate in new ways with the wider community	3	4	0	5	0
Based on my experience....					
I will use digital tools more often in the future	0	0	0	5	7
I feel that the investment required was worthwhile	0	0	0	5	7
I have become more enthusiastic about my pedagogical practice	0	0	2	3	7
I feel that the Learning Story presents exciting opportunities to do things differently in the classroom	0	0	2	3	7
The implementation of the Learning					

Story has developed...					
My skills in the use of digital tools	0	0	2	3	7
My knowledge of the pedagogical use of digital tools	0	0	2	3	7
My understanding about the potential of integrating digital tools in my teaching practice	0	0	2	3	7
My understanding about the different ways that students can learn	0	0	2	3	7
The implementation of the Learning Story...					
Promoted active and independent learning in which students take responsibility for their own learning or progress	0	0	2	3	7
Led to students being deeply engaged in their work (so that they did not notice time passing for example)	0	0	0	5	7
Has had a positive impact on students attitudes to learning	0	0	4	5	3
Has led to improvements in my students' levels of attainment (as indicated by my assessment data)	0	0	7	2	3

Of the four teachers implementing EEP, two felt that it would definitely lead to innovation in the classroom whilst the other two felt they probably would. Reasons given were: collaboration, learning beyond the classroom, new approaches to learning (2 comments) and effective.

The teacher who implemented SCR felt that it would definitely lead to innovation in the classroom. Reasons given were increased collaboration and opportunities for learning beyond the classroom.

Of the four teachers who implemented EEP, three said that they would definitely implement it again in the future whilst the remaining one said that he/she would probably implement it again in the future. Reasons given were that it was inclusive, easy to track student progress, increased student motivation and effective. One teacher noted that insufficient access to ICT could be a barrier.

The teacher who implemented SCR suggested that he/she would definitely implement it again in the future. Reasons given were inclusive (all students were engaged) and increased interactivity.

Of the four teachers who implemented EEP, one suggested that he/she would definitely recommend the resources to other teachers, whilst the other three that they

would probably recommend the resources to other teachers. Reasons given were: beneficial and effective. Cautions were noted: there are technical requirements, some digital tools incur costs (membership fees) and it can be time-consuming.

The teacher who implemented SCR said that he/she would definitely recommend the resources to other teachers. Reasons given were that it was flexible and easy to implement.

Appendix D Methodology

Analytical approach

The quantitative data elicited through the teacher survey has been dealt with in two ways.

Firstly, the data have been analysed on a country-by-country basis and then a cross-case analysis has been undertaken in relation to responses to open-ended questions. In particular, in relation to challenges, benefits and enablers, at country level the themes arising have been judged to be 'main' if it is referred to in relation to at least 20% of the cohorts (a teacher may have completed a questionnaire for more than one cohorts). In relation to reasons for innovation, the analysis has been at the level of teacher (rather than cohort). As for cohorts, the themes arising in this case have been judged to be 'main' if at least 20% of teachers have referred to it. In countries where data has been collected from five cohorts and/or teachers, a theme has only been considered to be 'main' if at least two references are identified. Country-by-country analysis in relation to the Learning Stories has only be undertaken when at least five teachers from the same country have piloted it.

The country analyses in Appendix C present a descriptive summary of the survey responses.

In the main report, additional analyses have included descriptive summaries of aggregated data, acknowledging that there may be bias in the data at the country level due to different numbers of teachers participating in each country. However, it is likely that the variation within a country in terms of teacher practices is large, although of course at the country level (and in some cases regional level) policies and the curriculum will influence teachers.

Qualitative data from the case study interviews and case study reports were coded thematically using a conceptual framework adapted from the SITES2 study (Kozma, 2003, p13).

Amendments to data collection in Cycle 2

Case study interview schedules were amended to reflect the change in focus from change in practice to benefits and barriers.

AYYS amendments were made at the request of WP4 and WP11 in relation to measuring teachers' competence levels.

