Eckert. Dossiers 13 (2017)

Maren Tribukait, Katharina Baier, Hanna Grzempa, Antigoni Loukovitou, Romana Sijakovic, Nadin Tettschlag, Denis Vuka

Digital learning in European education policies and history curricula

EUROCLIO
European Association of History Educators

GEORG ECKERT INSTITUT
Leibniz-Institut für internationale Schulbuchforschung

EDU|MERES

Eckert. Dossiers

Georg Eckert Institute for International Textbook Research

Volume 13 (2017)

Editors

Nicola Watson

and Tim Hartung

Contributions by the authors: Maren Tribukait (chapter 1, 2, 3.3, 4, 5), Katharina Baier (chapter 3.2), Hanna Grzempa (chapter 3.6), Antigoni Loukovitou (chapter 3.4), Romana Sijakovic (chapter 3.5), Nadin Tettschlag (chapter 3.7), Denis Vuka (3.1).

Table of Contents

Executive Summary

1. About the study

Digital technology presents new ways of creating and communicating knowledge and there are hopes that it will bring about radical improvements in education. In order to tap into the potential of digital media European states as well as the European Union have begun to adapt their education policies to the digital challenge. However, progress in individual states differs widely and on the whole, teaching and learning in European schools still follow conventional patterns.

This study has been conducted as part of the project 'Innovative History Education for All' (IHEA) and it explores education policies that define the frameworks for the use of digital media in history lessons across Europe. It specifically investigates digital strategies, media education concepts, curricula frameworks and curricula for history and IT-related subjects that together shape the requirements, guidelines and expectations for ICT use in history lessons. In addition to analysing European Union policy the study includes case studies of seven European countries (Albania, Denmark, Germany, Greece, the Netherlands, Poland, Spain) which explore the questions below.

2. Questions and results

How is digital learning conceptionalised and identified?

The EU's economic perspective on education

The European Union approaches education from an economic perspective and this dominates the initiatives of the European Commission in particular. Education policy papers signed by the Council of the European Union, however, take into account the dual social and economic role of education for the individual as well as for society as a whole. In the policy papers of the individual states, digital learning is seen as an aid to pupils' personal development as a well as a prerequisite for participation in society.

The gap between the vision and practices of digital learning

Digital education is generally associated with innovative didactic approaches that advance creativity, problem solving abilities and critical thinking as well as individual and collaborative learning. However, there is a gap between this vision of digital

learning and actual digital practices in schools, which are overwhelmingly described by academics and policy makers as conventional.

What action is taken to render digital learning possible?

The EU as a driver of innovation

The EU emphasises the educational potential of digital technologies and promotes their implementation in European education systems. Digital competence was defined as a transversal competence associated with critical thinking, creativity and problem solving in the EU reference framework 'Key Competences of Lifelong Learning' (2006). Another important milestone in driving digital learning is the initiative 'Opening up Education' (2013), issued by the European Commission, which aims to promote quality, efficiency and equity in European education systems.

Differences of national strategic processes

Some countries have developed strategies for digital learning; however, these differ widely with respect to implementation, scope and effectiveness. Denmark is the only country of those examined[1] that chose an integrated approach encompassing digital infrastructure, curricula, training, educational materials and research. In many countries, digital competences have been defined as transversal competences in the curricula, some offer ICT as a subject while others offer media studies courses.

Which crucial digital competences are required by the curricula?

Consistent understanding of digital competences

Definitions of transversal digital competences, when contained in the curricula, are thematically very similar and frequently include: information research; analysis, interpretation and evaluation of information and media; production of media; collaboration and knowledge-sharing; presentation and communication; law, security and ethics; media society.

---

[1] The other countries are Albania, Germany, Greece, The Netherlands, Poland and Spain.

What are the aims of history education?

Critical thinking and multiperspectivity in history curricula

Most history curricula examined for this study stress the importance of a critical approach to history and take into account multiple interpretations of history or the plurality of memory. They aim to foster a reflexive historical consciousness that encourages pupils to personally engage in their societies. Multiperspectivity is often recommended as a teaching approach. Some case studies, however, found the traditional national narrative given equal prominence in the curricula or indicated that history teaching in practice might at times convey a more traditional view of national history.

Are there requirements or suggestions for ICT use in history lessons?

Scant requirements and few suggestions in history curricula

Some history curricula underline the idea that history lessons should reflect the society in which pupils live and should therefore incorporate digital media. There are, however, rarely any specific requirements concerning digital learning. If suggestions are made, they concern teaching about the role of media in history, making use of the wide range of sources on the internet, using digital tools to search for, analyse and interpret information, analysing memory culture in contemporary digital media and using new creative formats for presentation.

What is the status of open educational resources in education policy?

OER platforms and initiatives, but no comprehensive strategies

None of the European countries examined has developed a comprehensive OER strategy, although most have government-run OER platforms. Poland, Greece and Spain have developed their platforms as part of 'Digital School' projects co-funded by the EU. This indicates that the EU can successfully stimulate the creation of open education resources through allocating funds to national projects.

3. Conclusions

The IHEA project aims to develop a learning environment for history education in Europe and this study, as part of that project, strives to identify common curricula requirements with which the learning environment conforms. Furthermore, it highlights current challenges in policy and curricula development with regard to digital learning.

With which curricula requirements does the IHEA learning environment correspond?

Creativity, critical thinking and individual learning

The learning environment created by the IHEA project on the Historiana website aims to stimulate creativity and critical thinking as well as individual learning. To support individual learning, the IHEA project team designed tools which allow teachers to create learning activities tailored to the needs of their pupils. The tools 'Prioritising', 'Sorting' and 'Analysing' encourage pupils to use their creativity and think critically when they analyse textual and visual sources.

Responsible use of sources

The approach aspires to enable pupils to use sources responsibly in history lessons and beyond; which is one major aspect of digital competence. The IHEA learning environment allows pupils scope to explore digital sources taken from the internet, question their audience and purpose, relate them to other materials and learn how to use them as evidence. This contextual and critical source analysis is an important preparation for the candid use of facts and therefore, a crucial contribution by history education to the development of active citizenship.

Cross-border perspectives

The Historiana source collections offer historical materials from different national contexts which are difficult to find in traditional school materials. They allow pupils to engage with cross-border perspectives and learn about the plurality of memory within Europe and beyond. This corresponds with the advice of many history curricula to include multiperspectivity as well as being compatible with references in European guidelines to transnational perspectives in the context of digital learning.

What can be learnt for future education policy and curricula decisions?

Integrated approach

There is a growing consensus that digital education can only be realised with an integrated approach which should include the development of organisational structures, IT infrastructures, learning materials and the digital competences of teachers. However, most countries examined still have to create such conditions to enable digital learning in schools.

Transversal competence and subject-specific requirements

There is a tendency to define digital competence as a transversal competence that should be taught in all subjects. While the interdisciplinary approach seems a sensible way to raise the status of digital education, it might not be enough to convince teachers to adapt their own teaching to the digital age while there are no subject-specific requirements. However, in some countries there is no tradition of detailed curricula, or rigid curricula are considered to be an obstacle to education reform. Therefore it seems questionable whether detailed requirements decreed by curricula would have the desired effect of innovating teaching.

Encouraging teachers

Teachers are key in realising digital education. Any potential curricula changes should be discussed with history educators before digital learning requirements are implemented in history curricula. Furthermore, curricula reform can only successfully promote innovative approaches if teachers are provided with the necessary support, training and encouragement to take up the challenge.

1 Introduction

Digital learning as a European education policy objective

Digital technology presents new ways of creating and communicating knowledge and hopes have been raised that it will bring about radical improvements in education. Digital learning is often described as participatory learning where strangers interact and create common products on the internet, potentially upsetting traditional learning institutions (Davidson & Goldberg 2010, p. 5, 7). This new culture of learning is characterised by some as the freedom to make the general personal and to share personal experiences within an environment that makes use of a massive digital information network (Thomas & Brown 2011). Others speak of connected learning as young people tying together their personal interests, peer networks and school accomplishments and orienting their endeavours toward civic, academic or professional engagement – with the help of digital media (Ito et al. 2013, p. 4–9). Furthermore, open educational resources (OER) have been propagated as promotors of free education and social justice by grassroots movements and by trans- and supranational organisations such as UNESCO (Butcher et al. 2015) and the European Union.

However, the last ten years have shown that even though digital media is increasingly used in schools, there has been no revolution in European education systems (ET Monitor 2015, p. 56–60). Some attribute the lack of significant improvements made to the innate complexities of teaching and learning (Haydn 2013), others dispute the idealised conceptions of digital technology and its supposed impact on education (Selwyn 2014). Meanwhile, teachers, students and academics have tested, reflected and assessed digital tools in the classroom and learned more about the advantages and disadvantages of ICT use (e.g. Alavi 2010; Blaschitz et al. 2012; Demantowsky & Pallaske 2015). With specific regard to history education, such studies highlight the new possibilities of access to a wealth of sources: the potential to learn about multiple perspectives and narratives, to visualise history, to explore local history outside the classroom, to open up topics and link the past to the present as well as to discuss and contribute to memory culture (Bernsen et al. 2012; Haydn 2013; Kelly 2013; Pallaske 2015). Many individual steps have been taken in this direction aimed at improving history education through the use of digital media. It still seems necessary, however, to further develop, consolidate and promote these innovative ideas in order to exploit the potential of digital technolo-

gies for history education. The project 'Innovative History Education for All (IHEA)' aims to take on this challenge by combining the development of tools and resources with research into digital practices and policies.

This study constitutes one module of that project and aims to shed light on the education policies concerning digital learning in Europe. Since a shift towards digital learning requires organisational change the study examines political strategies by the European Union and by selected European states with regard to the digitisation of schools: How is digital learning conceptionalised and identified? Which political aims and visions are connected to digital technology's potential in education? What action is taken in terms of equipment, learning resources and training? Yet the study also focusses on curricula as important schooling frameworks: Which crucial digital competences are mentioned in the curriculum? What role do digital competences play in the curriculum in general and in the history curriculum specifically? What is the concept for history education in general? And are there specific suggestions for ICT use in history lessons? By looking at the strategic and didactic level of education policy expressed in political guidelines and curricula, the study identifies and compares the approaches to digital learning in selected European states and relates it to the European Union's education policy. The conclusion will reflect upon two aspects of the findings: firstly, to what extent the digital resources developed by the IHEA project correspond with educational policies and curricular requirements; secondly, which challenges are currently being faced in the curricular adaptation and implementation of digital learning.

Curriculum, learning, and digital media

Each study of curricula must confront the ambiguity of the concept 'curriculum', a term that is used and understood differently depending on the context. Its meaning ranges from a local syllabus to a field of critical study. Ornstein & Hunkins distinguish five meanings: a plan for achieving goals; all experiences of children under the guidance of school; a system for dealing with people; a field of study, and a way of organising subject matter (Ornstein & Hunkins 2013, p. 8f.). In academia, technical and scientific approaches that aim to efficiently implement curricula are in conflict with humanistic and critical approaches that view education in larger social, political and economic contexts. Since the late 1960s curriculum studies has emerged as a sub-discipline of educational science. It is shaped by its critical stance towards behaviourist approaches and techno-

cratic educational policies. A new humanist school of reconceptionalists emerged that viewed curricula as symbolic representations (Pinar et al. 2004, p. 16) and as products of power-knowledge-relations that perpetuate the social, political and economic system (Apple 1979). Similarly, postmodern scholars perceived curricula to be cultural constructions (Popkewitz 2001).

Since this study is embedded in a project that aims to develop learning resources it chooses a pragmatic approach: it gives answers to the questions of how and in which contexts policy guidelines and official curricula make reference to the use of digital media. Its study objects are official texts that constitute the planned and formal curriculum. Within this research, it is not feasible to explore the received curriculum (the reality of student's experiences), the informal curriculum (all extracurricular activities at school) nor the 'hidden' curriculum (things students learn implicitly at school) (Kelly 2009, p. 10–13). Nevertheless, the text analysis is guided by a critical approach that interprets curricula as cultural constructions and products of power-knowledge-relations. It is mindful of links to contemporary discourses about the role of digital media in society and to broader concepts of education policies.

In education science, a constructivist understanding of learning as an active cognitive construction of knowledge is widespread and shared by the IHEA project (see Gruber et al. 2006, p. 126). With digital learning we refer to learning with digital media – without making any statement about the quality of learning. There is a strong assumption in contemporary educational discourse that digital media supports collaborative, self-organised, creative and student-centred learning which matches constructivist theories (Hesse 2004; Thomas & Seely-Brown 2011). While this is a fascinating perspective on the potential of digital media and one that also drives the IHEA project, it should be stated that student-centred learning does not automatically guarantee success in terms of a student's achievement (Hattie 2009, p. 26). Similarly, it should not be taken for granted that active, self-organised, collaborative and creative digital learning becomes a reality the moment students engage individually with digital media (cf. Hodel 2012, Selwyn 2014). Many factors, curricula guidelines included, have an impact on the way digital media are used in the classroom.

The term 'media' is understood to refer to forms of communication that include material technologies as well as the practices of production and use in their social and cultural contexts, according to common definitions in communication and cultural studies

(Gitelman 2009). Digital media are not only distinguished by their electronic materiality, but in most cases also by their multimedia, interactive, network and, sometimes, open character. The term open educational resources (OER) refers to digital materials designed for learning and teaching that are distributed under an open license allowing users to create and distribute new versions. The definition of OER in this report corresponds with UNESCO's 2002 definition of them as 'teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions' (2012 Paris OER Declaration).

Case study approach

For its preliminary research the project used the Curricula Workstation, a digital tool that allows full text searches of the Georg Eckert Institute's international curricula collection.[2] Using keyword searches to browse the history curricula of European countries; it became clear that specific digital learning requirements were not common in history curricula, though references could be found in many documents. This lack of definition in the history curricula made it necessary to conduct case studies in order to explore how digital strategies, media education concepts, curricula frameworks and the curricula for history and IT-related subjects shape the requirements, guidelines and expectations of ICT use in history lessons.

Seven European countries were chosen for case studies. The selection of the countries was guided by two criteria. The first was *best practice*: Since one aim of the project is to recommend curricular approaches to digital learning, countries that show ambition in terms of digital education should be considered in the sample. One indicator of the level of ICT use in schools is the *International Computer and Information Literacy Study* (ICILS 2013). European countries with high scores are the Czech Republic, Denmark, Norway, Poland and the Netherlands. The second was *balanced representation*: In order to avoid a focus on northern European countries, at least one country from each European region (north, east, south, west, central) and of each major language family (Germanic, Romance, Scandinavian, and Slavonic) was included. To a certain extent, a balance was sought between centre and periphery in geographical as well as political terms. Due to these criteria and the availability of relevant country specialists, Albania,

---

[2] See http://curricula-workstation.edumeres.net/en/curricula/.

Denmark, Germany, Greece, The Netherlands, Poland and Spain were chosen for case studies.

Experts for each country identified the relevant curricula, policy papers and regulations and analysed the documents with the following questions in mind:

1. What are the key terms referring to digital learning?
2. What are the aims connected with digital or media education in general?
3. Is there a strategy at the national level supporting digital learning?
4. How are the aims of history teaching described?
5. What are the requirements concerning digital learning in the curricula?
6. What is the status of open educational resources in education policy?

Each case study starts with a short overview of the education system (a). The subsequent paragraph (b) explains the concepts used to refer to digital learning, such as media education, digital education or digital literacy. We assumed that varying terminologies would stress different digital learning aims. These were, however, largely congruent. In contrast, remarkable differences could be found in terms of implementation, scope and effectiveness of digital strategies. The results of the curriculum analysis are presented in the next paragraph (c), which lists those digital competences that are defined as transversal competences in the general parts of curriculum frameworks, or sometimes in IT-related subjects. The next section (d) describes the aims of history education and the role digital media should play in the classroom, according to the history curricula. The issue of an open educational resources strategy is relevant to the study insofar as such resources could be viewed as promoting digital learning and are highlighted in paragraph (e). Finally, the country strategy and analysis of its curricula is contextualised using data that details actual ICT use in schools. The parameters were chosen from two recent comparative international studies which covered most of the selected countries. The results from the *International Computer and Information Literacy Study* (ICILS 2013) serve as indicator for the digital competences of fifteen-year-old pupils while technical data such as the pupil to computer ratio is taken from the study *Students, Computers and Learning* (OECD 2015), an evaluation of the PISA test of 2012 published by the OECD. Smaller studies with a national focus are taken into account as well.

The research was carried out between November 2015 and July 2016. Documents released after this time period could not be included. The description of the education systems in each case refers to the 2015/2016 academic year.

2 The EU's education policy: the significance of digital learning

The European Union has laid out its education policy guidelines in the strategic paper 'Education and Training 2020', which builds on the strategy paper 'Education and Training 2010' which was adopted in 2002. This agreement issued by the Council of the European Union presents a framework for cooperation at European level, whilst explicitly respecting the responsibilities of member states with regards to their own education systems. The preamble to the document highlights the important role played by education and training in tackling socio-economic, demographic, ecological and technological challenges and points to the significance of education and training systems in the development of 'human capital' and for economic growth within the EU (ET 2020, p. 2). It sets out the following strategic objectives:

'1. Making lifelong learning and mobility a reality'
'2. Improving the quality and efficiency of education and training'
'3. Promoting equity, social cohesion and active citizenship'
'4. Enhancing creativity and innovation, including entrepreneurship, at all levels of education and training' (ET 2020, p. 3f.)

Within this strategic framework the importance of digital technology for lifelong learning (objective 1) and the acquisition of digital competences (objective 4) are both emphasised. The document refers to the reference framework 'Key Competences for Lifelong Learning' issued by the European Parliament and the Council in 2006, which defines transversal competences that all EU citizens should acquire in their respective education systems and which they should continuously refresh in order to remain adaptable and flexible in the face of the challenges of our globalised world. These competences are essential if every citizen is to achieve 'personal fulfilment and development, active citizenship, social inclusion and employment' (Key Competences 2006, p. 13). The necessary competences are defined as a 'combination of knowledge, skills and attitudes'[3] and include digital competence. This comprises the 'confident and critical use of information society technology (IST)' as well as 'basic skills in ICT' (information communication technology), in particular critical information seeking, communication and collaboration in digital networks. Superordinate capabilities such as critical thin-

---

[3] The other key competences are: communication in the mother tongue, communication in foreign languages, mathematical competence and basic competences in science and technology, learning to learn, social and civic competences, sense of initiative and entrepreneurship and cultural awareness and expression.

king, creativity, problem solving und risk assessment are also significant for digital competence as well as for most key competences (Key Competences 2006, p. 13f., 15f.).

Despite the inclusion of digital competence, digital learning was not given high priority in the first version (2009) of the strategy framework 'Education and Technology 2020'. This was also reflected in 'Europe 2020', the European Union's growth strategy released in 2010. This presented the 'Digital Agenda for Europe' as a flagship initiative, which however did not make any direct reference to education systems. The primary education objectives announced in 'Europe 2020' were to reduce the number of early school leavers and to increase the number of university and college graduates, but did not include the digitisation of schools (Europe 2020, p. 32).

In this sense the European Commission's initiative 'Rethinking Education: Investing in skills for better socio-economic outcomes', released in 2012, goes a step further. The aim of the initiative is the reform of member states' education systems. It therefore focuses more on improvements in the basic and transversal skills of European citizens that will prepare them for the employment market. Basic skills such as literacy have reportedly undergone a marked change as a result of the digital revolution and achieving digital and media literacy as basic skills for all is therefore a primary goal. In addition, the potential of ICT and open educational resources (OER) for learning should be exploited. Digital technologies could provide entirely new opportunities for improvements to education in terms of quality, access and equality. Digital learning would enable a fundamental change in education, linked to new educational approaches which are characterised by personalisation, engagement, collaboration and bottom-up practices. For these reasons European countries should better exploit the potential of OER, seek to improve computer skills, investigate the intelligent application of ICT through pilot studies and take advantage of freely available knowledge (Rethinking Education 2012, p. 4, 8–10). This initiative is based even more strongly than 'Education and Training 2020' on the reform of education systems from an economic perspective. The education goals of active citizenship, personal development and well-being are clearly given lower priority and are seen as subordinate to the demands of the economy (Rethinking Education 2012, p. 2). There is an economic logic to this concept which can be explained as a response to high youth unemployment, however, in view of the fundamental complexities of educational processes, it is a rather one-sided approach.

A further initiative released by the European Commission in 2013 is dedicated solely to the theme of digital learning. 'Opening up Education' aims to stimulate high-quality and innovative forms of teaching and learning with the aid of digital technology and content. This initiative too is conceived primarily from an economic perspective. It seeks to promote open learning environments in order to improve quality and efficacy in education and subsequently contribute to the aims of the growth strategy put forward in 'Europe 2020'. The rationale is based on two main points. Firstly the realisation that education in the EU is not keeping pace with the digital economy and society – in contrast to the USA and several Asian countries. Secondly the point is made that digital technology provides opportunities to increase efficiency and equity in education: 'Open technologies allow *All individuals to learn, Anywhere, Anytime, through Any device, with the support of Anyone* [emphasis in original]' (Opening up Education 2013, p. 3).[4] The document also emphasises that the cross-border potential of education and knowledge could be developed with the aid of digital technology. A further supposition is that digital technology has the potential to reduce costs for educational institutes and their students, particularly those from disadvantaged groups, however, initial investments into education infrastructure and human resources must be made. The following priority areas were defined:

'- helping learning institutions, teachers and learners to acquire digital skills and learning methods
- supporting development and availability of open educational resources
- connecting classrooms and deploying digital devices and content
- mobilising all stakeholders (teachers, learners, families, economic and social partners) to change the role of digital technologies at education institutions'
(Opening up Education 2013, p. 2)

The text makes wide-ranging recommendations in these areas for the EU as a whole and for member states, to link technological, organisational and pedagogic innovation. In order to realise this initiative the EU wants to use the programmes Erasmus+ and Horizon 2020 to promote research and development, particularly in the areas of pedagogic approaches, curricula development, skill assessment and digital competence frameworks as well as adaptive learning technologies and learning analytics. It also

---

[4] See here also the following statements from the initiative's website: 'Lastly, there is a clear cost pressure in education and training systems. With several EU countries reducing their public investment in education, solutions for a more effective use of resources are needed, as well as measures to alleviate the costs for families',
http://ec.europa.eu/education/policy/strategic-framework/education-technology_en.htm, 28/7/2016.

plans to offer open online courses for further education and to provide European information exchange platforms for teachers. Furthermore the EU wants to support partnerships between producers of educational media, connect existing OER repositories through its new online platform Open Education Europa and create a European Hub of Digitally Innovative Education Institutions. Member states are called upon to implement reforms in their own education systems with the help of funds from the European Structural and Investments Funds (ESIF). Such reforms should include the creation of innovative learning environments and updated certification to reflect new forms of learning, an examination of teacher training, increased use of open access educational media, an expansion of digital infrastructure and improved networking. The sheer number of measures reflects the conviction that only an integrated approach, one that involves access to digital content, IT infrastructure, digital skills and an appropriate organisational structure, can achieve sustainable and innovative solutions (Opening up Education 2013, p. 12).

