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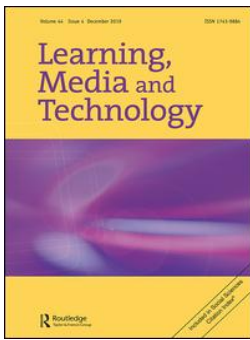
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Digital competence in teacher education: comparing national policies in Norway, Ireland and Spain

Oliver McGarr ^a, Louise Mifsud ^b and Juan Carlos Colomer Rubio ^c

^aSchool of Education, Faculty of Education and Health Sciences, University of Limerick, Limerick, Ireland; ^bFaculty of Education and International Studies, Department of Primary and Secondary Teacher Education, Oslo Metropolitan University, Oslo, Norway; ^cFaculty of Teacher Training, Department of Experimental and Social Sciences Education, University of Valencia, Valencia, Spain

ABSTRACT

This paper explores the development of policies dealing with teachers' digital competence in Norway, Ireland and Spain. Using a documentary research approach, the study analysed relevant policy documents from each country over a thirty-year period to the present day. Analysis of the documents highlights historical differences and similarities in how technology in education policies developed during that period and differences in how teacher education was addressed. Despite these differences, the analysis indicates a convergence in recent years towards a common understanding and the importance of teachers' digital competence influenced by supranational frameworks. The paper discusses the potential influence of these supranational frameworks and examines the opportunities and challenges of this policy convergence.

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Introduction

The integration of digital technologies in education has gathered pace in recent years, evidenced by continued attention devoted to this area in national education policies (Ottestad and Gudmundsdottir 2018). This has led to an increase in the attention given to what constitutes a digitally competent teacher. This attention is partly driven by concerns about the level of preparation of some teachers to utilise technologies in their professional practice (Tondeur et al. 2017) but also by the need to understand the many dimensions of professional digital competence, which has resulted in several frameworks being created that detail the different components of teachers' professional digital competence. While there are some comparative studies undertaken in this area (Voogt and Roblin 2012), there is a need to explore the extent to which national policies align with more recent supranational frameworks to identify the influence of such supranational policy documents.

This paper explores the development of teacher education policy in relation to digital technology and teacher development in Norway, Ireland and Spain. We selected these countries for a number of reasons. In addition to the authors' familiarity with each of the countries, the countries differ in a number of respects. Firstly, they vary in population, with Spain exceeding 46 million people, whereas Ireland and Norway have similar population sizes (approximately 4.9 and 5.4 million inhabitants, respectively). The countries also differ in terms of the structure of their educational systems: Norway and Ireland have quite centralised systems, whereas a decentralised system with significant regional autonomy prevails in Spain. While Norway and Ireland are similar in population and have similar centralised systems, they differ significantly in terms of the scale of technology

CONTACT Oliver McGarr  Oliver.McGarr@ul.ie  School of Education, Faculty of Education and Health Sciences, University of Limerick, Limerick, Ireland

investment and when policy in this area was first initiated. In addition, while they all differ in terms of when digital technological integration first became a policy goal, all three have had a relatively long history of policy in this area. Therefore, a historical trajectory of each country's policies can be established. This helps to determine whether their rationale for digital technology integration has evolved over time and whether the policies show evidence of convergence. To explore this issue this paper sought to:

- (1) Identify the key policy documents related to digital technology/information and communications technology (ICT) and teacher education in the three selected countries and provide an overview of the development of these policies.
- (2) Compare the development of the policies in the selected countries and examine the extent to which there is a convergence of these policies.

Digital competence in teacher education: the development of competence frameworks

There are many different terms used to describe the emerging competencies required by teachers as a result of the shift towards an information society. For example, Voogt and Roblin (2012) undertook a comparative analysis of international frameworks for 'twenty-first-century competencies' and found diversity in terminology used. They also questioned whether the need for such competencies represented something 'new' or whether it reflected a re-prioritisation in the education system. While not looking specifically at teachers' digital competence, their study identified eight policy frameworks that were developed to support the curricular integration of twenty-first century competencies and noted that, in all frameworks, ICT was at the core of each one. They noted a convergence of several competencies, including collaboration, communication, ICT literacy, and social and/or cultural competencies (including citizenship). There was also a common reference to creativity, critical thinking, productivity and problem solving. Regardless of whether digital competencies should be seen as a separate domain within twenty-first-century competencies or whether they should permeate all aspects, it is apparent that there is an increasing focus on teachers' digital competencies as evidenced by the number of frameworks developed in the last decade (McGarr and McDonagh 2019).

