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Manual of Good Practice & Implementation Guidelines

Teachers Continuing Professional Development:

Qualified Teachers = Successful Learners (ENTELES Project)

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**EDUCATION
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ENTEELS Team

Spain, 2016



Teacher Participants in
ENTEELS pilot project.
Spain, 2016



Introduction

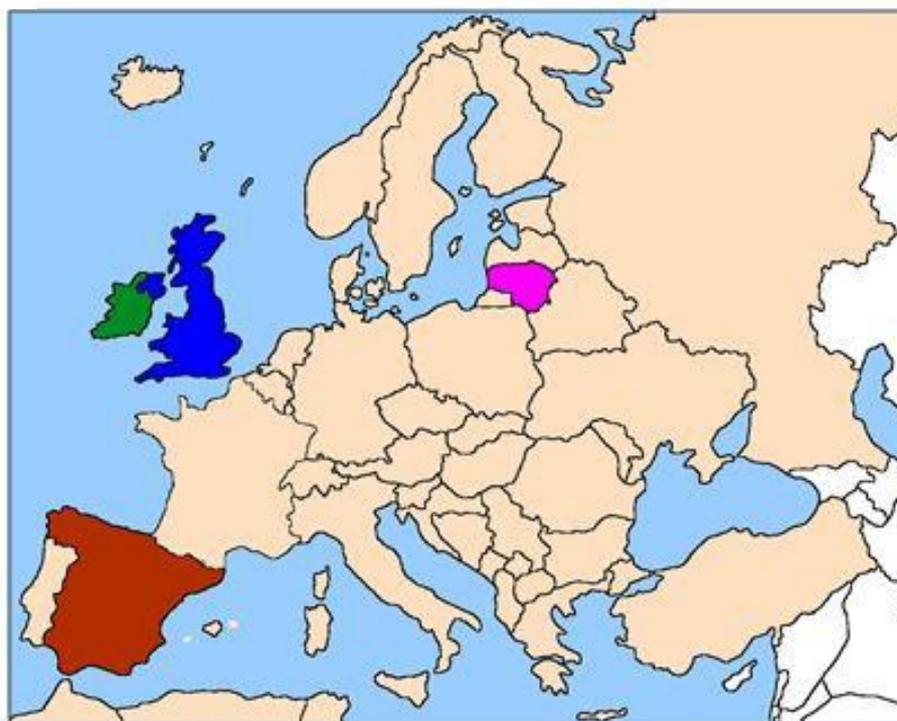
Overview of project

ENTEELS is a teacher-training, research and development project funded by the EU Commission's Erasmus+ programme. The project involved researching, designing and evaluating creative ways to introduce Information Communications Technology (ICT) into schools and into teachers' practice.

As part of this project, the ENTEELS consortium developed an online continuous professional development (CPD) course for teachers and other professionals. The unique elements of the project centred around international collaboration and experiential learning in the development of four modules; *ICT Toolkit*, *Learner-centred Approaches*, *Entrepreneurship* and *Assessment Approaches*.

The ENTEELS consortium

The consortium brought together five teams from four European countries in a collaborative research and implementation process arising from previous collaborations between consortium members. The ENTEELS project consortium comprised a network of researchers, teacher trainers and an educational authority.



Spain

Ireland

Lithuania

United Kingdom



The Xunta de Galicia, Spain

The Xunta de Galicia is responsible for education and CPD in Galicia and has extensive experience on centralized projects, project coordination and implementation. For the ENTELS project, The Xunta was responsible for ENTELS general project co-ordination and dissemination activities. The Xunta worked closely with project partners to deliver a final conference in May 2016 to present the project's final results.



H2 Learning, Ireland

H2 Learning has over 25 years' experience in working with a spectrum of education organisations in planning and successfully implementing ways to transform how teachers teach and how learners learn and are assessed, using digital technology. H2 Learning was responsible for designing, coordinating and evaluating the pilot phase of the ENTELS modules.



Kaunas University of Technology, Lithuania

Kaunas University of Technology, a higher education institution in Kaunas, has experience of working on different collaborative projects across Europe. Kaunas University of Technology was responsible for producing a literature review of partner countries' best CPD practice in the areas addressed in the four modules (entrepreneurship, self-assessment, learner-centred approaches & ICT).



University of Santiago de Compostela (USC), Spain

University of Santiago de Compostela's Department of Education has extensive experience on initial teacher training and CPD, integrating ICT in teaching and learning to transform classroom practice. For the ENTELS project, USC designed the teacher training modules; they worked in collaboration with CESGA (Supercomputing Centre of Galicia) to provide an appropriate virtual platform for the course modules.