The strategy papers 'Europe 2020' and 'Education and Training 2020' can be understood as reactions to the European financial and economic crises, as can the initiatives 'Rethinking Education' and 'Opening up Education'. However the revision of the strategy for 'Education and Training 2020' in 2015 came in the light of the terrorist attacks in France and the refugee crisis. In addition to the emphasis put on the economic significance of education and training the revised strategy shows an increasing focus on their role in perpetuating humane and civic values and imparting such values to the next generation. In this perspective, education can create an environment that fosters freedom of opinion, social cohesion and mutual respect and which impedes and combats discrimination. Accordingly, Europe faces not only the task of economic recovery and job creation but also of strengthening social cohesion, coordinating migration and preventing radicalisation and violence (New Priorities 2015, p. 1f.). Furthermore, it must address longer-term challenges, including adaption to the digital age and to a global, knowledge-based economy. Whilst upholding the four objectives of the 'Education and Training 2020' strategy, mentioned above, the new political focus and the review documented in 'Education and Training Monitor 2015' have caused a shift in priorities.

The first four priority areas are of interest to this project, as they incorporate the digitisation of education (see New Priorities 2015, p. 6, 11–13, 21–24):

Priority area 1: 'Relevant and high-quality skills and competences for employability, inovation, active citizenship and well-being' (New Priorities, p. 21)

Firstly digital literacy is named as a necessary basic skill for all. It therefore falls under the scope of the strategic objective to raise the level of basic skills across Europe, on which 'Rethinking Education' focussed particularly and the necessity of which was confirmed by 'Education and Training Monitor 2015' (ET Monitor 2015, p. 9). Secondly digital competence is listed as a transversal skill and key competence, to be actively encouraged alongside entrepreneurship and language skills. The link between digital competence and creativity, first raised in the reference framework 'Key Competences for Lifelong Learning', is explicitly emphasised again here: 'Learning and acquiring digital competences go beyond pure ICT skills and involve the collaborative and creative use of ICT, including coding'. (New Priorities 2015, p. 7, footnote).

Priority area 2: 'Inclusive education, equality, equity, non-discrimination and the promotion of civic competences' (New Priorities, p. 22)

In order to strengthen civic values and intercultural competences critical thinking should be encouraged. This is viewed under the umbrella of 'media and cyber literacy' and involves the ability to critically address (digital) media and the debates conducted in the media as well as the ability to participate in public debate conducted through (digital) media.

Priority area 3: 'Open and innovative education and training, including fully embracing the digital era' (New Priorities, p. 23)

The 'Education and Training Monitor 2015' documented that the application of innovative pedagogies and the use of tools for the development of digital competence still present a challenge (ET Monitor 2015, p. 56–60). In order to achieve a satisfactory level of digital education the paper reiterates, consistent with the 'Opening up Education' initiative, that further investment is required; in infrastructures, organisational change, digital devices, digital competence of teachers and school administrators as well as (open) digital educational media. The use of ICT and the availability of open educational resources must be supported across all levels of the education system with the aim of improving the quality of education.

Priority area 4: 'Strong support for teachers, trainers, school leaders and other educational staff' (New Priorities, p. 24)

Teacher training and professional development should be improved, particularly in the areas of digital competence and innovative pedagogies.

In summary, the conclusion to be drawn from the strategic framework is that adjusting the education system to the digital age will involve the following points being addressed: (i) Digital competences must be taught to all European citizens as essential transversal key competences throughout all levels of education. (ii) Digital competences encompass the creative, critical and cooperative use of digital media and technology. (iii) The use of digital media in teaching and learning situations should be more closely linked with innovative pedagogical approaches. (iv) Further investment is required in infrastructure, organisational change, digital devices and (open) digital educational media. (v) Teachers and school administrators must receive adequate training to improve their digital competence and be encouraged to use innovative pedagogical approaches.

Since 2006 the European Union's strategy for educational policy has been shaped by economic considerations. The primary objective has been, and remains, to raise European citizens' level of education and qualification in order to increase their potential as 'human resources' in the employment market. There were however shifts in focus within this perspective. The reference framework 'Key Competences for Lifelong Learning', released in 2006, recognised the dual social and economic role of education by highlighting 'personal fulfilment and development, active citizenship, social inclusion and employment' as education aims (p. 13). These aims were confirmed by the strategy paper 'Education and Training 2020' (p. 3). The 'Rethinking Education' initiative made economic education aims an emphatic priority with the use of the term 'employability' (p. 2). This focus also shaped the 'Opening up Education' initiative, which can be considered the first agenda for digital education. In the revised version of the strategy paper 'Education and Training 2020' the social significance of education came once again to the fore.

Between 2006 and 2015 the role of digital education was given increasingly higher weighting in EU education strategies, corresponding with the progressive digitisation of society and economy. The starting point was the definition of digital competences as a transversal key competence in 2006, this linked ICT skills with creativity, critical faculty and problem-solving ability in an ambitious concept aimed at all citizens. The introduction of the concept of digital literacy as a basic skill qualitatively reduces it as a requirement, but makes it applicable to all citizens and demonstrates the ambition to also

improve the abilities of people lacking skills in this area. On one hand this can be viewed as adapting to the social realities of Europe, in which marginalised sections of society have become disengaged from public education systems. Yet on the other it can also be read as accommodating economic interests, which might value basal functional abilities above creativity and critical faculty for the majority of the workforce. The revision of the strategy paper 'Education and Training' presents both concepts – digital literacy and digital competence – alongside one another and points to two characteristics of the European education system which are perceived to be problematic by the EU: the high number of people lacking basic skills and the high number of graduates from higher education who lack key competences. The 'Opening up Education' initiative responds to the current situation, where studying in open digital learning environments within innovative pedagogical approaches is not yet widespread. By supporting studies and trials of such learning scenarios and frameworks the EU is seeking to make adequate allowance for the fact that innovative digital learning will not develop automatically and that it requires support and funding – even in those areas where superior technical frameworks are already in place. The guiding belief is that digital technology has the potential to raise efficiency, access and equality within education and that it is important to ensure that education systems are connected to digital society and economies. There are two primary arguments for the initiative's commitment to viewing education from an economic standpoint: that digital technology enables efficient learning and that it can bring savings in the education sector (Opening up Education 2013, p. 3). Both arguments are based upon assumptions for which no precise documentation or projections exist. The statement that public spending can be reduced in the education sector through the use of digital technologies is however countered by the necessity for substantial investment in infrastructure, digital devices, organisational restructuring and training.

By diagnosing the existence of a gulf between the current traditional education system and digital society and economy the EU is attempting to drive innovation with this agenda. It can, however, only suggest, support and provide funds; it is unable to restructure European education systems as each member state is responsible for its own education system.

3 National approaches to digital learning in the history classroom

3.1 Albania

a) An overview of the education system

Reforms made to the Albanian education sector between 2005 and 2012 led to the school system being restructured. The new structure applies nationally to both public and private schools and comprises pre-school education (three years), compulsory basic education (nine years) and secondary education (three years) (National Strategy 2014a, p. 13–14). The nine-year basic education system started in 2008/09 (UNESCO 2011, p. 7) and was further divided into a primary level, from grades one to six, and lower secondary level, from grades seven to nine (Law 69/2012, p. 4407). Upper secondary education is provided in high schools, grammar schools or in technical or vocational schools (Law 69/2012, p. 4408).

The new strategy for the development of education aims to decentralise significant portions of what is currently still a centrally administered system (National Strategy 2014a, p. 23). The last curricular reform was completed in 2014 and implemented in the 2015/2016 academic year. The new competence-oriented curriculum framework determines the general aims, key competencies and the results pupils are expected to show by the end of lower and upper secondary education as well as the goals of different learning areas, the main principles of the teaching or learning process and pupil evaluation. The subject curricula contain the aims and the specific competencies of each subject, the pupils' achievement goals, the main content, the methodologies of teaching and learning and the evaluation of pupils (Law 69/2012, p. 4403). One of the main changes brought about by the new curriculum framework is an approach towards the learning process that encourages pupils to play an active role in acquiring new knowledge and competencies.

b) Digital learning – terms, aims and strategies

A range of terms are used throughout the curricula to refer to the topic of digital learning. The most commonly used term is digital competencies (*kompetenca digjitale,* Law 69/2012, p. 4406). Another key term is new technologies (*teknologjitë e reja*), and one of the principal aims of education is that pupils learn to employ such digital competence

on such new technology (Curriculum Framework 2014, p. 12). The term Information and Communications Technologies/ICT, (*Teknologjitë e Informimit dhe Komunikimit/TIK*) is also used frequently (Curriculum Framework 2014, p. 57). According to the definition in the curriculum framework, these are a set of means and technological resources used for transmitting, collecting, creating and exchanging information that include computers, the internet and other digital equipment (Curriculum Framework 2014, p. 57). A further correlated concept is that of digital literacy (*alfabetizmi digjital*), whereas the term digital media (*mediat digjitale*) is seldom encountered in the curricular documents.

In the preamble to the new curriculum framework, where the needs of a curricular reform are briefly discussed, it becomes clear that the new orientation for education is the construction of a society with increasing digital knowledge. One of the principal concerns of education, according to the curriculum, is the integration of pupils into the digital age: requiring them to attain digital competencies in order to enter into the digitalised economy. Digital literacy should be the aim of the education system on the path to achieving full-scale functional literacy (Curriculum Framework 2014, p. 9). In another passage, the framework states that throughout the different levels of education, pupils are being prepared for lifelong learning and the changed employment market in a digitised age of knowledge (Curriculum Framework 2014, p. 25). In addition to the aims targeting access to information, and improved communication and interaction, the use of technology is generally desirable in order to encourage innovation in the digital age (*epoka digjitale*, Curriculum Framework 2014, p. 15). Within these academic goals, the field of Technology and ICT assumes considerable importance as one of seven learning areas. In terms of technological education (*edukimi teknologjik*) the subjects of technology and ICT primarily aim to develop the technological capabilities that will enable pupils to recognise professional opportunities and become informed citizens in a rapidly changing world (Curriculum Framework 2014, p. 41).

The curriculum emphasises individual active learning and outlines several skills pupils need to develop, which include problem-solving abilities and a sense of responsibility, that are considered prerequisites for lifelong learning (Curriculum Framework 2014, p. 41). Another crucial aim is a constructive and critical engagement with technology and the internet (Curriculum Framework 2014, p. 41). The document points to specific didactic aspects and skills that are nurtured through the use of digital technologies:

searching and retrieving information from online sources, managing group projects, discussing and communicating information, adopting problem analysis techniques, reasoning and analysing information concepts or processes, and formulating ideas and concepts that cover all areas of learning (Curriculum Framework, 2014, p. 41). It states that digital competence, as the functional ability of digital reading and writing, encourages and supports other functional skills, such as: mathematical and communicative skills, critical thinking, problem solving, personal and social skills oriented towards working in groups and skills for learning and using multiple resources and instruments (Curriculum Framework 2014, p. 42). In summary, the curriculum suggests the further development and implementation of ICT in all areas of learning (Curriculum Framework 2014, p. 42).

The curriculum framework sees a close connection between a pupil's digital competence and their individual participation in the digital society and economy. Furthermore teaching digital literacy is seen as a promoter of innovation and the use of digital media is viewed as a chance for pupils to develop a whole range of intellectual, communicative and social skills. The pedagogical perspective on the personal development of pupils is thus brought into line with economic arguments in favour of digital literacy.

c) General requirements concerning digital learning in the curricula

The digital competences that pupils should acquire are described in the national curriculum framework, where digital competences imply the critical and effective use of ICT at work, during leisure time and communication. This relies on the basic skills of using the computer to find, produce, create, present or share information, and cooperate in the information networks on the internet (Curriculum Framework 2014, p. 20–21). By the end of secondary education pupils should be competent enough to:

> 'a) interact and collaborate with peers and experts on the diverse uses of digital media,
> b) use different media in order to effectively communicate information to multiple audiences,
> c) develop an awareness of globalisation and cultural diversity by communicating with pupils from other cultures,
> d) contribute to labour productivity within a group by finding new information or solving problems,
> e) maintain the ethics of personal and group communication,
> f) find, organise, analyse, evaluate, elaborate and use information from a variety of sources and media,
> g) select sources of information or digital tools based on their suitability to conduct and solve a variety of tasks or specific problems,

h) maintain the security of a virtual identity and protect their personal privacy,
i) select and use applications effectively and productively,
j) solve problems within systems and applications,
k) understand technology systems and use them correctly'
(Curriculum Framework 2014, p. 21).

Technology and ICT, which together represent one of the seven learning areas,[5] play an important role in teaching digital competencies. In the nine years of compulsory schooling and in secondary education they are introduced as two distinct subjects which are each taught for at least one lesson per week (Syllabus 2015). In year 10, ICT is obligatory and web design optional; in year 11, ICT is offered both as an obligatory and an optional subject; and in year 12, technology is obligatory and ICT advanced knowledge is optional. However ICT is not merely an isolated subject, it is connected to the six other learning areas and is being incorporated into all disciplines. It is regarded as playing a crucial role in enriching learning situations in which pupils develop their competences. The use of ICT may also improve appropriation and comprehension of the subjects whilst enhancing pupils' interest and concentration (ICT Curriculum 2015, p. 14). Concomitantly, it is argued that ICT promotes inquisitive learning, critical thinking, collaboration, decision-making and action-taking on important issues (ICT Curriculum 2015, p. 18)

d) Digital learning in the history curricula

The main aim of the competence-oriented history curriculum is to equip pupils with intellectual skills and qualities by building a set of concepts and competences connected to the subject of history. Through mastering these skills pupils will be best able to critically analyse information, recognise the connection between cause and effect in history, provide interpretations and explanations based on sound argumentation, and evaluate different interpretations referring to the past (History Curriculum, levels five and six 2015, p. 8). The curriculum specifies five chief competences related to learning history: historical research, use of sources, analysis with respect to cause and effect, historical interpretation, explaining and communicating the past (History Curriculum level five and six 2015, p. 19). A further aspect of the history curriculum not only specifies the acquisition of historical knowledge and competences but also the attainment of the ob-

---

[5] The others being: languages and communication; mathematics; natural sciences; society and environment; physical education, sports and health; and arts.

jectives laid out in the national curriculum framework for lifelong learning (History Curriculum, level four 2014, p. 8).

This new approach to history in the curriculum brings to the fore a different understanding of the subject. At its centre is a critical stance towards historical knowledge and the active involvement of the pupils in the learning process. They are called upon to interact, raise questions, provide interpretations or explanations and to communicate the results of their work. Going a step further, another crucial aspect of the history curriculum is the building of a reflexive historical consciousness that enables pupils to critically understand present events through their connection with the past and implications for the future (History Curriculum, levels five and six 2015, p. 26). Lastly, the history curriculum is opposed to the encyclopaedic accumulation of knowledge (History Curriculum, level five and six 2015, p. 68).

One element of this new approach may, however, be somewhat contradictory: requiring pupil's to understand the causes and effects of history will require them to have a strong grasp of the chronology, (History Curriculum, levels five and six 2015, p. 26), as well an understanding of linear narratives. This might return the national master narrative to the classroom, transmitted to the pupils in the form of a canon. Even though a thematic approach is described in the history curricula for years nine and twelve, the topics cover the main historical periods of the national narrative in a progressive line from antiquity to the modern era as has been taught traditionally.

Digital media are considered to play a significant part throughout the entire history curriculum. According to the curriculum, the widespread use of ICT means that digital media remain vital resources for history teaching. Despite issues concerning their reliability, they allow access to original sources and multiple interpretations and are generally viewed as the most successful way of introducing information and historical data; in addition they facilitate collaboration and dialogue (History Curriculum, levels five and six 2015, p. 54). In the history curricula, ICT is referred to at least five times:

1. In the form of learning outcomes or key competencies. At the end of years 9 or 12, pupils should have developed: a) the digital competence to search, select, analyse and communicate historical information, and they should be able to, b) access and critically analyse a range of digital sources of information, c) communicate, introduce and outline knowledge, skills and attitudes, and d) collaborate, discuss and de-

bate with others in order to build concepts and historical competences (History Curriculum, levels five and six 2015, p. 15; History Curriculum, level four 2014, p. 16).

2. In the framework of interdisciplinary (inter-curricular) approaches to the examination of specific themes, topics or issues. The interdisciplinary approach is seen as a significant step towards attaining the key learning competences of the curriculum framework. This may refer to instances when history integrates knowledge, concepts or competences deriving from different areas, or equally when other subjects make use of historical competences (History Curriculum, levels five and six 2015, p. 17). As with many other subjects, history and ICT can be reciprocally integrated and combined with each other. Several examples are provided: when students make use of computer symbols and roman characters in order to write the centuries; when they use computer programs to write a historical assignment and to present the results of homework in history (e.g. Word, PowerPoint); when they use the internet to retrieve information concerning historical events or figures; and when they use computer programs to share ideas or historical information with other pupils (History Curriculum, levels five and six 2015, p. 18; History Curriculum, level four 2014, p. 20).

3. In the context of pupil's learning behaviour and attitudes. The use of ICT in the learning process is considered beneficial in promoting pupil's historical competencies. The aim being to educate pupils so that they are well informed, rational, eager to know and learn, balanced, sensitive and able to provide arguments and well-reasoned decisions (History Curriculum, levels five and six 2015, p. 22).

4. In the section on methodologies, under the sub-heading 'Working with sources', the document states that ICT provides multiple historical sources and facts that should be subject to critical, individual and collective treatment (History Curriculum, levels five and six 2015, p. 49).

5. In the section about didactic materials and technology, computers and projectors are mentioned in addition to maps, atlases, photos, films, videocassettes, CDs, DVDs etc. These media are attributed increasing importance in education due to the fact that they provide what is known as visual concretisation of a series of historical events (History Curriculum, levels five and six, 2015, p. 57).

e) The status of OER in educational policy

The 'National Strategy for the Development of Pre-University School Education', includes plans to develop digital learning resources. These materials should be of high quality, in the Albanian language, follow the standards stipulated in the curriculum framework and be in line with the international key competencies (National Strategy 2014a, p. 39). Further information about the form, the use, or licencing of these resources is not provided. It is conceivable that the Ministry of Education intends to establish a state-run web portal with open educational materials, but this is not explicitly mentioned. The document discusses the creation of a national model for providers of digital materials, in accordance with the legal framework and infrastructure that would facilitate and unify the exchange of information (National Strategy 2014a, p. 39).

f) The use of digital media in schools

Whilst in most EU countries,[6] in excess of 90 per cent of fifteen-year-olds had access to at least one computer at home in 2012, in Albania only 65.4 per cent did, a rise nevertheless of 16.2 per cent from 2009. The figures concerning internet access at home (28.5 per cent in 2009 rising to 54.3 per cent in 2012) suggest that the private use of digital media by Albanian youngsters does not yet match the usage patterns of other European countries, shown by the other case studies, but is steadily increasing (OECD 2015, p. 19, 36).

According to the 'National Strategy' paper, the use of digital media in educational institutions is limited. Despite investments, existing digital equipment is not properly used or is out of date (National Strategy 2014a, p. 21). An expanded draft version of the same strategy paper elaborates on the lack of digital infrastructure and equipment. It points to the low number of computer labs, the slow internet connection and a general lack of computer devices making it difficult to retrieve on-line information (National Strategy 2014b, p. 25–26). This is confirmed by PISA data from 2012, according to which 8.9 students share one computer in Albanian schools (OECD average: 4.7). However the study documented a considerable improvement in the number of school computers with internet access, an increase from 41.3 per cent in 2009 to 70.3 per cent in 2012 (OECD 2015, p. 21, 66). The 'National Strategy' paper furthermore highlights that digital learning materials are not widely available in the Albanian language, neither are

---

[6] In Romania: 87.1 per cent, there was no data for Malta and Cyprus.

proper educational programmes or learning modules and there is not enough investment in the teacher's abilities to use digital media. (National Strategy 2014b, p. 26). Consequently, an immediate intervention in three key areas is recommended: firstly, the establishment of digital infrastructure on a national level, secondly, the development of digital learning resources, and thirdly, improvements in teacher training concerning the use of digital learning and media (National Strategy 2014a, p. 38–39).

g) Summary

Digital competencies represent a central concept in the new curricular documents and are attributed a significant role in preparing pupils for the digital age. Technology and ICT are provided as obligatory subjects in primary and secondary education. The integration of ICT in the education system reflects a modern pedagogical approach that aims to provide pupils not only with technological abilities and skills but also to strengthen individual active learning and the ability to work in groups and solve problems, and above all teach lifelong learning skills. The curricula underline that schools should foster a constructive and critical engagement with technology and the internet. This approach to digital media is considered a chance for pupils to develop a whole range of intellectual, communicative and social skills. At the same time, it is seen as necessary to enable pupils to participate in the digitised society and economy and as a prerequisite to the promotion of innovation.

With regard to history as an academic subject the documents reveal a new approach, characterised by critically engaging with historical knowledge and actively involving pupils in the learning process and helping them build a reflexive historical consciousness. The only concept that might contradict these claims is the reference to the cause and effect approach to history. Digital media and technologies are considered as being essential to give pupils access to diverse sources and, thus, to allow multiperspectivity. The aims of digital literacy are translated into several competencies: the ability to search, collect, elaborate or analyse and communicate historical information with the help of digital media as well as the use of several applications that facilitate the elaboration of information and problem solving. The promotion of critical and creative thinking represents a chief aim; however, there is little elaboration on how this can be achieved.

As part of the fundamental reform of the Albanian education system policy makers have seized the opportunity to integrate digital competences on the curricular level. At

the same time, there are clear discrepancies between the curricular and practical level. The 'National Strategy' addresses the low level of digital equipment, the lack of Albanian-language digital materials and the need to elevate the digital competences of teachers. However, specific projects aiming at improving equipment, materials or teacher's competences have not been launched on any significant scale so far. The success of the curricular reform in terms of digital learning will depend on the extent to which the 'National strategy' is implemented.

3.2 Denmark

a) An overview of the education system

The school system in Denmark consists of f*olkeskole* (state schools covering pre-school, primary and lower secondary education), private primary schools, grammar schools (*Gymnasium*) and other secondary schools (MBUL 2010). The first nine school years (primary level and lower secondary level), including one pre-school year, are mandatory. The tenth school year is optional and serves as preparation for the upper secondary level. The Danish *folkeskole* operates as a comprehensive school covering both the primary levels (years 1 to 6) as well as the lower secondary level (years 7 to 9/10). History is taught from years 3 to 9. Four types[7] of upper secondary education are available. These provide either general education and qualification for university entry (Stx) as well as adult education[8] (Hf), or qualify pupils for professional training or apprenticeships and direct entry to the employment market (Hhx, Htx). Denmark has 146 grammar schools and institutions that provide education according to the Stx or Hf programmes, sixty schools offering Hhx programmes and thirty-eight with Htx programmes. Over sixty per cent of Danish pupils attend one of the forms of secondary school following the *folkeskole* system (MBUL 2008).