In conceptualising the various dimensions of digital competence, there have been a number of frameworks put forward (for example, Voogt and Roblin 2012; McGarr and McDonagh 2019); however, more recently, the emergence of supranational frameworks that are focussed on teacher standards and specifying desired practices have become influential. We use the term supranational frameworks as they are driven by agencies that have a transnational focus. These include the European Union's *DigCompEdu* (Redecker 2017), the *UNESCO ICT Competency Framework for Teachers* (United Nations Educational, Scientific and Cultural Organization (UNESCO) 2011) and the International Society for Technology in Education (ISTE) standards for educators (ISTE 2017). The *DigCompEdu* and *UNESCO* frameworks appear to be more influential in a European context, whereas the ISTE standards have had a greater influence in the United States (Nelson, Voithofer, and Cheng 2019).

These competency frameworks aim to assist national governments in embedding digital competence in teacher education. The *DigiCompEdu*, for example, states that the framework was designed as 'educators need a set of digital competences specific to their profession in order to be able to seize the potential of digital technologies for enhancing and innovating education' (Redecker 2017, 8). Similarly, the UNESCO framework provides a 'guide for the development of effective ICT in education teacher training programmes' (UNESCO 2011, 8). Both frameworks list the various dimensions of teachers' digital competence and detail the specific nature of these competencies. They arguably reflect the shift towards greater teacher accountability and standards globally (Adoniou and Gallagher 2017). Supporters of this shift towards competency and standards argue that such

frameworks provide a roadmap for career-long professional learning, which can raise the status of the profession. Others raise concerns about their role in diminishing teacher autonomy and eroding teacher agency (Pantić and Wubbels 2010; Adoniou and Gallagher 2017) as they can reduce teachers' professional practice to simplistic and easily measurable outcomes (Ball 1994).

These teacher competency frameworks share commonality in that they emphasise both the technical proficiency needed by teachers, and also highlight the pedagogical knowledge required. To varying degrees, they refer to other dimensions, such as cyber-ethics and social aspects related to technology use. This convergence suggests that there is an emerging global consensus in relation to what teachers' digital competence entails. Nonetheless, the extent to which this is reflected in national teacher education policy requires discussion. It could be argued that such supranational frameworks are the ideal instruments to help guide and cohere the provision of teacher professional development and their existence is justified on this basis. Conversely, however, it could be argued that the aims of these supranational frameworks to inform national policy are unachievable as they fail to appreciate the complexity of policy transfer, and the complex social, cultural and political factors that mediate the adoption of policies (Phillips and Ochs 2004). In this context, little is known about the extent to which the supranational frameworks developed over the last years have percolated down to the national level and influenced policy.

Methodology

The study adopted a documentary research approach. Documentary research is a research method focussing on the analysis of documents where the documents are not deliberately produced for research purposes but exist in their own right (Mogalakwe 2006). These documents can be either public or private and offer a form of voice that provides a level of insight into events and activities. As documentary research explores historical documents and can follow documents chronologically over time, it facilitates insight into past processes of change, as well as continuity over time (McCulloch 2013). Therefore, policy documents are the ideal sources for undertaking documentary research as their analysis highlights assumptions that underlie policy reforms (McCulloch 2013). Such policies, for example, rather than describing specific intentions, often play a symbolic role, serving a public relations and marketing function (Rizvi and Lingard 2009). The policy documents used in this article are public documents accessed from Norwegian, Spanish and Irish sources. In undertaking documentary research, Mogalakwe (2006) highlights that handling sources is no different from those applied to other areas of social research in that the sources must be authentic, credible and representative. Therefore, selecting the documents we analysed required a systematic and uniform approach across the three countries.

Selection of sources

Several principles guided the selection of sources. It was decided to select official national policy documents within each of the authors' countries. This selection was further refined to include only policies related to digital technologies, schooling and teacher education. For each country it was agreed to select documents from the commencement of policies related to digital technologies in education, despite the difference in commencement dates. An overview of policies is included in Appendix Table A1.

Norwegian sources

In the Norwegian case, a search in the government repository resulted in 54 White Papers (Norwegian: *St. meld. or Meld. st.*) issued by the Ministry of Education. Following the above selection procedures, White Papers from 1994¹ to the present issued by the Ministry of Education ($n = 12$) were selected. Older White Papers dealing with the implementation of technology in teacher education and compulsory schooling were searched using a snowballing method ($n = 2$). These documents

date back to the early 1980s and reflect Norway's status as one of the world's leading nations in adopting new information and communication technologies (Liu 2010). Official reports, action plans and strategies are not included as these papers form either the basis of a White Paper or are the operationalisation of the White Papers.

Irish sources

In the Irish case, policy documents related to technology in education date back to 1997 with further policies launched in the proceeding years. These policies tended to be published as standalone policies separate from other education policies and hence were less integrated across other policy documents. The selection of sources commenced with the *Schools IT2000* policy launched in 1997. Over the following years to the present day a further five relevant policies were identified.