Plymouth University Institute of Education (PloE), England

Plymouth University Institute of Education has extensive experience of conducting worldwide research on diverse aspects of educational practice. PloE is the only higher education institution in the South West of England to provide a full range of teacher training from early years to post-compulsory. For the ENTELS project, PloE oversaw the project's quality assurance, produced a Project Evaluation Report and the Manual of Good Practice.

Glossary of terms

This section aims to clarify some of the acronyms, definitions and concepts used throughout the manual, particularly within a European context. Concepts such as 21st century skills, professional development, entrepreneurialism and European Key Competences may vary across countries and disciplines, and thus it becomes imperative to state the meaning of these terms as used by the ENTELS project when designing the course materials.

Professional development of teachers

Training for teachers (primary, secondary education) with the view to providing teachers with the competences they need to ‘adapt to globalised and complex environments, and to promote creativity, innovation and commitment to continuous learning’.ⁱ

Entrepreneurship

For the purposes of this manual, entrepreneurship is defined as the pursuit of opportunities beyond the resources people have access to or control over.ⁱⁱ It refers to an individual’s ability to turn ideas into action and includes creativity, innovation and risk-taking, as well as the ability to plan and manage projects in order to achieve objectives.ⁱⁱⁱ

21st Century skills

This term encompasses ‘certain core competencies such as collaboration, digital literacy, critical thinking and problem solving skills’^{iv}, in addition to effective communication. These skills prepare students for increasingly complex life and work environments in the 21st century, and focus on content knowledge and expertise, emphasise deep understanding and strive to engage students with real world data to solve meaningful problems.^v

European Key Competences

The European Parliament and the Council of the European Union define key competences as ‘a combination of knowledge, skills and attitudes appropriate to the context. Key competences are those which all individuals need for personal fulfilment and development, active citizenship, social inclusion and employment.’^{vi}

Learner-centred Approaches

Learner or student-centred approaches are based on theories of learning (constructivism) built on the premise that ‘learners must construct and reconstruct knowledge in order to learn effectively and develop critical thinking’.^{vii} Learner-centred approaches rely on active

rather than passive learning; they emphasise deep learning and understanding, encourage greater responsibility and accountability on the part of the student and interdependence between teacher and student.^{viii}

Assessment

Assessment of learning outcomes is a 'process of appraising knowledge, know-how, skills and/or competences of an individual against predefined criteria (learning expectations, measurement of learning outcomes). Assessment generally refers to appraisal of individuals whereas evaluation is generally used to describe appraisal of education and training methods or providers'.^{ix}

Evaluation

Evaluation of education and training refers to the 'judgement on the value of an intervention, training programme or policy with reference to the criteria and standards, such as its relevance or efficiency'.^x

Rubrica/Rubrics

Rubric is used to refer to an assessment template, grid or matrix, used by teachers as a tool to assess students learning against specified criteria.

Principles of Good Practice

A literature review and analysis of examples of best practice provided by project partners supported the adoption of the following principles in the design and implementation of the course:

-
- Our pedagogic approach combined
- learning by doing and reflection on action
 - collaborative learning (sharing resources, teamwork, working with peers)
 - networked communities
 - professional development for whole staff teams (development of communities of practice)
 - self-directed online tutorials
 - traditional tutor-led instruction
 - integration of educational theory into practice
- The course offered opportunities for participants to
- acquire new skills to increase and extend their use of ICT in their jobs
 - use digital tools to access and develop classroom materials
 - engage with new curriculum topics (such as entrepreneurialism) and apply new technologies to support learning (use of social media in classrooms, learning about web tools)
- The adoption of a stable, reliable electronic learning platform
- that ensured a user-friendly learning environment
 - that offered opportunities for interaction with course tutor via online support and with other participants
 - that included opportunities for participants to offer detailed feedback (e.g. via online questionnaires, supplemented by interviews), to capture lessons learnt and support future development of course materials.

The ENTELS project took into account teachers' working patterns and social and cultural context, with careful consideration given to duration and timing of the course.

Using the Manual

The manual has been written to support course participants and individuals responsible for selecting and facilitating in-service professional development. The manual begins with a brief introduction to the theoretical framework which underpins the project, followed by a description of the context in which materials were developed. After a brief overview of modules, we set out six examples of good practice that emerged from the course, to guide would-be participants embarking on the course, leaders setting up training for their staff or indeed those developing online courses in the future.