The Danish parliament is responsible for setting laws and compulsory curricula[9] (*Stx-bekendtgørelsen/ Læreplan*), and based upon this the Ministry of Children, Education, and Gender Equality sets the regulations governing the operation of schools. Each secondary school has an individual specialised profile which includes optional and compulsory subjects and subject combinations. The subject curricula are devised by the Ministry of Education. All subjects are taught at three different levels (A, B, C), which

---

[7] These are named according to the examinination type they offer: *Studentereksamen*, Stx (general education grammar school), *Højere forberedelseseksamen*, Hf (Higher preparatory examination course), *Højere handelseksamen*, Hhx (Higher commercial examination course), *Højere teknisk eksamen*, Htx (Higher technical examination course). For more information on the different types of grammar school see: MBUL 2016.

[8] The Stx-, Hhx- and Htx training or education lasts three years and is open to all pupils that have completed nine years of education. The Hf training or education takes two years and is open to all pupils that have completed ten years of education (MBUL 2016).

[9] Curricula for individual subjects are covered by the *Bekendtgørelse om uddannelsen til studentereksamen* (= BEK nr 776 af 26/06/2013). Each subject curricula (e.g. Historie A – Stx Læreplan 2013) is accompanied by a document commenting on the stipulations of the curricula and offering recommendations for teaching practice (e.g. Historie A – Stx Vejledning 2010), which are, however, not compulsory.

adjust the depth and scope of the subject according to the hours available[10] (MBUL 2008). History is an obligatory subject at level A in addition to Danish (level A), English (level B), one further foreign language (A or B) and other subjects. Teaching typically includes classroom work as well as project work, case studies and individual and group work. Exams may be written or oral and based on case studies, project work or a combination. Exams are generally open-book and may include the use of digital media and devices. The education ministry formulates all written exam questions.

b) Digital learning – terms, aims and strategies

Denmark considers itself to be a modern knowledge-based society and wants all citizens to actively participate in the production of knowledge and to be able to access information. Digital competence is a prerequisite skill to enable citizens to actively participate in the modern, democratic and digital society (Common Goals 2009, p. 4). The education of digitally-active and digitally-responsible citizens starts at school. The education ministry therefore formulated new common goals (*Fælles Mål*) in 2009, which defined the competences to be taught in the *folkeskole* and formulated how these should be incorporated into education in schools. In these targets digital education (*digital dannelse*)[11] covers basic abilities in the use of ICT as well as competence in critical information searches, dealing with data and the ability to interpret the diverse representative forms of digital media (Common Goals 2009, p. 5). This also includes the ability to continually adjust and adapt to the new challenges and requirements of the digital environment (see section c).

The requirements for digital education in Denmark prioritise the development of subject-specific competences (specialist input, individual support) in pupils as well as educating them to be independent thinkers and responsible persons. Denmark also aims to improve creative and critical use of ICT as well as the ability of pupils to express themselves using ICT and to work productively and cooperatively (DSt 2011–2015). Improvements in lessons will reflect the use of digital educational media and there are

---

[10] C-level 75 lessons, B-level 200 lessons, subjects at A-level 325 lessons.
[11] The term digital education is generally only used in the context of a general education concept, requiring a range of competences, but when referring to digital educational media it means 'media literacy', 'computer literacy', 'digital literacy' and computer skills (Tænketank 2012, p. 2), without explicitly using those terms.

great expectations for the development and implementation of new, more diverse lesson plans and examinations.

In 2011 Denmark founded an agency for digitalisation (*Digitaliseringsstyrelsen*), which launched the first national strategy for a 'Digital Denmark' through a range of initiatives introduced between 2011 and 2015.[12] One of the main initiatives (DSt 2011–2015), which received significant financial investment, concerned the digitisation of *folkeskole* and the introduction of digital educational media. The primary aims were to advance the procurement and funding of digital educational media for schools in order to improve their ICT facilities (3.1.a) and to increase the use of ICT in lessons through user-friendly retail channels (for example through app stores) (3.1.b). The aim was that every pupil should have wireless access to the internet by 2014 and that the networks and technology would be stable enough for pupils to rely upon them for work (3.2.a).[13] Every pupil should have access in lessons to a computer (PC, tablet or other) provided by the school (3.2.b). The thinking behind this was that individually tailored teaching requires individual tools and so pupils should be provided with their own 'personal equipment' as far as possible. In addition, it was considered important to have clearly defined aims for the use of digital learning resources and to develop digital learning goals (3.3.) as previous studies have shown that the implementation of ICT and digital learning resources can improve the performance of children in related subjects. Concrete objectives would clarify exactly what pupils in the various age groups were to learn about digital educational media and through using it. Studies have also found that the use of ICT can be consolidated in classrooms, particularly if the school administration strategically targets the consistent use of digital educational media and encourages and supports their teaching staff in the application of such learning resources. Strategic research and development programmes are to be implemented in the future which would design lesson plans for individual subjects based around ICT (3.4). In order to successfully integrate new teaching and learning methods into the current system the government envisages demonstration schools, teacher training with a strong IT focus, and a dialogue forum for IT in schools. These measures are intended to resolve questions re-

---

[12] A new strategy will be released in 2016 and will be implemented by 2020. (DSt 2016-2020).
[13] This is a reaction to the findings of various studies (e.g. EVA 2009, Købmand Petersen et al. 2010) that have pointed out many times that technical difficulties were the predominant reason for digital educational media not being regularly integrated into classroom teaching.

garding how subject-specific and social learning can be advanced through the use of ICT tools and how their implementation can help teachers improve their lessons.

The strategy for the digitisation of the *folkeskole* has taken on board findings, conclusions and recommendations from older studies (EVA 2009, Købmand Petersen et al. 2010) and integrated these into its objectives. Although relatively concrete targets have been formulated, the implementation of the school initiative does not seem to be progressing as rapidly as other digitisation initiatives (DSt 2011-2015 Status). Recent studies have found that grammar schools are still facing similar challenges (z. B. Aaen & Christian 2013, Mathiasen et al. 2014).

c) General requirements concerning digital learning in the curricula

The Common Goals document specifies the framework for the dissemination of digital education. The document prescribes four themes that should be incorporated into subject-specific and inter-disciplinary teaching:

'1. Collecting and searching for information. Pupils should attain the following competences in this area:
- determine their specific information requirement,
- use appropriate tools to locate the required information,
- use target-oriented strategies for a systematic search,
- critically examine and evaluate the information,
- select information for particular purposes, sort and process it,
- refer to various sources and cite them correctly.' (Common Goals 2009, p. 6)

'2. Production and transfer. Pupils must be able to critically and deliberately:
- adjust message and production methods according to their target group
- gather available knowledge,
- select the appropriate communication medium based on content and situation (text message, blog, Wiki, Website, etc.),
- select a suitable community and judge the extent to which it is identified by its contributions (to wikis for example) and in what way,
- select an appropriate form of presentation (text, graphic presentation, film/video, online, offline, etc.),
- consider security issues if the internet is to be used to publish, share or save material. Terms: anonymity, authenticity and danger of misuse.' (Common Goals 2009, p. 7)

'3. Analysis and communication. Pupils should learn to analyse digital media with regards to presentation forms, rhetoric, production, content and target audience.' (Common Goals 2009, p. 8)

'4. Knowledge-sharing and collaboration. Pupils should be equipped for communication in 'cyberspace'. They should:
- become familiar with common forms of interaction and user interfaces and be able to transfer acquired skills to new environments,
- learn about various teaching and learning situations,

- familiarise themselves with different forms of collaboration and be prepared to work with diverse applications in web 2.0 groups and project teams,
- learn diverse communication conventions,
- be able to navigate confidently in virtual spaces, where identities and intentions are often unclear,
- learn to anticipate the consequences that various forms of expression could elicit in the global public sphere.' (Common Goals 2009, p. 10)

The implementation of ICT is never an end in itself; rather the underlying objective must always be to encourage learning processes and creative thinking as well as deliberate and modern working methods relevant to the specific subjects. Guidelines for the implementation and operation of IT media and digital educational media are specified in each subject curriculum for Danish grammar schools. Information concerning the role of digital media in lessons and recommendations for their use are included in section three Organisational Matters (*Tilrettelæggelse*) under the heading 3.3 IT and Media (*It og medier*). The implementation of digital media, officially at least, therefore carries as much weight as the guidelines outlining the didactic principles of lessons and working methods.

In addition to the respective advice and the possibilities for using modern media in individual subjects the Danish curricula also offer other, optional, IT and media subjects, which are predominantly taught at level C.[14] The following subjects are offered at grammar schools: programming (*Programmering*), multimedia (*Multimedier*), media studies (*Mediefag*), information technology (*Informationsteknologi*) and computer science (*Datalogi*).

Multimedia examines all forms of interactive media (information and communication systems), including digital material. The aim of the subject is to give pupils the ability to analyse and evaluate interactive media from technical, communicative, and aesthetic perspectives, as well as to design interactive media and create small-scale multimedia productions for various situations and for different audiences. Pupils should also learn to actively and competently participate in the global networked society (Multimedier 2010). The use of IT media i.e. hardware and software is fundamental to the subject.

---

[14]   See the overview of grammar school subjects on the ministry homepage: https://www.uvm.dk/Uddannelser/Gymnasiale-uddannelser/Fag-og-laereplaner/Fag-paa-valgfag, [29.03.2016] § 37. States that only one of the subjects may be selected as an optional subject (computer science C, programming C, information technology C- or B-level, communications C- or A-level, or IT B- or A-level.

Programming covers the methods and techniques required to develop programmable IT components. Programming is primarily a technical subject which aims to improve personal learning skills by training logical and systematic thinking as well as developing specific IT skills that can be applied to other educational situations. The curricula (Programmering 2010) states that the subject will improve pupils' chances of operating successfully within the globalised, high-tech world. The course involves the extensive use of IT tools for experiments, exams, preparation and documentation.

Information technology examines the interaction between information technology and technological development and the implementation of information technology in education, society and in the economy as a whole. According to the curriculum (Informationsteknologi 2010) the subject fulfils technological education aims and prepares pupils for further study (meeting the general education goals of grammar schools) by enabling students to navigate through the globalised world and teaching them IT skills in professional and interdisciplinary contexts. The course improves the ability of pupils to react appropriately to the use and misuse of information technology by individuals and society. The subject also contributes to improved understanding of the role of information technology within other subjects and contains practical, experimental and innovative elements that put pupils in a position to interact with continuously developing technology (Informationsteknologi 2010). The subject is taught using a diverse range of IT tools for experiments, examinations and preparation. The internet is used as a search tool for information, instructions, examples, software components and library enquiries.

Computer science addresses methods and concepts fundamental to current manifestations of a range of information technologies; core themes are information, structures, processes and models. The curriculum (Datalogi 2010) states that the subject trains pupils' ability to understand real world data and to model it. Pupils learn about technical limits and possibilities and should be able to form an educated opinion with regards to information technology and its applications. Project work increases the capacity for abstract thought and encourages creativity. The working methods used within the subject help pupils to acquire and train skills such as working cooperatively and searching for information (Datalogi 2010). The course makes extensive use of IT tools.

Media addresses aesthetic, cultural and communicative viewpoints and above all (moving) images in both theory and practice. The goal of the subject as outlined in the curriculum (Mediefag 2010) is to develop pupils' ability to analyse the degree of veraci-

ty in Danish and international media products and to evaluate them and put them into perspective. The subject should also strengthen pupils' ability to express themselves sensitively using moving pictures, so that they become active, creative and reflective users of film and television (Mediefag 2010). IT plays a central role in this subject both theoretically and practically.

d) Digital learning in the history curricula

The history curricula for grammar schools (Historie A – Stx Læreplan 2013) specifies the pedagogical objectives and preparations for higher education but also states the aims of developing and strengthening pupils' personal competence in order to become responsible citizens of a democratic society.[15] According to the document the focus must be on developing a sense of responsibility. The subject should help develop the historical knowledge and consciousness of pupils, as well as their own identities, it should also pique their interest and improve their ability to ask questions about the past and consequently develop an understanding for the complex world in which they live. The document also stipulates that pupils should know and understand the most important events and developments in Denmark's history, European history and world history in terms of their own cultural background and that of other cultures. The subject provides pupils with the tools to evaluate the diverse historic material they encounter in school and outside school, and enables them to process and to structure the many ways in which history is conveyed and used (Historie A – Stx Læreplan 2013). History lessons are specifically expected to convey a sense of the timelines and processes of historical development. The curriculum lists eleven objectives that should achieve this aim, and which simultaneously function as evaluation criteria for interim tests and final examinations. These objectives are designed to further pupils' personal development and historical consciousness, to develop their identities and strengthen their competence (Historie A – Stx Læreplan 2013).

The curriculum places great value on the development of a chronological understanding. A key term in the Danish grammar school curriculum is therefore historical consciousness (*historiske bevidsthed*); the accompanying document to the curriculum states that the key concept of historical consciousness is that we constantly interpret the

---

[15] The curriculum (Historie A – Stx Læreplan, 2013) states that the subject of history should contribute to the development of pupils' personal maturity and creativity, enabling them to make decisions and become active citizens in a democratic society. (Historie A – Stx Læreplan, 2013)

past in order to understand the present in which we live and to extrapolate expectations for the future. The formation of a consciousness of the relationship between the past, present and future by pupils not only develops their awareness of self and of their environment but also their personal ability to actively address the present and to influence the future, both for themselves and the society in which they live (Historie A – Stx Vejledning 2010, p. 5). There is also an underlying concept that lessons should heighten the pupils' sense of 'constructedness' of history and its functionalisation[16] as well as place great value on multiperspectivity. The methodological incorporation of various sources and materials specifically supports the use of internet-based information sources (Historie A – Stx Vejledning 2010, p. 6). Pupils are also required to express their historical comprehension in a range of formats (Historie A – Stx Læreplan 2013). In addition to written methods (such as Power Point presentations, literary articles, newspaper articles, illustrated magazines, advertisements) and oral methods (such as presentations, talks, role plays, podcasts and group work) the accompanying document to the curriculum also recommends internet and media-based forms of communication (such as blogs, internet sites, TV-programmes, films and documentaries) (Historie A – Stx Vejledning 2010, p. 7). Multimodality is also considered to be important and during the three-year upper secondary course many different working formats should be introduced to classrooms (Historie A – Stx Læreplan 2013). Lesson planning and pupils' presentations of their own work must focus on problem-oriented questions; the didactic principle is that of educating pupils to think independently and be self-aware and able to reflect upon their behaviour and their environment. According to the documents, history lessons should reflect the society in which pupils live and should therefore incorporate social media, IT and the like (Historie A – Stx Vejledning 2010, p. 14). For this reason personal materials from the everyday lives of pupils should also be taken into account.

The use of IT and other media is secondary in the history curricula to the objective of developing pupils' learning processes. The document says that IT devices should be used as search tools for information when researching specific historical themes on the internet and in databases. It specifies the focus as being on the development of creativity and the ability to search systematically and independently and to adopt a methodological and critical approach (Historie A – Stx Læreplan 2013). IT and other media should

---

[16] Specifically: work with a range of historic material and documents and react methodologically and critically to examples of how history has been used. (Historie A – Stx *Læreplan*, 2013)

also be used for presentation activities in lessons. The incorporation of IT devices is seen in the curricula as predominantly for purposes of improving lessons, although the internet is celebrated as a great gift to history teaching that offers a virtually unlimited amount of information in the most diverse forms (Historie A – Stx Vejledning 2010, p. 17).

e) The status of OER in educational policy

In 2013 there were no policies in place to promote and support OER in any of the Nordic countries, including Denmark (Pawlowski et al. 2013). The Danish government aims to promote ICT in education and has supported and encouraged research on digital education and digital learning resources. It is also the initiator, host, and operator of several portals that provide digital learning resources, including OER. EMU (Danmarks læringsportal, www.emu.dk) is a public portal for educational content (material, services and resources) initiated by the education ministry and managed by The National Agency for IT and Learning (*Styrelsen for It og Læring*). EMU contains several sub websites such as SkoDa (skoda.emu.dk), a commercial database service for schools run by UNI·C, and The National Repository of Learning Resources (https://materialeplatform.emu.dk/materialer/). Furthermore there is a large comprehensive family initiative, DUDA (www.duda.dk), listing Danish OER for school children, parents and teachers (Pawlowski et al. 2013, p. 507; Harlung et al. 2010, p. 75) However recent research agreed that OER in the Nordic Countries (Pawlowski et al. 2013) and specifically Denmark (Harlung et al. 2010) was still not strongly represented and was difficult to find amongst the wide range of services for schools, teachers and pupils. Some of the main reasons, besides the lack of an official OER policy, seem to be Danish competition laws as well as copyright issues that prevent OER from becoming easily accessible to the public.

f) The use of digital media in schools

According to the *International Computer and Information Literacy Study* (ICILS 2013, p. 96), Danish pupils (average age fifteen, year 8) score well overall (542 points) in comparison to those in other countries. This may be due to the fact, shown by the study, that Denmark invests more in education than the other countries in the study (ICILS 2013, p. 55, also DSt 2011-2015). Pupils in Denmark do not yet have access to IT equipment in every classroom, but 71 per cent have access via school computer labs or

class sets (72 per cent) (ICILS 2013, p. 131). The PISA study documents that in 2012 there was one computer per 2.4 pupils in Denmark and that computer use in school is high: with 86.7 per cent of pupils using computers in school (OECD average: 72 per cent). Internet use in Denmark is joint highest among OECD countries with Australia, where 80.8 per cent of pupils use the internet in school at least once a week (OECD average: 41.9 per cent). The figures for average daily internet use in school are similar; comprising 46 minutes in Denmark, second only to Australia with 58 minutes (OECD average: 25 minutes). Denmark also leads in terms of private access to computers and the internet: 99.9 per cent of Danish pupils have access to at least one computer at home and spend an average of 136 minutes online at home on week days (OECD average: 95.8 per cent, 104 minutes, OECD 2015, p. 18, 20).

A survey of teachers that was carried out as part of the ICILS (ICILS 2013, p. 200f.) revealed that the greatest benefits of ICT use in schools are that pupils have improved access to information sources, that they can better process and consolidate knowledge with the help of ICT information and that ICT encourages collaboration between pupils and increases interest in learning as well as making it easier for pupils to learn at a level appropriate to them. Information and communication technology can also help pupils to develop their planning and self-management skills as well as to improve their academic performance.

The research conducted by the ICILS confirms findings from a range of other projects and development studies carried out in recent years; in Denmark many have been conducted or assessed by The Danish Evaluation Institute (*Danmarks Evalueringsinstitut*, EVA). Many large and small research studies and projects have been published since the turn of the century, a number of which include Danish grammar schools. These examine the development of digital educational media and study and evaluate their implementation (e.g. Aaen & Christian 2013; Mathiasen et al. 2014; EVA 2015). The studies are not limited to educational materials designed explicitly for classrooms – none refers to media from educational publishers - rather they concentrate more on digital materials and media that are used in classrooms as educational media, presentation media or as means of communication. A comprehensive study by EVA recently examined current research findings and combined empirical data and interviews with experts on the subject of 'IT in secondary education' (EVA 2015). The study largely confirmed the results of the ICILS survey and concluded that IT now plays a significant role in Danish

schools; it did however reveal that a very narrow range of hardware was in use in grammar schools. Desktop computers and audio-visual devices dominated, and smart-boards were in use but in much smaller numbers (EVA 2015, p. 10). The forms of digital media most widely implemented were found to be e-books, i-books or digital reference works; 90 per cent of teachers claimed to use these in lessons (EVA 2015, p. 10). Collaborative tools or cloud services such as GoogleDocs or Dropbox are used by 63 per cent of grammar school teachers. IT media are used predominantly in lesson preparation or within traditional lessons. The potential of IT media for more experimental classroom work or for the implementation of different styles of learning remained largely unexplored (EVA 2015, p. 10). IT media are principally employed by teachers when preparing their own teaching materials, for example written material, power point presentations, quiz questions and tests, although some teachers create videos and other media content with their pupils (EVA 2015, p. 11). The didactic objectives behind the implementation of IT media are the same across the different types of secondary education: variety in lessons is the primary didactic goal (90 per cent), whilst maintaining the concentration of the pupils and involving more pupils in the lesson come a close second (80 per cent). As many as 60 per cent of teachers indicated that they use IT devices to respond to the different needs of their pupils and evaluate learning results.[17] However, the study found considerable development potential in the area of lesson differentiation and evaluation and that this would generally be welcomed by teachers (EVA 2015, p. 12). An important finding, and one which had also been observed in previous studies, is that the implementation of digital educational media can stimulate learning in individual subjects (EVA 2015, p. 11). The study also revealed however, that pupils have greatly varying levels of competence with regards to the use of digital media, which presents a new set of challenges for teaching staff. It is clear that many pupils are technically highly competent and are proficient in the preparation of digital devices for use in lessons, but that they lack the ability to critically analyse sources or to reflect upon ethical aspects when using digital media (EVA 2015, p. 12).

The greatest hurdle for the implementation of digital educational media from the perspective of teaching staff is seen to be a lack of time (65 per cent), followed by insufficient skill in the use of digital educational media and IT technology (31 per cent) (EVA

---

[17] Individual learning speeds or degrees of difficulty can more easily be accommodated: more advanced pupils working independently for example, whilst the teacher spends time with those who may be struggling wth a subject.

2015, p. 12f.),[18] however technical operating problems are an additional hurdle as is a lack of adequate hardware and software available to pupils within school (EVA 2015, p. 12). Many teachers also have insufficient ideas on how to meaningfully incorporate such educational technology into their lessons.

Statistics from the digitisation agency compiled in 2015 show that the vast majority of Danes own a mobile phone and a computer and that tablets and smartphones are now also widely owned (Lauterbach 2015, p. 13). The percentage of families with access to the internet was 92 in 2015, demonstrating that generally speaking all those with a computer at home have internet access too (Lauterbach 2015, p. 14). The ICIL study reveals that Danish schools have nearly 100 per cent network coverage (including Wi-Fi) and that other resources, especially internet-based resources, are available across the board for pupils (ICILS 2013, p. 169, 172). Nevertheless only 50 per cent of teachers believe that their school is sufficiently well-equipped with ICT (ICILS 2013, p. 186).

Strategic ICT policy is the responsibility of each individual school. Studies have clearly shown that many school administrations have not formulated targeted IT strategies (EVA 2015, p. 13). Many teaching staff would like to see improved sharing of knowledge within their school as well as a transparent framework issued by the administration guiding the implementation of digital educational media in the classroom (EVA 2015, p. 13, 15). It is important for teachers to have the backing of the school administration on the issue of digital media use. The study conducted by Mathiasen et al. (2014, p. 178) found that around half of all teachers (46 per cent) were unsure whether their school had a specific IT strategy.

