# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>1  STUDENT TEACHER VOICE</td>
<td>3</td>
</tr>
<tr>
<td>2  MOOCs</td>
<td>5</td>
</tr>
<tr>
<td>2.1 The rise of the MOOC</td>
<td>5</td>
</tr>
<tr>
<td>2.2 The ITELab Mooc</td>
<td>6</td>
</tr>
<tr>
<td>2.3 Recommendations for future MOOCs</td>
<td>7</td>
</tr>
<tr>
<td>3  PROFESSIONAL DIGITAL COMPETENCE</td>
<td>8</td>
</tr>
<tr>
<td>4  ITE MODULES AND POLICY</td>
<td>11</td>
</tr>
<tr>
<td>FINAL REFLECTIONS</td>
<td>14</td>
</tr>
</tbody>
</table>
INTRODUCTION

Vesna Belogaska (IRIS Connect), Pedagogical Board Chair

In the past two decades we have witnessed unprecedented changes in our society, driven by exponential development in technology and innovation, globalisation, political and climate change. In this increasingly complex and uncertain world, the role of teachers is also becoming increasingly complex, dynamic and important. Teaching is a multifaceted profession and teachers need to be supported in the adaptation of the teaching and learning that is required in order to respond to the needs of the changing society and prepare the children to be active citizens.

One way of addressing that is through developing the Initial Teacher Education programs to prepare student teachers with the skills to adapt to a changing education environment, including pedagogical use of Information and Communication Technologies (ICT). Teacher competencies are at the heart of effective education systems. The EC’s major Survey for Schools: ICT in Education (2013) suggests that ICT training should be made a compulsory part of all initial teacher education (ITE) programmes. And yet, the European Commission’s Opening Up Education1 communication (2013) highlights that six teachers out of ten have not received any training on how to use ICT in the classroom.

Another recent project, iTEC (Innovative Technologies for Engaging Classrooms, 2010-2014), coordinated by the European Schoolnet and funded by the EC, recommended that, “Ministries review their initial teaching programmes to ensure that they provide trainee teachers with the skills, knowledge and understanding to adopt ICT and iTEC practices with confidence.” These recommendations have been the inspiration for the creation of the ITELab Knowledge Alliance project. ITELab includes six universities providing initial/pre-service teacher education (ITE) and four companies that offer ICT solutions and professional development for teachers who have come together to work with MoE, national ICT agencies and other stakeholders (participating as Associate Partners), to address these issues. The project runs from January 2017 until December 2019 and it will provide the following outputs:

- Data and case studies that highlight new approaches to integrating ICT within ITE courses;
- Develop an innovative framework and content to be used across the European HE ITE institutions – course modules and a MOOC;
- Establish a sustainable forum for ongoing cooperation and innovation in this field by all stakeholders, including generating recommendations to policy makers.

Part of the ITELab’s Quality Assurance plan includes the appointment of a Pedagogical Board to help ensure that project deliverables and outputs meet the requirements of a wider stakeholder group.
The PB consists of six independent experts drawn from ITE universities, companies and Ministries of Education, who are participating on voluntary basis and are lending their expertise and experience to:

- Ensure that the course modules and the MOOC are well aligned with requirements from a wider group of ITE providers in universities and companies providing CPD resources for teachers.
- Quality assure and review the course modules and the MOOC
- Contribute to recommendations for innovating ITE curricula.

This paper provides the reflections and the recommendations of the ITELab Pedagogical Board regarding ITE programs, future projects, policy, and industry, drawing on the specific areas of expertise and particular interest of the individual members and their involvement in the ITELab project. It will contribute towards the input and design of the final project Capacity Development Workshop at the EMINENT conference in November 2019, and it will be summarised in the final ITE Monitoring Report, along with the case studies, research and surveys, to inform the project-wide recommendations published at the end of the project (Dec 2019).