Spanish sources

In the Spanish case, there were fewer state documents focussing on the development of digital technology in schools and teacher education due to the decentralised nature of the educational system and regional autonomy. The first institutional initiatives began in the 1980s with the development of *Programas de Nuevas Tecnologías de la Información y la Comunicación (PNTIC)* (ICT programmes), a set of resolutions based on the use of the computer in the classroom, designed as a support for teaching rather than a learning tool. Hence, this was the first policy document selected, and subsequent policies launched in the intervening period were then selected.

It is worth noting that the selection of these sources is not a definitive list of all published policy in this area. Instead, the sources included are significant policies that reflect the overall policy trajectory and provide a broad historical overview at the national level.

Analysis of the selected sources

To analyse the sources, a five-stage process was undertaken:

- (1) Digitally skimming the documents using an iterative 'skim-read-interpret' strategy for familiarisation.
- (2) Searching through the documents looking for references to teacher education/professional development.
- (3) Choosing relevant excerpts referring to teacher education and IT/ICT/digital technology (acknowledging the changing terminology over the decades from IT to ICT).
- (4) Synthesising these sources so that an overall historical narrative for each country could be captured.
- (5) Drawing inferences with regards to recurrent themes and topics in each country.

In comparing the countries, we were mindful of the challenges of such comparative interpretation as outlined by Phillips and Ochs (2004) given the political, social, economic and cultural nuances of policymaking processes in each country. As a result, we adopted what could be described as a broad-brush analysis to capture the overall trajectory.

Before presenting the cases, it is important to highlight the challenges associated with comparing policy written in different languages. Phillips and Ochs (2004) referred to this as the challenge of semantic and linguistic peculiarity. In the Norwegian and Spanish cases, documents in the original languages were used and relevant excerpts translated to English. In translating these documents, we were mindful of the differing uses of terminology. While most terms had direct translations, two key terms refer to different understandings of the concept. Of particular importance in the context of this research, and for other researchers exploring this issue, are the use of the terms didactics/pedagogy and literacy/competence. The term 'didactics' (*didaktikk* in Norwegian and *didáctica* in Spanish) is more accurately translated to 'pedagogy' in English. Interestingly, the, as the literal

translation of pedagogy in Norwegian/Spanish *pedagogikk/pedagogía*, is most appropriately translated into English as refers to what in English is often termed as ‘educational theory’. Similarly, the use of the term ‘literacy’ or ‘competence’ is dependent upon geographical region. For example, Spante et al. (2018) found that the use of the term ‘digital competence’ is used in Nordic countries and in continental Europe (Norwegian/Spanish: *digital kompetanse/competencia digital*), whereas ‘digital literacy’ tends to be used more in anglophone countries. However, they both refer to the same concept.

The three national cases

Norway

Synthesis of key policy developments

The earliest policies aimed at introducing ICT (termed as IT or electronic data processing (EDP), a designation commonly used in the Norwegian literature) into education can be traced back to the early 1980s. These first White Papers (Kirke-, utdannings- og forskningsdepartementet (KUF) 1983, 1987) aimed to contribute to national strategies for IT in the educational sector, starting with a presentation of the need for a common effort in the use of EDP in school and introducing several action plans. Rustad, Skjærlund, and Ulnes (2014) concluded that these early policies for introducing IT in school made arguments for the inclusion of ICT (EDP) to address inequalities of access, efficiency and the potential as a tool for learning. However, the positive outlook was somewhat tempered by a more critical perspective, noting that EDP could also be a potentially ‘disturbing’ element in childhood (KUF 1983).

By contrast, the White Papers of the 1990s and early 2000s (KUF 1993, 1998, 2000; UFD, 2001) reflected a more positive view, taking as a point of departure that society needs to create new workplaces and further develop information technology, introducing EDP/IT as having ‘changed society dramatically’ (KUF 1993, 4). The terms used in this White Paper reflect this catalytic role of IT, using terms, such as ‘potential for learning’, ‘new possibilities’, ‘stimulating creativity’ and ‘contributing towards efficiency’ (KUF 1993, 28–29, 36) as well as comparing it to being ‘necessary’ and ‘as natural as cycling or swimming’. At the same time, concern was raised as to whether schools were able to ‘meet the demands’ that the influx of information and access to mass media presented. These early policies reflect the need for justifying the introduction of ‘new technologies’ into education.