The EVA report recommends that future developments focus very specifically on the didactic challenges presented by the implementation of digital educational media, particularly the possibilities for differentiated learning, the use of different lesson types and for accommodating different learning types, as well as methods of evaluation (EVA 2015, p. 14). The development of pupil's competences is an additional requirement.

g) Summary

Danish education policy specifies digital education as one of the objectives for the *folkeskole*. It is seen as essential to enabling pupils to participate in a democratic

---

[18] It is interesting that the ICIL study found that teachers in Denmark still claim to be fully confident in the use of a range of computer programmes and to use these for lesson planning and for monitoring the progress of pupils (between 49–99 per cent). (ICILS 2013, p. 206–7).

knowledge society as independent thinkers and responsible citizens. In addition to operational competence the objectives include creativity and critical faculty in relation to digital media as well as the ability to interpret medial representations. Pupils should gain access to digital education through the introduction of themes such as information search and collection, production and transfer, analysis and communication, knowledge sharing and collaboration in lessons. Danish education policy stands out because it has developed a digital strategy for the *folkeskole* and injected considerable funds into the implementation of that strategy between 2011 and 2015. This encompasses improvements to technical facilities in schools, including a one to one pupil to computer ratio, the formulation of objectives for the use of digital media and support for research and development projects examining digital teaching and learning. Promotion of OER is not part of this strategy.

At curricular level these aims are reflected by the range of media and IT subjects on offer as well as the recommendations for the implementation of digital media in each subject curriculum. The implementation of digital media should always serve the specific aims of each subject and open up diverse learning pathways. Based on the concept of developing historical consciousness history teaching aims to educate pupils on the 'constructedness' and the functionalisation of history and uses the principle of multiperspectivity, a methodological approach that recommends the use of diverse sources, which may be accessed through the internet. It is worth emphasising that according to the requirements laid out in the Common Goals document, digital tools are not only recommended for use in search, analysis and presentation but also in the production of digital media such as blogs, websites and films.

The Danish digitisation strategy has certainly advanced the digital competence of Danish pupils. Despite considerable efforts the current results are, however, somewhat below expectations. On one hand continuing technical and organisational barriers (on the part of schools) still exist and on the other the current implementation of digital media is described as conventional. According to relevant studies the challenges for the future will be the use of digital media to explore new horizons in the structuring of teaching and learning.

3.3 Germany

a) An overview of the education system

The education system is organised individually by each of the sixteen German States (*Bundesländer*). Each state therefore shapes its own educational policies which are co-ordinated through the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany (*Kultusministerkonferenz*, KMK). The German Basic Law forbids interference by the federal government in school issues (cf. D21 2014, p. 19). Since the federal government has more financial power and would be in better position to find solutions for future challenges this cooperation ban has often been criticised and was lifted for higher education in 2014, but is still in place for schools.[19]

With the exception of two states (Berlin and Brandenburg) secondary schools in Germany start in year 5 (age ten), following four years of primary education. Until recently, (West) German secondary schools were organised in a three-tier system, with *Hauptschule* (up to year 9), *Realschule* (up to year 10) and *Gymnasium* (up to year 13 and A levels or university qualification certificate). Some states also offered *Gesamtschulen* that comprised all school levels. After the disappointingly average results of the PISA study in 2001, some states merged the two lower levels (*Haupt-* and *Realschule*), in some cases with the option of continuing to year 13. The *Gymnasium* has been cut to eight years in most states.

b) Digital learning – terms, aims and strategies

The topic of digital learning is mostly referred to by the terms media competence (*Medienkompetenz*) and media education (*Medienbildung*). At state level, the Standing Conference (KMK) agreed on the declaration 'Media Education in School' in 2012. The objectives of the paper were to implement media education in schools and to emphasise the new learning opportunities presented by digital media. The paper defines media education as a pedagogically structured process for critical and constructive engagement with media (KMK 2012, p. 3). Media education aims to develop media competence;

---

[19] In December 2015, the Social Democrats launched a new initiative to lift the cooperation ban due to rising numbers of immigrants, see "Debatte ums Kooperationsverbot: SPD will Bund wieder Schulpolitik machen lassen", Spiegel Online, 9/12/2015, http://www.spiegel.de/schulspiegel/spd-will-kooperationsverbot-im-schulbereich-abschaffen-a-1066875.html, 10/12/2015.

defined as knowledge, skills and proficiencies that enable pupils to act appropriately, self-determinedly, creatively and responsibly in a media-rich world. The declaration therefore focusses on the pedagogical dimensions of media education and makes no reference to the economic discourse surrounding digital competencies. In the document, the states commit to ensure that the goals are realised on a number of levels: curricular, teacher training, school development, equipment, educational media, legal, evaluation and cooperation with external partners. 'Media Education in School' advocates for a comprehensive, multidisciplinary media education and stresses the potential of digital media to stimulate and support individual and cooperative forms of learning as well as problem-based and research-oriented learning (ibid., p. 4). The declaration underlines the importance of media education by including it in the educational mandate and providing a framework for its implementation at state level (ibid., p. 9). However, it lacks binding obligations and delegates the finer details of educational and technical concepts to individual schools (p. 7f., cf. D21 2014, p. 19).

At the federal level, the parliament appointed a Committee of Enquiry on Internet and Digital Society in 2011 which covered topics such as media competence and education. Media competence is seen as a key qualification in modern society, comprising as it does technical as well as cognitive skills, affective and conative capabilities (Enquete-Kommission 2011, p. 5). However, stressing the importance of a critical understanding of media, the Committee recommends the use of the term media education rather than media competence (ibid., p. 5). Media education should support the personal development of pupils and strengthen their capacity to work and to participate in the digital society (Enquete-Kommission 2013, p. 17). The overall aim of media education is known as digital autonomy (*digitale Selbstständigkeit*) and includes the ability to use digital devices for reading and writing and to retrieve relevant information, a technical understanding of digital media, the ability to critically assess sources and produce creative output as well as an awareness of risks (Enquete-Kommission 2011, p. 31f.). As a practical suggestion, the Committee of Enquiry recommended all pupils in secondary schools be equipped with a laptop or tablet at public expense (Enquete-Kommission 2013, p. 18)

The Ministry of Economic Affairs has followed up some suggestions made by the Committee of Enquiry in their strategy paper 'Digital Agenda 2014-2017'. This focusses on the advancement of the national economy by extending the digital infrastructure

but also seeks to improve access to information and participation in society (BMWi 2014, p. 2f.). The programme announces a strategy for digital learning at all levels of the education system but has not yet been expanded upon or put into action (ibid., p. 27; cf. Bundesregierung 2015).[20] In response to the *International Computer and Information Literacy Study* that documented average results of German fifteen-year-old pupils (see f), the national parliament (*Bundestag*) again addressed the issue of digital learning in 2015. A motion carried by the coalition parties supported the objective of enabling pupils to participate in the digitised world and of fostering digital autonomy in order to prevent the formation of a digital divide (Bundestag 2015b, p. 3). However, the text consists mostly of declarations of intent comprising, among other things, a 'pact for digital education' between state, economy and society in order to improve digital infrastructures in schools.[21] Furthermore, it calls on the federal government to advocate for an inter-state treaty on the development and realisation of a strategy for digital learning (ibid., p. 4). This treaty should feature the interdisciplinary use of digital media in the learning process, improvements to teacher training and the implementation of media competence in the curricula. Though the motion refers to the report by the Committee of Enquiry, it does not support the recommendation to equip all pupils in secondary schools with a laptop but it does propose a model where pupils bring their own devices (ibid., p. 4).

c) General requirements concerning digital learning in the curricula

In all states, media education is integrated, to varying degrees, into the other school subjects in the curricula (D21 2014, p. 20). There are three main patterns of media education: four states in eastern Germany, Mecklenburg-West Pomerania, Saxony-Anhalt, Thuringia and Saxony, have implemented mandatory requirements at curricular level, but do not offer many additional projects; the four biggest states in the west of Germany, Baden-Württemberg, Bavaria, Lower Saxony and North Rhine-Westphalia, as well as the smaller Rhineland-Palatinate, have not included many mandatory requirements in the curricula, but have developed high-quality projects and introduced measures to initi-

---

[20] In December 2016, too late to be included in this analysis, the Standing Conference (KMK) launched the strategy 'Education in the Digital World".

[21] In December 2015, representatives of the software industry indicated that the economy will not financially support the digital infrastructure of schools on a larger scale, 'Digitales Lernen: Das Handy ist kein Spielzeug!" Spiegel Online, 4/12/2015, http://www.spiegel.de/schulspiegel/digitales-lernen-an-schulen-lehrer-geben-tipps-a-1066141.html, 10/12/2015.

ate and support media education; the remaining group of small states including all three city states have ambitious, yet not fully-developed, strategies and have integrated very few mandatory requirements into the curricula and have not taken any specific measures yet (D21 2014, p. 8). Thuringia and Lower Saxony, as examples from the first two groups, are examined in more detail below to illustrate the curricular adaptation to digital learning.

Thuringia

The Thuringia curricular framework demonstrates an emancipatory approach to learning by mentioning a conscious, self-determined and critical engagement with media as one aim of schooling. The educational mandate is oriented towards enabling pupils to shape their individual development and construct their own worlds (TMBWK 2011b, p. 4). At the same time, it is seen as an obligation of school to prepare pupils for the dynamic changes of the present such as globalisation, mobility and flexibility in the working environment, the multicultural and the multimedia environment, the rapid development of technologies, new professions, the explosion of knowledge, the diversity of family structures and increasing individualisation (ibid., p.7). One solution to these challenges is the development of media competence. Hence, the framework emphasises schools' obligation to integrate media education into the school curriculum. This should enable pupils to find and use information, to retrieve, chose and use sources self-determinedly and reflexively, safely and sensibly use media to communicate, to produce their own media adequately, to analyse and interpret media products and to understand media, its role in society, its way of constructing reality as well as its importance in the working environment (ibid., p. 11f.).

Thuringia has been praised as the (German) model state of mandatory media education (D12 2014, p. 60). A multidisciplinary course called 'media studies' was introduced for years 5 to 10 in 2009. The curriculum emphasises the importance of learning with media and learning about media and covers the topics of information and data, communication and cooperation, media production, presentation, analysis and assessment, media society and media and law and includes the following requirements (TMBWK 2010):

Information and Data:
- 'The pupil can characterise information as a central social resource that is fundamental to the retrieval and use of knowledge.'
- 'The pupil can appropriately, deliberately and independently retrieve information, refer to it, analyse it and evaluate it.'
- 'The pupil can contemplate and discuss the information content, format and credibility of a range of sources.'
- 'The pupil can appropriately, thoughtfully and independently pass on information, evaluate, analyse and interpret it.'
- 'The pupil can demonstrate the context of information and data; describe different forms of presenting information and the ways of interpreting it and processing data.'
- 'The pupil can characterise the context of the information society as a condition of the provision of information and can draw a range of conclusions.' (ibid., p. 5)

Communication and Cooperation:
- 'The pupil can describe various kinds of media and genres used for communication and cooperation.'
- 'The pupil can select suitable tools for communication and cooperation.'
- 'The pupil can communicate and cooperate responsibly in order to achieve the desired results.'
- 'The pupil can recognise rules on equality and on individual and cooperative social participation.' (ibid., p. 9)

Media production, computer modelling and interpretation:
- 'The pupil can plan, realise and publish his or her own media products founded on the appropriate implementation of various media technologies.'
- 'The pupil can create computer models for specific circumstances.' (ibid., p. 12)

Presentation:
- 'The pupil can present his or her learning and working results appropriate to the situation, function and audience, and with the use of information systems.' (ibid., p.15)

Analysis, explanation and evaluation:
- 'The pupil can analyse various forms of presented information using content, form and structure correlations.'
- 'The pupil can evaluate the implementation of design tools with regards to their desired impact and effect.'
- 'The pupil can explain the connection between content, audience, intention etc. and the tools used.'
- 'The pupil can retrieve information from a range of media sources and interpret that information.'
- 'The pupil can reproduce statements from media sources.'
- 'The pupil can describe the expectations and demands of media-specific genres, presentation forms and formats.'
- 'The pupil can ask questions and speculate about computer issues, justify decisions made about the use of computer systems and decide upon criteria for computer issues.' (ibid., p. 17)

Media society:
- 'The pupil can develop a basic understanding for the role media has in shaping individual and social life […]'
- 'The pupil can analyse media manipulation […]'
- 'The pupil can judge the significance of the media in the formation of political opinion and decision making. ' (ibid., p. 20)

Law, data security and child protection:
- 'The pupil can express an opinion on fundamental aspects of copyright law, data protection, data security, personal rights and child media protection and can act accordingly.' (ibid., p. 24)

The course should be integrated into the school curriculum (TMBWK 2010, p. 3f.). It is taught two hours a week every other year and pupils are awarded a media pass upon completion.

Lower Saxony

The Lower Saxony Education Act describes its education commitment as being to refine 'the characters of pupils based on the principles of Christianity, European humanism and the concepts of the liberal, democratic and social liberation movements'. Several aspects of this development are defined, such as the formation of civic responsibility, ethical principles, a tolerant and liberal-minded approach and ecological awareness, as well as the ability 'to inform oneself sufficiently and to use that information critically' (NSchG 2015, p. 5). Information literacy is supported through interdisciplinary media- and methodology concepts, which are the responsibility of the individual schools (NKM 2015b, p.8). More details on information literacy, digital learning or media education can be found in the relevant subject-specific core curricula (see section d. for history).

In 2012 the state produced a strategy for 'Media Competence in Lower Saxony. Milestones and Objectives' (*Medienkompetenz in Niedersachsen. Meilensteine zum Ziel*), which sought to improve media literacy throughout all educational institutions (NSK 2012). The objectives for schools were to expand the network of media consultancy, to support the development of school-related media education concepts, to create an education platform containing teaching materials and to integrate media education into the core curricula. However, the revised strategy 'Media Literacy in Lower Saxony: Goal line 2020' (*Medienkompetenz in Niedersachsen. Ziellinie* 2020) which was released in 2016 drew rather mixed conclusions on this last point. The commissions for core curricula are certainly more aware of issues related to media education and have added the use of media in presentations and searching for information to the core curricula, albeit unevenly distributed across the individual subjects (NSK 2016, p. 13f.). It is also important to note that these inclusions only cover two aspects of digital learning. In order to improve media education in schools the Lower Saxony State Institute for Quality Development in Schools (*Niedersächsisches Landesinstitut für schulische Qua-*

litätsentwicklung – NLQ) has produced a reference framework for media education in schools (*Orientierungsrahmen Medienbildung in der Schule*) whose aim is to support school development, the revision of the core curricula and both initial teacher training and in-service training and seeks to facilitate the integration of media education and specialist teaching by providing practical proposals (NSK 2016, p.15). It refers to the significance of media in the digital society and underlines the dual task of providing pupils with relevant skills for the workplace and also training their critical faculties and creativity in their interaction with media. Media education requires and at the same time encourages problem-oriented, independent and cooperative learning, discovering through learning, inclusive and differentiated learning and ethical reflection. For these reasons media education should take place within practice-oriented and open lesson structures (NLQ 2015, p. 8, 14).

The strategy paper 'Media Literacy in Lower Saxony. Goal Line 2020' also refers to the potential to acquire interdisciplinary IT knowledge in the subject of computer studies. However, computer studies can only be taken as an optional subject by year 8 to 10 pupils majoring in natural sciences at *Gymnasium* or in years 6 to 10 at *Hauptschule* and *Realschule* (NKM 2015b, p. 8), it is therefore not compulsory for all pupils nor even an option for many. The core curriculum for the various types of secondary schools (years 5 to 10) defines both process-oriented competences (structuring and modelling, implementing, communicating and presenting, substantiating and evaluating, using computer systems as tools) and content-oriented competences (information and its presentation, algorithms, computer systems, computer studies and society). The competences are consolidated within four fields of learning: data and its traces, computer competence, algorithmic problem solving and automated processes (NKM 2014b, p. 6, 12). The focus is therefore on problem solving using informational tools that provide pupils with a good basic knowledge in the use of computer and communication technology, however, the critical use of digital media for communication in schools and in everyday life is not prominent.

d) Digital learning in the history curricula

Thuringia

As in most German history curricula, the overall aim of the Thuringia history curricula for secondary schools is to foster independent historical thinking. In other words, pupils should develop a reflexive historical consciousness that enables them to approach history culture critically. In detail this means the ability to extrapolate historical facts with the help of relevant methods, to be aware of how historical interpretation is depending on the respective point of view and for the insights gained to serve as a source of orientation for the present and into the future. History teaching should be founded on the didactic principles of multiperspectivity, controversy and plurality. Competence-oriented history teaching should foster knowledge, skills and proficiencies that can be transferred to new historical questions and topics (TMBWK 2011a, p. 5).

Digital media is not mentioned as a separate category in the history curriculum but specific forms such as computer games are referred to. The curriculum rarely reflects how digital change might affect history as a discipline and history culture in general but it does refer to media in four different contexts:

1. research and analysis skills: pupils should learn to retrieve information using different kinds of media and to choose appropriate sources (ibid., p. 10, 26, 31, 34);

2. presentation skills: pupils should learn to present complex narratives with the help of digital media (ibid., p. 22, 26, 33, 34);

3. analysis of the role of media in history: pupils should learn to analyse the role of mass media in democracy and dictatorship (ibid., p. 37);

4. history culture in the media: in year 12, the last unit teaches pupils how to understand and deconstruct history culture in different kinds of media (ibid., p. 42).

The history and media studies curricula overlap with regards to general skills such as research, analysis and presentation. However, other general skills such as communication and cooperation through digital media, media production and the relationship between information and data, which are part of the media studies course, are only given a passing mention in the history curricula. The only assessment criterion for media competence is phrased quite generally and concerns the 'safe use of media' (ibid., p. 42).

Points 3 and 4 can be characterised as subject-specific approaches to digital learning in history that are also covered by the general topic of 'media society' in the media stu-

dies curriculum. Viewing media from a historical perspective can inspire reflection about the role of media in today's society. The research, analysis and interpretation of digital history culture can encourage pupils to participate in public discourse.

The history curriculum allows digital media to be incorporated into history teaching but it is neither prescriptive nor does it offer many concrete examples. According to the curriculum, history can well be taught without digital means. The approach of all Thuringia curricula discussed here, emphasises the requirement to work efficiently with (digital) media (TMBWK 2011b, p. 8, 12; TMBWK 2011a, p. 10, 12; TMBWK 2010, p.15) and the necessity to view media critically and reflect upon its use (TMBWK 2011b, p. 4; 12; TMBWK 2011a, p.10, 12; TMBWK 2010, p. 5).

Lower Saxony

History teaching in Lower Saxony aims to guide pupils in the development of a reflexive historical consciousness, which is essential to successful social participation in a 'networked world' (NKM 2011, p. 16). Central to this is the pupils' ability 'to recognise and evaluate their own historical conditionality and that of their environment, as well as the constructed character of interest-driven historic explanations and models' (ibid., p. 7). Accordingly the competence-oriented core curricula of the various types of schools follow the didactic principles of multiperspectivity, controversy and plurality (ibid., p. 7f.; NKM 2015c, p. 5, 15; NKM 2008, p. 14f.; NKM 2014a p. 7f.). They highlight the openness and diversity of historic processes and reject the dissemination of a closed world view. The core curricula do however place varying emphasis on the dissemination of normative concepts. The core curricula for *Hauptschulen* and *Realschulen* reiterate the view expressed by the Education Act that history lessons contribute to the development of the child as a whole 'based on the occidental cultures and religions predominant in our society, on European humanism and ideals of liberal, democratic and social liberation movements' (NKM 2014a, p. 5, similarly NKM 2008, p. 7). In contrast the curriculum for the *Gymnasium* names no associated philosophy. Instead it accentuates the 'reflexive potential of history as a subject requiring critical thinking' and refers to the pluralisation of historical research History teaching too has undergone a change; current guiding principles such as paradigm diversification and constructivism are expressions of 'a concept of the state founded in freedom, pluralism and cultural diversity' (NKM 2015c, p. 5f.).

The importance of media education is referred to in the passages explaining history's educational contribution. The general point is made that the use of media furthers 'perception, understanding and organisation', which support the active acquisition of knowledge and are important elements in gaining an overall methodological competence (NKM 2011, p. 8). The acquisition of a historical methodological competence contributes in turn to improvements in general media literacy skills (NKM 2015c, p. 14). The core curricula do not, however, offer details regarding the implementation or the specific potential of (digital) media in history lessons; the formulation of concepts for media implementation in each subject is delegated to the individual schools (NKM 2011, p. 39; NKM 2015c, p. 25). Similarly to the Thuringia curricula, media are addressed in relation to the following:

1. research and analysis skills: media allow pupils to obtain information, and to interpret and critically evaluate it (NKM 2011, p. 8);

2. presentation skills: media-supported presentations constitute part of the oral marks (NKM 2011, p. 37);

3. analysis of the role of media in history: year 5 and 6 pupils should be taught the outline of media development in advanced civilisations (NKM 2015c, p. 20); the optional year 11 module 'Media Revolution at the start of the modern age' examines the printing of books and the resulting social implications (NKM 2011, p. 20).

4. history culture in the media: the optional year 13 module 'Encountering history in films and new media' is designed to get pupils to analyse how history is portrayed in films, computer games, online portals etc. and to produce their own historic material in one of these formats (NKM 2011, p. 35).

The Lower Saxony curricula, similarly to the Thuringia curricula, only highlights the general significance of (digital) media, it does not specifically prescribe its use and only infrequently suggests it. In general there are disparities between political support for media education and the superficial integration of digital learning at a curricular level.

e) The status of OER in educational policy

Neither the federal government nor the individual states have embraced Open Educational Resources so far. Only minor steps have been taken towards an OER strategy. The Ministry of Education and Research initiated two research projects in 2015: 'Mapping OER' and 'Feasibility study concerning the setup and operation of OER infrastructures

in education' (Bundestag 2015a, p. 2f.). Furthermore, the federal government and the states run a web portal (Deutscher Bildungsserver) that collects and links educational resources and includes a search engine (Elixier) that links to online learning materials (some open access) whose quality has been tested. Most states run their own web portals that offer digital learning materials assessed by them (e.g. mebis, Merlin, ED-MOND NRW, OMEGA). These materials can be used by teachers but most are not published under a creative commons license.

f) The use of digital media in schools

The *International Computer and Information Literacy Study* (ICILS) indicated that German year 8 pupils were on par with the EU average, scoring 523 points overall where the EU average was 525 points. As in previous studies, a performance gap was revealed between pupils in *Gymnasium* (570 points) and in other secondary schools (503 points) (ICILS 2013 Germany, p. 16f.).