These recommendations are provided from four perspectives, linked to the profiles of the PB members:

The Student Teacher perspective
by Seamus O’Sullivan and Aoife Carew (University College Dublin)

The MOOC perspective
By Dr. Patrick Camilleri (University of Malta) and Minna Koskinen (JAMK University)

The Teacher Digital Competences perspective
by Roger Blamire (European Schoolnet)

The ITE Modules and policy perspective
by Karianne Helland (Norwegian Directorate for Education and Training)

---

1 ITELab Pedagogical Board profiles. Roger Blamire is a senior expert providing steering to the ITELab project, with particular research interests in digital competences.
1 STUDENT TEACHER VOICE

Seamus O’Sullivan and Aoife Carew

The OECD, Talis Report 2018, described technology’s use in education as “falling short” or “problematic”. As the European Commission, Industry, and Universities continue to promote the use of technologies in Education, it is often the case that Student Teachers are left without the necessary knowledge and skills to use technology in a pedagogically wise manner. Frameworks such as the DigCompEdu have been developed to ensure that there is future guidance for teachers to be tech savvy in a way that allows for teachers to provide for the best and safest learning environments. And yet, there is often a need for more guidance with regards the use of technology. What is more, different schools and educational systems of various countries will have different attitudes towards the use of technology, and different resources available to them.

Ranieri, Brunib and de Xivry’s journal article\(^2\) echoes the importance of properly equipping those in the teaching profession with sufficient technological skills. This argument acknowledges the problem of there being not enough education with regards to technological skills development in continued professional development workshops. This article’s research took information from educators partaking in an online platform to best further their educational IT skills. The recommendations to solve this problem are categorised into four areas: didactic aspects, blended modality, technology and participation. The importance of incorporating media analysis activities when attempting to educate teachers in their IT proficiency is necessary as it highlights the importance of information literacy and media languages, which also helps solidify information in educators’ memories. With regard to modality, findings made it clear that teachers were not satisfied with the IT programme being delivered solely through an online platform. Teachers suggested the need for there to be a minimum of two face-to-face meetings running alongside the virtual programme. A fundamental recommendation to the programme was the necessity to first evaluate the participants’ IT competencies before they start the programme. It is vital to remember not to take participants’ competencies for granted before delivering the programme, as it may result in the participants becoming lost and ultimately dropping out of the programme. Finally, the last recommendation with regard to the lack of participation in the programme was due to a lack of support. Teachers voiced their belief that they were not receiving enough support in order to undergo this programme. Teachers need the support and commitment of their local and national institutions, from their own schools to the National Ministry of Education, support such as giving free time to be dedicated to professional learning.

ITELab has made it possible to bridge many of these gaps and to ensure that Initial Teachers are given guidance in the knowledge, skills, and wisdom for the use of

---

\(^2\) Ranieri, M., Bruni, I., & de Xivry, A. O. 2017, 10-19
pedagogical technologies. Whether Student-Teachers have taken part in Module A, B, or C, or whether they have completed the MOOC, they have been able to examine the use of technology in Education; be it in the classroom or in their professional development. For us, we have been given a unique insight into the inner workings of Industry, Policy, and University at the Design Workshops and EUN’s EMINENT annual conference. We have also been given the opportunity to reflect and collaborate on other projects within the programme, whether it be the Student Voice, the use of Facebook as a platform for promoting pedagogical and technological ideas, or the opportunity to contribute, as a member of the Pedagogical Advisory Board, to this Whitepaper.

An invaluable opportunity we have had with this project is the collaboration and links created with student teachers from an international context. From video chatting with trainee educators from other Universities to face-to-face meetings abroad, we have been awarded the chance to share in the experiences of other student teachers. Through conversing with them, we were able to share similar stories and learn about how each other’s educational system works. Alongside areas for international collaboration, becoming involved in this programme also gave us a space to collaborate with our local student teachers in University College Dublin. In these weekly, two-hour workshops, approximately twenty student teachers worked together exploring various aspects of technological integration in an educational setting. Teaching is no longer an isolated profession; it is important now to create a sense of community and to build a network of like-minded teachers who will help support and foster our ever-evolving profession.

Our recommendations for the future, would be continued support, encouragement, and guidance in the use of technology in the classroom. We believe our experiences have been invaluable, however, without continued CPD support and availability of resources and guidance, those experiences may become redundant. Furthermore, we believe there should be more coordination between Industry, Policy, and Universities in future projects - the collaborative approach of ITELab having proved so effective. However, we would also recommend a closer partnership with schools - schools often having conflicting policies towards the use of technology. Without more leadership, this may be impossible, but unless the schools are willing to adopt more technology into their practices, the training of Initial Teachers to use technology in their teaching shall remain superfluous.