Theoretical Framework and Context

Rationale

The underlying motivation for the course lay in a concern that teachers should be able to address the needs of schoolchildren today growing up to face complex, changing environments 'where creativity, innovation, initiative, entrepreneurship and commitment to continuous learning are as important as knowledge' (Caena, 2011: 2). For children and young people to acquire the complex and analytical skills and dispositions needed to adapt to such environments, schools should provide appropriate teaching to develop students' '21st century skills' - collaboration, creativity, ICT (information and communication technology), communication and problem-solving - to meet workplace requirements (Dede, 2005; 2009). Teachers, particularly those trained before the relevance of such skills became apparent, are likely to need to develop their practice and perhaps also to change their attitudes to what children need to learn and how teachers can help them to do this. Therefore, teachers should be offered accessible, sensitive and effective professional development to help them to achieve this.

Teachers' career-long professional learning is now attracting widespread attention (Livingston, 2014) as teacher quality is seen as having the greatest influence on student outcomes, and a lack of sufficient qualified/well-performing staff as being associated with reductions in the quality of teaching in schools (Whitehouse, 2011; European Commission, 2014:10). Teachers have reported that there is a need to address 'skills deficits that reflect the changing circumstances of teaching'; these deficits are 'linked to ICT (both its use for teaching and teachers' work more generally), and the growing diversity of groups of learners (teaching students with special needs and in multilingual/multicultural settings)' (European Commission, 2014: 20).

In addition, there is an increased need for professional development to promote 21st century skills. However, these new demands faced by education institutions compete with budgetary and regulatory constraints that emphasise achievement in traditional basic skills over the collaborative and communicative abilities that underpin 21st century skills. Although the importance of 21st century skills might be recognised in policy, in practice

tight budgets may force schools to prioritise training for more immediate concerns, such as poor performance in literacy and numeracy.

The above considerations underpin the design of the course: it needed to be accessible, appropriate and economical (in terms of time, money and effort).

Theoretical framework

The approach to the development of course materials has been underpinned by a broadly sociocultural theoretical framework. This framework emphasises that, while course participants might all employ the same platform and access the same content, their use of online resources occurs in specific social and cultural milieus for different purposes, shaped by different values and influenced by different community priorities (Russell, 2001).

Communities can be understood as local groups brought together by physical proximity, the local geographical contexts in which teachers and other practitioners carry out their work. According to Bronfenbrenner and Morris (2007), we should attend not only to the relationships between individuals within such communities and the social and family groups in which they live and work, but also look both beyond these to the local and national context of political, economic, social and cultural affordances and constraints. It is also important, however, to consider other kinds of communities which feature in teachers' lives, most notably the professional communities in which they learn about and develop their practice – 'groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly' (Lave and Wenger, 1991).

Teachers can be characterised therefore not as lone workers, solving problems themselves through reflecting on their own classroom practice, but as professionals who engage in collaborative learning. Collaborative learning is a method of teaching and learning in which learners join together to explore a significant question or solve a meaningful problem. In order to create an environment in which collaborative learning can take place, learners need to feel safe, but also challenged; groups need to be small enough so that everyone can contribute; and the task which the group is working on together should be clearly defined.

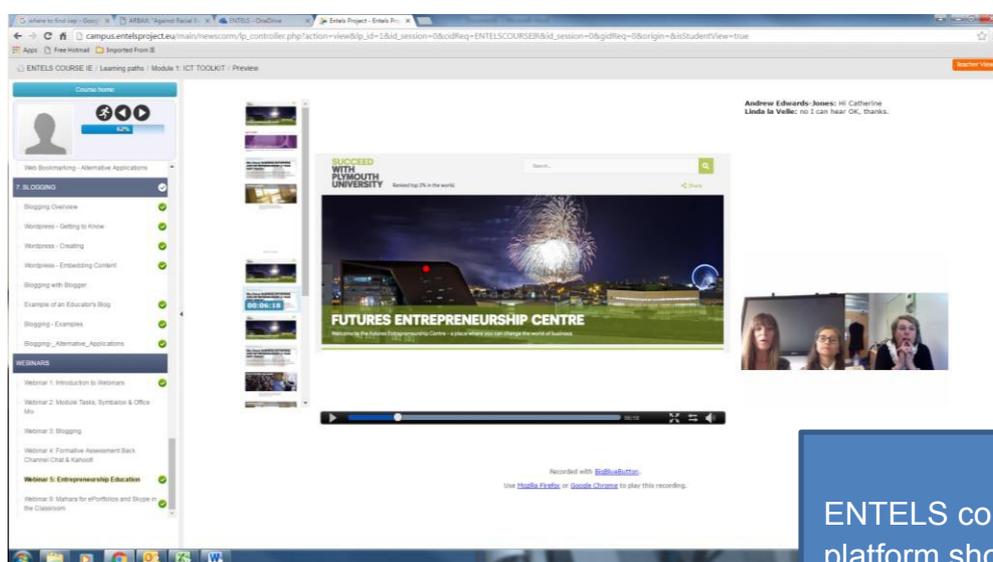
Teachers learn about their work not only through doing their work but also through watching and interacting with others in the course of their job. This learning-by-doing that takes place is not necessarily intentional, nor are teachers always aware of what they have learnt. If hands-on learning and learning by doing are accompanied by reflection on what has been achieved, learning can be taken to a deeper level. Experiential learning is the term generally applied to learning through experience, but should be more specifically defined as learning **through reflection** on doing (Kolb & Kolb, 2008).