The average results in the ICILS may be explained by German schools' slow adaptation to digital learning, as noted in several reports and studies (Enquete-Kommission 2013, p. 15). There is a gap in digital media use between private and school life: Almost all fifteen-year-old pupils (99.4 per cent) had access to a computer at home in 2012 and spent on average 114 minutes using the internet on weekdays outside of school (OECD average: 95.8 per cent, 104 minutes, OECD, 2015 p. 18); 88 per cent of pupils (age twelve to nineteen) had a smartphone in 2014 (JIM 2014, p. 23). In contrast, only 68.7 per cent of fifteen-year-olds used computers at school in 2012, 28.9 per cent browsed the internet for schoolwork at school at least once a week and fourteen minutes was spent on average by all pupils on the internet at school on weekdays, which ranks below the OECD averages of 72 per cent, 41.9 per cent and 25 minutes respectively (OECD 2015, p. 18, 21). These figures might be influenced by two main factors. The first being the modest level of digital equipment in schools which, with 4.2 pupils sharing a computer, was slightly better than the OECD average of 4.7 in 2012 yet below the equipment level of most EU States;[22] only 12 per cent had a laptop or tablet provided by the school in 2014 (JIM 2014, p. 33). The second factor is that teachers demonstrated a much more sceptical attitude towards digital media; three times as high as in other Eu-

---

[22] The only EU States with lower levels of equipment were Romania (4.6), Croatia (5.0), Greece (8.2) while there was no data for Malta and Cyprus.

ropean countries in 2007 (Enquete-Kommission 2013, p. 15) and higher than in all other participating countries in the ICILS in 2013 (ICILS 2013 Germany, p. 19).

g) Summary

Media education is a central concept in the German education system, offering answers to the digital change concerning school, learning and education. Media education takes a critical and pedagogical approach to media and includes learning about and learning with media. Most texts analysed above are part of an emancipatory education discourse about digital media that emphasises on the one hand, the opportunity to expand personal potential through media and on the other, the necessity of controlling the influence of media. The texts state that media can aid participation in society, but this argument is seldom qualified further.

An overall federal strategy of digital learning for schools has not so far been developed. Though some individual states have launched their own initiatives, the lack of digital infrastructure and of an overall strategy seems to hamper the possibilities of using digital media in schools. Specifications on the use of digital media are rarely mandatory in the curricula. Only a few of the smaller states have introduced a mandatory course of media studies, such as in Thuringia, that teaches theoretical understanding and the practical use of digital media. Media education is superficially included in history curricula but the integration of digital learning and history education is rarely visible. The awareness of media is seen as part of retrieval, research, analysis and presentation skills. Two subject-specific approaches can be identified: learning about the role of media in history and analysing, discussing and assessing forms of history culture on the internet. The active contribution by the pupils to digital history culture on the internet is also mentioned, which could encourage them to participate in society through the use of digital media.

3.4 Greece

a) An overview of the education system

The Greek education system is regulated centrally by the Hellenic Ministry for Culture, Education and Religious Affairs (see UNESCO 2012; EURYDICE 2015a; EURYDICE 2015b). Since 2007 ten years of schooling have been compulsory, including a mandatory year at nursery school (Erdmann & Hasberg 2011, p. 354). There are three types of school starting with primary school (*Dimotiko*) which lasts for six years and is followed by three years at secondary school (*Gymnasio*). Compulsory schooling ends upon completion of the *Gymnasio* but a further three years of upper secondary school (*Lyceum*) is possible from years 10 to 12. Vocational schools are also available as an alternative to the *Lyceum*.

In Greece the same curricula apply to the entire country. The same textbooks are also used in all schools; teachers are not able to make their own selections. They must use teaching materials prescribed by the education ministry; teaching methods are also regulated. The centrally controlled education system has been widely criticised as outdated due to its teacher- and material-oriented teaching practices that use regulated texts and methods and allow very little room for discussion, group work or independent learning (Tziafetas et al. 2013, p. 200; ET 2020 Greece, p. 5).

b) Digital learning – terms, aims and strategies

Since 2001 the education ministry has attempted to expand the provision of IT equipment in schools and improve teacher training on the use of digital media. The information technology curricula issued in 2003, which are still in force, emphasise the general significance of digital media. These documents use the term digital world (*Ψηφιακός κόσμος*) in relation to digital learning and define the term in the subject curricula for computer studies as the influence of ICT upon science, art, culture, languages and linguistics, environment, quality of life etc. (PI 2003b, p. 415). Another central term is information and communication technology (ICT) (*ΤΠΕ Τεχνολογία πληροφοριών και επικοινωνίας*). Its objective is explained in the subject curricula for computer studies which states that pupils should develop a critical approach to the use of computers for problem solving and that they should become familiar with current computer application possibilities. They should also be made aware of the effects of ICT applications in

the workplace, on the environment, language and the use of language, value systems and culture (PI 2003b, p. 416, 419). Emphasis is placed on the fact that ICT is not just relevant in a school environment but influences the private lives of pupils. It is therefore important that pupils are also informed of the everyday impact of ICT use (PI 2003b, p. 416, 419). The particular significance of ICT in pupils' lives is also highlighted: ICT is described as an important tool for the acquisition of valuable insights into cultural and scientific knowledge, ensuring an adequate scholarly education and life-long learning. It is also described as facilitating the integration of those with physical or mental disabilities in lessons and as a valuable tool for success in future careers (PI 2003b, p. 416, 412). In addition, the document points out the benefits of ICT for personal development: underlining the possibilities provided by ICT for communication, exchanging ideas, structuring and consolidating ideas and thoughts, relaxation, the presentation of ideas and opinions and general, everyday ICT applications (PI 2003b, p. 419). The subject curricula for technology also emphasises that technological aids such as computers and the internet should make everyday life easier. These resources can be used as tools to search for solutions for everyday problems and for acquiring information (PI 2003c, p. 1).

These statements from the curricula make clear that the requirement for digital education has a firm pedagogical foundation aimed at helping pupils' personalities evolve and unfold. The focus lies on pupils' personal development; they should use such media to expand their knowledge and to network with other people and exchange ideas (PI 2003b, p. 416, 419). Reference is also made to the usefulness of ICT knowledge in their career paths.

Whilst digital media have in the past primarily been viewed as the content of subjects such as computer studies and technology, they have recently been afforded much greater significance in the education system as a whole. Since 2009 the Greek government has been forced to restructure the public sector as a result of the Greek financial and debt crises, changes that have also affected the education system. In 2010 it was obliged to impose a strict austerity policy in exchange for credit from the IMF and European Central Bank. Between 2009 and 2015 the government reduced spending on education by 36 per cent (ET 2020 Greece, p. 3). A reform of the education system was initiated in combination with these immense spending cuts. A process of rationalisation was introduced which aimed to reduce personnel costs through measures such as in-

creasing teaching workloads and the number of pupils in each class, but also aimed to more efficiently use specialised resources which involved merging schools, for example (ET 2020 Greece, p. 6). In addition, long-term strategies were developed to counter weaknesses in the education system and a programme called 'New School – Schools for the 21st Century' (*Νέο Σχολείο – Σχολείο 21ου Αιώνα.*) was launched. The existing curricula are currently being revised with the aim of better meeting the requirements of teachers and pupils in the twenty-first century and oriented towards EU educational goals such as lifelong learning, social participation and nurturing active and responsible citizens (Routsis 2010). The integration of digital media lies at the core of the 'New School' programme and has a crucial role in achieving the stated goals. The English term 'digital competence'(*Η διαμόρφωση συνθηκών ίσων ευκαιριών ανάπτυξης ψηφιακών δεξιοτήτων*), is generally used to describe this key concept and refers to abilities that both teachers and pupils must acquire and develop (Routsis 2010).

The introduction of ICT as a subject at primary and secondary level in 2011 was a definite step in this direction; designed to teach all pupils the basics required to participate in a knowledge-based society (Tzimogiannis 2011). In addition, the project 'Digital School' (*Ψηφιακό Σχολείο*) was launched, which aimed to improve the integration of digital technology and media across different levels of the education system. The project was founded on three objectives: the implementation of a uniform digital environment to aid users of digital media in all subjects; the use of ICT to more efficiently administer the educational system; and better access to education through the availability of digital resources. The key aspects of the project, which was partially funded by the EU, are 1) improving the digital infrastructure in schools, 2) the production of digital materials, including new curricula and textbooks, 3) improving teacher training with regards to the implementation of digital media (ET 2020 Greece, p. 6f.). Most progress has been made in the creation of digital learning platforms and digital educational materials, whilst equipping schools with digital devices and retraining teachers still requires much work. By 2015 training had been provided to 21,285 teachers whilst another 60,000 primary and secondary school teachers for all subjects were still due to take part in ICT training (NRP 2015, p. 30f.)

The Tsipras government, elected in 2015, criticised the effect of the economic cuts on the education system and sought to create a new strategy for education policy that was based on a comprehensive assessment of the public school system (ET 2020

Greece, p. 6). Despite this policy change, the 'National Reform Programme 2015' laid out plans to change the structure of the system, based on the guidelines in the strategy paper 'Europa 2020', and confirmed the continuation of the 'Digital School' programme. Primary action areas were to be the development of digital learning methods and teaching scenarios for primary and secondary level, the expansion and connection of existing digital learning platforms and the inclusion of existing digital resources from cultural institutions such as museums and libraries for educational purposes (NRP 2015, p. 29). This programme clearly demonstrates the Greek government's emphasis on the significance of digital technology in the field of education and its role in the modernisation of society and the economic development of Greece.

c) General requirements concerning digital learning in the curricula

In addition to the subjects of computer studies and technology, ICT was introduced as a new subject in 2011. The concept for the use and implementation of ICT and the subject curricula describe the objectives for pupils studying ICT:

> 'Computer culture, attitudes and behaviour (e-learner, e-citizen, e-safety)'
> - 'I can create and express myself with ICT'
> - 'I can communicate and collaborate using ICT'
> - 'I can research, discover and solve problems through ICT'
> - 'I can use and make things with ICT'
> - 'I can search for information, communicate and collaborate using ICT'
> (Tzimogiannis 2011, p. 9, 12, 13; see also PI 2011, p. 8)

ICT is to be taught at primary and at secondary levels. A total of sixty teaching hours should take place over the first and second years of primary school, although the exact timetable and order of topics are at the discretion of the teaching staff. The same applies for the third and fourth years of primary school, whilst sixty hours of ICT should be taught in the fifth year alone (PI ICT, p. 12, 24, 50), and fifty-four in each of the first, second and third years of *Gymnasio* (PI 2011, p. 14, 33, 52).

Working guidelines and lesson topics are provided for teachers. For example the recommendation that first and second year primary pupils spend a lesson searching Wikipedia for specific information (see PI ICT, p. 17). Second year *Gymnasio* pupils are required to examine the safety and credibility of the technical tools used to search on the internet as part of the category 'I collaborate using ICT'. Pupils are directed by teachers to search for specific information by calling up certain internet sites. They should then, in groups, examine the information available on those internet sites. They should re-

search who the originators of the information are, and what qualifies them to place this information online. The pupils are also directed to internet sites that specialise in the subjects of plagiarism and copyright (see PI 2011, p. 40f.). In this way pupils are taught about using the internet as a tool. They should understand that not everything on the internet is necessarily correct or complete and that the available information should be critically assessed.

Digital methods have so far had marginal importance in other subjects. As far as they are referenced at all in current curricula, digital media are viewed as tools to complete exercises and for lesson planning.

d) Digital learning in the history curriculum

The history curriculum aims to develop historical thinking and historical consciousness, which are defined as follows:

> 'The development of historical thinking pertains to an understanding of historical events achieved through the examination of causes and consequences, whereas historical consciousness concerns an examination of human behaviour in specific situations, and should serve to shape values and attitudes which in turn lead to responsible conduct in the present and future.' (PI 2003a, p. 1)

The significance of history to the present is emphasised:

> 'Pupils should not only discover in history lessons that humanity is always heavily influenced in the present by events of the past, they should also learn that current historical discourse is linked to their own lives. The goal of historical thinking and consciousness is on the one hand to create a general awareness and on the other to educate pupils to become responsible citizens.' (PI 2003a, p. 1)

There is at the same time a strong focus on the history of Greece in which 'Greek concepts of freedom and autonomy' are underlined,[23] revealing the normative orientation of history teaching; that pupils should develop a national ethos through their discovery of history.

In the history curriculum ICT, new media and media use are only mentioned in passing, as they were in the existing curricula from 2003. It includes very general recommendations that pupils should use technological and other methods to learn about basic historical themes (PI 2003a, p. 188). The themes of technology and computer science in the twentieth century should also be addressed from a historical perspective (see PI

---

[23] The phrase 'recognition of the struggle for liberty' is used continually in reference to Greek history (PI 2003a, p. 184, 185, 209).

2003a, p. 209f.). The use of media in lessons is briefly mentioned (CD-ROMs, PC use), but no further details are given regarding why their use is recommended and what benefits is would bring. 'Digital media' are not explicitly referred to, but are subsumed under 'illustrative material' and 'visual material' (VHS and CD ROMs are given as examples) (see PI 2003a, p. 213).

e) The status of OER in educational policy

Two principle outcomes of the 'Digital School' project have been the Photodendro portal (http://photodentro.edu.gr) and the e-books portal (http://ebooks.edu.gr/). The e-books portal provides current textbooks in PDF format or as interactive books. Access is free and open to all, however not under open licence. In contrast the Photodendro portal is dedicated to open educational resources. It offers teaching materials in a dedicated open repository and provides access to external resources through a central search tool. All accessible materials are published under CC licence with BY-NC-SA limitations (or less).

The Ministry of Education also operates a further website: 'Greek Digital School' (Πανελλήνιο Σχολικό Δίκτυο) at www.sch.gr, which links all Greek schools. Online material for use in lessons is made available on the site, blogs can be created and users have access to video conferences facilities as well as an 'electronic classroom'. The site aims to create a new generation of education communities who will take advantage of the benefits of information technology and communication in a school context (Greek Digital School 2015). Technical support is also offered (http://e-yliko.minedu.gov.gr/).

f) The use of digital media in schools

In comparison to other EU countries the Greek population as a whole does not have particularly high levels of digital skills. Internet usage is low; in 2014 33 per cent of the population had never used the internet, compared to an EU average of 18 per cent (ET 2020 Greece 2015, p. 5). However among fifteen-year-old pupils 94.6 per cent had access to at least one computer at home in 2012 and spent 108 minutes on the internet outside school on weekdays (OECD average: 95.8 per cent and 104 minutes, see OECD 2015, p. 18). Measures introduced in 2009 seeking to integrate ICT into schools have made an impact on computer use in schools: 65.9 per cent of fifteen-year-olds used computers in schools in 2012, which, whilst still below the OECD average of 72 per-

cent, is however a significant increase of 8 percent compared to 2009. In addition, in 2012, 44.9 per cent of pupils used the internet at least once a week in school, which is just above the OECD average of 41.9 percent (up 9.7 per cent from 2009, OECD 2015, p. 18, 21). However computer facilities in schools were still limited in 2012, an average of 8.2 fifteen-year-old pupils shared each computer, which is significantly above the OECD average of 4.7 (OECD 2015, p. 21; on below average computer facilities see also: EC 2013).

In 2006 the Greek Association of Computer Scientists criticised the fact that the education system was not taking advantage of the broad spectrum of opportunities for digital learning. Digital media were rarely used as anything other than aids to completing an exercise. They believe teachers should be affording pupils more freedom in their interaction with digital media, and that pupils should be allowed to experiment and to find their own approaches to solving problems and to develop their own solutions, with teachers acting as guides and advisors (see GACS 2006, p. 69). A shift in didactic culture seems to still be in progress. The *Survey of Schools: ICT in Education* identified that in the 2011/2012 academic year Greece, far more than other EU states, viewed their current pedagogic approaches and curricula as an obstacle to the use of digital media in the classroom (EC 2013, 68f.). Tziafetas et al also point out that many ICT teachers use digital media within their traditional pedagogic approach which does not therefore further the development and expansion of innovative teaching concepts (Tziafetas et al. 2013, p. 200f., 206).

g) Summary

The Greek education system is currently undergoing a process of reform, although the strategic orientation remains unclear after the regime change of 2015. At present old curricula, textbooks and didactic approaches coexist with new objectives, subjects, media and technologies. The potential for learning and personal development of digital media was highlighted in curricula as far back as 2003, however its use has been limited to the subjects of computer studies and technology which has not allowed digital learning to make headway in other subjects. The need to restructure the state system in light of the debt crisis and to push the economic and social development of the country has increased the tendency to use digital media in the education sector. Corresponding with the orientation towards EU education goals, the competent use of digital media is seen

as a key requirement to productive participation in twenty-first century society and economy. By introducing ICT as a school subject and launching the 'Digital School' project the government has clearly laid out its priorities and these are also quantitatively reflected in teaching practice. However, improvements in teaching quality and a change towards a more open learning culture through digital media, which is one aim of these measures, is not yet apparent. Without didactic concepts for ICT integration that teachers can relate to and which can be incorporated into the curricula it is difficult to see how a change in didactic culture will be initiated. The current curricula contain only negligible advice on the use of digital media and vague guidelines for the ICT as a subject.

Greek education policy-makers could turn the crisis to their advantage and use the framework of the 'Digital Schools' project to develop and expand digital learning platforms that promote open educational resources. These platforms and materials could stimulate new forms of learning, although the challenge lies in negotiating the transformation from a hierarchical to a more open learning culture at all levels of the education system.

3.5 The Netherlands

a) An overview of the education system

Education in the Netherlands is primarily organised by the Ministry of Education, Culture and Science. The Ministry is responsible for finances and determines general education policy. In general, there is a tendency not to propose uniform regulation that would apply to all educational institutions. 'The Higher Education and Research Act', which was implemented in 1992, allows many institutions and schools to have high levels of responsibility and freedom (NUFFIC 2014). The Education Council (*Onderwijsraad*) provides the government with independent advice on educational issues. In 2014, the council was concerned by the lack of a systematic process for reform within the Dutch education system; a deficiency meaning that reforms were either being introduced too late to keep up with society's demands or not being implemented at all (Onderwijsraad 2014).

The education system is structured according to age and education level. Children start primary school (*Basisschool*) in year 1–2 at the age of four and finish in year 8 at the age of twelve. At secondary level (*Voortgezet Onderwijs*), teenagers will spend four (VMBO), five (HAVO) or six (VWO or *Gymnasium*) years in high school – depending on their educational level.[24] Secondary schools are divided between lower secondary (*Onderbouw*) and upper secondary level (*Tweede Fase*). Compulsory education in the Netherlands starts at the age of five and continues until the age of sixteen.

In 2004 the Dutch government created a framework specifying fifty-eight core objectives and comprising reference levels and final targets. Within this framework schools are fairly free to choose their own interpretation (SLO 2006a). In 2014, the Dutch government started an online platform called 'Education 2032' (*Onderwijs 2032*), which aims to create a space for dialogue about the content of primary and secondary education. It is hoped this dialogue will lead to a transformed and improved curriculum, replacing the existing curriculum which is considered to be incoherent and in many ways outdated, overloaded and fragmented. At the time of writing (May 2016) the 'E-

---

[24] The levels are abbreviations for: Preparatory middle-level vocational education *(Voorbereidend Middelbaar Beroepsonderwijs,* VMBO*)*, higher general continued education *(Hoger algemeen voortgezet onderwijs,* HAVO*)*, and pre-university secondary education *(Voorbereidend wetenschappelijk onderwijs,* VWO*)*. VMBO students go to the middle-level vocational education schools *(Middelbaar beroepsonderwijs,* MBO*)*, HAVO students can apply for the University of Applied Sciences (Higher vocational education) and students from VWO or Gymnasium can apply for university places.

ducation 2032' proposal was still under discussion. Multiple debates are being organised to determine its precise content.

b) Digital learning – terms, aims and strategies

In 2004, the Dutch government decided that the number of core objectives should be reduced. The Netherlands Institute for Curriculum Development (*Nationaal Expertise-centrum Leerplanontwikkeling*, SLO) developed the fifty-eight new core objectives (SLO 2006b) mentioned above. Previously, one single subject may have had thirty-two core objectives.[25] Since 2004, the core objectives have been divided among seven domains: Dutch, English, mathematics, humanities and nature, humanities and society, art and culture, and sport. In the curricular description of the domains and the core objectives the use of digital media in schools plays a very limited role, which can perhaps be attributed to the age of the document. The use of digital sources is only mentioned within the domains Dutch, English and humanities and society, referring in the latter to digital historical sources. Computers are referred to as sources of information, and as useful tools and means of communication for all domains except sport (SLO 2006a). In the *International Computer and Information Literacy Study* of 2013, national education and curriculum centres in the Netherlands, such as SLO or Knowledge Net, are quoted as saying that their country had no specific plans or policies regarding support for ICT in education at the national, state or provincial level (ICILS 2013, p. 56).

The new national initiative 'Education 2032' reflects the increasing importance of ICT in education by proposing digital literacy as one of eight new domains alongside citizenship, humanities and society, nature and technology, languages and culture, cross-curricular skills, numeracy and linguistic competence. The initiative states that digital literacy involves pupils learning to work and live in a digital world. The government, in addition to many of the aforementioned national education centres, emphasises that digital literacy is a necessary skill to enable pupils to function in a modern twenty-first century society. The 'Education 2032' proposal specifies four components of digital literacy: 1) basic knowledge of ICT including online security and privacy, 2) information skills through which pupils will learn how to evaluate online information and how or where to find the right information, 3) media literacy (*mediawijsheid*) to make pupils

---

[25] Stichting Leerplanontwikkeling (SLO), Kerndoelen Voortgezet onderwijs Onderbouw, http://ko.slo.nl/vakgebieden/00001/, 26/05/2016.

aware of their own behaviour and that of others on social media, 4) computational thinking to learn the way a computer, search engine or robot works (Onsonderwijs 2032). These might be considered the first steps towards a digital agenda in the Netherlands.

The main support for ICT in education comes from Knowledge Net (*Kennisnet*), a public, nongovernmental organisation for education and ICT. They provide professional development activities but despite being funded by the government, receive no explicit recommendations: 'teachers can access professional development activities relating to these purposes; there is no documented support at the ministry level for them' (ICILS 2013, p. 64, 66). In Knowledge Net's latest annual report, the government stated that 'it is no longer about *whether* we should use ICT in schools, but *how* we should use ICT in schools' (Kennisnet 2015). Knowledge Net assists schools and educators with the implementation of ICT in their school systems. For example, they provide an 'Education and ICT scan' which provides a school with an overview of the current status of ICT in their school and of their possibilities. In this scan, there are four important pillars: vision, competence, content and application, and infrastructure.[26] Knowledge Net bases its services on targeted research carried out by research institutes at universities. They are for example investigating how and when tablets are being used in schools, what didactical ICT competence means (for educators) and what the general opinion of educators is towards the use of ICT in the classroom (Meijer et al. 2014; Van der Neut et al. 2015; Vogt 2015).

Although digital skills or sources currently play only a marginal role in the curricula the Dutch government has conceived a strategy for digital heritage in the Netherlands. According to the Digital Heritage Network (*Netwerk Digitaal Erfgoed*) archives, libraries and museums are aware that their collections can be of great value to a society based on information and that consequently, they need to use ICT or other technological tools to reach out to the public. Pupils are a part of this public and an important target group that can, like any other user group, measure the usefulness of many archives (Netwerk Digitaal Erfgoed 2015, p. 6, 10). It is interesting to see that the Dutch government is paying attention to the social, cultural and educational functions of ICT and has developed a strategy accordingly.