Another issue brought up in the early White Papers is that of an economy that changes due to the rapid development of technology (KUF 1983, 1987, 1993, 1998), reflected in terms, such as ‘hard competition’ and ‘larger mobility of capital, wares and services’ (KUF 1998, 8). The role that education plays in strengthening the economy is reflected across several White Papers where claims are made that new technology ‘opens new possibilities in teaching’, focussing on the ‘democratising’ aspect of IT and where the potential for exploiting IT in ‘teaching, learning and competence development’ is emphasised (KUF 1998, 8). These terms are also reflected in more recent White Papers, describing digital tools as a ‘means for stimulating inquiry’ (Kunnskapsdepartementet (KD) 2007, 8). This language of change is also evident in recent policies: ‘Technological changes and innovations will help change digital and physical production processes for both goods and services. Productivity growth in Norway depends on the ability to utilise new technology that is largely created outside the country’ (KD 2015, 6).

In early policy documents, the notion of ‘tool literacy’ (Tyner 1998; Lankshear and Knobel 2006) was prominent in describing IT, evident in phrasing, such as ‘instruments that support learning’ (KUF 2000, 8). This notion is further developed in subsequent policies as a basic competency on par with reading and writing (UFD 2001, 2003). At the same time, a need for developing I(C)T in teacher education was established, moving the focus of ICT from tools for learning to professional and educational aids; thus, ICT was integrated into school subjects. As with earlier policies, these policies drew on positively laden words and phrases, describing ICT in terms of

'possibilities', 'potential', 'positive effects' and as a 'prerequisite for functioning'. The role that teacher education plays in developing the nation's IT competence was taken up in several policy documents, focussing on the need for 'continuously renewing' teacher education and underscoring the need for creativity from a 'future' perspective (KUF 2000). UFD (2003) specified that educational use of ICT in all subjects is a prerequisite (Erstad 2010); hence, teacher education must ensure a basic ICT competence and that student teachers must be given a thorough introduction into the use of ICT as a 'professional, pedagogical and educational aid, and provide experience with online teaching and the use of digital teaching aids (UFD 2003, 101).

This was followed up in subsequent policies, where the emphasis was on the role of teacher education institutions' contribution to students' understanding and use of IT (KD 2008, 9–10). Teachers' challenges in integrating digital skills and ability in assessing the relevance and use of different media in teaching, including ethical and legal issues, is also delineated (KD 2008, 13). Concerns about children's 'digital life' and adolescents' use of the Internet – in particular, issues related to cyber-ethics, which are referred to as 'complex' and requiring 'good judgement' (KD 2008) – are highlighted. This was the first time that ethical and legal issues were explicitly identified as part of teachers' work. The policy also conceded that the rapid development of technology had presented schools with hitherto unknown challenges. This White Paper signals a change from previous White Papers, emphasising the role of the teacher as the leader of the classroom. The subsequent White Paper (KD 2012) focussed on educational and pedagogical use of ICT and professional development for teachers and principals.

Drawing on OECD's Education 2030 and a report by Tømte, Kårstein, and Olsen (2013) indicated that Norwegian teachers were far behind countries, such as Poland and Slovenia, when it came to using digital teaching and teaching tools: 'Teacher education is consistently weak' (KD 2015, 74); thus, recent policies have highlighted the need to educate teachers to become digitally proficient. This culminated in the Framework for Teachers' Professional Digital Competence (Kelentrić, Helland, and Arstorp 2017), which focussed on seven key elements that a teacher and student teacher should possess. As part of the development of this framework, existing competence frameworks, such as DigiComp, ISTE and Europass, are referenced and act as the foundation for the national guidelines (Kelentrić, Helland, and Arstorp 2017, 16).

Recurring themes and topics

Several recurrent themes were identified in Norwegian policy documents, in particular a focus that can be described as 'educationally motivated technological determinism', where the main argument for including ICT in education and teacher education is that we live in a society of rapid technological development, hence it is necessary to possess basic ICT skills in order to participate in this society. This theme occurs across the different decades of policy development of ICT for teacher education. Another theme that was identified was the 'potential of ICT', although later policy documents are more tempered and lay more responsibility on the teacher and their classroom management skills. Recent policy documents underscore that early policy documents had an instrumental view of digital competence with a more recent focus on the pedagogical aspects of integrating ICT into education.

Ireland

Synthesis of key policy developments

The first and most significant policy aimed at embedding ICT into schools in Ireland was the *Schools IT2000* initiative (Department of Education and Skills (DES) 1997). The policy was somewhat reactive in nature as it aimed to respond to other national ICT-incorporating educational policies across Europe at that time. The words used in the report reflected a sense of urgency with claims that the Irish education system 'lags significantly behind' other systems in regard to ICT use and that it was 'vitaly important' to 'grasp' the 'cutting edge' and 'innovative' nature of

technology for Ireland's 'future economic well-being'. It also commented on 'the need to make rapid initial progress' in implementing the policy. This initial policy drew on the positive rhetoric surrounding digital technologies at the time, frequently using words, such as 'catalyst', 'exciting', 'enrich' and 'innovation', within the policy. For example, it noted that technology could facilitate, 'rich, exciting and motivating environments' and enable 'creativity, imagination and self-expression'. In looking at how teacher professional development was framed in the policy, it emerged that it was constructed as a form of linear progression and that professional development could facilitate 'progression from novice to expert' in a rather unproblematic manner. While emphasising the centrality of teacher professional development in the adoption of ICT, it made little reference to the challenges of educational change. Details of what 'teacher professional development' implied was somewhat vague, but it did highlight three key areas: basic computer skills, knowledge of particular educational software in curricular delivery and pedagogical skills.