Analysis of teachers' responses to what they experience on the course has been informed by Tobin's dialogic approach to fieldwork, and an expectation that opportunities for teachers to find out about practice in other contexts, as well as making the strange familiar, might also help to make the familiar strange, thereby prompting deeper reflection on practice in their own context (Tobin, 1999).

Overview of resources, modules and pilot

The specific topics chosen to be covered during the course emerged originally out of professional development needs in the Spanish context, but were also influenced by the interests of project partners forged through participation in numerous international projects over the last ten years, many of which had focused on supporting the acquisition of European Key Competences (2007).

The course was piloted in Spain, UK, Ireland and Lithuania, with partners developing content to suit local and national educational priorities and CPD requirements, such as the need for assessment. In some contexts it was sufficient to monitor participants' progress and completion but in others the quality of submissions also needed to be assessed.



ENTELES course platform showing UK-hosted Webinar 'Entrepreneurship in Education'

Module content and course coherence

ENTELES is an online CPD course and is a product of the ENTELS research and development project funded by the EU Commission's Erasmus+ programme. The ENTELS project involved researching, designing and evaluating creative ways to introduce Information Communications Technology (ICT) into schools and into teachers' practice. The course was originally designed for teachers working in the secondary phase of education, but can be undertaken by educators and educators-in-training engaged in teaching from primary school through to post-compulsory education.

The ENTELS course comprises of four online modules:

1. ICT Toolkit
2. Learner-centred teaching
3. Entrepreneurial Education
4. Assessment Toolkit

The ENTELS project required pilot participants to complete Module 1: ICT Toolkit, as a mandatory module, and another module of their choice.

Each module includes theoretical information and practical activities to carry out in the classroom; there is a balanced mix of theory and practice for participating educators to incorporate into their learning.

Teachers participating in the course are able to acquire the competences to design innovative learning environments, try out new and creative ways of implementing the curriculum and examine the basic conditions for the sustainable use of ICT in education. From taking the course teachers are also able to analyse and develop innovative pedagogy and assessment approaches including methods to support diverse individual learning pathways in order to help learners to acquire new skills for new jobs.

Participants also learn to assess their students' key competences and 21st century skills. Teachers were introduced to a variety of assessment tools: quality standards, e-assessment and e-portfolios.

Course Coherence

The course aims to develop teachers' pedagogical approaches and their ability to use in creative and innovative ways digital technology, communication tools and the internet. By developing these skills, teachers are expected to be able to offer effective support for their students' learning and to help them participate successfully in their 21st century communities and future professions.

The ENTELS consortium designed the online professional development programme to consist of four modules. These four modules promote the development of 21st century skills through the practical and appropriate use of web tools as part of teaching and learning, learner-centred teaching approaches, entrepreneurial education, and practical formative assessment approaches including e-assessment.

Participants are expected to engage with the platform at their own pace. The support of online tutors should be available to assist teachers with modules tasks. As an additional tool for tutors, the platform registers the time participants spend on the platform. However, some of the resources (e.g. video tutorials) are available outside the platform.