---

[26] Kennisnet: Kennisnet onderwijs & ICT Scan,
https://www.kennisnet.nl/diensten-voor-de-school/kennisnet-onderwijs-ict-scan/, 08/07/2016.

c) General requirements concerning digital learning in the curricula

In the current curriculum, the only way for pupils to really develop their digital skills is to choose computer science (*Informatica*) as a subject. However, this subject is not available at every secondary school and not compulsory where it is offered, which means there are many pupils who do not have computer science as a subject at school (Vakdossier Informatica 2007, p. 13).[27] The subject comprises four main themes: computer science in perspective, basic terms and skills, systems and structures and applications in connection. The first theme teaches pupils how to view computer science and ICT in a broader perspective, for example that ICT is used for more than streaming music or videos for entertainment (Handreiking Informatica 2007, p. 15). The second and third themes focus more on computer skills such as developing information systems and on infrastructures of simple database systems (Handreiking Informatica 2007, p. 18). The final theme concerns project management in system development. Pupils work together in a final project in which they develop an ICT-system (*Handreiking Informatica* 2007, p. 27). In computer science, pupils learn about ICT, but the curriculum focuses on programmes, systems and structures rather than on the communicative use of ICT. When comparing it to the domains in the new initiative, there is a considerable difference between computer science and digital literacy in terms of the desired goals and skills.

d) Digital learning in the history curricula

When looking at the Dutch educational system it is important to differentiate between the curriculum in the first three years of secondary school (*Onderbouw*) and the final years of secondary school (*Tweede fase*), the duration of which depends upon the level of education (VMBO, HAVO, VWO, *Gymnasium*). It is also worth noting that for many students history is only a mandatory subject for three years and that subsequently only 37 per cent of all students sit a final history exam (Vakdossier Geschiedenis 2010, p. 9).

In the first three years of secondary school, history, together with geography and economics, is part of the domain called humanities and society. Central to this domain is personal involvement. Students learn about and analyse recent and past global developments and learn how to evaluate and critique these developments. Digital literacy is not

---

[27] See. Informatica Voortgezet Onderwijs (IVO): Over het vak, http://www.informaicavo.nl/over-het-vak, 08/06/2016.

mentioned in the current history curriculum. SLO refers only to the Internet and digital sources as being important due to their complexity, attraction for students and their increasing communicative influence (SLO 2007a, p. 12).

In the final years of secondary school, ICT maintains its marginal position in the curriculum. Words like digital sources and internet are barely used in the documents. The exam programme consists of five domains: historical consciousness, orientation knowledge, multiple themes, history of the rule of law and parliamentary democracy and orientation on study and profession. In this exam programme for all educational levels, no mention is given to the use of digital sources (Examenprogramma geschiedenishavo/vwo 2015; Vakdossier Geschiedenis 2010, p. 18; Syllabus 2016 geschiedenis, VMBO; Syllabus 2016 geschiedenis, HAVO; Syllabus 2016 geschiedenis, VWO). Therefore, it is up to each school and its individual teachers to decide how digital sources are used and whether digital skills are developed in class.

e) The status of OER in educational policy

In the Netherlands the idea to create Open Educational Resources (OER) led to the foundation of two educational libraries: Leermiddelenplein, initiated in 2003 by the SLO, and Wikiwijs, initiated in 2008 by the education ministry. The content was openly licensed (Creative Commons), but could only be used in closed networks of schools and companies and their employees. A joint initiative by Knowledge Net, the Open University and the SLO combined these two libraries in 2013, creating a platform named Wikiwijsleermiddelenplein. This platform is much more open than the previous version and can be used by any educator from primary to university level. In the new combined version, some materials are still only available for specific school networks, but many are available for all educators. After they register (for free) and create an account, users are able to develop materials and save or share them with their colleagues.

f) The use of digital media in schools

In 2013, the *International Computer and Information Literacy Study* (ICILS) compared ICT knowledge and abilities of students in 24 countries. With a score of 536, Dutch year-nine pupils demonstrated that their knowledge of ICT ranked above most EU states (average score for EU countries was 525, ICILS 2013, p. 96). Dutch pupils had above average access to ICT at home or in school. The school computer ratio in the Nether-

lands is 2.6 pupils per computer which is significantly better than the average of 4.7 (OECD 2015, p. 18, 20). The Netherlands is the OECD country with the highest percentage of fifteen-year-old pupils using computers at school (94 per cent, OECD average: 72 per cent). With regards to frequency, 67.5 per cent of the pupils use the internet in school at least once a week, the average daily time spent online is 26 minutes (OECD average: 41.9 per cent and 25 minutes respectively). The figure of 99.8 per cent of pupils in the Netherlands having private access to computers is also among the highest in the OECD countries, and fifteen-year-old pupils spent 115 minutes using the internet outside school on weekdays (OECD average: 95.8 per cent, 104 minutes, OECD 2015, 18).

Knowledge Net issues a report every year called *Four in Balance (Vier in Balans)* in which the organisation investigates the state of ICT in secondary schools. Comparing a report from 2004 with the positive computer to pupil ratio mentioned above it becomes clear that major investment has been made in the ICT infrastructure in the meantime. The ICT competence of educators was also increasing at that time, but there was a lack of clarity on how best to adapt ICT to education (Kennisnet 2004, p. 15). In 2010, research into the use of electronic learning environments (ELO) showed that many schools do use these kinds of platforms for communication and organisation (SLO 2010a, p. 16). According to a recent study, many Dutch educators use ICT in their classrooms to motivate students, but in a very limited way. Additional information and knowledge would enable teachers to more effectively link ICT-applications to their education objectives (Voogt et al., 2016, p. 8). The latest report by Knowledge Net, published in 2013, states that ICT is used in almost every school in the Netherlands, but that coherence is lacking: 'The difference between goals and reality is still big and the way ICT is used is often not effective enough to reach the desired goals' (Kennisnet 2013, p. 5).[28]

g) Summary

In the Netherlands the national curriculum is shaped by the government. The Dutch government relies mostly on the SLO to create the curricula for Dutch schools, but there are many nongovernmental organisations such as Knowledge Net who influence the Dutch education system in other ways. So far, the Dutch government has not come up

---

[28] Wikiwijsleermiddelenplein, http://www.wikiwijsleermiddelenplein.nl/over-deze-site/ (8/6/2016).

with an overall strategy to include ICT in the curriculum or to increase pupils' digital skills. The current curriculum only states that pupils should use the internet and digital sources, but digital literacy is not explained in any more detail. In 2015 the government launched the 'Education 2032' initiative which led to more national attention for ICT and digital skills in schools. Multiple reports by national education organisations demonstrate that most Dutch schools have an extensive ICT infrastructure. This implies that it is mainly the vision and the educational concepts framing the use of ICT that need to be further developed in the Netherlands. Educators emphasise this, stating that they do use ICT, but they would like to be better informed about the didactic possibilities.

3.6 Poland

a) An overview of the education system

The Polish education system is centrally organised. Teaching in general education schools is based on the curriculum framework that was implemented between 2008 and 2012. The concept of a curriculum framework, which was introduced as part of the education reforms that took place after the political changes of 1989, was designed to replace the central curricula with its detailed guidelines on lesson content, objectives and methods, and provide teachers with more autonomy. Six years at primary school are followed for all by three years at grammar school (*gimnazjum*). Differentiated instruction is then offered to pupils based on their performance and interests. The upper secondary level comprises three to four years (years 10 to 12/13) at secondary schools (*liceum, technikum, liceum profilowane*) where pupils can qualify for tertiary study. This education system and the curriculum framework will be substantially changed, however, in the 2016/2017 academic year.

b) Digital learning – terms, aims and strategies

One of the central terms for digital learning is media education (*edukacja medialna*). This subject educates pupils in suitable media reception and use (Curriculum framework 2012, p. 74). Other important terms used in the curriculum framework are information and communication technologies (*technologie informacyjno-komunikacyjne*) and information society (*społeczeństwo informacyjne*). Other documents discussed below are the Report on ICILS 2013 and the strategy paper 'Poland 2030' (*Polska 2030*) which also discusses digital competences. These competences are defined as the ability to solve problems with the help of information and communication technology (ICILS 2013 Poland, p. 8).

The documents examined, offer two perspectives on the necessity of digital learning and media education. The curriculum framework emphasises that pupils should be prepared for life in an information society (Curriculum framework 2012, p. 74). To this end the papers recommend a range of structures to stimulate cognitive, affective and psychomotor skills in children and young people. Strategic papers released during the Tusk government (2007–2014) however, highlight the economic benefits of digital competences. The development of human capital and economic development (Digital School

2012, p. 1) as well as innovation and creativity in the economy (Poland 2030, p. 48) are named as objectives. The introduction to the strategy paper 'Digital School' states:

> 'The ambitious plan to further pupil and teacher competence in the application of modern information and communication technology within education is considered central to the implementation of Polish and European strategic aims to develop human capital and strengthen the economy.' (Digital School 2012, p. 2)

The government launched a pilot project in conjunction with the political strategy paper 'Digital School', which aimed to promote the digitisation of schools. The programme ran from April 2012 to August 2013 and its objective was to conceive a long-term plan for the development of digital and media competence in primary schools; for both teachers and pupils (Digital School 2012, p. 2). The concept covered four areas: electronic teaching and teaching materials, electronic schools and learning, although the development of electronic teaching and teaching materials was to be continued into 2015 as part of other projects. The state and regional authorities (who also act as school authorities) shared the costs, which were calculated to be 13.6 million Euro (Report Digital School 2014, p. 8), with the European Union. Applications to participate in the programme were received from 3512 schools across Poland, of which 402 qualified to take part (Report Digital School 2014, p. 6). The aim was to improve pupil and teacher competence with regards to the application of information and communication technology and to induce a change in the outdated teaching model. The selected model sought to shift focus more towards the development of competences such as creativity, team work and critical thinking, including research, evaluation and the creative application of available sources of information. The project provided for improved digital infrastructures in schools, further training for teachers on digital instruction and the creation of digital teaching materials (see section e).

The link between the digitisation of education and economic development was also referenced in the higher-level strategy paper 'Poland 2030' (*Polska 2030*). The document was compiled during 2011 and 2012 by the Ministry of Administration and Digitisation and describes the main trends, challenges and scenarios of socio-economic and structural development in Poland (Poland 2030, p. 4). A major part of the document is the chapter on 'Strategic objectives and directions of intervention in the area of economic competition and innovation', which included the role of education in an information-led society. Goals in this area were listed as:

- 'the implementation of curricular reform in general education, which moves away from the knowledge-oriented education model and encourages learning schemes that allow pupils to obtain information independently and to critically evaluate that information, to identify problems and find individual strategies to solve them' (Poland 2030, p. 84).
- 'The expansion of modern information and communication technologies as didactic devices in schools across all subjects, and the development of pupils' abilities to use these judiciously' (Poland 2030, p. 84).

Both strategy papers, 'Digital School 2012' and 'Poland 2030', connect the advancement of digital competences with economic development, whilst also closely associating digital competence with the development of critical faculties and problem-solving abilities.

c) General requirements concerning digital learning in the curricula

The curriculum framework refers to digital competences in passages applying to individual education levels and in sections outlining the education aims and content of individual subjects.

The general sections of the curriculum framework list the most important competences that pupils should learn. In relation to digital education and media socialisation at upper and lower secondary levels the document specifies that pupils should have the ability to use modern information and communication technology as well as the ability to search for information and subsequently to evaluate and critically analyse it (Curriculum framework 2012, p. 73). Similar competences have also been formulated for primary level. The central role of these aims in the document indicates the significance afforded them.

However the curriculum framework only gives very general advice regarding the implementation of these measures. The document offers no details concerning the precise media to use and how best to implement them or the competences that such media could stimulate. The political decision makers appear to leave teachers plenty of scope to make their own decisions. This corresponds with the approach taken to education policy since 1989. The curriculum framework provides the broad lines of policy in terms of teaching content and education goals but provides very little in the way of detailed parameters for the digitisation of lessons. Opinions on this education policy approach vary. One view is that education should be, at least partially, controlled from the bottom up, and that this has proved effective in practice. Others point out that teachers were left

without concrete guidance during difficult phases of the education reform and that this created confusion and chaos. These differing opinions represent a clash of two very different approaches to educational policy: One side promotes autonomy, decentralisation and democratisation whilst the other tends towards centralisation, statism and authoritarianism (Śliwerski 2009, p. 12).

More definite guidance on digital and media education is spread across the chapters addressing the individual subjects. This diffusion, which delivers neither a complex and well-structured concept nor a code of practice, has been heavily criticised. Despite the fact that the recommendation to introduce media studies as a subject in its own right has not yet been implemented, critics say the curriculum framework could have allowed enough leeway for a comprehensive programme of digital and media education to be developed across the education system (Dąbrowska et al. 2012, p. 193f.). The intention to prepare young people in Poland for life in an information society is, however, clearly visible in the guidelines for the individual subjects and is present at all levels of education. At primary level it is a component part of Polish, art, music and computer studies. At lower and upper secondary level it appears to be especially important in Polish, computer science, social studies, cultural studies, music and art (Dąbrowska et al. 2012, p. 196). Particular value, for example, is given to the critical evaluation of information in Polish lessons, as well as independent searches for information, the ability to differentiate between types of media and an examination of language conventions in various forms of communication such as SMS, e-mail or blogs. Young people should also be made aware of the dangers associated with the anonymity of the online world (Curriculum framework 2012, p. 79f.). Social studies lessons draw pupils' attention to the broader problems of mass media (Curriculum framework 2012, p. 151). The use of diverse media and technology is required in several subjects. Computer studies lessons should contribute comprehensively to the acquisition of media and digital competences. The following general goals are named in the curriculum framework for computer studies:

- 'Searching for, retrieving and processing information from diverse sources; using computers to create diagrams, texts, numeric data, animations and presentations'.
- 'Using computers, programs and educational games to expand knowledge and competence in a range of areas as well as to develop individual interests'.
- 'Accurately judging dangers and limitations as well as social aspects in the development and use of information technology' (Curriculum framework 2012, p. 251).

Detailed aims are given for media education, which predominantly address searching for and using information but also include the distribution of information over the internet.

- 'Searching and using (retrieval, selecting, processing) information from diverse sources; working with data online. Pupils:
  present typical kinds of information processed with the help of computers; find information on the internet by using various search tools; gather information from a range of sources, including the internet, evaluate its usefulness for their own projects and tasks taking the content and form into consideration; make information available on relevant internet sites.' (Curriculum framework 2012, p. 252)

d) Digital learning in the history curricula

History is one of the subjects whose curricular content requirements contain few direct guidelines on promoting digital competences. However, that does not necessarily imply that new media are not used in history lessons. Firstly, promoting the skills outlined in the general sections of the curriculum framework is expected as much of history teachers as of any other teachers. Secondly the normative guidelines give very little information on what lessons should contain. The aim of history teaching is divided into three stages for primary teaching and for lower and upper secondary levels. These are historical chronology, historical analysis and meaning, and historical narrative. With regards to historical analysis and meaning pupils at all levels of education are expected to be able to critically and reflectedly handle information from various sources. Each skill should build upon the previous one. At primary school pupils are expected to search for, select and classify information (Curriculum framework 2012, p. 38). At lower secondary level pupils are expected to compare the information found and draw conclusions from it. This teaches pupils how to deconstruct the narrative and identify its various informative, explicative and evaluative layers (Curriculum framework 2012, p. 128). After completing upper secondary level pupils should be able to differentiate between different types of sources, evaluate the usability of the source to explain the historic problem and appreciate the variety of perspectives and interpretations of history and the causes (Curriculum framework 2012, p. 137).

The subject History and Society, which is offered to upper secondary pupils not taking history as a separate examination subject, examines the media and the digital world from a historical perspective. Selected historical topics are examined from a problem-based perspective or in the form of cross-sectional and longitudinal studies. The subject

uses the compulsory topic of 'language, communication and media' to analyse the role of media in history, for example through the role of iconography or printing. The curricular demands with regards to learning about digital media are that pupils are able to master the following:

> 'Pupils analyse the circulation of information in twentieth century society; they describe the significance of new forms of social communication, taking into consideration radio, television, films and the internet; they analyse how methods of distribution have influenced the quality of the content; they analyse examples of manipulation in political propaganda and advertising.' (Curriculum framework 2012, p. 290f)

The aim behind the promotion of all the skills listed above is to encourage a critical historical consciousness, to construct historical thinking and to give pupils an understanding of the methodologies of history studies. This is not only evident in the curricular requirements but also recommended in Polish didactic publications. The literature however draws attention to the fact that the approach to historical thinking sought by economists and politicians, one which attempts to impart open and critical historical thinking from a multi-perspective view, is rarely reflected in teaching practice. This discrepancy between theory and practice is explained by Julkowska who states that there is currently no common understanding within Polish practical didactics of the principles of historical thinking. And that for this reason the transfer from an advanced and dendritic theory to didactic practice proves problematic even in its academic mediation (Julkowska 2013, 374.). The findings of the ICIL study show that Polish teachers tend not to use media and technology in lessons (ICLIS 2013 Poland, p. 6), which suggests that the translation of the theory (curricula) into practice is not without problems, even in the training of digital and media competences.

e) The status of OER in educational policy

Both the curriculum framework and the documents 'Poland 2030' and 'Digital School' stress the relevance of open educational resources (OER) and emphasise the necessity of their development and integration into educational practice. OER would ideally become a constituent part of lessons. One of the objectives achieved by the 'Digital School' project was to develop digital teaching materials and electronic textbooks and to make these freely available online. The portal Scholaris was developed by the project and in 2016 contained approximately 28,000 freely available teaching materials (http://scholaris.pl/onnas). These have been designed specifically to comply with the

curriculum framework and cover 75 per cent of its recommendations (Report Digital School 2014, p. 24). In addition, around sixty electronic textbooks have been created for a range of subjects and for all education levels. These are available on the website of the Centre for Educational Development, which is part of the Ministry for National Education (http://www.epodreczniki.pl/begin/). The electronic textbooks are released under creative commons license (CC-BY 3.0 Polska) and are therefore available, free of charge, to all and can be accessed, changed and redistributed in modified versions from anywhere, at any time (Report Digital School 2014, p. 24-26). Polish television is also part of the project and produces educational programmes, which are freely available from TVP's education portal (http://www.edu.tvp.pl/).

f) The use of digital media in schools

According to the *International Computer and Information Literacy Study* (ICILS) the digital competence of Polish pupils (second year of grammar school) compared favourably with others of their age. Their result of 537 points in 2013 placed them among the best in the study (ICLIS 2013 Poland, p. 41). The high competency levels among pupils had little to do with the effectiveness of their schooling and more to do with the role played by other factors, such as social background, individual educational aspirations or experience with computers outside of school. There were however differences depending on the size of the towns and villages in which schools were located. Those from smaller localities were more likely to have acquired their digital competence at school. The significant role played by external factors in the development of pupil's digital competences could be connected to the lack of information and communication technology infrastructure in schools as well as the reluctance of teachers to implement digital media in the classroom. In Poland in 2012 there were an average of four pupils to each computer and their computer use was under the OECD average: 60.3 per cent of fifteen-year-old pupils used computers in school, 30.3 per cent used the internet at least once a week in school for schoolwork and the average time spent at school on the internet was thirteen minutes a day (OECD average: 72.0 per cent; 41.9 per cent; 25 minutes; OEDC, 2015, p. 18, 20). Some 41 per cent of teachers said that they used information and communication technology regularly, i.e. once a week (ICLIS 2013 Poland, p. 6). However there were differences between the subjects. For example computers were almost always used in computer studies lessons, which is perhaps not surpri-

sing, but rarely used in other subjects. These low levels of use can be explained by the fact that the use of information and communication technology is expressed in the curricula as an option, expectation or recommendation rather than a normative requirement. In contrast Polish pupils use digital media relatively frequently at home: almost all pupils (97.7 per cent) had access to at least one PC at home in 2012 and used the internet for an average of 117 minutes on weekdays (OECD average: 95.8 per cent, 104 minutes, OECD 2015, p. 18).

g) Summary

The digitisation of education in schools is viewed as an important factor in the economic development of Poland and Europe and is therefore specifically targeted through state-funded measures, which endeavour not to curtail teacher autonomy. However, there are frequent complaints that there is no comprehensive strategy behind these measures and that no detailed concept has been designed in order to achieve the overall objective of preparing young people for life in an information society. This slightly chaotic situation is reflected in the curricular requirements, which clearly highlight the relevance of digital and media education despite containing no definition of key areas or recommendations for the expansion of interdisciplinary areas. Instead they provide a mosaic of individual suggestions, which generally refer to the implementation of information and communication technology as well as to the wider problem of dealing with new media.

Interpreting Poland's good result in the ICILS is not easy. One conclusion would be that the centrally organised Polish education system, with its focus on support measures and scope for development, has created a successful approach to the digitisation of education in schools. Yet on the other hand the success of Polish pupils cannot directly be attributed to the role of schools but rather to individual commitment. The evaluation of the political measures introduced in this area, which have without doubt been intensified in the last few years, will have to wait.

3.7 Spain

a) An overview of the education system

The Spanish education system has a federal state structure. The Spanish government issues national education laws and a core curriculum (*currículo básico*). The seventeen autonomous communities (*comunidades autónomas*) and two autonomous cities (Ceuta and Melilla) each create their own curricula on which teaching in schools is based. Secondary education (*Educación Secundaria Obligatoria, ESO*) is compulsory and pupils generally start in year 7 at twelve years old and finish after four years in year 10 when they are sixteen years old. The *bachillerato* (equivalent of A-levels) is optional and is completed in year 12, after two years study between the ages of sixteen and eighteen. Alternatively pupils may undertake an apprenticeship or professional training (generally academically based), which takes one and a half to two years (*formación profesional*).

There have been two important national education reforms in Spain in the last ten years, and these are currently being implemented. In 2006 the government passed the LOE Education Law (*Ley Organica de Educación,* GdE 2006). The preamble clearly aligns Spanish education policy with the educational aims of the European Union. According to EU and UNESCO recommendations, improvements to the quality and efficiency of the education system should take priority; they state that 'Spain's active participation in the European Union requires improvements to education levels [...] which requires the dedication and comprehensive efforts demonstrated by this law' (GdE 2006, p. 3, Art. I.). In 2013 the Conservative government and its then education minister José Ignacio Wert introduced further education reforms, which included the core curriculum, and were defined in detail in the law for educational improvement known as LOMCE (Wert's law or *the Ley Orgánica para la mejora de la calidad educativa*, GdE 2013). This again made explicit reference to the European Union's strategic core objectives as formulated in the strategy paper 'Education and Training 2020' (see GdE 2013, p. 4, Art. V).