The next significant policy document in relation to technology in schools was launched in 2008 called *Investing Effectively in ICT in Schools 2008–2013* (DES 2008). Analysis of the vocabulary and clause combinations used in this policy reveals a significant similarity with the first policy document almost a decade earlier. These similarities were in two main areas. The first related to the words and terms used as part of the rationale of the policy. As with the previous policy, it drew on many similar words and phrases to 'sell' the policy. Words, such as 'enrich', 'innovative', 'creativity' and 'inventiveness', and phrases, such as 'invigorates classroom activities' and 'transforming schools in the twenty-first century', highlight the promotional element of the policy and suggest that, unlike other educational policies largely written for internal audiences in the education sector, this was written for wider public consumption. The second way in which it mirrored previous policy was in the construction of movement and progress in 'meeting the challenge'. The early part of the policy, for example, noted that 'considerable progress has been made' and also noted that 'to sustain this, we must prepare the next generation for the knowledge society' (DES 2008, i).

As with the previous policy, teacher professional development was a central element, but similar to the previous policy, few details were provided in regard to what that entailed. The comments in relation to CPD of teachers throughout the document suggested that it should primarily be targeted at helping teachers integrate technology into their teaching, but there was less clarity in relation to what this involved. Teacher professional development was again represented as a progression from novice to expert.

The economic downturn of 2008 resulted in the curbing of much of the aspirations set out in the 2008 policy and it was not until 2015 that a new policy on technology in schools was launched, the *Digital Strategy for Schools 2015–2020* (DES 2015). Following the tone of the previous policies, the policy again drew on words and phrases that were common in the techno-positive literature at that time, thus continuing the techno-positive discourses of the earlier policies. For example, phrases, such as 'greatly enhance the learning experience' and 'bring learning to life', were used to sell the 'exciting and ambitious programme' set out in the policy. The policy aimed to 'modernise the curriculum' and 'embrace the opportunities' that the technology offers to education. Analysing the clause combinations and grammatical features, the policy again set out the integration of ICT as a 'challenge' for the system to respond. It also drew on a developmental metaphor noting that the policy aimed to build on the progress completed so far, a term that was also mentioned in the previous 2008 policy. Thus, it aimed to paint a picture of positive advancement. Teachers and teacher professional development were also presented as being part of this positive advancement. While this 2015 policy was similar to the previous two policies in the techno-positive discourse it adopted, it differs from previous policies in its articulation of what constitutes teacher professional knowledge in this area. In explaining the elements of teachers' professional knowledge in this area, the policy explicitly adopts the *UNESCO ICT Competency Framework* (UNESCO 2011) to frame teacher development.

Recurring themes and topics

In the Irish policies, all documents are peppered with very positive, enthusiastic views of technology in education reflecting the broader techno-positive discourses of the past 20 years. Each successive policy has presented the need to integrate technology as an imperative and a ‘challenge’ that needs to be addressed. Looking specifically at teacher professional development, Ireland does not have a history of framing teacher professional development in the area of ICT as digital literacy or digital competency. While digital literacy has been referred to in policy in relation to students, policy documents in Ireland have not, until the most recent policy made reference to the term digital competence/literacy for teachers. Early policies, while highlighting the importance of teacher professional development, adopted a quite rudimentary approach to teacher professional development, focussing primarily on technological skills and classroom use of technology but not to the same extent as the former. The explicit adoption of the *UNESCO ICT Competency Framework for Teachers* to elaborate on the design of teacher professional development highlights the direct influence of this supranational framework on national policy.

Spain

Synthesis of key policies

The first state-sponsored national initiatives to incorporate ICT in education began in Spain in 1985 with the launch of the Atenea and Mercurio projects. Spain is divided into 17 autonomous communities, each with full responsibility over the education in their region. While the Spanish Ministry of Education (Mde) ensures compliance with the standards and general curriculum approved by state laws in each community, which also affects the promotion and consolidation of ICT, the regional autonomy leads to the development of specific education laws for each region. However, this regionalised nature of the education system has resulted in a significant variation in how the autonomous regions responded to the national goals of integrating technology in schools (Mde 1988; National Institute of Technology and Professional Development (INTEF) 2017).