A recommendation for universities that may take part in this project is for the programme to have credit module weighting, otherwise it is very difficult to incentivise students to take part in the programme. This was evident during the University College Dublin pilot of the programme, as weeks progressed, and students were prioritising academic assignments over attending the ITELab workshops. It is vital to have formal recognition for the work the students have done. Alongside this, many students felt they wanted more practical lessons in the ITELab sessions, meaning they wanted tutorials on what apps they could immediately use in their classroom to help their students grasp concepts.
2 MOOCs

Patrick Camilleri and Minna Koskinen

2.1 The rise of the MOOC

MOOCs have been around for about a decade now. During the years MOOCs have become a global trend in the field of education and evolved from being a marketing tool offering standalone courses, to the serious provider of continuing professional development and established part of the educational system (Brown, 2018). Nowadays three different MOOCs can be identified: xMOOC, cMOOC, and hybrid MOOC.

- xMOOC has content-based interaction and is based on traditional university courses. Students are provided with the material in different forms – mainly video lectures – and quizzes to measure obtained knowledge.
- cMOOC emphasizes collaboration between students. It has social media-based interaction and is based on connectivist pedagogy. The focus is to involve groups of people learning together.
- Hybrid MOOC is a face-to-face course which has MOOC content integrated in the course.

According to Class Central MOOC report 2018, nearly 40% of the MOOCs offered in 2018 were about business or technology, Education and Teaching reaching only 9%. The number of new participants and new MOOCs have slightly declined from previous years but the numbers still remain high.

---

Though the number of MOOC participants have declined from previous year they are becoming more and more part of the educational system. Many predict that within couple of years MOOCs will be migrated into degree programs either as hybrid MOOCs or even as the basis of degree programs (e.g. Ubachs, 2019⁴, Shah, 2019⁵).

2.2 THE ITELAB MOOC

ITELab’s MOOC was first piloted in Spring 2018, updated with the evaluation feedback before running again the final version in Spring 2019. The MOOC was a success with over 3700 participants from over 70 countries, including all 28 member countries of the EU.

ITELab MOOC focused on developing pedagogical digital competence for future teachers. Another important aspect was to offer a possibility to connect with fellow students to share ideas and start to build a professional learning network. During the MOOC there were several activities, such as 4 live events, Twitter chats, Quiz night, Teachmeet, which encouraged students to come together, learn together and share their experiences. This makes ITELab MOOC an excellent example of a collaborative cMOOC.

The biggest challenge in ITELab MOOC was probably the question of accreditation. This is no surprise, since course recognition, certification and accreditation have been recognized the key issues of MOOCs in general (Read, Barcena, Sedano, 2018⁶).

In ITELab MOOC the answer to this challenge was to encourage the universities participating with their student teachers, to recognise the MOOC as part of the local assessment and grading. In many cases, students included the MOOC as part of their professional portfolios. This kind of hybrid MOOC approach surely was one of the reasons for ca 50 % completion rate which is an excellent result compared to MOOCs in general. Approaching MOOCs from a hybrid perspective opens up new opportunities to face the challenges of accreditation, credibility and completion rates.

One suggestion for the future development of ITELab MOOC would be to integrate it into the ITELab Module Frameworks.

Accessibility has always been in the core of MOOCs. The initial idea of MOOC was to open up higher education to all, to offer an online platform for learning so that anyone from anywhere could access the learning material for free.

Today, accessibility has a whole new meaning. The EU directive on the accessibility of the websites and mobile apps of public sector bodies⁹ requires all websites and services on the public sector to meet the web accessibility criteria described in WCAG 2.1. by 23 September 2019. Since the plan is to rerun the ITELab MOOC in Autumn 2019 and to sustain it as part of the European Schoolnet Academy MOOC program in 2020, this is certainly something to focus on.

2.3 Recommendations for future MOOCs

The culmination of user-generated content brought about with the onset of the World Wide Web unlocked new dimensions into the ways that people can stay connected and network together. MOOCs happen to be only one aspect, in this case, an educational one, that exploits the intentions of nascent rich dialogues and interactions between tutors as facilitators and the learners.

