D3.1 Recommendations and resources to support innovation within Initial Teacher Education

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1 DESIGNING THE ITELAB MODULE FRAMEWORK AND DEVELOPING THE PILOT MODULE

1.1 BACKGROUND AND CONCEPTUAL BASIS

1.1.1 Introduction

As part of the ITELab project, UCD Dublin has taken on the role of leading and guiding in the development of a number of introductory modules for use with students in initial teacher education settings. Our intention is to develop 3 modules, in total, over the life of the project, covering ideas and activities that will be useful to student teachers in the early stages of their career. These will cover thinking about and working in school-settings on topics connecting to digital citizenship, digital literacy and fluency. The focus throughout will be on digital pedagogical capacity building.

The underpinning purpose of this is not simply the making of modules: it is to develop and trial through these modules a generative, flexible, and portable modular framework that embodies an innovative and creative approach to enhancing learning and pedagogy. Importantly, we propose that this framework is infused with a strong digital ontology, drawing from leading-edge literature on learning design and recent policy-experimentation in EU level projects that address the nature of digital capability in instructional settings. Taken together, these offer a basis on which to identify sets of concepts and categories that exhibit properties and relations which we will use to define a novel learning and teaching architecture to underpin the ITELab modules. Section 1.2 of this document outlines and discusses this theoretical stance in some detail. In the longer term, this work will build towards a model for other ITE centres to follow to develop similar modules.

Section 1.3 and 1.4 detail work-in-progress relating to Work Package 3 whose core objective is “boosting innovation in Higher Education” by enabling ITE providers and ICT companies to work together in order to:

- develop new course modules for student teachers that prepare them as new entrants to the profession to make innovative pedagogical use of ICT; including by adapting existing continuing professional development (CPD) resources from companies; and

- rethink the way that the pedagogical use of ICT is covered in ITE and provide recommendations and innovative start-out materials and guidance for how higher education institutions beyond the project should adapt their curricula.
The specific work discussed below concerns Task 3.1: Course module planning and particularly the progress on our scoping Report including Descriptions of Course Modules and detailing beta version for CDW 1 by M12 [Dec 2017].

1.1.2 Design Concept; summary

The UCD partners presented to the first partnership design workshop meeting (May 2017) a design approach drawing from ongoing work at UCD and on earlier work on Open Educational Resource (OER) repositories, and Massive Open Online Courses (MOOCs) by Conole (2015) and others1. Starting from this, and the responses harvested at that initial meeting, we developed a set of qualities and practices that should characterise an ITELab module. This approach is based on the following principles: well-integrated pedagogical approaches; design principles relating to open access; the provision of guidance and support to ITELab colleagues running a pilot module; content and activities that are customized from existing resources within the project partnership rather than developed from scratch; inbuilt participant opportunity for reflection and demonstration; an approach that fosters communication and collaboration opportunities within and across ITELab partner universities offering the Q1/2018 test-module.

Section 1.2 of this document discusses those principles in more detail.

1.1.3 Approach and Direction; summary

For the planned beta pilot stage in Q1/2018, we propose working-up and trialling an initial module - Teaching, Learning, and Professional Development in the Digital World - in order to get participant student and partner feedback that will inform the subsequent design and development of the three pilot ITELab modules ahead of a full trial in 2019. These modules will complement the ITELab MOOC, will present in a form that is ECTS accreditable, and will also be self-contained as standalone offerings.

The principal planning challenge we initially faced involved agreeing with our Project Partners a design architecture and shared approach to module development to include; headers / themes for modules; layout and specifications for module wireframes; early decision on platform for beta test; and ways of documenting our progress in order to facilitate lessons from the experience of designing this first module.

A proposed line of approach and design architecture was put to the project partners at the design workshop meeting by the UCD team. This was accepted. We then began work on the modules. This was guided by reference to Conole (2013)

1 https://opennetworkedlearning.files.wordpress.com/2015/05/the-7cs-of-learning-design.pdf
whose OLDS-MOOC\(^2\) project provided a clear, seven-step design pathway to inform key decisions in relation to the module development, and to assist in scoping the stages and steps required. This process is explained in detail in Section 1.2.

1.1.4 Design challenges; summary

Ensuring coherence and fit within the draft module materials is being addressed by matching the work to two separate reference frames; the well-established TPACK framework (http://www.tpack.org/) already in use among several of the project partners and the DigCompEDU Framework, a current project of the EC ERC at IPTS Seville (https://ec.europa.eu/jrc/en/digcompedu).

The first provides us with a framework that combines three knowledge areas: technological knowledge, content knowledge, and pedagogical knowledge. This framework offers a useful way of gauging how the content and activity elements of an ITELab module might work together to increase learner motivation and make the content more accessible to the student mix the partnership presents. The second offers a well-considered, if still evolving\(^3\), framework to describe and place in relation to each other a range of digital competences and capabilities specific to an educational context and with an underpinning sets of descriptors and levels that can be used to inform the development of our modules.

Together, these frameworks offered the UCD team a comprehensive reference set against which to identify and describe, and then attempt to build into prototype module format, a considerable number of core components of educators' digital capability. Constant return to the DigCompEdu and TPACK frameworks ensured the focus stayed centred on the pedagogical value of developing modules.

A further dimension to the work of comprehensively identifying teachers’ needs may prove possible by building an element of self-assessment into the reflective aspects of the prototype modules. The TET-SAT (Technology-Enhanced Teaching Self-Assessment Tool) developed as part of the work of the MENTEP (http://mentep.eun.org/) policy experiment could offer considerable possibilities here. It provides some useful insight into digital pedagogy, digital content use and production, digital communication and collaboration, and the more generic concerns of digital citizenship. This process of seeking coherence and fit is ongoing and we see it as increasing in importance throughout the life-cycle of the project. However, it is still at evaluation stage within the MENTEP project.

\(^2\) http://www2.le.ac.uk/projects/oer/oers/beyond-distance-research-alliance/7Cs-toolkit

\(^3\) The results from a recent consultation on the Framework are currently being evaluated by the ERC-IPTS in Seville. cf https://ec.europa.eu/eusurvey/runner/DigCompEduConsultation
1.1.5 ITELab Module–ITELab MOOC connectivity; summary

The original intention of both the Module and MOOC leads was to work for an alignment and to see if elements could be integrated. However, this proved technically challenging for the Q1/2018 beta pilot as the development cycle has been condensed into a shorter timeframe to allow for testing in Q1/2018. As a result, while there is general alignment, closer alignment will follow for the full trial in 2019.

Pedagogically both modules and MOOCs will be based on engaging and informing learners in a challenging, participatory, and task-based manner. Thematically there is considerable potential for linkages – particularly around constructions of the networked teacher, on-line and cloud-based professional learning, and applied usage of relevant learning and teaching technologies in classroom settings. However, in terms of aligning module activities which seem likely to require the inbuilt flexibility to allow them to operate in at least two modes – long (8 to 10 week), and shorter (intensive, 3 week blocks) – with those of the MOOCs, the practicalities of alignment will be challenging. The pedagogical character, and interaction with the much wider audience of the MOOC, also needs further careful consideration.

Our working assumption at this point is that when the MOOC and Modules have been beta-tested we will be in a better position to identify possible linkages. Nevertheless, we propose to seek out some initial linkages from the outset of the Q1/2018 pilot stage. To this end, we are working to align the design and material content of the initial Chapter of the first ITELab MOOC *Teaching in the 21st Century* and the first unit of *Teaching, Learning, and Professional Development in the Digital World* - the initial ITELab Module offering, so that both run in parallel in February/March, 2018. Our intention is to prime all interested module students for participation in the ITELab MOOC during Unit2; Wks. 5 and 6, and to build this into the materials and activity base of the module in order to demonstrate the potential learning opportunities offered by the connection to all concerned. (See Section 3.)