The Atenea and Mercurio projects that marked the initial stage of technology integration in classrooms, commenced with the appearance of the personal computer in society. These projects focussed on the introduction of terms like ‘computer’ and ‘audiovisual media’ into the curriculum and continued for a decade. An analysis of the vocabulary of the project documents reveals that they drew on much of the positive rhetoric surrounding technology at that time and also placed a strong emphasis on the technology as a tool to be mastered: ‘We are at the dawn of a new era of education, which will be conditioned by the new instruments for the production, processing and transmission of information and for the enormous possibilities communication channels ... open up to us’ (Mde 1988, 5).

Nevertheless, these policies also raised wider educational and societal questions and, while not detailing what teacher professional development would encompass, still questioned what teacher professional development was required into the future (Mde 1988).

A second phase of technology integration in Spain commenced in 1995 influenced by the increasing use of the Internet and networked technologies. From early in 1996, educational centres began to connect, first to the Infovia network, a nationwide Internet, and then to the Internet through modems on analogue lines. During that same year, the Ministry began to offer Internet connections, web space and email accounts to all schools and teachers. From then on, the different plans for the introduction of ICTs into education were led by the regional communities and some started to introduce small courses and office tools among the teaching staff.

The structural and vocabulary elements of all these regional policies have been very similar. They also included similar goals: improving the computer equipment and technological infrastructures of the centres, especially internal and Internet connectivity and developing digital educational

resources for use in the classroom. These documents continuously proposed to incorporate the technological training of teachers, although they do not give it the importance that will be given later after the development of the digital competency models. All the policies referred to the methodological change that the new technologies should bring about. For example, in 2002, the *Internet in Schools Framework /Convention-Internet en la Escuela*, signed by the Ministry of Education, Culture and Sport and the Ministry of Science and Technology, aimed to promote the use of new technologies. The actions underpinning this framework included co-financing between the Central Administration and the Autonomous Communities in the provision of broadband Internet connections to educational centres, infrastructural development of computer applications and educational software and content development for compulsory education. While teacher education was also included, it was not afforded the same priority.

The most important plan, initiated in October 2012 and subsequently updated in 2014, was the Digital Culture Plan in the School. Seeking coordination among the 17 autonomous communities, the plan emphasised the acquisition of resources and the growth of new technological infrastructure rather than the continuous training of teachers. While teacher professional development held less prominence in the policy than infrastructural concerns, the plan was the first to introduce the concept of 'digital competence for teachers', which aimed to improve teachers' digital competence and acknowledge that pre-service teacher education at the university level was not adequately preparing future teachers in digital practices (INTEF 2014).

This policy also introduced a 'Common Framework for Digital Teacher Competence' with the intention of providing a descriptive reference that could be used for training purposes and in evaluative and accreditative processes. This common framework had wider influence within the education sector and now forms part of the *Plan de Cultura Digital en la Escuela* and the *Strategic Framework for Teacher Professional Development*. As in cases already analysed, these political plans, while providing support through training and infrastructure to help teachers integrate technology, are rather vague in describing the nature of the expected integration. More recently, through the establishment of national working groups representing all regions and the state, consensus and approval was achieved in identifying lines of future action. These appear to emphasise the importance of the teacher in helping students to acquire important digital competence. Significantly, the Common Digital Competence Framework for Teachers, developed in 2017, notes that it was an adaptation from the *DigComp* (Vuorikari et al. 2016) and *DigiCompEdu* (Redecker 2017) frameworks (INTEF 2017).

Recurring themes and topics

The plans in the Spanish context associate the idea of technology with social progress and also draw on the discourse of digital citizenship in justifying its integration into schools. The early emphasis on the use of digital tools, typified by the early projects of the 1980s and 1990s, where technological infrastructure and connectivity were centre stage, has shifted in more recent years with a stronger emphasis on teacher professional development and what constitutes teachers' digital competence. EU policy has been influential in this regard. From 2015 onwards, with the development of the 'Common Framework for Digital Competence for Teachers', attention has now focussed on the different dimensions of digital competence and adopts the language of 'novice to expert teachers' used in supranational digital competence frameworks. Notably this common framework is based on the competencies described in the *DigComp* project (Vuorikari et al. 2016) highlighting an alignment with EU policy. In May 2020, the Spanish government reached an agreement with the various autonomous communities to establish a common regulatory framework for this digital competence (BOE-A-2020-7775). This model attempts to measure digital competence based on the analysis of the different dimensions of the teacher role stemming from the *DigiCompEdu* competency framework, again highlighting the influence of supranational frameworks on national policy.

Discussion and conclusion

In comparing the different countries, there were a number of aspects that were unveiled, including: (1) the use of a common techno-positive language; (2) the varying emphasis on teacher professional development; and (3) the influence of supranational policies.