As soon as LOMCE was announced in 2012 there were national protests against the education reforms. The most controversial proposals involved reductions in numbers of teaching personnel, increases in class sizes from thirty to up to forty-seven pupils, budget cuts for state schools whilst subsidies for private schools (about a third of all schools in Spain) were to be unaffected, as well as increased importance being placed

on Catholic religious studies (ICEF 2015). Proposals to upgrade Spanish (*el Castellano*) to the principal language were also sharply criticised in the historic autonomous communities (*comunidades autónomas históricas*) or historic nations (*nacionalidades históricas*),[29] particularly in the Basque Country and in Catalonia. According to LOMCE at least fifty per cent of the curriculum should now be taught in Spanish. This proposal was especially opposed in Catalonia, where the statute of autonomy allocates Catalan as the language of instruction (PdC 2006, p. 13, Art. 6).

During 2014 and 2015 the Spanish government in Madrid passed national regulations governing the core curriculum (*currículo básico*; GdE 2014), which described the relationship between competences, content and assessment criteria (GdE 2015a), as well as the implementation of the new educational reform law LOMCE (GdE 2015b). The reforms were initially introduced in the 2015/16 academic year in years 7 and 9 (*cursos 1º y 3º*) of lower secondary schools and year 11 (*curso 1º*) at upper secondary level, which would then lead to the reforms being applied to years 8 and 10 (*cursos 2º y 4º*) in the 2016/17 academic year and to year 12 (*curso 2º*).[30]

Following the programme of education reforms from 2013 to 2015 the autonomous communities produced successive new curricula. By the summer of 2016 the education reform had been implemented in the majority of autonomous communities – with the exception of the Basque Country and Catalonia – at both lower and upper secondary level.[31] It must be noted that schools are permitted some scope within the curricula to focus on their own areas of speciality. Schools develop and expand upon the curricula where necessary in order to take the particular needs of the students into account and to allow methods that support varying levels of learning ability and promote self-learning and team work (GdE 2015b, Art. 19; GdE 2014, Art. 7).

---

[29] According to the Spanish constitution of 1978 Catalonia, the Basque Country and Galicia are *nacionalidades históricas* or *comunidades autónomas históricas*. Andulusia and Navarra were added in 1982. Since 1995 Ceuta and Melilla, which are located on the North-African Mediterranean coast, bordering Morocco, have been recognised as autonomous cities (*ciudades autónomas*). (http://www.ign.es/espmap/mapas_org_eso/OrgESO_Mapa_09.htm , last accessed 10/08/2016)

[30] According to the Spanish constitution of 1978 Catalonia, the Basque Country and Galicia are *nacionalidades históricas* or *comunidades autónomas históricas*. Andulusia and Navarra were added in 1982. Since 1995 Ceuta and Melilla, which are located on the North-African Mediterranean coast, bordering Morocco, have been recognised as autonomous cities (*ciudades autónomas*). (http://www.ign.es/espmap/mapas_org_eso/OrgESO_Mapa_09.htm , last accessed 10/08/2016)

[31] http://www.mecd.gob.es/educacion-mecd/mc/lomce/mapa-ccaa.html

b) Digital learning – terms, aims and strategies

Although recent academic studies frequently discuss media education (*educación mediática*) and media competence (*competencia mediática*), the terms used in national and regional education policy and recent corresponding laws, with reference to EU accords (such as the strategy paper 'Education and Training 2020'), are digital education (*educación digital*) and especially digital competence (*competencia digital*) or media competence (*competencia mediática*) and occasionally computing skills (*competencia informática)*. In addition to the definition of digital competence in the new education laws and curriculum framework these requirements are often paraphrased in the specific subject curricula to include knowledge and skills in 'information and communication technology' (ICT, *tecnologías de información y comunicación*, TIC). The terms digital learning (*aprendizaje digital*) and teaching media and digital skills (*la alfabetización mediática/digital*) also occur in discourse on individual subjects and in educational practice.[32]

Among the education goals outlined by the Spanish government in 2006 (LOE, GdE 2006), guaranteeing universal access to information and communication technology was a priority as it formed part of the EU and UNESCO recommendations on improvements to quality and efficiency (ibid., p. 3, Ch. I). In October 2012 the working group 'ICT in education' developed a twelve-month action plan for the Ministry of Education, Culture and Sport (*Ministerio de Educación, Cultura y Deporte – MECD*). This specified that any action taken by the Ministry of Education would be in collaboration with the autonomous communities. An agreement was made to write a 'Plan for digital culture in schools' (*Plan de Cultura Digital en la Escuela*). External experts worked alongside the Ministry of Education and the autonomous communities to draft the plan, which also aimed to develop and implement specific projects for teachers, education administrators, pupils, families and the wider public (INTEF 2013).

A short time later, in February 2013, 'The Digital Agenda for Spain' (*Agenda Digital para España)*, was passed by the Ministry of Energy, Tourism and the Digital Agenda together with the Ministry of Finance and Public Function. The new agenda outlines the Spanish government's strategic focus on economic and social digital development for the years 2013 to 2015. Its aims were to fulfil those of the 'Digital Agenda for Europe',

---

[32] Corresponding terminology in Catalan: educació mediàtica, competència digital, educació digital, competència informàtica, tecnologies d'informació i comunicació, aprenentatge digital, alfabetització mediàtica/digital

set initially for 2015 and then extended to 2020, as well as to meet specific, predominantly economic, goals for Spanish development. The finance ministry makes explicit mention of EU strategies on its website.[33] Under point 2.7 of the strategic objectives education is listed as an action area, in addition to the public health and welfare sectors and the legal system, the aim being to develop public sector projects that will strengthen the ICT branch. Plans include the use of virtual learning environments and the spatial and temporal expansion of the classroom concept, the collective use of digital platforms across the entire education community in order to access high-quality teaching materials, and encouraging teachers and pupils to use ICT.

Among the five central proposals made by the 'Plan for digital culture in schools' was the creation of the collective digital education space Procomún. This was realised in 2014 with the launch of a web platform and the provision of an OER database. Parallel to this plans were formulated to upgrade internet connections in schools. Administrative reforms in the region of La Rioja enabled the process to begin there in October 2015 and the following month four other regions began upgrading and updating their internet connections and computer equipment.[34] Both these processes have been carried out by the Spanish government with financial assistance from the European Regional Development Fund (ERDF). Other objectives of the 'Plan for digital culture in schools' are to improve teachers' media skills, to raise standards and to promote online products through payment schemes (INTEF 2013).

LOMCE, the new education law, states that 'globalisation and the effects of new technologies are bringing about a shift in ways of learning' (LOMCE, GdE 2013, p. 3). ICT is named as one of three areas in which education reforms should have the greatest effect (ibid., p. 7), the other two being the promotion of multilingualism and the modernisation of professional training. ICT is viewed as fundamental to bringing about methodological changes that will improve the quality of teaching. The document makes particular reference to the potential to personalise learning through the use of digital teaching materials, enabling the different needs and abilities of students to be addressed (ibid., p. 8).

---

[33] http://www.agendadigital.gob.es/objetivos-agenda-digital/Paginas/Objetivos.aspx
[34] http://www.mecd.gob.es/prensa-mecd/actualidad/2015/11/20151127-digital.html

c) General requirements concerning digital learning in the curricula

The core curriculum, approved as part of the LOMCE education reforms alongside the curriculum framework for the main subjects (GdE 2014), was modified to contain only seven core competences instead of the previous eight (GdE 2014, Art. 2, 2), in line with the European framework 'Key Competences for Lifelong Learning' issued in 2006. The competences target adequate execution of activities and efficient solutions to complex problems (ibid., Art. 2, 1c). The general aim is to improve the development of basic abilities in science and technology (in addition to linguistic communication and competence in mathematics) (GdE 2014, Art. 2, 2).

The aim of the core digital competences (*competencia digital*) is the 'creative, critical and safe use of ICT, in order to accomplish goals related to the workplace, employability, learning, recreation, integration and participation in society'.[35] The detailed list of aims and skills takes a rather pragmatic approach; highlighting how to use technology correctly rather than creatively. The skills presented as knowledge include 'knowing the rights and risks of the digital world', 'specific modes (text, visual, etc.), important applications and information sources'. General competences listed as actions are: the 'use of technology for communication and problem-solving', 'critically and systematically using and processing information', 'gathering and searching for information', and 'creating content'. The third area refers to personal skills and to taking personal responsibility based on an 'ethical and critical approach to technology' as well as the 'development of curiosity and motivation to improve digital media use'.

In addition to reading, writing and oral communication the curriculum framework for secondary schools contains universal elements that apply across all subjects, beyond their specific treatment in individual subjects, such as entrepreneurship, political education, ICT and audio-visual communication (GdE 2014, p. 5f, Art. 6, 1). ICT is also viewed as having high potential for misuse and therefore specific curricular elements are being introduced in both upper and lower secondary schools in an attempt to prevent its improper use (ibid., Art. 6, 2).

One of the two Spanish regions selected to be studied for this report was Catalonia[36] which is an autonomous community with a strong independence movement and which opposed (as did the Basque Country) the central education reforms introduced by

---

[35] http://www.mecd.gob.es/educacion-mecd/mc/lomce/el-curriculo/curriculo-primaria-eso-bachillerato/competencias-clave/digital.html

[36] Spanish: *Cataluña*, Catalan: *Catalunya*

LOMCE. The region has historic nation status (*nacionalidad historica*), as do the majority of the 17 autonomous communities. The other region selected was Madrid, which has the highest income and, as the seat of the Spanish government, the most centralised outlook and where universal implementation of the national education reforms was to be expected.

In its newest decree regarding the organisation of teaching in schools the autonomous community of Catalonia refers explicitly to the education objectives outlined by the European Union in the strategy paper 'Education and Training 2020', whilst the community of Madrid makes no mention of the EU strategy in its latest decree on the organisation of teaching. The Madrid document only makes reference to the EU core competences and reference framework with regards to the subjects mathematics, second language, ethics and ICT. Madrid does however refer to the new national education law, LOMCE, and the national law on the regulation of the core curriculum (GdE 2014), whereas these are not mentioned in the Catalonian document. These findings support the presupposition that Catalonia's ambition to be independent of the Spanish government would be reflected within the framework of educational reform whilst also demonstrating their acceptance of European education policies.

Catalonia (secondary schools)

In August 2015 Catalonia's regional government (*Generalitat de Catalunya*) agreed a new, competence-oriented, curriculum framework for secondary schools. Its principle reference points are the aims and objectives laid out in the EU Commission's strategy paper 'Education and Training 2020' (ET 2020) and the Catalonian Education Law 12/2009 from 2009 (GdC 2015a, p.1), which itself is based on the EU objectives. The education law defines the curricular aims for secondary school education: the development of pupils' personal and social skills in conjunction with personal autonomy, reflexive knowledge, cultural skills and competences, focus on attaining core competences (*competencias básicas*), and their application in all areas of knowledge (ibid., p. 17). These also include developing competence in the use of technology and audio-visual communication (GdC 2015a, p. 2, Art. 2.1).

Schools are obliged to create their own curricula, which are based on the curriculum framework and the individual competence-oriented and subject-specific curricula (GdC 2015b for digital subjects; GdC 2015c for social studies). With regards to regulations on

languages Catalonia's government (*Generalitat de Catalunya*) refers to the Catalonian Education Law 12/2009, which specifies Catalan as the commonly spoken language in the education system and the classroom language.

Teaching is organised into nine knowledge sectors (GdC 2015a, p. 17ff, Appendix 1) of which sector three is Natural Sciences and Technology (*ámbito científico-technológico*). This knowledge sector includes technology as a subject and specifies that it should be taught to year 7 to 9 pupils for two lessons a week. In year 10 there is the option to combine technology with ICT/computer studies (*TIC/Informática*). The technological dimension in knowledge sector three subsumes competences which are required for 'involvement in a world full of technological resources and technological applications both in industry and everyday life'. This includes three competences related to the (correct) usage of technical devices and an evaluation of their risks and impact on the environmental and on health as well as the ability to find solutions using technology (ibid., p. 143ff). The subject ICT/computer studies should broaden interdisciplinary digital competences (ibid., p. 188) so that pupils can develop as 'citizens of the knowledge society'. Teaching content includes: 1. operative systems, 2. organisation, design and production of digital information, 3. communications networks and 4. application programming.

The teaching content for both sector eight – digital studies (*ámbito digital*) and sector nine – personal and social development should be designed to be interdisciplinary (ibid., p. 5). The aim is to develop digital competence as an interdisciplinary competence (*competencia transversal*) (ibid., p. 301ff).

Definitions of the digital core competences (*competències bàsiques de l'àmbit digital*) for secondary schools (ESO) are also released in Catalan (GdC 2015b) by the Catalonian education ministry (*departament d'ensayament*). The curriculum framework specifies the competences within four dimensions (ibid., p. 10) as well as defining the content to be taught (ibid., p. 82). In addition, competences are also assigned to individual areas although competences three, five and nine are assigned to the subject group geography and history (GdC 2015b, p. 82):

'I. Instruments and applications
Competence 1. Select, configure and program digital devices appropriate to the task in hand.
Competence 2. Use applications for word processing, multimedia presentations and numerical data processing to produce digital documents.

Competence 3. Produce digital documents using basic applications for processing images, audio and moving pictures.

II. Information processing and organisation of working and learning environments

Competence 4. Locate, compare and select suitable digital information to complete the required work, taking a range of sources and media into consideration.

Competence 5. Use digital applications to engineer new knowledge through processing strategies for personal data.

Competence 6. Organise a personal working and learning environment for working and learning with digital tools and use it to develop oneself in the knowledge society

III. Interpersonal communication and cooperation

Competence 7. Engage in interpersonal communication and read virtual publications in order to share information.

Competence 8. Take part in group activities in collaborative virtual environments.

IV. Citizenship, regulations, courtesy and digital identity

Competence 9. Use current social digital resources to engage in civic activities and personally develop.

Competence 10. Promote safe habits of ICT use and good ergonomics in order to avoid potential risks.

Competence 11. Approach ICT use critically and responsibly, taking into account ethical, legal, safety and sustainability aspects and digital identity.'

(GdC 2015b, p.10)

It is worth noting the recommendation that competence four should be developed within research projects and that schools may decide autonomously to which sector competence six should be assigned, also that competence eight should be taught within tutor groups and competence eleven should be applied to all learning content (ibid., p. 83) – meaning that these competences are relevant for the design of curricula in the subject group geography and history.

Catalonia (upper secondary level)

The current curriculum framework for upper secondary level is based on decree 142/2008 issued by the Catalonian education ministry, which implements the national education reform LOE from 2006 (GdE 2006) and the national core curriculum from 2007 (GdE 2007). *Bachillerato* studies are organised into three main modules (*modalidades*) which comprise common subjects (*materias comunes*), major subjects (*materias de modalidad*) and optional subjects (*materias optativas*) (GdC 2008, p.1). Art, natural sciences and technology are offered as main modules in addition to humanities and social sciences.

The following are named as general objectives in relation to digital education at advanced level and refer to the education reform LOE (GdE 2006, p. 15, Art. 33):

- 'Use information and communication technology reliably and responsibly' (GdC 2008, p. 3, Art. 3g)
- 'Acquire basic scientific and technological knowledge [...].' (ibid., p. 3, Art. 3i)
- 'Be aware of, and able to critically evaluate, the contribution of science and technology to changing living conditions [...].' (ibid., p. 3, Art. 3j)

The Catalonian education ministry has defined six core competences, one of which is digital competence. Their aim is to further develop the core competences taught at previous levels of education and to prepare pupils for an 'active life' in higher education where they should be able to 'work efficiently' (GdC 2008, p. 18, app. 1).

Teaching digital literacy (*la alfabetización digital*) is defined in the curriculum framework for upper secondary level as a 'top level requirement'. Its absence would lead to the 'impoverishment of personal opportunities in the academic world, in the private sphere and above all, professionally'. 'Digital ignorance' in a knowledge-led society can lead to ostracism and social inequality. Digital literacy denotes 'a set of abilities and skills based on fundamental theoretical and practical knowledge of the information society, its culture and products as well as the ability to deploy good practices from that environment'. Digital literacy should be functional and implementable and should be achieved through the availability of technical resources and the development of abilities in diverse subjects in order to enable pupils to process and manage information; digital tools should be used and updated. In addition, the potential for digital communication within lessons and in the outside world should be exploited and opportunities for interaction and communication should be ceased upon (ibid., .18).

Madrid (secondary schools)

In 2015 the regional government in Madrid issued new curricula for secondary schools (CdM 2015a). With regard to digital education, the general objectives for secondary schools list the acquisition of basic technological knowledge, specifically in the area of ICT and in relation to the critical application of information sources and the acquisition of new knowledge (CdM 2015a, p. 12, Art. 12e). As designated in LOMCE for secondary level, Madrid intends to integrate audio-visual communication and ICT across all taught subjects as interdisciplinary elements, alongside reading comprehension, oral and written communication, entrepreneurship and civic education (CdM 2015a, p. 15, Art. 9, 1). Other interdisciplinary elements 'are associated with risk, particularly arising from the use of information and communication technology' (ibid. p. 16, Art. 9, 2).

Whilst many subjects do integrate these elements, the new curriculum framework for history does not.

The subject technology (*tecnología*) is covered in each of the four years, as in Catalonia. In the first three school years the focus is placed on 1. programming, 2. technology, 3. robotics and 4. the internet. The focus in the fourth year is on ICT.

Madrid (upper secondary level)

In 2015 Madrid also issued a new curriculum (*currículo*) for the upper secondary level (CdM 2015b). The general objectives for the *bachillerato* include the following that are related to digital education – as in Catalonia and based on the education law LOE (GdE 2006, p. 15, Art. 33):

- ‘Use information and communications technology reliably and responsibly’ (CdM 2015b, p. 32, Art. 3g)
- ‘Acquire basic scientific and technological knowledge [...].’ (ibid., p. 32, Art. 3i)
- ‘Be aware of, and able to critically evaluate, the contribution of science and technology to changing living conditions [...].’ (ibid., p. 3, Art. 3j)

The curriculum for the upper secondary level consists of: objectives, competences, teaching content, evaluation criteria, teaching and learning standards and teaching methodology. It corresponds with the national core curriculum and is likewise based on the education law LOMCE (GdE 2014, appendix 1; CdM 2015b, Art. 4, 1–2). Digital competence (*competencia digital*) is one of the seven defined skills objectives. The curriculum also specifies interdisciplinary curricular elements – as for the secondary level and likewise corresponding with the LOMCE– that are associated with risk arising from the use of information and communication technology (ibid., p. 37, Art. 10, 1).

The Madrid region bases its definitions of main subjects (CdM 2015b, Art. 9) on the national core curriculum (GdE 2014). This defines twenty six main subjects for upper secondary level (GdE 2014, p. 202–453, App. 1). In the module (*modalidad*) for art, audio visual culture (*Cultura audiovisual*) can be offered as a main subject in both years. In year 11 the subject addresses topics such as ‘image and meaning’, ‘the still image’, ‘the moving picture’ and ‘audio-visual narratives’ and in year 12 ‘creation of audio-visual and new media’, ‘multimedia productions in a range of media’, ‘audio-visual communication’, ‘advertising’ and ‘media analysis of images and news’ (ibid., p. 228ff). This subject should keep pupils up to date with the digital age and give them the skills to create their own images and audio-visual products (ibid., p. 226–227).

The teaching content of the upper secondary level curriculum for the Madrid region demonstrates that digital competence requirements in optional speciality subjects have been implemented in over half the subjects (8 of 15) (CdM 2015b, appendix I). Each school can decide which of the optional speciality subjects they choose to offer. Certain subject areas are more obviously based in new media and technology. The subject information and communication technology (ICT) in year 11 includes 'an introduction to the information and knowledge society' and pupils are also taught about the 'composition of computers, software and networks' and 'programming'. This programming knowledge is consolidated in year 12 and expanded by the topics 'publication of knowledge' (in new media) and 'security'. ICT use is encouraged in the teaching of other subjects such as information culture, sport, music and foreign languages.

4. Digital learning in the history curricula

Catalonia (secondary schools)

A new competence-oriented curriculum framework was issued at the same time as the decree on secondary education in Catalonia (GdC 2015a, ibid. p. 1), its aim being to improve the quality of learning. The significance of the competences was explained through reference to international recommendations and agreements such as the EU strategy paper 'Education and Training 2020' as well as the reference framework 'Key Competences for Lifelong Learning' released in 2006.

The teaching content is organised into nine knowledge areas (ibid., p. 17f.). The subject group for social sciences: geography and history (*Ciencias Sociales: Geografía et Historia*) is assigned to area four: social affairs (*ámbito social*). Three lessons a week are planned for the social sciences in each of the four school years (ibid., p. 19). The subject group geography and history aims to further skills that facilitate the analysis of situations and events using specific knowledge and methods. Competence in this area means 'that boys and girls have acquired the necessary tools to understand the world and to become people that are capable of being critically and actively involved in a diverse and changing society' (ibid., p. 194). For this subject group thirty core content elements (*contenidos claves* – CC) have been defined, of which ten relate to content in the digital interdisciplinary area (*ámbito digital*) and of those three relate to history as a subject:

'CCD9. Text processing tools. Multimedia presentations and numerical data processing.
CCD 14. Selection, cataloguing, storage and exchange of information.
CCD 16. Information processing.'
(CCD, ibid., p. 196ff.)

The core competences in the subject groups are divided into four dimensions. The historical dimension, 'refers to knowledge that helps pupils develop their own historical consciousness as well as a collective identity that enables them to understand their historicity as a result of the relationship between the past, present and future' (ibid., S. 194–195). Seven competences are specified for the historical dimension. These are related, amongst other things, to 'maintaining plural memories of protagonists from the past'. The conclusion being that a multi-dimensional understanding of history exists, within which there are many different legitimate historical narratives.

The description of the competence objectives and core content points out the diversity of historical data and the wide possibilities for producing documentation related to existing applications and 'normal practice in digital environments' (competence objectives 1, ibid., p. 196). Competence objective two is related to a critical analysis of digital sources that includes 'the ability to select, understand, interpret, compare and evaluate' (ibid., p. 197). Competence three (ibid., p. 177–178) states: 'The search for and selection of information requires the use of applications and combined sources, predominantly from the internet and in a range of formats such as texts, audio recordings, images, videos, maps etc. This selection process must be accompanied by a critical process that converts the information into language appropriate for pupils and at a level they can understand' (ibid., p. 177f.). The core content of the competence objectives five to seven also lists the 'search, analysis and comparison of statistical information, graphics and maps with the help of digital and analogue tools' (ibid., p. 200–202).

It is clear that pupils and teachers in secondary schools in Catalonia will be continually encouraged to expand their digital competences in (history) lessons. The curriculum framework for the subject group social sciences: geography and history highlights the methodological introduction of digital media, the internet in particular, to search for historic sources. The schools and teachers are given considerable leeway in how they substantiate, teach and evaluate the contents and competences. The curriculum frameworks for geography and history and for digital competence also allow schools scope to use the opportunities of the digital world for pupil development and for modern history

teaching, which is no longer based upon a national narrative. For example digital competences involving group work and increased sharing of knowledge across digital platforms may be incorporated to a greater degree than that specified in the curriculum framework for geography and history.