The courses' learning outcomes emphasise 21st century skills and key competences, to be achieved through the exploration of different tools and practical exercises. The course develops a number of skills that impact directly on the educator-participant and indirectly impact on the learners within each educator's learning context. These skills include:

- digital confidence and competence
- self-management of learning by selecting, integrating and using various software tools, media, services and training modules appropriate to the individual's own context
- recognising and selecting appropriate tools and strategies to use appropriate to the environment, subject matter and learning needs of the learning context
- social learning using software tools such as blogs, wikis, social networking, forums and media sharing applications which are pedagogical tools that benefit from their affordances of sharing, communication and information discovery
- adjusting and choosing options based on learning needs and circumstances, resulting in (ideally) a model where learner needs, rather than technology, drive the learning process
- enriched engagement with learners and exploiting the use of technology to provide a learner-centered approach
- developing a professional learning network through online interaction with other educators
- creating a learning environment to support entrepreneurial learning
- implementation of formative assessment strategies and e-assessment to promote self-directed and goals-based learning.

In **Module 1: ICT Toolkit**, participants explore the use of web tools for digital bookmarking, design presentations, create simple webpages, produce digital mind maps, engage in digital storytelling and tools for introducing coding to students. It is strongly suggested that this module should form a mandatory part of the course to develop common skills that can be taken forward into subsequent modules.

Module 2: Learner-Centred Approaches provides information and ideas on what is meant by a personal learning environment, problem-based learning, collaborative learning and enquiry-based learning. The module offers practical examples of how to implement these approaches.

Module 3: Entrepreneurial Education incorporates a balance of theory and practical strategies to develop entrepreneurial skills through simple classroom activities. Participants learn how to set up and develop virtual company projects with students. The aim is to develop an understanding of the skills and characteristics needed for proactive learning, confidence and acquisition of entrepreneurial skills.

Module 4: Assessment Toolkit has been designed as a collection of relevant tools to explore approaches, such as interactive quizzes, e-portfolios and assessment templates

(*rubricas in the Spanish context*) to support rich assessment practices. The focus is primarily on ongoing assessment and assessment for learning strategies and tools. This module aims to provide teachers with the opportunity to reflect on the assessment approaches that they use in their practice and consider how these could be developed to encourage students to take ownership of their own learning.

Teaching Strategies

The ENTELS course should be delivered through a blended learning model that encourages transparent communication amongst all parties involved with the course. Communication is facilitated through the interaction tools such as those embedded into the Chamilo platform including a webinar tool (Big Blue Button), forums, chat and wikis.

Additionally, course providers should appoint a course tutor who can be available to teachers to provide advice, feedback and encouragement throughout the course.

Participants are able to move through the online content in a *self-directed* manner allowing them to dictate the time, place and pace most convenient to them.

An overall *learning by doing* methodology has been applied to the course. This allows participants not just to *know about something* but to *know how to do something* - which can be two very different things. The course therefore has practical activities linked to each module requiring participants to put the learning into practice in the classroom or to create artefacts to support teaching, learning and assessments activities.

During the pilot of the ENTELS course, the providers facilitated real-time online and/or face-to-face sessions with participants. These sessions allowed for:

- course inductions to brief participants on the overall aims of the course and how to get started
- participants to raise any queries or concerns about using the platform or understanding the course content and have these addressed
- showcasing of particular tools and strategies from the course and encouraging discussion of how they could be translated to each teacher's unique learning environment
- broader discussions around topical themes in education such as 'The Sustainable use of ICT in Education' with input from experts invited as guest presenters
- course providers to gather regular feedback from participants.

Participants should be able to communicate or report any issues with the course to the on-line moderators/tutors through dedicated forums within the platform or by direct email. Communication between tutors and participants in the pilot was achieved through the tool 'announcement2', forum and emails; feedback on activities and projects was provided in

the same way. At the end of the pilot phase, participants reported that they greatly appreciated the course's continuous on-line support.

Methods of Assessment

Each module includes its own tasks and activities. Assessment activities are in line with the *learning by doing* methodology, requiring participants to engage in practical activities and to reflect on the benefits and challenges encountered from this experience. Each participant should record which tools and strategies they have selected, their reasons for selecting these particular tools, and the impact this selection has had on them and their learners. Any supporting evidence can be also included in participants' final products, such as images, videos or artifacts. These in turn should be returned to course providers to ensure all requirements have been met satisfactorily.

Course Evaluation

The ENTELS project, as a whole, was evaluated by Plymouth University Institute of Education. However partner organisations also evaluated the pilot phase within their own contexts.

Feedback should be collected from participants through surveys and direct feedback to course providers and tutors. Feedback is best collected in confidence and anonymously (in accordance with participants' preferences). Course providers and tutors should seek to provide optimal experiences for all participants enrolled on the course. Participants should be informed that feedback is always welcomed, and that it will be used, wherever possible, to improve the course.