1.2 Devising the ITELab Module Architecture; towards an ontology and design

1.2.1 Approach, purpose, and intention

As noted in Section 1.1, the deeper purpose underlying the work on ITELab modules is not simply about the making of modules: it is to develop and trial a generative, flexible, and portable modular framework or architecture that embodies an innovative and creative approach to enhancing learning and pedagogy, and that does so in a way that generates more meaningful learning experiences for our student-teachers.

Much of the ITELab work at UCD from the outset has been to identify and examine sources in the literature and in the practice-world of teacher education that can
contribute to building this novel, module framework infused with a strong digital ontology and with pedagogical principles that reflect both the challenges and opportunities of being student-teachers exploring more meaningful and effective technology enhanced classroom practice.

1.2.2 Authoritative / Defining sources; content, pedagogy and design

We have drawn to date on a number of sources that have proved definitional for the shape and direction of the emerging module framework.

The UCD team started with the ITELab Task 2.1: LITERATURE REVIEW. This early scanning exercise provided the team with a valuable, widely-cast summary of published reports and case studies which document how training in the pedagogical use of ICT is currently covered within ITE curricula in Europe; and / or provide evidence of how student-teachers are currently introduced to using ICT.

The Review highlighted a number of useful outcomes and findings from a wide range of reports and studies that address the issue of education ICT and its relations to initial teacher education. In particular we found an early use for the Review’s observations on the research outcomes reported in an OECD working paper by Rizza (2011) who noted – among much else – that while many OECD countries have undergone major curriculum reforms hoping to incorporate digital competencies as well as a wider set of 21st century skills, ‘there is sometimes a mismatch between curricular reforms and what is going on in initial teacher education’. She goes on to observe that ‘requirements regarding curriculum reform implementation have not always been complemented by dialogue and collaboration with teacher education institutions’ (p.40). The line closes with the observation: ‘Teacher competencies are not always well-defined and, even when they are, it is often the case that they do not endorse a clear vision of what teaching and learning in a knowledge society should be and what supporting role technology can play.’ (ibid.)

Another issue brought into focus by the ITELab Literature Review concerned the professional digital competence of teacher educators themselves, across the EU. For instance, a recent research report on the situation in Norway, Ottestad, Kellentric, and Guðmundsdóttir (2014) found that the development of professional digital competence is not well supported institutionally within many Norwegian teacher education programmes, and that programmes often lack a comprehensive approach to the development of such skills. Consequently, the expertise of the individual academic staff involved is highly variable. Again, we found ourselves in broad agreement with this observation which raised a significant issue for the module design; the need to make sure that there was a good fit in terms of expertise and expectation between all of us in the project partnership where the modules were concerned. Additionally, it raised the prospect of needing to provide guidance

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4 http://itelan.eun.org/research

Co-funded by the Erasmus+ Programme of the European Union

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and support to project partners beyond the module materials themselves, to allow for variable degrees of expertise and engagement by project partner when teaching the modules pilots.

A second authoritative source that informed early thinking at UCD on the deeper nature and the shape of an ITELab module was the work of the ShareTEC project. ShareTEC was established originally to explore the construction of an advanced, brokerage service that might provide ‘personalised access’ for teacher educators to a wide range of digital contents for teacher education drawn into a single metadata indexed repository from resources available locally to the consortium partners. As part of its work programme ShareTEC developed an interesting protocol to allow indexing of other repositories in the field and, optionally, to add resources generated by practitioners outside the consortium.

It was the semantic core that powered this protocol which proved most valuable to the UCD team in terms of targeting content for inclusion in our prototype module.

Essentially, this core – which the project termed the Teacher Education Ontology (TEO) – represented a comprehensive, collaboratively-developed matrix that integrated a number of existing knowledge taxonomies but reoriented these to the specifics of the teacher education field (ShareTEC 2011, p18). The ontology contains six separate but related ‘branches’ that are self-consistent in nature:

- Digital Content (educational resources, communities, expertise, etc.). This branch represents the characteristics of artefacts closely related to the concept of “learning object” and offers a top-level discrimination technique for pedagogically related resources.

- Actors and Roles (people in the TE context and in the project system). This branch is aimed at capturing those characteristics of users (individual and groups) that support system adaptivity and in the ShareTEC context was seen as a possible source of recommendation around functionality.

- Competencies (both at subject matter and at general levels [socio-affective, metacognitive, etc.]). This branch tried to combine two independent yet related hierarchies: competency and generic skill.

- Context (various contexts of action within the domain of teacher education). This branch represents the various contexts of action within the domain of Teacher Education, including in particular the teacher-practice context, which is aimed at capturing those organizational peculiarities in the

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5 Share.TEC - SHAring Digital RESources in the Teaching Education Community, eContentplus programme (ECP 2007 EDU 427015).

various partners’ school systems as these impact on teacher education practices.

- Knowledge Domain. This branch of the ontology was developed to offer a vocabulary useful to represent the topics a given digital resource addresses, and the subject matter involved in any given competency act.

We used this TEO matrix, specifically the branch headings noted above, as a guide when making our initial selections of teaching and learning materials relating to ICT in early stage teacher education – both as a way of rough-gauging content appropriateness and of identifying possible novel usage for the project, given that we were looking to move beyond the mundane and ordinary in terms of focus. This matrix – with its origin in work relating to a semantic core for teacher education – proved useful also in identifying several major gaps in the materials base available to us in our thinking on the ITELab module framework. Specifically, we were able to observe and respond to the importance of factoring actor and role into the design from the outset, so that partners across the project could decide on aspects to include and/or enhance according to local needs. Finally, the integration of ShareTEC matrix into the initial work on ITELab modules allowed us to define more clearly the ontology that provides our basis for describing, exchanging and reusing digital resources within the project setting.

A third, authoritative source for the UCD work on ITELab module architecture was the emerging DigCompEDU framework from within the DG JRC Unit Human Capital and Employment of the European Commission in Seville.

A series of draft and discussion documents was published by the JRC as the work of this policy-experimentation progressed. Essentially, DigCompEdu is presented as a ‘scientifically sound background framework which helps to guide policy and can be directly adapted to implement regional and national tools and training programmes’ that will ‘help the dialogue and exchange of best practices’. The value of this claim has yet to be fully tested but the UCD team found the developing framework extremely useful in helping us position the emerging module framework in terms of potential learning outcomes and learner benefits.

The current and probably final version of the DigCompEdu frame is included below at Figure 1

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The DigCompEdu frame (DCE) is built around six ‘areas’ of capability each of which is expressed in terms of specific competence and applications – with a total of 22 competences making up the full frame. These areas focus on different aspects of educators’ professional capability and activity. These are:

1. **Professional Engagement**: using digital technologies for communication, collaboration and professional development.
2. **Digital Resources**: sourcing, sharing and creating digital resources.
3. **Teaching and Learning**: Managing and orchestrating the use of digital technologies in teaching and learning.
4. **Assessment**: using digital technologies and strategies to enhance assessment.
5. **Empowering Learning**: using digital technologies to enhance inclusion, personalisation and learners’ active engagement.
6. **Facilitating Learners Digital Competence**: enabling learners to creatively and responsibly use digital technologies for information, communication, content creation, wellbeing, and problem solving.