Sharing a similar optimistic language

The policies from all countries adopt positive and enthusiastic views of technology in education and are imbued with utopian perspectives on technology, emphasising the need for schools to respond to the global knowledge economy (Robertson 2005). As part of this discourse, technology is justified both on economic and societal grounds. From an economic perspective, the integration of technology is seen as critical to ensure students are prepared for the twenty-first century workplace. Thus, the school (and the teacher) has a role in preparing the students for these changes. From a societal perspective, the integration of the technology is justified on the grounds that what it means to be literate has changed. Therefore, to ensure all citizens can actively contribute to society, they need to be digitally competent. While each country differs in relation to the emphasis placed on these aspects, they are present in each, suggesting the presence of a broader common discourse related to technology in education from which all countries draw from.

The prioritisation of teacher professional development

In relation to teacher professional development, differences exist. Norwegian policy appears to have placed a strong emphasis on professional teacher development from the onset; whereas, in both the Irish and Spanish policies, professional teacher development was acknowledged, but a similar level of specificity and emphasis was not present. There are a number of possible reasons for this. Firstly, it may be that situating digital competence as part of a teacher's (and citizen's) wider competence from an early stage has led to greater emphasis on developing teachers' digital competence in Norwegian policies. Conversely, in the Irish case, early policies tended to focus on developing teachers' skills to use technology but not necessarily situate them in the wider context of digital competence and literacy. Secondly, the lack of priority afforded to teacher professional development in early policies in Ireland and Spain could instead be a result of differences in priorities. For example, early Spanish policies appeared to prioritise connectivity and infrastructural development, perhaps reflecting what is considered to be the most pressing matter at that time. Thirdly, these differences may also reflect historical differences in relation to professional teacher development and its perceived importance in curricular change that transcend specific ICT in education initiatives.

The influence of supranational policies

In all cases, greater attention has been directed towards teachers' digital competence in more recent policies. This may reflect the greater awareness of the importance of teacher professional development as a result of the mixed successes of past initiatives to integrate technology. It may also reflect the increasing influence of supranational frameworks related to teachers' digital competence as the more recent policies in all countries highlight that they have been explicitly influenced by either the UNESCO, *DigiCompEdu* or the ISTE frameworks. This highlights that, while early policies displayed a high degree of difference in relation to how teachers' digital competence was conceived, or indeed if it was referred to at all, there is a convergence on how teachers' digital competence is conceptualised through the adoption of these existing frameworks. This policy convergence reflects a wider educational policy convergence on student testing and accountability (Ball 2012), in general, and on digital technology use in schools, specifically (Williamson et al. 2019).

Such a convergence could be seen as both a positive and negative development. On a positive note, this convergence ensures a level of uniformity within the education community, thus facilitating a sharing of research and practice. It can also lead to the creation of resources and professional development materials that can be shared. It also ensures that important areas of digital competence, such as aspects related to cyber-ethics, are not overlooked, particularly in countries where such dimensions of digital competence were previously undervalued or not traditionally addressed.

On the other hand, this convergence can have drawbacks. At the broader level – and set within the global rise of teacher competence frameworks, in general – concerns have been expressed about the potential of teacher competence frameworks to reduce teacher autonomy and stifle innovation (Ball 1994; Pantić and Wubbels 2010; Adoniou and Gallagher 2017). Therefore, digital competence frameworks may result in a narrowing of possible digital practices so that teachers comply with the expected practices as laid out in the frameworks, potentially reducing digital competence to a linear and deterministic set of competencies primarily used for teacher accountability measures. As a result, rather than extending the teacher's professional pedagogical repertoire and their agency, these competence frameworks could instead restrict digital integration and limit use to a narrow range of predetermined dimensions. A convergence of digital competence may also stifle diversity in particular countries that adopt a broader or novel interpretation of digital competence that may be a result of unique national or regional characteristics. Further still, the hierarchical categorisation of teachers' technology use from 'lower' levels of use towards 'higher' levels of use or from 'novice' to 'expert' that are frequently laid out in such digital competence frameworks (e.g., the DigiCompEdu and UNESCO frameworks), suggest a desired set of practices that place a greater emphasis on some skills over others. These categorisations and rankings, and the ideologies that underpin them, often go unchallenged when such frameworks are adopted.

Mindful of these potential pitfalls, while such frameworks can help map the complex terrain of teachers' digital competence, their adoption should perhaps act as a guide as opposed to a blueprint. This is mentioned within the *DigiCompEdu* framework, which highlights that digital competence should not be seen as a normative framework or as a tool for performance appraisal (Redecker 2017). However, how it is subsequently adopted at a national level is another question.