In the same instance that we focus on the content we must not neglect less discernible qualities such as enhanced collaboration and other 21st century skills directed to support and subsequently project us wherever this digital revolution will take us. Yet this is only the beginning as with the onset of Artificial Intelligence that inexorably is already merging within our lives, education must once again rise as it did in the past to support future workers to and through the next AI infused industrial revolution that incidentally gives a new meaning to MOOCs.

Learning is not only personal but also social. The quality that makes us human is our ability to look into and interpret the same issue differently and share outcomes to learn together and from each other. As humans, we do not only see things in black and white but are subjectively capable of developing nuances that give different meanings to the same issues. MOOCs offer the power to connect and network where people not only learn at their own pace, but are also provided with choice and a voice of socially shared that through recursive dialogues is instrumental in developing new qualities that conventional teaching cannot deliver. Thus, as MOOCs transcend through time, they become evocative of an emerging paradigm for the nomadic self-directed learner whom, in order to remain meaningful in a fast-changing digitally mediated landscape will avail him/herself of MOOCs to change the concept of education from ‘just in case’ and ‘just in time’ to ‘just for you’ empowering personalised education in compliance to nascent market and economic requirements.

---

3 PROFESSIONAL DIGITAL COMPETENCE

Roger Blamire

It is only recently that attention has focused on defining and assessing teachers’ skills in using ICT effectively in teaching and learning: *pedagogical* digital competence, as distinct from digital competence.

Frameworks have been developed to describe the components of such competence, notably the UNESCO ICT competency framework for teachers\(^8\) with its three domains (technological literacy, knowledge deepening and knowledge creation) and 18 sub-areas, and, more recently, the Digital Competence Framework for Educators (DIGCOMPEDU)\(^9\) comprising six domains (fig. 1) and 22 competences. Its focus is on how digital technologies can be used to enhance and innovate education and training, and not technology itself.

![Figure 1: Overview of DigCompEdu](http://mentep.eun.org)

Not a framework as such, but a diagnostic tool developed in the MENTEP project\(^10\), the *Technology Enhanced Teacher Self-Assessment Tool – TET-SAT* – has four dimensions, as seen in figure 2.

---


\(^10\) [http://mentep.eun.org](http://mentep.eun.org)
TET-SAT gives teachers immediate personalised confidential feedback on their Technology-Enhanced Teaching Competence – their strengths, weaknesses and training needs. In trials, using TET-SAT resulted in teachers, on average, revising slightly downwards their beliefs about their competency in using ICT for teaching. An update (August 2021) includes links to short examples of practice (55) illustrating the different competence levels and a policy maker dashboard is under development.

Newly qualified teachers are likely to be expected to reach at least base levels in these competences as they become more firmly established (and will need classroom experience to consolidate and develop them); they could well become entry requirements to the profession or at least, necessary qualifications expected by innovative schools. At present, newly qualified teachers report fairly poor quality ICT training during their teacher education according to a Norwegian survey11, and the authors recommend that continuous efforts are needed to review the quality of ITE and specifically the development of student teachers’ pedagogical digital competence. Instead of considering pre-service teachers as one homogenous group, tutors’ need to understand the variations among in abilities and knowledge in order to be able to provide student teachers with the support they need12. What is not yet clear is the level of digital competence to be expected of newly qualified teachers and which domains (if not all) are considered to be a pre-requisite for beginning teaching.

The ITELab project has thrown the spotlight on the pedagogical digital competence of tutors in ITE, particularly as they are seen as role models by students and their influence can be lasting. Teacher educators modelling technology use, are an important motivator for beginning teachers to use technology in their own teaching.

---


according to Tondeur et al\textsuperscript{13} (although field experiences are the most critical factor influencing their practice). Yet according to another Norwegian study\textsuperscript{14} only 35% of teacher educators believe they are good role models for use of technology and that teacher educators' efficacy correlates positively with their digital competence. Dutch research found that teacher educators themselves struggle with effective use of technology in their own courses\textsuperscript{15}.