The authors of the frame suggest that Areas 2-5 capture the competencies that educators need for effective, inclusive and innovative teaching. Together, these detail how digital technologies may be used effectively and innovatively in planning (Area 2), implementing (Area 3) and assessing (Area 4) technology enhanced learning and teaching. Area 5 addresses the idea of learner-centred teaching. Area 1 concerns the broader professional environment in which teachers work and learn; it is seen to address the use of digital technologies for professional interaction and development. Area 6 is seen to detail the specific pedagogical competences used by educators to facilitate students’ digital competence.

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From the final report of the DigCompEdu Project: *European Framework for the Digital Competence of Educators; DigCompEdu*, Redecker, C and Punie, Y (eds) EUR28775 EN.
The frame is seen as holistic and with strong transversal lines interconnecting the areas (several of which are indicated in Figure 1).

The DCE in its various iterations has been profoundly useful to the UCD team as a reference point when designing for pedagogical validity and realistic use within the module architecture and subsequently in relation to the validation of content and activities to include in the draft module itself. Decisions around module materials that address planning and implementation, inquiry, critical reflection, and collaboration were all enhanced by reference to the DCE frame. Additionally, use of the DCE allowed us to integrate IRIS Connect and Microsoft STEP materials into module activities; identifying optimum context and role opportunities for this to take place.

In summary; the UCD team found these three sources persuasive and useful. They offered sound and reasonable departure points for articulating our ITELab module framework and the pedagogical architecture that we wanted to embed in the modules as they developed. The ITELab Review and ShareTEC TEO matrix were particularly useful in this regard. All three sources also assisted in decision making around our first-cut at the task of framing an ITELab module; the DigCompEdu frame was especially useful here.

We decided to focus much of our early work directly on the concerns foregrounded by the ShareTEC matrix and the initial DCE frame. Consequently, module-framework decisions came to be characterised by systematic and ongoing engagement with our partner institutions in a spirit of dialogue and collaboration – to the point that we built in mechanisms that allow partners to co-construct with us both the ‘content’ and the pedagogy proposed for the module. We also set out to hardwire into design framework concerns for both the competencies / capability we were targeting, and a vision rooted firmly in the intersectionality of technology and knowledge-building in a 21st century school setting. We started also from the outset thinking about ways to assist partners in their decision-making around which elements of the proposed modules would fit best with their own institutional practices and the local needs of their students. This defined the initial position proposed to the partners on the ITELab module architecture (see Section 1.3).

1.2.3 From ontology to design process
The focus above falls squarely on decisions around content and activities that would constitute an ITELab module and ontological concerns for a pedagogical architecture that would allow us to generate the initial beta ITELab module and further modules in the series based on sound, consistent and validated protocols and approaches. Taken together, our initial scoping-out of this possible module architecture (based on the issues and challenges discussed earlier) and the subsequent conversations we had with the project partners offered a sound basis on which to identify sets of concepts and categories that exhibit properties and relations which we need to define a novel, learning and teaching architecture to underpin the ITELab modules.
It did not, however, provide a principled and replicable design-pathway that would take us from these inception / departure points around pockets of content and activity to something like a finished module package, ready for field-trialling.

Design thinking, and learning design in particular, is increasingly seen as a central element in addressing variables such as fixation, creativity, and process strategy when assembling or devising a technology-enhanced programme (Koh et al 2015). Essentially, a well-determined design approach can help clarify expectations and so establish more realistic project deliverables and deadlines as well as a method of communicating these to partners, it can bring clarity and concision to a project, most importantly however it can facilitate better decisions around usability and the success parameters of a development project (cf Dalziel, J. et al., 2016; Scheer, Noweski and Meinel, 2012).

For guidance in the process of moving systematically and in a quality-informed way from the departure point into challenges of module design and development, we turned to the work of Conole (2013, 2015).

Today’s society is heavily reliant on digital technologies and platforms in almost every facet of everyday life. Education is no exception and the past decade has seen a number of significant EU policy and practice developments in relation to the intermeshing of teacher education and the use of technology to enhance learning and teaching on a spectrum of levels. There is a growing sense among the ITE practice base of need to shift towards the 21st century with more active and engaging types of university teaching being put to the forefront (e.g. Heaney et al, 2014; Bain and, Zundans-Fraser, 2016, inter alia). In addition there is an exponentially increasing amount of information online that can be accessed to help devise and create engaging educational resources. This presents its own challenges.

Part of any effective response to this challenge has to be to consider how these vast resource bases can better be approached and harvested in a more systematic, effective and meaningful way. Some of the most promising recent work in this regard has come out of the application of design thinking to the processes of course and programme development. Research carried out at the Open University UK as part of the OU Learning Initiative and the University of Leicester’s Carpe Diem work proved especially useful to the UCD team (cf. Conole 2013, 2015; Armellini et al 2009). Much of this has been brought together in Conole’s 7C’s framework which is essentially a Learning Design Conceptual Map (LD-CM) that helps to identify contextual components (such as content materials, pedagogical activity and so on) and their interactions in design decisions. This provides a system or pathway that educators can use to make learning design decisions that reflect what have been termed the Larnaca Principles of guidance, representation and sharing and encapsulate the necessity to make good decisions around how learners can interact with rich (multi)media, communicate and collaborate, and be appraised as they engage in technology enhance learning experiences (Dalziel et al 2016).

We found particular value in the frameworks concept of design acts – Vision, Activities, Synthesis and Implementation; brought together in the stages as the 7C’s; Conceptualise, Create, Communicate, Collaborate, Consider, Combine and
Consolidate – and used these to underpin all work on ITELab module development. In addition we found strong reference value in the related work by Dalziel et al (2016) which offers a way of setting a learning design framework against the context of the broader learning landscape. See Figure 2.

In short, UCD work to date on the ITELab module framework and the prototype module has been informed by ongoing reference to both the 7C’s and the Learning Design Conceptualising Map outlined above.

When we addressed the challenge of the first stage – Conceptualisation– we worked particularly on creating a vision for the modules that would reflect the nature of the learners who are likely to take the modules, their university level, diversity, characteristics as learners, likely existing skills, perceptions and aspirations about learning and especially their understandings of teaching with technologies. This drew in part on the ongoing work of the ITELab project – particularly the ongoing information gathering activities taking place within WP2 and the emerging case study materials. It also drew on a selection of ITE TEL syllabi and module outlines from within the partnership and beyond.

On a very practical level, our early attempts at developing a shared project position / vision surfaced a number of issues and challenges concerning the range of teacher education programmes offered within the partnership – everything from pre-primary to Further Education, and all between – and the diversity of learners and practice contexts the project participants represented.
This is seen to offer an exciting opportunity to innovate across a range of ITE settings and levels.

In developing the ITELab module framework, we have therefore concentrated on activities and contents that are likely to reflect primary and secondary stage ITE programme needs, and to focus on building opportunities for participants form the range of project settings to develop learning design understandings and practices in and through the project modules.

Design efforts at the second stage, which Conole (2013) describes as the Activity Stage, saw an intensive focus on designating the resources and activities that the learners will engage within the module. At this point in the work we also drew on the ShareTEC (2011) ontological frame, and on the DigCompEdu rubric emerging from the EC JRC at Seville (as discussed in Section 2). These provided useful guidance on the selection of content and for pedagogical decisions to do with the specific areas of learning to place as the core focus of the ITElab module – both in general and more granular terms.