AYYS amendments:

- Question asking which country added to English and German versions
- Question asking teacher to self-rate level of ICT competency (from 1 = none, to 10 = very high) added
- Question added on which form of CPD was most beneficial
- Questions on impact of CPD modified to give greater variation (from yes/no to 1 = not at all, to 7 to a great extent)

TQ amendments were made as a result of reviewing the data from Cycle 1 and consultations with WP3 and WP7.

TQ amendments:

- Classroom ID deleted
- Question asking which classroom the survey response relates to inserted
- Question asking which country added to English and German versions
- Question about quantity of ICT resources available to staff and students deleted
- Question about the room layout deleted
- Picture of Teacher Community deleted
- Question about which Learning Story inserted
- Question about which Learning Activities updated
- Question on numbers of sessions and where amended (total time spent in minutes)
- Question on digital tools used in implementation amended to reflect work undertaken in WP2 on innovation matrix
- In consultation with WP3, questions were inserted in relation to the use of Facebook/Twitter, and use of reflection tools (numbers of posts etc)
- In consultation with WP7, questions were inserted in Austrian and Turkish questionnaires in relation to the use of DotLRN
- General question on problems encountered deleted (duplication)
- Question on enablers inserted

Appendix E NPC Workshop Minutes, 23rd March 2012

Flash meeting/recording: <http://fm.ea-tel.eu/fm/789bef-29520>

Presented by: WP5: Maureen Haldane

Attendees:

Mehmet (Turkey)	Monica (France)	Axel (Austria)
Jorund (Norway)	Silvana/Liro (Israel)	Linda (UK/Promethean)
Jose (Portugal)	Ainhoa (Spain/SMART)	
Viera (Slovakia)	Khoi (SMART)	

Apologies:

Martin (Estonia)	Gabriella (Hungary)	Barbora (Czech Republic)
Gill (UK/Promethean)	Andrea (Italy)	Sarah (Germany/SMART)

INITIAL PRESENTATION:

Maureen covered a number of aspects in the Evaluation Handbook which had been revised since Cycle 1:

- NPCs to ensure that the case study teachers are clearly identified in the pilot management tool
- Survey changes
 - AYS to be completed by all teachers, not just those new to iTEC (as originally planned)
 - Both TQ and AYS to be administered in a simpler way – direct links to be accessed via the Teacher Community, no need to enter code to relate the questionnaire to a specific pilot. NPCs were also warned that there may be some minor changes and that help with translations would be required.
- Changes to iMmS
 - Revised iMmS guidance brought to their attention
 - NPCs told that they were responsible for collecting in presentations and also for choosing a local blogging tool (no longer required to use blog tool on Teacher Community).
- Changes to case study
 - NPCs were advised to look carefully at the interview schedules as there had been some changes in wording (reflecting the changes in the Evaluation Plan following the first review)
 - NPCs were reminded to collect relevant documentation
 - NPCs were advised of latest date to submit data to MMU
 - NPCs were advised that the NPC end of cycle interview had been replaced by a questionnaire (with follow-up short interview if required)

- NPCs were directed to the strengthened guidance on interviewing, particularly in relation to prompting deeper responses to initial questions
- NPCs were reminded of the importance of providing direct quotations to evidence claims made in case study reports

ISSUES RAISED:

1. NPCs unanimously requested that they have direct access to the information about who has completed/submitted their questionnaire in order to save time and effort in the chasing up of non-respondents . . . to quote Jose: “once a questionnaire is submitted, this could trigger a message to the NPC.”

ACTION: CL to liaise with Cathal (or Elina) to look into how this might be achieved. This was not possible but CL provided the data when NPCs requested it.

2. Monica said that she wanted separate coding for the second part of the CSR (at least, I think this is what she meant).

ACTION: CL to add a new code for Part 2 of the CSR and to check through (and amend if necessary) the existing coding convention. Send to NPCs towards the end of the Cycle (or sooner if ready).

3. 30th June is an impossible deadline for France to submit data.

ACTION: CL to negotiate a suitable alternative deadline for France with Monica. Monica subsequently decided that 30th June was ok.

4. Israel wants a webinar/meeting (similar to our Briefing Session) that focuses on Learning Story implementation in the classroom.

ACTION: MH to highlight this Note 4 in an email to Marie Le Boniec