That is why, in the ITELab project the University of Agder, Norway, examined in more detail the components of tutors’ professional digital competence, as distinct from those of student teachers and serving teachers: its importance in ITE, and issues surrounding the very nature of assessing higher education tutors’ skills. A survey was conducted which revealed that generally tutors feel that digital competence is important to teach their subject and that they are expected to develop their digital competences themselves. 85% agreed or strongly agreed that they have the digital competency skills to do so, suggesting that they see no problem about their competences – but student teachers may disagree. This is perhaps echoed in the fact that only 32% of responding tutors (n=162) agreed strongly that their pedagogical digital competence is adequate to support student teachers' development of pedagogical digital competence.

In future, pressure may well increase on ITE providers to ensure – and demonstrate (in a climate of increased accountability) – that the teachers emerging from training have the competences required in modern learning environments. Will such pressure be resisted in some institutions as an attack on academic freedom and the autonomy and professionalism of tutors?


4 ITE MODULES AND POLICY

Karianne Helland

Policy interest in the use and potential of information and communication technologies in schools, including the importance of teacher competence, goes back decades. However, until fairly recently there has been little focus on the role of initial teacher education, and studies indicate that there are challenges to be addressed.

In Norway, a 2013 study pointed out that professional digital competence was weak and not systematically addressed in initial teacher education. A 2014 study of newly qualified teachers showed that they felt the quality of their ICT training had been fairly poor.

As more research emerged on teachers' professional digital competences, it became clear that discussion and clarification was needed on what these competences were. The European DigCompEdu Framework, launched in 2017, has been important in identifying and describing teachers' professional digital competences and providing a common reference for discussion. Similarly, the Norwegian Centre for ICT in Education, with input from teacher education institutions, developed a Professional Digital Competence Framework for Teachers. This framework springs from the national context but is also aligned with DigCompEdu.

The Framework for Teachers' Professional Digital Competence takes as its starting point a comprehensive, multifaceted view of the role of the teacher, and asks the question, what does this role look like in a digital context?

It is more important than ever that children and young people are not merely passive consumers of products, services and information, but also critical users and active producers themselves. Teachers need complex competences to support them, including leadership of learning processes, interaction and communication, and ethics.

However, a framework is only a starting point. How can policy makers support the ITE institutions in developing this part of their programmes, without infringing on their academic autonomy? Supporting projects like ITELab, which brings together different actors in a collaborative environment is certainly one possible answer to that question.

To help address the "digital gap" in ITE, The ITELab project has developed three modules for beginning teachers. These modules are described in structured handbooks and are meant for in-class teaching. They are flexible and adaptable,

16 NIFU (2013): IKT i lærerutdanningen: På vei mot profesjonstaktig digital kompetanse?


18 https://www.udir.no/in-english/professional-digital-competence-framework-for-teachers/
allowing ITE institutions and teacher educators to use the material in a way that suits their context.

The ITELab modules exemplify the kind of teacher competences that are described in DigCompEdu and other frameworks. The concept of teachers’ professional digital competence indicates something more than and different from the digital competences required by school curricula. It denotes the complexity and breadth of knowledge, skills and competences in teachers’ professional practice that are associated with understanding the opportunities and challenges in today’s digital society.

Teachers need to be able to lead in technology-rich classrooms, to use the possibilities provided by the technologies for varied and interesting ways of working in the classroom, and for effective ways of helping students learn in all subjects. This includes “opening the doors of the classroom” to the outside world, and being able to instil critical thinking, understanding of democracy, and the value of participation and diversity in an increasingly interconnected and complex digital world.

The ITELab modules have been co-designed and tested by the ITE institutions involved in the project. Module A was run as a pilot in the spring of 2018, and again in the spring of 2019 together with the smaller, supplementary modules B and C. Through these pilots, valuable experiences have been collected and fed back into the development process. The aim has been to ensure that the modules are sufficiently flexible and adaptable to be used across different education systems and in different national and institutional contexts.

Module A (5 ECTS), "Teaching, Learning and Professional Development for Beginning Teachers", deals with how to be a teacher in a digital world. It is designed to introduce and develop understanding, confidence and good practice in the use of digital resources and online networks for developing your professional competences.

Module B (3.5 ECTS), "Designing for Learning", deals with designing learning and teaching in a digital context.

Module C (3.5 ECTS), "Working with Learners", explores principles and practical issues relating to working with learners and reflecting on classroom practice.

Course handbooks have been developed for teacher educators wanting to carry out the modules with their students.