This stage of the learning design was characterised by work on Creating /Collating, Communicating, Collaborating, and Considering in the context of the ITELab mission. Creating /Collating is about articulating the main learning materials that need to be sourced, whether through the partners or by developing. In addition, it covers the identification and where necessary repurposing of Open Educational Resources (OERs) from wider repositories. Communicating is concerned with methods to facilitate interaction and peer-learning, between the learner and tutor, the learner and their peers, and the learner with a broader professional community, mostly through social media. All of these were built into the emerging prototype module (see Section 3). This also includes preliminary work on the ITELab Student Hub and initial input into the University-Industry Forum. Similarly, work on the construction of opportunities for Collaborating is about fostering mechanisms to enable collaboration and group activity within and across the partner sites once the module is in operation. Finally, our work around the idea of Considering has been concerned with ways in which reflection and demonstration of learning achievements can be promoted within the modules and incorporated into the more general work on developing the ITELab design frame/module architecture. Part of this concerns activities and the generation of ‘artefacts’, which require the learners to create their own content and apply this in learning setting under their control – most likely practice classrooms.

Our next step, once prototyping for the Activity Stage was concluded – was to begin work on Combining and then Consolidating. Combining concerns taking advantage of opportunities for the partners to step back and reflect on the design process to date, and to look at the emergent modules from different perspectives. We designated the ITELab project partner and pedagogical board meeting (November 15th 2017), which was co-located with the capacity design workshop at EMINENT2017 (November 16th 2017) as the principal opportunity to do this – allowing as it did for both intensive project partner-level dialogue and discussion, and also for the integration into the developing framework of issues and advice drawn from the ITELab Associate Partners’ session. Finally, the Consolidate stage will be about
implementing our design in a real-life context and evaluating its effectiveness. The Q1/2018 piloting will provide this opportunity.

1.2.4 Closing comment

In sum: the ITELab module architecture and its embedded design process have been outlined and discussed above. This discussion covered the origins and sources of the ITELab module ontological and design features and was intended to point to the authoritative sources used to inform the work as it developed and key characteristics of the emerging approach. Also, it indicated that these have been factors in shaping the prototype module, as discussed further in Section 1.3.

Figure 3 presents a schematic representation of the ITELab module design architecture and suggests how the three principal design sources interrelate. It is organised into three stages and shows where within the development cycle to date the influences of these authorities have contributed to building this novel module framework, infusing it with a strong digital ontology and with pedagogical principles that reflect both the challenges and opportunities of being student-teachers exploring more meaningful and effective technology-enhanced classroom practice.

The ITELab Module architecture and generation of the project modules is still a work in progress. Our activities incorporate concerns for the following key characteristics of the emerging modules: well-integrated pedagogical approaches; principles relating to learning design; concern for open access; the provision of guidance and support to ITELab colleagues running a pilot module; content and activities that are customized from existing resources within the project partnership rather than developed from scratch; inbuilt opportunity for reflection and demonstration as a defining feature of module assessment; an approach that fosters communication and collaboration opportunities within and across ITELab partner universities offering the Q1/2018 test-module.
1.3 Module development

1.3.1 Introduction

Under a general theme of *Wisdom, Literacy and Citizenship in a Digital World* we propose to develop three (3) ITELab modules over the course of the project, each embodying structures and arrangements that will allow partners to apply to their home institutions for recognition of the modules for credit purposes, should they so decide. Two of these modules will be at 3 ECTS, Level 3, under the European Credit Transfer and Accumulation System (ECTS), to accommodate primary partners. One may need to be at 3 or 5 ECTS, Level 4, to suit partners who offer graduate-level initial teacher education.

A preliminary proposal regarding module content and structure was put to the project partnership at the second, on-line partnership meeting on 7 September 2017. Three modules in basic /outline form were presented for consideration. (These are included below as Figure 4.) Some valuable comments on the design approach and the content and sequencing of the emerging modules were received on the day and subsequently as more formal feedback arrived from a number of the partners in mid- to late-September. Much of this commentary has now been incorporated into our thinking on the module development process.
One additional element was also added to the design approach; pedagogical value in terms of easy and immediate deployment of learning from the module in the practice setting was added as a guiding element of the vision for ITELab modules.

Figure 4; Areas of ITELab Module Focus; tranche one.

The working-titles for these modules are:

A. Teaching, Learning, and Professional Development in the Digital World.

B. Designing for Learning in a digital world.

C. Effective Use of Space and Technology in digital learning settings.

As mentioned, these are working titles and will change as the modules take shape. Additionally, as the design process continues and partners become more familiar with the outline structures and possibilities of the modules and increasingly involved in (re)shaping them, we fully expect that our initial design decisions around Creating /Collating, Communicating, Collaborating, and Considering will evolve to include new possibilities.

For the Q1/2018 pilot we focused on Module A above to bring it to pilot as a 3 ECTS, Level 3 offering. As agreed with the project partners this will be a ‘closed’ trial – i.e.
involving ITELab university partners only (UCD, UoA, UoN, UoP, PolyIS). A decision will be made as to which module to trial to ECTS Level 4 following the initial Q1/2018 pilot.

What follows is a working through of our initial proposal for the pilot module. This was presented to the project partners at the second project meeting on 7 Sept. 2017. It has been moderated by reference to advice and guidance received from the project partners during and after that meeting.

1.3.2 Module Completion schedule

This development schedule adopted is as follows:

- October 2017 – initial development work of module framework and Module A prototype; including briefing of Pedagogical Advisory Board
- November 2017 – review and refine module in close liaison with project partners; stress-test at EMINENT
- January 2018 – Finalise module, liaise with piloting universities re timeframe and mode ahead of late January launch (w/b 22 January 2018)
- January 2018 – end April 2018; Q1/2018, MODULE A pilot period
- May 2018 – student teacher focus group (Brussels) and project partner meeting – evaluation, feedback, commence module development for 2019

1.3.3 Direct input by Project Partners

Work on module content and development benefited greatly from the discussions and interactions that took place at the ITELab Project Partner Workshop –29-30 May 2017 in Brussels and through a follow-up meeting in Dublin on 13 June 2017 involving the Project Director and Project Leads on the ITELab Modules and ITELab MOOC. This was further developed through the ITELab Project Partner Online Meeting –26 Sept, and the Project Partner Workshop at EMINENT2017 – 16 Nov 2017.

A number of key parameters were established by the partners in the initial discussion and affirmed subsequently at subsequent project partners’ meeting. These reflect the core values and underpinning vision of the ITELab module, as envisaged by the partnership. They comprise: the need to build and retain a vision for meaningful use at the heart of all that we do in this project; the need to place the use of digital tools to enhance and innovate learning at the centre of the project; the centrality of opportunities for active-learning and self-efficacy in the development of competence and digital capability building, and the centrality of this to the learning architecture of any proposed module. In addition, the systemic nature of the challenge faced by the Project was emphasised, as was the need for close coordination of the project partners and the involvement of Associates and the Pedagogical Board in the progressing of project content and vision, generally.
MODULE A: Teaching, Learning, and Professional Development in the Digital World

[75 hrs total; 3ECTS Level 3; hours of direct input and hours of related project work/self-directed learning to be decided locally]

<table>
<thead>
<tr>
<th>Focus</th>
<th>Concept</th>
<th>Competence Areas</th>
<th>Assessment</th>
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| Teaching, Learning and personal PD | Designed to: introduce and develop understanding, confidence and good practice relating to digital, online resources and networks that connect to people and sources of pedagogical ideas/materials and personalised CPD. | • Finding, evaluating and using CPD Resources.  
• Exploring materials and contexts that embody innovative teaching/learning strategies  
• Participating in learning networks.  
• Professional engagement; communication, collaboration and development. | Portfolio relating to digital pedagogy; PLN-prototype; Demonstration piece from within the module work. |

Objectives/Intended Learning Outcomes

At the conclusion of this module participants will be able to:

• meet the challenges of sourcing, (re)purposing, and developing a range of rich-digital instructional and learning materials for use in ITE contexts;
• plan, teach and evaluate digitally enhanced lessons in a confident and capable way, demonstrating strong levels of understanding and competence in relation to both technical and pedagogical principles and practices
• identify opportunities and plan effectively for on-line activities which relate specifically to digital learning design and innovative ICT usages, in both professional and pedagogical modes.