Implementing modules

System requirements

Course participants were required to have access to an internet enabled computer and have the opportunity to use ICT for teaching and learning in their classroom/learning context.

The course is hosted on the Learning Management System Chamilo, a simple and intuitive e-learning platform. Although participating teachers only need access to internet to undertake the courses, system administrators might need to install Chamilo. If you required Camillo installation, the following servers are needed: a web server, a database server and a FTP client (or any other, preferably secure, way to upload files to the server, such as SFTP, to ensure the security of your future Chamilo server). The platform works with most operating systems (GNU/Linux, BSD, UNIX, windows (XP, Vista, 7), Mac OS X), but it is also recommended that a Wamp server (Windows), or the components of a LAMP server (Linux), is installed. The server must support PHP 5.3 or superior and MySQL 5.1

or superior (alternatively MariaDB).^{xi} For more details on system requirements and installation guidelines, please access the Chamilo [handbook](#) available online.

Good practice examples from pilot

1. Structured tutor support for course participants (Ireland; UK)

Regular instructional webinars (Ireland)

Reflecting the recruitment of participants principally via networks of geographically dispersed educators, as opposed to school- or area-based groups, H2 decided to create a series of webinars to provide regular and maintained support for participants following the course. Not only did this offer existing registrants support and guidance during the pilot phase of the project, because the sessions were recorded and inserted into the course modules on the ENTELS platform, any future user could have immediate access to these materials at a time which fitted their own progress through the course.

The webinars provided technical guidance on access to, and navigation around, the platform, as well as being themed in order to explore specific principles, practices or tools that feature within the modules.

An equally important element of the webinars during the pilot was that they enabled exchange between participants and tutors, and direct interaction between the participants themselves, so helping to develop a community of practice, facilitating collaboration and mutual professional development.

Occasional webinars for deeper learning (UK)

Building on H2's webinar programme, Plymouth University hosted additional webinars that utilised its own expertise base by asking guest presenters to discuss specific topics which explicitly supplemented some of the module themes; for example, academics based in the University's Futures Entrepreneurship Centre delivered a session titled 'Entrepreneurship in Education'. These sessions were intended to provide participants with a deeper understanding of the module subject area and provide ideas and inspiration for their own professional development.

Recommendation

Create a series of webinars aimed at providing flexible and ongoing support for new registrants, with the principle objective of enabling participants to navigate around the platform easily, and providing some useful guidance on familiarising them with some of the module tools and resources. Embed the webinars within the ENTELS platform to provide easy access.

2. Local context to course content (Ireland; Spain)

Module developers thought it was essential to present some content with a local context in order to maximise user interest and maintain motivation for course progression. Although the overall course and module structure was standardised across the four countries, the flexibility for each partner to be able to develop content around a core delivery model led to the use of exciting, innovative examples of practice set within the language, culture and pedagogy that have genuine meaning to participants in each country.

In Spain, for example, the Learner-Centred Teaching module featured ideas for learning about the Spanish Armada, and the Ireland course directed its Entrepreneurship participants to websites featuring the Junior Entrepreneur Programme and Young Entrepreneur Programme, both administered in County Kerry.

Recommendation

Within each module, try to include good practice examples with a local connection whilst maintaining a high standard of quality.

3. Develop a learning community of practice amongst participants (Lithuania)

For some of the partner organisations, the knowledge and skill-building elements of the CPD course were supplemented by the opportunity to apply a pedagogy of collaborative 'learning by doing' to the need to master use of the platform and its features. The applicability to practice that participants developed, as a result of all the good practice examples on offer within the modules, combined effectively with the encouragement (or requirement) to apply new tools and skills to teaching practices.

Traditionally cautious Lithuanian teachers, for example, found this aspect to be of particular significance to participation, and gradually led to a very healthy and constructive exchange of ideas and practical applications. The dynamic interaction between the participants created a genuine community of practice that became a notable feature of course progression and evidencing successful task completion.

Recommendation

Encourage course participants to share practice, particularly examples of successful application of specific tools and ideas into lesson plans and classroom activities. Encouragement will be enhanced by ensuring the process of sharing is simple, hence the easiest methods of using the platform's features should be identified from participant feedback.

4. Identify demand for the course from niche communities (UK; Lithuania; Ireland)

The ENTELS course was primarily targeted at secondary school teachers, where the acquisition and transfer of 21st century skills was determined to be most appropriate and necessary; for example, to ensure that school leavers were well equipped to deal with modern day issues and career requirements.