These supranational frameworks are mediated at the national level, hence how they percolate through national policy is important as an element of 'cherry picking' may occur, where desirable elements are adopted and other aspects ignored. Further still, national governments may make reference to these supranational frameworks in a symbolic way, providing legitimacy to their policies but not necessarily incorporating them. Reference to such frameworks may therefore create the illusion of international alignment that masks considerable differences. Thus, while there is a convergence of language, the extent to which this reflects a convergence in practice is another matter. Future research should explore the extent of this alignment.

As a study aiming to compare the national policies of three countries, the authors are aware of the challenges of undertaking such an analysis and the limitations of the documentary analysis conducted, particularly in selecting a comparable set of policy documents and attempting to compare quite different contexts. That said, the broad brushstroke approach to our presentation of the three countries has helped to highlight the overall trajectory of policy in this area and the adoption of their most recent supranational policies to frame teacher development in this area. Further research should also explore the extent of this convergence in other countries and the different ways in which these supranational frameworks influence policy.

Note

1. The repository only has digitalised documents from 1994.

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ORCID

Oliver McGarr  <http://orcid.org/0000-0002-1592-2097>

Louise Mifsud  <http://orcid.org/0000-0002-8991-1067>

Juan Carlos Colomer Rubio  <http://orcid.org/0000-0002-4677-201X>

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Appendix

Table A1 XXXX

Norway	Ireland	Spain
St. Meld 39 (1983–1984) Datateknologi i skolen [Computer technology in School]		
St. Meld 37 (1988–1989) Om datateknologi i skolen og opplæring [About computer technology in school and learning]		Ministerio de Educación 1988. Proyectos Atenea y Mercurio. Programa de Nuevas Tecnologías de la Información y de la Comunicación (P.N.T.I.C.). Madrid: MdE.
St. Meld 24 (1993–1994) Om informasjonsteknologi i utdanning [About IT in Education]		
St. Meld nr 48 (1996–1997) Om lærerutdanning [about teacher education]		
St. Meld nr 42 (1997–98) Kompetansereformen [Competence reform]	Department of Education and Skills (1997) IT 2000 – A Policy Framework for the New Millennium. Dublin: Stationery Office	
St. Meld nr 36 (1998–99) Om prinsipper for dimensjonering av høgre utdanning [About principles for dimensioning higher education]		
St. Meld nr. 27 (2000–2001) Gjør din plikt – Krev din rett [Do your duty – Claim your right]	Department of Education and Skills (2000) Blueprint for the future of ICT in Irish Education Three-year strategic action plan 2000–2003. Dublin: Stationery Office.	Ministries of Education, Culture and Sport and of Science and Technology (2002). Internet in Schools Framework Convention-Internet en la Escuela. Madrid: MdE.
St. Meld nr. 30 (2003–2004) Kultur for læring [Culture for learning].		
St. Meld nr. 16 (2006–2007) ... og ingen sto igjen		
St. Meld nr. 31 (2007–2008) Kvalitet i skolen [Quality in Schools].		

St. Meld nr. 11 (2008–2009) Læreren rollen utdanning [The teacher – the role and the education]	<p>Department of Education and Skills (2008) Investing effectively in Information and Communication Technologies in Schools 2008–2013 – the report of the minister's strategy group. Dublin: Stationery Office.</p> <p>Department of Education and Skills (2009) Smart Schools = Smart Economy: Report of the ICT in Schools Joint Advisory Group to the Minister for Education and Science. Dublin: Stationery Office</p>	<p>INTEF (2012). Plan de Cultura Digital en la Escuela. Actualizado a julio de 2012. Madrid: MdE.</p> <p>INTEF (2014). Plan de Cultura Digital en la Escuela. Actualizado a julio de 2014. Madrid: MdE.</p>
Meld. St. 20 (2012–2013) På rett vei [On the right path].		
Meld. St. 28 (2015–2016) Fag – Fordypning – Forståelse [Subjects – Specialization – Understanding]	<p>Department of Education and Skills (2015) Digital strategy for schools 2015–2020: Enhancing Teaching, Learning and Assessment. Dublin: Stationery Office</p>	
Meld. St. 21 (2016–2017) Lærelyst – tidlig innsats og kvalitet i skolen.	<p>Department of Education and Skills (2017) Digital strategy for schools: Action Plan 2015 -2020. Dublin: Stationery Office</p>	<p>INTEF (2017). Common Digital Competence Framework For Teachers. Madrid: MdE.</p>
Meld. St. 16 (2016–2017) Kultur for Kvalitet i høyere utdanning [Culture for quality in higher education]		<p>Dirección General de Evaluación y Cooperación Territorial (2020) Resolución de 2 julio de 2020, de la Dirección General de Evaluación y Cooperación Territorial, por la que se publica el Acuerdo de la Conferencia Sectorial de Educación sobre el marco de referencia de la competencia digital docente. (BOE-A-2020-7775)</p>