Unit 1

UNIT FOCUS: Being a teacher in a digital world.

Wks 1-3

21st century teaching – continuity and change;  
21st century learning – what it is and how to help it happen;  
Parents’ and Societal Expectations around ICT / Education Technology

Unit 1 is about building understanding of the changing nature of teaching and learning in contemporary society. Each week focuses on ‘starter-pack’ case-materials and involves a challenge that requires thinking about how (and if) technology can be used to make their classes more active and engaging for all students. The underlying model here is that the ITE students experience and then practice aspects of using ICT more capably.

Wk1. Teaching Today

Start-up: watch and critically engage with a short video such as Singapore’s 21st Century Teaching Strategies – Education Everywhere Series;  
https://www.youtube.com/watch?v=M_plK7ghGw4

Or Janet Looney of the European Institute of Education and Social Policy;
**Development**: Working in small groups students search out details on this and other ‘models’ of modern teaching – eg UNESCO, OECD, ETUCE etc. Discuss and describe (elements of) any other innovative models they have come across.

Generate a 2-slide Presentation / Report on findings to share with the class.

**Consolidation**: Discuss how aspects of the session could be ‘mirrored’ or built-on in their own teaching setting. Use a Padlet (or similar) to gather class-wide reflections.

**Follow-out**: Portfolio piece later in week on what was learnt and how it was ported through into personal teaching setting.

**Capability building /DigCompEdu focus**: 1:2, 2:1, 2:2, 3:3, 4:2, 5:1.

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**Wk2. Reimagining the Learning Space**

**Start-up**: Taking the FCL site as a point of departure, come up with arguments for a radical design of learning space for a ‘classroom of the future’; [http://fcl.eun.org/](http://fcl.eun.org/)


**Consolidation**: Plenary on ‘realistic’ / unrealistic versions of future learning spaces. And how these make ‘different’ learning possible. Use SoundCloud (or similar) to gather class-wide reflections. Identify as series of One Change suggestions.

**Follow-out**: Portfolio piece later in week on outcome of One Change action in classroom / laboratory setting.

**Capability building /DigCompEdu focus**: 1:2, 1:3, 2:1, 2:2, 3:3, 4:2, 5:1.

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**Wk3. Technology and Social Media in Learning**

**Start-up**: The views parents and others hold on technology in schools can be very diverse. Two points of entry: Individual reading of (eg) a recent New York Times opinion piece and letter response on this topic; [https://www.nytimes.com/2017/05/20/opinion/sunday/technology-teaching-chromebooks-google.html](https://www.nytimes.com/2017/05/20/opinion/sunday/technology-teaching-chromebooks-google.html) and Individual consideration of the arguments put forward here: [http://www.ictineducation.org/home-page/15-reasons-to-use-education-technology-in-your-classroom?utm_content=buffer0131eandutm_medium=socialandutm_source=twitter.comandutm_campaign=buffer](http://www.ictineducation.org/home-page/15-reasons-to-use-education-technology-in-your-classroom?utm_content=buffer0131eandutm_medium=socialandutm_source=twitter.comandutm_campaign=buffer)

**Development**: Self-select as teams of ‘blog-posters’ and generate a series of strongly anti-Tech posts based on the type of ideas expressed in this and similar media sources. ‘Post’ perhaps to a shared surface in the classroom using stick-notes , not necessarily digitally.

**Consolidation**: Discussion of ‘Points of View’ and the possible effect of social media on ‘normal’ manners and interactions. Consider how this topic might be approached in a classroom setting.

**Follow-out**: Portfolio piece later in week on an action taken in teaching setting to improve
students’ understanding of issues like trolling, rudeness on line, cyberbullying etc. This could explore social media/connectedness or safety, perhaps.

**Capability building /DigCompEdu focus:** 1:2, 1:3, 2:1, 2:2, 3:3, 3:4, 4:2, 4:3, 5:1.

<table>
<thead>
<tr>
<th>Unit 2</th>
<th>UNIT FOCUS: Technologies that Widen the Teaching World.</th>
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<tbody>
<tr>
<td>Wks 4-8</td>
<td>Teachers’ professional learning spaces; Personal Learning Networks (PLNs); Teachers’ professional learning spaces; MOOCs; Seeing Things; IRIS Connect; eTwinning – a community and a learning resource</td>
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Unit 2 is about learning how personal technologies and platforms can be used to open up teachers’ professional learning in new and interesting ways. The underlying model here is that the development of a PLN and insights into the possibilities offered by leveraging technologies that open-up the classroom and so widen the teaching world.

**Wk4 Personal and Professional Learning Networks**

**Start-up:** Share thoughts and experiences on using ‘network’ contacts in day to day life; then view as a class; [https://www.youtube.com/watch?v=hLLpWqp-owo](https://www.youtube.com/watch?v=hLLpWqp-owo)

**Development:** In small teams investigate the types, nature of interaction and uses of PLNs. Report the outcome to the classgroup. Consider: what model(s) of professional learning do different PLNs facilitate? Which professional learning interactions are supported (access to theory, modelling, practice, feedback, coaching)? What will a particular platform enable you to do more efficiently or that you otherwise would not be able to do? How safe and secure does it seem to be?

**Consolidation:** Investigate in your teams the affordances of Twitter as a node in a strong PLN. Consider issues such as ‘following’ and # conversations like #edchatnz.

**Follow-out:** Sign up for Twitter and / or participate in and write up your experiences around a #chat.

**Capability building /DigCompEdu focus:** 1:1, 1:2, 1:3, 2:1, 2:2, 3:1, 3:3, 3:4, 4:2, 4:3, 5:1.

**Wk5 MOOCs and Professional Development**

**Start-up:** Explore as a classgroup the concept of a MOOC and the differing nature of on-line courses; [https://www.youtube.com/watch?v=rYwTA5RA9eU](https://www.youtube.com/watch?v=rYwTA5RA9eU)

**Development:** Briefly discuss Agarwal’s claims; are they fair and reasonable? Now visit the EUN Academy, here [http://www.europeanschoolnetacademy.eu/](http://www.europeanschoolnetacademy.eu/)

Consider how MOOCs have changed even in the short time between the Agarwal and Academy MOOCs. Briefly discuss what a teacher-specific MOOC might look like / contain – what would YOU look for in one. Visit the ITELab MOOC.

**Consolidation:** Explore the ITELab MOOC offering and participate in at least one Chapter. Or alternatively, take on the personal challenge of to compare and contrast a couple of different types of MOOCs such as xMOOCs, cMOOC and others. 75 MOOCs listed here, (US): [https://www.teachthought.com/archived/list-75-moocs-teachers-students/](https://www.teachthought.com/archived/list-75-moocs-teachers-students/)
**Follow-up:** Write up or podcast your experiences in the MOOC using Spreaker (or similar).