However, as module content continued to be developed, and participant recruitment became wider and more creative, it started to become clear that many of the skills, knowledge and tools covered by the course had relevance for other educators and learners.

In Ireland and Lithuania, the course interested primary school teachers as the potential of tools such as Toontastic and Puppet Pals 2 became apparent. H2 Learning, as a result, used modules on ICT and Assessment for a 20-hour course for primary school teachers. In the UK, teachers at special schools saw the merits of some of the examples on offer within the Learner-centred Teaching module. And in Spain, Ireland and the UK, the applicability of the course to Further Education students and trainee teachers emerged as an exciting new direction for the project.

In the case of the UK, the value of the ENTELS course as a supplement to existing Postgraduate Certificate of Education (PGCE)/Certificate of Education programmes at Plymouth University and affiliated colleges was recognised by programme leaders to the extent that students enrolling on the 2016/17 programme have been directed to the ENTELS course from September 2016. It is envisaged that the course will offer access to activities to support the development of key competencies that will support successful

work placements in schools and supplement early career options. As well as helping to embed the ENTELS course locally, this can provide a dissemination and promotion function as participants 'spread the word' to new colleagues in placement schools and colleges.

Recommendation

Course administrators should consider possible niche uses of the ENTELS course. Thought needs to be given to the degree of course material adaptation that could or should be made to best meet the needs of these niche clients. For example, additional optional sections for primary teachers could be added to modules, and more flexible task outputs could be considered for trainee teachers.

5. International projects (Spain)

A key feature of the ENTELS platform that appealed to many teachers initially was the prospect that they would be able to exchange ideas and practice with colleagues in other countries. However, the reality was that the platform was not set up to facilitate this level of interaction. Partner discussions identified this as a key area for development in relation to longer term sustainability of the product.

Indeed, these discussions went even further, determining that the platform should be able to foster and accommodate collaborative working on international projects, including project design, implementation, and analysis of outcomes.

Recommendation

All partners should consider an international space within their course structures. It is thought that an international community of teachers can result, where peers from any country, region or community can directly link with one another. Outputs produced from the pilot project could provide useful initial links and material for populating this international space; e.g. teachers' blogs that were created from the ICT module.

6. Identifying effective methods of using ENTELS resources to share ideas and practice (Spain)

The ENTELS course structure and platform features are flexible enough to offer a range of mechanisms for participants to share their ideas and practices. As innovative ideas are tested out and delivered successfully in the classroom, if they have broad application, they can be added to the good practice examples explicitly listed within the modules in the most relevant sections.

From the extensive number of existing good practice examples and resources within the modules, future teacher feedback will reveal which ideas have the greatest potential at different levels (i.e. whether at a local level in a single class or for an international collaborative project). For example, one Spanish teacher incorporated a resource obtained from a US homeschool mum's blog, called 'Periodic Table Battleships', into a chemistry lesson plan as a tool for motivating students to remain interested and focused on learning the periodic table.

The same teacher also found some interesting handouts on a blogsite developed by a former chemistry teacher that were then re-worked into her lesson plans:



MAKING SOLUTIONS

My mother always said that I only created problems for her.

• Mixing up a solution from scratch:

Example: Make 2.00 L of a 0.786 M NaCl solution.

① Find out how much solid you would need.

$$2.00 \text{ L NaCl} \times \frac{0.786 \text{ mol NaCl}}{1 \text{ L sol'n}} \times \frac{58.44 \text{ g}}{1 \text{ mol NaCl}} = 91.87 \text{ g NaCl needed}$$

② Measure it out on a balance.



★ Use a weigh boat!

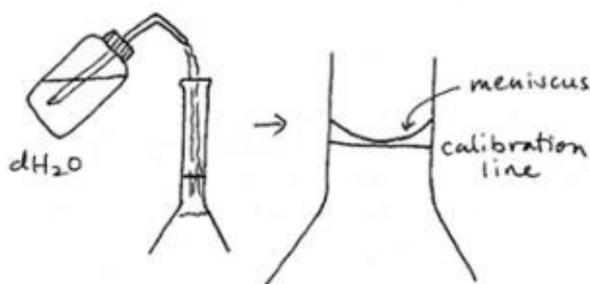
★ Don't put excess back into the stock container!

③ Pour it into a volumetric flask and add enough dH_2O to dissolve it. Mix thoroughly.



★ Always stopper the flask before shaking!

④ Add enough water to make the correct amount of solution. Mix again.