The modules provide insight into relevant perspectives and how they can be addressed in teacher education. In this way, the modules can provide a model and a starting point and can give teacher education institutions and teacher educators some experiences which they can build on to improve their own competences and to integrate these topics into their study plans. This demands, however, that the institutions take a systematic approach.

Policy making is sometimes said to be based on equal parts knowledge, experience, politics and guesswork. We never know enough about the causes that underlie a
situation, or what will work to change it. However, we must make our guesses based on as solid a foundation of research and experience as possible. As with many things, cooperation (nationally and internationally) can be an important factor in achieving this knowledge base.

Cooperation between industry, policy, and ITE has been central to the ITELab project, and provided a richer context and broader perspective than would otherwise have been possible. I want to echo the recommendation of the student teachers above, to develop further the link to the practice field, i.e. schools. Students cannot become confident teachers of complex competences unless they have the opportunity to practice. Quality in practice requires cooperation, common goals and a shared understanding between teacher educators on campus and in schools.

Teacher educators themselves need training and practice, as well as the necessary infrastructure, spaces and support, to develop their own and students’ professional digital competences. One of the findings from the 2013 study mentioned earlier was that the lack of a systematic approach from the ITE institutions meant that the professional digital competences student teachers were able to develop varied a lot and depended on individual teacher educators. Only by involving the institution widely and systematically, and by including professional digital competences in study programmes, will the institution be able to build a robust professional community in this area.

Ideally, digital perspectives and modes of learning should be integrated across subjects and topics in ITE. The ITELab modules provide a very useful starting point, and it is to be hoped that many ITE programmes across Europe will take advantage of this valuable work.
FINAL REFLECTIONS

Vesna Belogaska (IRIS Connect), Pedagogical Board Chair

The ITELab project highlights key issues facing ITE in the context of pedagogical use of ICT and provides some inspiring examples of how some of those issues can be addressed effectively.

Cooperation between industry, policy, and ITE across different countries has been central to this project and has provided a richer context and broader perspective than would otherwise have been possible.

Benefiting from the different perspectives provided by the representatives of key stakeholder groups in teacher education, this paper presents interestingly convergent conclusions and recommendations. There is a consensus on the need for incorporating increased quantity and quality of pedagogical use of ICT in ITE. Digital perspectives and modes of learning should be integrated across subjects and topics in ITE – the ITELab modules provide a very useful example of this.

The flexible and adaptable nature of the project outputs – notably the ITELab modules and the MOOC – has been one of the key advantages, allowing ITE institutions and teacher educators to use the material in a way that suits their context. The courses' certification and accreditation has emerged as an additional advantage for ensuring student incentive and wider engagement with the valuable open source content.

Key recommendations for developing teacher professional digital competences aimed at policy makers, ITE institutions, industry and future projects include:

- An integrated and systematic approach across the education eco-system. It needs to involve not just student teachers, but teacher educators, as role models for the students; not just the ITE universities, but also the schools where student teachers practise and subsequently join as qualified teachers, in order to ensure bridging the gap between theory and practice.

- A blended and collaborative learning approach. The potential benefits of collaborative learning and knowledge building which the digital approach affords have been evident in multiple scenarios involving ITE stakeholders: the student teachers engaging in rich and diverse international communities of practice through the ITELab modules and the MOOC; the teacher educators and industry partners engaging in the iterative process of co-creation of innovative content, and the policy makers drawing on the research and experience emerging from this project, informing decision-making.

- Policy makers can support the ITE institutions in integrating the innovative ITE curricula and approaches into their programmes by supporting and considering the recommendations from projects like ITELab, which involves collaborative co-creation work of different stakeholders and an ongoing ITE forum for sustainable sharing of knowledge and resources.
ITELab (Initial Teachers Education Lab) is a Knowledge Alliance project between higher education institutions and industry to foster innovation and knowledge exchange in initial teacher education (ITE). Project number: 575828-EPP-1-2016-1-BE-EPPKA2-KA. It is co-funded under the European Commission’s Erasmus+ Programme from January 2017 to December 2019.

This publication was created with the financial support of the Erasmus+ Programme of the European Union. This publication reflects the views only of the authors and the European Commission cannot be held responsible for any use that may be made of the information contained herein.