**Capability building /DigCompEdu focus:** 1:1, 1:2, 1:3, 2:1, 2:2, 3:1, 3:3, 3:4, 4:2, 4:3, 5:1.

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**Wk6 Video for Learning and Professional Development**

**Start-up:** In pairs, visit IRIS Connect site and explore what it is and does; [https://www.irisconnect.com/uk/](https://www.irisconnect.com/uk/)

**Development:** Using your individual IRIS Connect user accounts, log in to the secure platform, navigate to the ITELab Group and complete the activities in the IRIS Connect Induction section there. Engage in a flipped learning activity within (Task 1 of the Film Club 1) and engage with other students within the online forum.

**Consolidation:** Engage in the Film Club Webinar and participate in the collaborative discussion. Explore the opportunities for relevant ICTs to transform the instructional activity in the video. Launch your IRIS Connect portfolio and discuss the reflection task.

**Follow-up:** Plan and make arrangements for creating and uploading a lesson on to the IRIS Connect platform. Reflect upon the lesson in light of the previous research, examples and discussion. Within your portfolio, plan your implementation of an enhancing ICT.

**Capability building /DigCompEdu focus:** 1:1, 1:2, 1:3, 2:2, 2:3, 3:1, 3:2, 3:3, 3:4, 4:1, 4:2, 4:3, 5:1, 5:2, 5:3.

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**Wk7 Video as a formative assessment support**

**Start-up:** Continue working on the IRIS Connect platform; [https://www.irisconnect.com/uk/](https://www.irisconnect.com/uk/). Record your planned follow-up lesson and share your video with a critical friend for developmental feedback.

**Development:** Provide your critical friend with feedback on their practice using the “Comments” tool on the IRIS Connect platform.

**Consolidation:** Share your videos to your portfolio on the platform and complete the embedded questionnaires / discussion forum. Visit and consider also the this video from the EUN interactive classroom working group: [http://fcl.eun.org/icwg-pedagogical-videos](http://fcl.eun.org/icwg-pedagogical-videos)

And, time allowing, this one relating to the Norwegian setting:

[https://youtu.be/IYsnvwM3zDc](https://youtu.be/IYsnvwM3zDc)  Discuss how students in each of these settings are using video based assessment to support professional learning.

**Follow-up:** Within your portfolio complete the learning log - provide a detailed overview of how your practice has shifted as a result of the feedback you have received.

**Capability building /DigCompEdu focus:** 1:1, 1:2, 1:3, 2:2, 2:3, 3:1, 3:2, 3:3, 3:4, 4:1, 4:2, 4:3, 5:1, 5:2, 5:3.

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**Wk8 Technology for international collaboration**

**Start-up:** Read / download the brief information sheet on eTwinning from here [https://ec.europa.eu/programmes/erasmus-plus/sites/erasmusplus/files/factsheet](https://ec.europa.eu/programmes/erasmus-plus/sites/erasmusplus/files/factsheet).
etwinning_en.pdf: Then visit the UK eTwinning site and watch ; https://www.youtube.com/watch?v=m4jlWnnp3E

Development 1: Deep search for information on this programme and then generate a quick ‘talking–head’ type promotional video (use mobile phone or tablet, perhaps) to explain why teachers should become involved in activities like this. Consider in particular how involvement affects learning in their classes. Access and discuss examples of different practices from some of the EUN case study material on teacher education in Norway, Spain, Italy, and UK that are available from the EUN.net site.

Development 2: Visit the MENTE Project site (http://mentep.eun.org/) or the EU DigCOompOrg site (https://ec.europa.eu/jrc/en/digcomporg/selfie-tool) and investigate the nature and use of self-assessment tools such as SELFIE and TET-SAT.

Consolidation: In small teams, discuss and make a short report in plenary to the class on one of the Case Study publications associated with eTwinning. Or explore one of the project packs accessible on the main EUN eTwinning site and do similarly. Alternatively, explore the TET-SAT tool and report on its nature and affordances to the classgroup.

Follow-out: Sketch out a possible project and if feasible discuss with your school running a short-term project on a topic of your choice.

Capability building /DigCompEdu focus: 1:1, 1:2, 1:3, 2:2, 2:3, 3:1, 3:2, 3:3, 3:4, 4:1, 4:2, 4:3, 5:1, 5:2, 5:3.

Unit 3

Wks 9-10 Wks 9 and 10 Drawing the Learning Together and Module Assessment

Module Consolidation: Individual or group presentation of a module demonstration piece - an item produced through ‘Follow-out’ activities associated that the student(s) is prepared to share with the classgroup.

Assessment: As decided by the local organiser of the module

Capability building /DigCompEdu focus:

Professional Engagement; 1:1, 1:2, 1:3
Digital Resources; 2:2, 2:3
Teaching and Learning; 3:1, 3:2, 3:3, 3:4
Assessment; 4:1, 4:2, 4:3,
Empowerment as Learners; 5:1, 5:2, 5:3.
1.4 ADDITIONAL SUPPORT FOR LOCAL ORGANISERS

A short, Module Guidance Note is being prepared for local organisers to support their participation in the beta-test. This will be distributed in mid-January when the timeframes for the module run and the live-to-air aspects are in final form. UCD will also convene a pre-module webinar for participating project faculty. This will take place during the weeks prior to launch and further webinar support will be offered fortnightly during the module run. This will be open to all ITELab colleagues offering a pilot module and by arrangement with some of the associate partners who have expressed particular interest in being involved as observers from the outset.

Additional resources will be available to support the IRIS Connect element of the test module – this will take the form of full access to the platform for the cohort of students using the IRIS as part of their module demonstration piece /assignment; a webinar based on the “Film Club” structured professional learning programme to provide teachers with a clear, focussed and practical learning strategy, exploring the use of video for personalised and collaborative professional learning and certification for the students concerned, provided by IRIS Connect. These will be published to the partnership in early March – ahead of the test-module units that involve close interaction with the IRIS platform. [Unit 2; wks 6-7.]

Resources and information relating to the eTwinning platform and case studies will be sourced through EUN and made available to participants ahead of Unit 2/ Wk 8 to all interested local organisers. We hope to make an off-line version of the MENTEP TET-SAT tool available to the partners ahead of this final PD / teachers’ learning related activity [Unit 2 / Wk 8], to allow local leading staff to become familiar with the possible potential of the tool to help the student-teacher participants to identify their technical and pedagogical competence and so start to structure a plan to develop these. The plan is to link this with the evaluation activity.

1.5 ITELab STUDENT LEARNING HUB

Work on designing and building the ITELab Student Learning Hub is progressing. The hub will be ready to launch in mid-January, ahead of the opening sessions of the test-module. Essentially, this ‘hub’ will serve as a virtual community where student participants in on-going ITELab modules can interact with each other in an open and welcoming environment. Our intention is that the hub will offer an on-line space which can meet learners’ needs for a project-wide platform. The module activities will reference this hub-space and encourage participants from across the project sites to post on issues of interest and concern, to comment in module-related discussions, to give and seek advice (peer to peer), and collaborate within and across the project sites.

We see it functioning both as a social and a professional learning communicate by offering a mix of resources, a chat function, forums, and a discussion board. Over
time the hub will grow to accommodate all of the ITELab modules and may also serve as a bridge to the ITELab MOOC by providing links and updates relating to the MOOC as it runs.