★ The bottom of the meniscus should just touch the calibration line.

★ Do not actually add 2.00 L of dH_2O !!!

cationdesigns.blogspot.com

As well as the module structure, other features of the platform can be used to share practice. These include the Forums and Wiki features that were used during the pilot project for posting outputs of tasks and activities, and where participants (and tutors) can hold asynchronous dialogues. Also, the Virtual Classroom feature allows for synchronous discussion via webinars as well as presentation of materials and more didactic methods of

communication. This latter facility was used very successfully by H2 Learning (see point 1, above).

Recommendation

Course administrators should consider feedback from the ENTELS pilot project to determine which elements of the platform were the most successful for the sharing of ideas and practice. In particular, some users may have preferred communication features to be embedded within the modules, while others may prefer to use stand-alone features such as the Wiki or Forum tiles. In making such decisions, consideration should be given to the potential for ever-expanding numbers of examples and case studies that might be added to the platform resources.

Case Studies

The presentation provided in the link below shows how one teacher in Spain used a mix of resources, examples of practice, and tools to deliver a classroom-based lesson on 'Classification scheme of matter' as part of an Applied Science module for Vocational Education and Training (VET) students studying Hair Styling, Maritime or Fishing programmes.

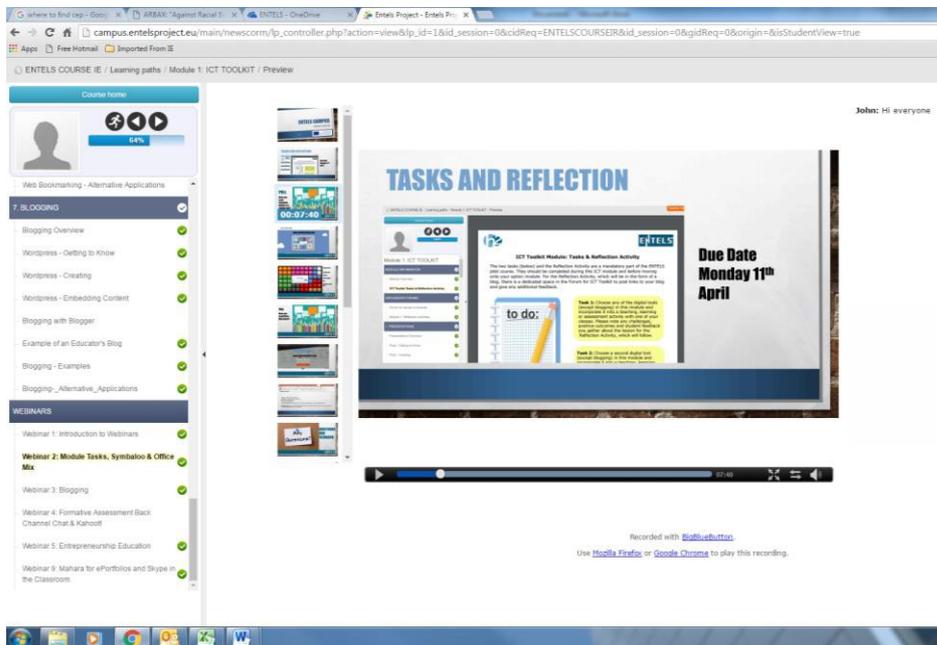
The presentation includes overall aims, teaching objectives, learning outcomes, activities, tools used (i.e. XMind, WordPress), resources, assessment and an evaluation by students of the pedagogies employed. To access the presentation entitled '*Un proxecto internacional de aula ao abeiro do curso ENTELS*' please click [here](#).

Learning Journeys

In the UK, one Special School teacher was initially drawn to the ENTELS course by the Learner-Centred Teaching module, as he assumed the knowledge and skills he would learn would be particularly relevant to his teaching practice. Conversely, he felt that the Entrepreneurship module would be totally unsuited to his situation, with many of the skills emphasised through the activities likely to be less applicable to his pupils. Because the Learner-Centred Teaching module was not fully developed when he was ready to start the course, he commenced working through the compulsory ICT module. Less motivated by this module initially, due to his self-confidence in the use and knowledge of IT, he subsequently reported enjoyment and surprise that there were so many tools that he was less familiar with, but which had genuine potential for applicability in a special school classroom.

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ENTELESCOURSE platform showing Ireland-hosted Webinar 'Module Tasks, Symbaloo and Office Mix'. This one shows the tutors explaining the task requirements of the ICT Kit module.

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