Additionally, we see the ITELab Student Learning Hub playing an important role in capturing the student voice, in an unobtrusive and authentic manner, so that it can be used to help shape the revisions to our first module – Teaching, Learning, and Professional Development in the Digital World – and contribute to our thinking as a partnership on the design and resourcing of the modules for 2019.
2 INITIAL RECOMMENDATIONS

In this final section of the report, initial recommendations are offered on the basis of work done to date on the development of the ITElab module architecture and the resourcing of Module A. These draw on lessons learnt from experiences to date with our industry and ITE partner universities and are anchored in the project tasks at UCD. First, some early observations are offered on how ITE providers can better exploit CPD resources and teacher communities supported by partner companies. Second, a set of initial recommendations are offered on how the ITE curricula can be improved to better reflect the needs of newly qualified teachers entering classrooms and schools where ICT is increasingly pervasive. The provisional and initial nature of these recommendations is noted; ITELab module work is still very much in its early days and we expect to be in a much stronger position for future editions of the Report, when the data from the beta pilot run are gathered and processed.

2.1 ITE PROVIDERS: WORKING WITH COMPANY CPD RESOURCES AND TEACHER COMMUNITIES

Of the four ITElab industry partners, Microsoft and IRIS Connect have the most developed and extensive ranges of materials targeted on initial and early stage teacher education. Much of this relates to the provision of online training within programmes specific to these partners.

In 2017, Microsoft launched the Student Teacher Education Programme (STEP) for initial teacher education https://education.microsoft.com/courses-and-resources/resources/guidance-for-step. This is the first time that Microsoft had made a direct distinction for a programme in support of Initial Teacher Education at a global level. The material base is rich and STEP is currently being trialled intensively in a number of ITE locations in the UK. Elements of the programme offer interesting possibilities for ITELab – in particular its focus on students developing a rationale for the need to develop 21st century skills. STEP material and activities address key 21st century skills such as collaboration, knowledge construction, self-regulation, problem-solving and innovation, information and communications technology (ICT) for learning, skilled communication. Within ITELab we see very considerable potential here in relation to the second of our planned beta modules – Designing for Learning in a Digital World.10

IRIS Connect also recognise student teachers as a distinctive group in terms of the stage they are in in their professional development, and therefore their training needs. Within the ITELab project, we view the IRIS Connect platform as particularly promising as an arena for supporting sustainable and secure collaboration between student teachers in the partner universities, their lecturers, and – where relevant – their mentors at the schools where they go for work experience / placement.

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10 UCD is currently exploring with Microsoft the best ways of incorporating this into Module B as part of the 2018-19 field-test of ITELab materials and practices.
Within the beta-test of ITELab module A, we are working to include both IRIS Connect Film Club materials and access to Look Who’s Talking Too (the IRIS Connect On-line Collaborative Environment) where student teachers and their educators can share and critique specifically video-captured lesson segments.

The intention is to explore with IRIS the possibilities for ITELab modules of working with elements of their ready-made professional learning programme that may help our student teachers to develop as self-regulating, independent learners.

SMART Technologies and Steelcase materials and resources offer less distinction in relation to their content for student teachers, as most of the strategies and principles they embody are seen as equally relevant to education professionals working at various levels. SMART Technologies\(^{11}\) in particular tailors training specific to their university teacher training client needs e.g: around future classroom and the use of flexible learning spaces supported by technology, and delivering ‘hard skills’ training in problem areas through their network of locally based educators and on-line.

Steelcase\(^{12}\) works with universities on the design of changeable spaces to support future teaching and learning. By working closely with the newly-opened Steelcase Learning and Innovation Centre (LINC), ITELab is be in a position to leverage and incorporate aspects of the company’s latest research on how learners can better share insights, experiment around ideas and risk failure, within bespoke learning spaces – both real-world and online – as part of their path to learning and ultimately successful capability building.

We see both of these partners as having considerable expertise and knowledge to bring to the design and development of Module C, the third of the proposed ITELab modules – Effective Uses of Space and Technology in Digital Learning Settings. This work will, in the main, take place in Q2-Q3 2018 and will be ready for field test along with Module B in Q1/2019, as per the ITELab Project Schedule.

### 2.1.1 INITIAL RECOMMENDATIONS FOR ITE PROVIDERS

For ITE providers, the relationship with the companies such as the ITELab industry partners is, typically, one of supplier and ultimately a commercial one covering products and services. However, in this EC-funded Knowledge Alliance project where ITE providers and companies are working side by side, the value of developing a relationship which goes beyond this is already becoming apparent through our ongoing work on developing an ITELab module architecture and actualizing this in the beta-modules.

The initial ITELab recommendations for ITE Providers which follow are based on this developing extended partnership. Drawing on the working practices and approaches we have adopted to date with our industry partners, from which both


\(^{12}\) https://www.steelcase.com/research/articles/creating-link-learning-innovation/
sides have benefited, we suggest ITE institutions can usefully work with such companies in the following ways:

2.1.1.1  Support change and Innovation in ITE  
Much of what we have achieved to date is due to being able to identify and work with companies that have a particular focus on the education market. In the ITELab case, both IRIS Connect and Microsoft have education experts who track the changing nature of education practice across the EU and translate what is happening there into the development process for the company’s products and services. We have found that working with these company education experts provides a unique insight into the possibilities of their various products and platforms that might otherwise elude us in the ITE sector. As a result of their conversations with multiple ITE organisations across many different countries, their knowledge can bring fresh insights and ideas for useful comparison, networking and international research and resources. In the ITELab case we have been able to translate these ideas and insights into aspects for our beta-modules which go to field test in the coming months.

2.1.1.2  Understand and leverage more of the breadth of what companies have to offer  
Similarly, working closely with our partner companies has allowed the ITELab module development team to gain a greater understanding of our industry partners’ wider offerings in the ITE area. In the case of ongoing work on Module A, this allowed us to include involvement in both IRIS Connect and Microsoft teacher communities in our design, access to high-quality resources curated by these communities, and valuable opportunities to offer feedback through our beta field trials, so that both the mission of the teacher communities and the resources on offer can align more effectively with the needs of ITE institutions within the partnership and beyond. Future work with our industry partners proposes to extend these conversations to include the possibilities of the learning / training design processes championed by Steelcase at their Learning and Innovation Centre (LINC), Berlin and leveraging SMART Technologies expertise in the delivering ‘hard skills’ training in problem areas – such as structured progression towards competence and confident in deep-learning pedagogies for student teachers across the ITELab partnership.

2.1.1.3  Actively help shape product and services development in companies  
All good partnerships are two-way. Working with our industry partners has allowed ITELab universities to contribute to the understanding our industry partners have of the lived-realities of working to promote better digital literacy and pedagogical strength in our various ITE institutional settings. This has been particularly evident at the project Professional Development Workshops where detailed conversations took place on both the possibilities of the project and the visions and assumptions all parties brought to the work. Part of the unique challenge faced by ITELab is the range of ITE interests and practices brought to the project by the academic partners; it is also, we believe, one of our strengths. Each of our ITE settings presents very different possibilities and constraints – from the timing of work practice placement to the great variety of training and support opportunities for developing strong, well-considered digital pedagogy. The non-lineary, episodic nature of much of this was clearly something that our industry partners may have known of but sometimes failed
fully to understand. The diversity of voice this presents was not fully expected by our industry partners. By contrast, their embedded models of learning and development were comparatively time-hungry and surprisingly inflexible in ways – allowing only limited scope for personalised work that is needs-based rather than prescribed in programme terms. By developing deeper, long term relationship between ITElab companies, ITE can help inform and shape the bridging activities that are necessary to bring these visions and practices more closely into line – so that ITE interests benefit from better understandings of the power of more systematised programming for skills-development, and industry partners in turn appreciate more fully the operational and time constraints faced by ITE programmes. From developing the ITElab modules we see considerable value in these conversations and how they can, in time, shape future product and services. All in the partnership are benefiting from access to the module beta trials. Their early involvement in the process helps shape both industry partners’ understandings and the ITE organisation’s own implementation plan, as we all benefit from identifying and building on lessons learned.

2.2 ITE CURRICULA: READYING FOR 21ST CENTURY CLASSROOMS

The same complex factors that make achieving 21st century learning in EU classrooms a challenging goal, are also faced by ITE institutions. There is considerable discussion in the literature on the need to move towards more innovative models of teaching and learning and the difficulty of doing so (eg Fullan and Langworthy, 2014). Creativity and collaboration are often set as central to such innovations and much of the on-going debate about educational reform is positioned within a rhetoric of failure to provide such 21st century learning (cf Dede 2010; Voogt and Roblin, 2012). Of course, the 21st century learning agenda is not without its criticisms and from a practitioner perspective it is often argued to lack exemplars of how it can be implemented within mainstream schools (eg Brecko, Kampylis and Punie, 2014).

In ITE settings, the complexities range from lack of institutional vision and leadership to support the scale of change that is required to the interests and capabilities of the existing teacher training staff, to financial constraints for developing new technology-rich learning cultures, and the breadth of curricula that initial teacher education is expected to provide (cf Caena 2014; ETUCE 2008; Rizza 2011). Much of the agenda here has been set by EC policy action on teachers and teaching for contemporary times (Stéger 2014) and is framed in terms of competences required for effective teaching in the 21st century – which are posited as knowledge/understandings, skills, and dispositions (EC 2012).

2.2.1 INITIAL RECOMMENDATIONS IN RELATION TO ITE CURRICULA

The ITElab Module architecture and the ongoing generation of project modules is still work in progress, nevertheless it represents valuable headway in terms of articulating important differences between our proposals and what may be termed more usual / conventional ITE curriculum practices. This feeds directly into the informing principles of the ITElab design framework and – more importantly here – into the identification
of sets of capabilities and related experiences that are then embedded in the modules. Broadly, these consist of clusters of competences relating to using ICT within well-integrated pedagogical approaches, in-built opportunities for reflection and demonstration, and – centrally – incorporate approaches to early professional learning that foster and utilise peer-to-peer as well as student-lecturer communication and collaboration opportunities.

The initial ITELab recommendations for ITE Providers which follow are based on our developing understanding of how the embedding of such knowledge-work, skill-building and dispositional development can considerably enhance the student experience. We suggest ITE institutions can usefully reimagine the scope and nature of modules concerning technology enhanced pedagogy, in the following ways:

**2.2.1.1 Support Student-teacher Learning for and from Practice**

Both the broader literature on this topic and insights from practice across the partnership suggest that more needs to be done for student-teachers in regard to both their technical and pedagogical preparation for work experience / placement, and supporting them to learn more from those practice settings while in situ.

We suggest that practical, ICT-related pedagogical skills are rarely addressed adequately in ITE. Where ITE curriculum modules about ICT exist, they often concern subject specific training and have a strong technical focus. This is not sufficient in itself. Our work on the ITELab modules to date suggests that there is much to be gained from also working on transversal and ‘soft’ skills that relate to technology-enhanced new pedagogies (such as using ICT for active learning, collaboration, etc.) in such a way that repertoire of practice – along with the knowledge to know when to use different strategies for different purposes (Darling-Hammond 2006) – are built up on a needs-led basis over the course of an ITE programme. It also suggests that student-teachers must be prepared to recognize and address problems in a complex classroom, which juggling the learning needs of their own students and all the while continuing to learn themselves as adaptive experts (Caena 2014). This requires opportunities for engaging in reflective discussions with experienced teachers and with their teacher educators and also requires having the skills and understandings to do so in a meaningful and self-educative manner.

**2.2.1.2 Support Student-teachers to become Lifelong-Learners**

One of the challenges facing initial teacher educators is to lead their students to an understanding that teachers are lifelong learners and that their initial teacher education is just that; initial. Current practice in the various ITELab university settings represents different stances on the idea of the continuum perspective linking initial teacher education, induction and CPD. Nevertheless, we were all agree that the lifelong-learner mindset is a valuable one for our student teachers to acquire and one that ITE in general should do much more to foster and develop. Consequently, we set out to place reflexive, inquiry-based learning opportunities at the centre of the ITELab module architecture and to encourage deeper engagement with this learning process through the suggested assessment arrangements we design-in. Aspects of each unit within the beta-modules were designed to encourage the participants to work with the complex and unpredictable problems of technology enhanced practice in teaching and learning settings. There is a singular dimension
to this that sees the student-teachers participate at a level of that requires deep, critical engagement (Benade 2015) with the values, beliefs and assumptions of teaching with and through technology. There is also a peer-dimension expected which requires aspects of their learning to be collaborative and to occur in a technology-enhanced community setting (cf Freidhoff, 2008). This is seen to involve partnering with student-teacher peers at other partnership universities, where appropriate, as part of the learning process facilitated by the ITELab modules. The expectation here is that this will both show the student-teacher the power of blended communities of learners in addressing professional learning tasks and lay the foundations of engagement in communities of practice and inquiry that will endure long beyond the ITE experience.

2.2.1.3 Support Student-teachers in building open, creative and innovative practices

One of the aspects of initial teacher education that the ITELab project identified early and chose to explore through the module development process relates to the ‘practical wisdom’ (Biesta 2012) needed to shape ICT usage as an enabler/pre-condition of open educational practice. There were two reasons behind this; a decision to explore ways that students taking ITELab module could be encouraged and supported in building practices that include the creation, use, and reuse of open resources, through technology; and a sense that with the sheer quantity of learning resources now available on the web, it was essential that the ITELab modules provided both the opportunity and the skill-base for those students to develop high levels of competence in identifying, selecting and retrieving reliable digital resources, on-line.

We are strongly of the view that ITE is the crucial first stage in a teacher’s professional journey. As Caena (2014) argues, it lays the foundations of a professional mindset and provides the entrant with a basic capability to make meaningful learning happen in a classroom. A comprehensive introduction to the value and power of open practices should be part of that experience so that student-teachers have every opportunity to develop strong personal capacity for the meaning-making and decision-making that will be required when considering whether, why and how to use open educational resources and practices (Cronin 2017) within their teaching.
2.3 Closing Comment

The recommendations and observations above are tentative and are offered in anticipation of the completion of the ongoing development and beta-testing of the ITELab modules. We are confident that the upcoming Q1/2018 Pilot of the ITELab Module A will go a considerable distance towards validating our decisions to date. Nonetheless, we are acutely aware of the need to fully stress-test both the design approach we have authored and the modules we are building and resourcing to reflect that approach before we can be more authoritative in relation to the quality, impacts and relevance of the work.

The module development team at UCD Dublin is working closely with both the Project manager and the ITELab Internal Evaluators to ensure that robust processes and protocols are in place to identify and gather the data necessary to evaluate rigorously the reach and impact of the modules during beta-testing.

This dataset will inform and guide the future work of the module development team. It will also provide the core content for the next Edition of this deliverable, which will in addition include accounts and feedback relating to ITELab Module A from the student teacher focus group (Brussels, May 2018), from project partner meeting over the coming year, and from the University-Industry Forum.
3 SELECTED / INDICATIVE BIBLIOGRAPHY


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