Catalonia (upper secondary level)

The current curriculum framework for the upper secondary level (GdC 2008) is based on decree 142/2008, which was issued by the Catalonian education ministry. History is a main subject in all three main modules (the arts, natural sciences and technology, humanities and social sciences) as well as in the subject history of philosophy offered in the second year of the *bachillerato* (year 12). Three lessons a week are assigned to each (ibid., p. 362). The curriculum covers Spanish and Catalonian contemporary history from the first third of the twentieth century onwards. History is viewed as a multi-disciplinary subject as it 'integrates many of the epistemological dimensions of other social sciences'. It tends towards being a 'study of the complexity of human society'. In addition to recognising this complexity pupils should be made aware of a 'respect for diversity, rejection of intolerance and defence of equality and freedom' (ibid., p. 63, app. 2).

The subject aims to encourage general and subject-specific competences. The subject-specific competences relate firstly to the temporal dimensions of human social existence, secondly to a critical interaction with historic sources and finally to social and civic competences (GdC 2008, p. 64). History teaching should contribute towards the general objectives of the *bachillerato* and should promote digital competence. This refers to forms of communication and of obtaining information which are 'often involved in the use of digital technology and audio-visual media in order to access a wide spectrum of information' (ibid., p. 64–65). Furthermore inter-disciplinary references are made to the subjects ICT and audio-visual culture in the languages sector (*ámbito de lenguas*) (ibid., p. 66, 69).

The common content across all topics includes 'searching, collecting and selecting information from a range of sources, and processing and interpreting such through examining the validity of suppositions or objectives', however, there is no explicit mention of the opportunities offered by the internet or by digital educational tools. The pos-

sibilities of ICT are nonetheless regarded as relevant when exploring the various ways in which results can be communicated (ibid., p. 68).

Madrid (secondary schools)

History and geography together form one of the main subject groups of the social sciences and are taught across all four school years of ESO for three lessons a week each. History lessons chronologically cover societies throughout time over the two cycles of secondary school (CdM 2015a, p. 58). Neither the learning objectives nor evaluation criteria for history contain concrete aspects related to the reflection or use of digital media in the broader sense. In contrast digital learning is systematically anchored in the majority of the other main subjects such as Spanish language and literature or maths, particularly in the form of content discussion and the methodological application of ICT.

Various learning objectives within history lessons that are aimed at using a range of sources lend themselves to digital education or to the encouragement of digital competences. Aspects of promoting digital competence may by implicitly specified (CdM 2015a, p. 63–65, 68–70) in learning objectives and evaluation criteria in an expanded school curriculum. The identification and analysis of a range of sources could be used to explicitly refer to new technologies. The only reference to the digital revolution in history is related to teaching about globalisation during the twentieth century and the beginning of the twenty-first century (ibid., p. 71).

Madrid (upper secondary level)

The Madrid regional government issued a new curriculum in 2015, which was based on the educational reform LOMCE (CdM 2015b, p. 31). The definition of the main subjects in the Madrid curriculum (CdM 2015b, Art. 9) is based on the guidelines for the *bachillerato* in the national core curriculum (GdE 2014, p. 187ff).

In year 11 the subject contemporary history can be offered as part of the arts or humanities and social sciences (GdE 2014, p. 189; overview see p. 122). The knowledge taught in contemporary history lessons should reflect the historic continuity of people in societies, their deeds and achievements, through which the world today can be better understood (ibid., p. 342). Teaching content, evaluation criteria and standards of learning should 'further the personal, intellectual and social development of pupils at this

level of education'. All recommended measures should 'improve pupils' ability to learn for themselves, in groups and individually, and to develop their critical thinking.'

The documents refer to the examination and consideration of diverse perspectives and sources through the use of ICT (ibid., p. 342) or with the help of media criticism (*la crítica de los medios de comunicación*). Aspects of digital learning can therefore be found, predominantly in terms of methodology, in six of the ten topic blocks for year 11 teaching: in terms of capturing sources and information from the internet and presenting it (ibid., p. 342ff; blocks 3, 4, 6, 8, 9, 10). Block ten – The world today from a historical perspective – deliberately and critically addresses how digital sources are handled, by requiring pupils to identify key features 'connected to the reliability and objectivity of the information available on the internet and other digital media'. Ultimately pupils should be able to draw 'conclusions about the picture and video material related to the contemporary world'.

In year 12 the main subject of Spanish history must be offered in each of the modules natural sciences, humanities and social sciences, and the arts (CdM 2015b, p. 190). Spanish history lessons, following the Spanish core curriculum according to LOMCE (GdE 2014, S. 321), aim to teach specific values and behaviour and to educate pupils in a free and democratic constitutional order, described thus: 'through studying the history of Spain pupils should acquire specific values and behaviour such as a critical attitude to sources, an awareness of Spain's diversity and the appreciation of cultural and historical heritage. This subject should equally contribute to a particular sensitivity towards contemporary society and its specific problems, ultimately encouraging a responsible and solidary attitude to the defence of freedom, human rights and democratic values' (ibid., p. 321).

The teaching content, evaluation criteria and measurable learning standards extend across twelve themed blocks as well as an additional block zero which addresses the criteria determining how history is written (GdE 2014, p. 321–327). The 'historical methods' defined in block zero aim to draw attention to the diversity of sources and perspectives (ibid., p. 321), whereby the search for and critical evaluation of primary and secondary sources also refers to the internet. The application of new ICT is only implicitly referenced, such as when pupils should produce maps or timelines. Digital learning is still limited to using the internet as a source of information, when 'interesting information' is sought from primary or secondary sources (ibid., p. 322ff, blocks 1, 2, 3, 5,

10, 11). Apart from a limited methodological orientation towards digital technologies, there is no substantive examination of the digital shift within the subject of Spanish history.

e) The status of OER in educational policy

In 2014 there were forty-five open education initiatives recorded in Spain by the EU-financed (Lifelong Learning Programme) British project POERUP (Policies for OER Uptake), of which seven were MOOC (Massive Open Online Courses) and thirty-eight OER initiatives (POERUP 2014). In comparison with the rest of Europe Spain is the most active country in this regard after Great Britain. The term OER (*REA - Recursos Educativos Abiertos*) is however not universally used, as free licences do not always include permission to alter materials and distribute them. The POERUP project research team have criticised the lack of clear political definition regarding OER (ibid., p. 19): 'there is a lack of clear policy direction on OER at national government level – but note again that many educational matters are devolved to the autonomous communities (including, but not only, Catalonia). This is a country where OER initiatives have flourished and expanded rapidly without specific national policies'. Even the new education law LOMCE does not address questions related to OER. The Spanish Ministry for Education worked with the autonomous communities in 2014 to create the virtual education space Procomún as an extension to Agrega,[37] the web platform for digital education resources. Procomún is a social network for teachers and provides a database for all kinds of OER teaching materials for nursery, primary and secondary education as well as for further education and professional training.[38] The education community can use the platform to find and create structured teaching materials, classified according to standard formats and available for download by teachers, pupils, students and the general public. The web platform is co-financed by the EU budget for regional development. In March 2016 the database contained around 35,000 resources, of which 2000 were designed for history teaching (1060 for secondary schools and 370 for upper secondary level).

---

[37] Similar to the German education server Elixier, *Agrega* captures digital resources from the *Comunidades Autonomas* (comparable with German Federal States) The materials are based closely around the curriculum and can be accessed directly or by clicking on links to appropriate servers. http://agrega.educacion.es/visualizadorcontenidos2/AcercaDeAgrega/AcercaDeAgrega.do

[38] https://procomun.educalab.es

f) The use of digital media in schools

According to a study carried out on ICT in education (*Survey of Schools: ICT in Education*; EC 2013) by the European commission in 2011 and 2012 Spain was ranked much higher than other southern European countries with regards to computer equipment in schools. Just behind Sweden where there are two pupils to each computer, in Spanish secondary schools there are three year 8 pupils to each computer: the same as Norway and Denmark. The EU average is seven pupils sharing each computer (ibid., p. 34). In year 11 Spain matches the EU average with four pupils to one computer.

Data from the OECD study *Students, Computers and Learning. Making the Connection* (OECD 2015) confirm that the computer infrastructure in Spanish schools is above average. According to the PISA data from 2012, each computer was shared by 2.2 pupils in Spain, which puts the country in ninth place among the thirty-four OECD countries (OECD average: 4.7 pupils, OECD 2015, p. 20). The actual use of computers in schools, however, was only slightly above the OECD average. 73.2 per cent of fifteen-year-old pupils used computers in school and 51.1 per cent used the internet at least once a week at school, the average time spent on the internet at school was 34 minutes each day. (OECD average: 72.0 per cent; 41.9 percent, 25 minutes; OEDC, 2015, p. 18, 20). Private digital media use was also slightly above the OECD average: almost all pupils (97.9 per cent) had access to at least one PC at home in 2012 and used the internet for an average of 107 minutes on weekdays (OECD average: 95.8 per cent, 104 minutes, OECD 2015, p. 18).

A qualitative study (Medina & Ballano 2015) illustrated the status of media education and the challenges of its implementation in secondary schools in Catalonia. The data was collected through questionnaires and focus groups involving academics (media education experts), school head teachers, teachers and pupils during 2010 and 2011, prior to the education reform LOMCE. The results of the study show that media education in secondary schools barely existed in practice at that time. Whilst academics and teachers saw the introduction of media, information and communication technology (ICT) as an interdisciplinary task, an introduction on that scale proved rather more difficult in practice. Media education was therefore generally taught as a separate subject. The study showed that as media education was still heavily dependent on the voluntary commitment of the teachers, it rarely took place and that it was also not included in the

curriculum. In addition, secondary school curricula were viewed as too rigid to allow the inclusion of relevant multimedia content in the individual subjects (ibid., p. 146).

g) Summary

As a result of EU and UNESCO recommendations and strategies being taken into consideration during the last two Spanish education reforms 2006 (LOE) and 2013 (LOMCE), international standards related to digitisation, digital education and digital competence are slowly being implemented in the education sector. LOMCE was due to be conclusively implemented in the 2016/17 academic year although Catalonia rejected the reforms in summer 2016 and had subsequently not yet produced a new curriculum for upper secondary level in line with the new competence-oriented curriculum framework. In contrast, Madrid had not only agreed a new curriculum framework for secondary schools, its specifications for all subjects at upper secondary level leant heavily on the Spanish government's core curriculum, based on LOMCE.

The national core curriculum and the curriculum frameworks in the two regions studied were dominated by a pragmatic discourse on the acquisition of digital competence, which aimed to improve knowledge and use of audio-visual media and ICT, particularly for information retrieval, and included safety aspects. The heavy orientation towards competence was striking in the Catalonian curriculum framework, as was the differentiation of digital competence, whilst the curriculum framework for Madrid was more content-oriented and therefore more closely in line with the Spanish core curriculum.

How elements defined in the curriculum framework as interdisciplinary, specifically audio-visual communication, and information and communication technologies (both aiming to develop multimedia and digital competence) should be implemented in history lessons has not yet been fully specified, partly because detailed points of the school curriculum also need to be implemented.

The continuously developing requirement for interdisciplinary teaching of digital competences is on the right track due to the implementation of the curriculum framework and the high quality computer infrastructure. However, the expansion of digital competences will remain nothing more than a lofty goal if teachers' media competence is not improved and if schools do not systematically implement learning objectives in the area of digital education or come up with creative didactic ideas. Spain is one of the

leading European countries in the provision of OER and therefore has the right conditions to embed digital teaching and learning materials in the classroom and to make a great contribution to the advancement of digital competence among teachers and pupils.

4 Comparison and conclusion

The case studies above indicate that in most European countries the relevance for education of the digital change has been recognised. What is most conspicuous is that policy makers across Europe seem to share a common vision of digital learning, yet at the same time there appears to be widespread perplexity concerning the key question of how to tap into the potential of digital media in formal education. However, there was great variation in the individual countries' readiness to design and organise programmes for the digitisation of schools. Further findings from this report highlight the European Union's role in bringing forward digital learning as well as the commonalities between history education approaches in European curricula and the implementation of open educational resources. The findings can be summarised as follows:

The EU as a driver of innovation

The EU emphasises the educational potential of digital technologies and promotes their implementation in European education systems. One of the first steps was the definition of digital competence as a transversal competence associated with critical thinking, creativity and problem solving in the reference framework 'Key Competences of Lifelong Learning' (2006). This document proved influential as it is cited in national policy strategies and curricula especially by countries such as Greece, Spain and Poland that applied for EU funding for digital school projects. Another important milestone in driving digital learning is the initiative 'Opening up Education' (2013) which can be viewed as the first digital agenda for education in Europe. Focussing on the open character of digital technologies it aims to promote quality, efficiency and equity in European education systems. The document starts with the diagnosis that digital technologies have not yet improved education systems and then continues by propagating an integrated approach comprising the development of IT infrastructures, learning resources, digital competences and organisational structures. The objective is the advancement of educational institutions and the initiative aims to support all parties and organisations involved. It suggests that flexibility, innovation and adaptation to the digital age will be required in order to cope with global competition. It also recommends nationally organised education systems to take a cross-border perspective.

The EU's economic perspective on education

The European Union approaches education from an economic perspective which dominates the initiatives of the European Commission in particular. In 'Rethinking Education' (2012) employability is undoubtedly valued higher as an aim of education than active citizenship, personal development and well-being. 'Opening up Education' (2013) is oriented towards the efficiency of education and underlines the alleged cost-reducing potential of digital technologies. These papers tend to see pupils predominantly as human capital but this perspective is not shared by the national governments. Education policy papers signed by the Council of the European Union take into account the dual social and economic role of education for the individual as well as for society as a whole (Key Competences 2006, ET 2020, 2009/2015). On the national level, the necessity of digital learning is explained in accord with humanistic educational discourses: it is seen as a support to the pupil's personal development as a well as a prerequisite for participating in society. Nevertheless, overall national strategy papers such as 'Poland 2030' or the German 'Digital Agenda' point to digital competences as important economic factors.

In countries affected by the European debt crisis such as Greece and Spain, digitisation initiatives coincided with severe cost-reduction measures in the education sector. Against this background, 'opening up education' might be perceived by those in the education sector as downgrading formal learning institutions in favour of informal learning scenarios, which are presented in the paper as important additional learning opportunities. This is a critical point since teachers are addressed as key figures and should be motivated to realise digital learning in schools. Furthermore, the cost estimation in 'Opening up Education' seems contradictory: it claims that digital technologies have the potential to reduce costs for educational institutions and their students while demanding substantial investments into infrastructure, human resources, materials and ever changing technologies.

The gap between the vision and practices of digital learning

Digital education is generally associated with innovative didactic approaches that advance creativity, problem solving abilities and critical thinking as well as individual and collaborative learning. However, these notions are quite loosely defined and represent a vision of digital learning rather than a clear concept. Furthermore, there is a gap bet-

ween this vision of digital learning and actual digital practices in schools, which are described by academics and policy makers as conventional. Even in Denmark, which has put a lot of effort into the development of digital education, the study revealed a lack of new teaching approaches in practice. The EU initiative 'Opening up Education' points to this problem as well and encourages research and development of digital learning concepts. While it is coherent with general education aims to connect digital competence with the development of wider intellectual and social abilities the current gap between the vision and practices should be taken seriously. It is possible that digital technologies can support the respective capabilities and forms of learning but this may not work for everybody and is unlikely to take place simultaneously. It may also produce other, unintended effects (cf. Selwyn 2014). In other words, there is a risk of the vision overshadowing actual practices and of little improvement being made to digital education.

Differences in implementation, scope and effectiveness of strategic processes

Some countries have developed strategies for digital learning; however, these differ widely in respect to implementation, scope and effectiveness. Others have not yet tackled a strategic approach. In some countries, digital competences have been defined as transversal competences in the curricula (Albania, Denmark, Germany/Thuringia, Poland, Spain), some offer ICT as a subject (Albania, Denmark, Greece, Spain) or offer media studies courses (Germany/Thuringia).

- Denmark has developed the most progressive strategy of the cases covered: in 2009, it defined digital education as part of the Common Goals (*Fælles Mål*) that are to be integrated into inter-disciplinary and subject-specific teaching. The topic 'IT and media' has been worked systematically into the curriculum and several IT and media subjects are offered. Furthermore, the 'Digital Denmark' strategy included the development of digital learning materials and user-friendly education retail channels, the improvement of the digital infrastructure at primary and lower secondary level (one to one IT-equipment in the *folkeskole*), the design of digital learning goals and the implementation of research and development programmes (demonstration schools, teacher training, dialog forum).
- Greece, Poland and Spain have launched 'Digital School' pilot programs, co-funded by the EU, that are aimed at the improvement of digital infrastructures in schools, the

creation of teaching materials and the development of teachers' (and in Poland, pupils') digital competence. Overall national strategies (National Reform Programme in Greece, Poland 2030, Digital Agenda for Spain) emphasise the significance of digital learning methods in education and pledge to continue the digitisation of education. On the curricular level, ICT is offered as a subject in Greece and Spain. The new Spanish curricular framework defines digital competence as a key competence while the use of ICT in Poland is a general requirement but is not more narrowly specified.

- In Germany, media education is implemented as a transversal element in most state curricula, but only a few states such as Thuringia have introduced mandatory requirements and media studies courses. A strategy for digital learning was introduced by the Standing Conference at the end of 2016.[39]

- In the Netherlands, the initiative 'Education 2032' suggests introducing digital literacy as one of eight domains which were publicly discussed in 2016. In contrast to the high level of digital equipment in Dutch schools, digital learning there has only been addressed to a limited degree at a strategic, conceptual or curricular level.

- In Albania, digital competences gained prominence in the curriculum framework of 2014. ICT became a subject in its own right and was also incorporated into all other disciplines. There are, however, discrepancies between the curricular and the practical levels. In the National Strategy, the improvement of digital infrastructure, the development of digital learning resources and teacher training are all recommended, but not planned in any detail.

Consistent understanding of digital competences

Just as there is coherency among European policy makers in their visions of digital learning, definitions of transversal digital competences, where defined in the curricula, are also thematically very similar and frequently include:

- information research
- analysis, interpretation and evaluation of information and media
- production of media
- collaboration and knowledge-sharing
- presentation and communication

---

[39] The Standing Conference (KMK) launched the strategy 'Education in the Digital World" in December 2016, which could therefore not be analysed in this study.

Maren Tribukait et al.
Digital learning in European education policies and history curricula
103

- law, security and ethics
- media society

The first two themes are mentioned as transversal competences in curricular documents from all countries examined (Greece and The Netherlands include them in planned guidelines). Though most countries include the remaining themes in their guidelines there are differing priorities, Denmark for example, emphasises production, collaboration and knowledge-sharing while in Germany and Spain aspects relating to law, security and ethics play a more significant role.

Critical thinking and multiperspectivity in history curricula

Most history curricula we examined stress the importance of a critical approach to history and aim to foster a reflexive historical consciousness that encourages pupils' to personally engage in their societies. Some documents require pupils to understand the constructedness of history and the way history is used; most point to multiple interpretations of history or the plurality of memory that pupils should engage with critically, but in an open-minded and respectful manner. Multiperspectivity is often recommended as a teaching approach. Some case studies, however, found the traditional national narrative given equal prominence in the curricula (such as in Albania and Greece) or indicated that history teaching in practice might at times diverge from the learning goals in favour of conveying a more traditional view of national history (Poland).

Requirements or suggestions concerning digital learning in history curricula

Some history curricula underline the idea that history lessons should reflect the society in which pupils live and should therefore incorporate digital media. There are, however, on the whole rarely any specific requirements concerning digital learning. The stated skills of researching, analysing and interpreting sources are generally simply expanded to digital materials. This indicates that subject-specific learning and digital learning have not yet been integrated on a conceptual level. It should be noted, however, that some countries' national curricula allow teachers considerable autonomy (e.g. in Poland) or require schools to elaborate digital or media education plans in their individual curricula (Germany, Spain). History teaching in practice and individual school curricula could not be taken into account in this study, so it is highly possible that relevant approaches can be found at the micro level. The national curricula contain a few refe-

rences to the way in which digital media could change the traditional way of teaching history.

- Themes: Teaching about the role of media in history, such as the Gutenberg revolution or mass media in twentieth century democracy and dictatorship presents an opportunity to reflect current media developments (e.g. Germany, Poland).

- Material: Digital media allow access to a wide range of original sources and to multiple interpretations, the internet can be seen as a boon to history teaching that offers an unlimited amount of information in the most diverse forms (e. g. Albania, Denmark).

- Tools: Digital tools can enhance searches for information and its interpretation and presentation (e.g. Denmark, Germany).

- Methods: The analysis of examples of contemporary history or memory culture in (digital) media such as feature films, YouTube clips or computer games can encourage pupils to contribute to history or memory culture themselves (e.g. Denmark, Germany).

- Presentations: New creative presentation formats (blogs, podcasts etc.) allow history to be presented in a more personal way (e.g. Denmark).

OER platforms and initiatives, but no comprehensive strategies

While the EU initiative 'Opening up Education' places great emphasis on open educational resources, none of the European countries examined has developed a comprehensive OER strategy so far, although most have government-run OER platforms. Poland, Greece and Spain have developed their platforms as part of 'Digital School' projects co-funded by the EU. Poland is conspicuous in having a repository that offers open, modifiable textbooks corresponding to the curricula, while the Greek textbook repository allows free downloads and distribution but no changes to textbooks. In addition, both countries run a second portal offering a wide range of open learning materials that can be changed and redistributed. In Spain, an OER platform is combined with a social network for teachers that encourages creation, exchange and modification of learning materials. The examples of these three countries indicate that the EU can successfully stimulate open education through allocating funds to national projects. Whether open educational resources will encourage innovative ways of digital learning remains to be seen.

Finally, the question arises of what can be learnt from this policy and curricula analysis; firstly, for the development of a digital learning environment in the IHEA project and secondly, for future policy and curricula decisions.

IHEA tools encourage creativity, critical thinking and cross-border perspectives

One of the main findings, that there are rarely specific digital learning requirements in European history curricula, allows much flexibility for the design of digital learning environments. The challenge is to interpret the widely shared, but vague vision of digital learning for history education. Transversal digital competences in many countries' curricula describe the whole spectrum of desired abilities and should be considered, but cannot be addressed fully by one learning environment for one subject.

The learning environment created by IHEA on the Historiana website aims at stimulating creativity and critical thinking as well as individual learning – thus focussing on three major features of digital learning according to the common vision. Creativity, critical thinking and individual learning were given priority because they also corresponded to the results of the needs analysis conducted within the project. According to this analysis the most important challenges in the eyes of teachers were 1) engaging the whole class, 2) developing source analysis skills, 3) teaching chronological thinking, 4) making a connection between the past and the present. To support individual learning, the IHEA project team designed tools which allow teachers to create learning activities tailored to the needs of their pupils. The tools 'Prioritising', 'Sorting' and 'Analysing' should encourage pupils to use their creativity and think critically when they analyse textual and visual sources, enable them to make a connection between these and other sources and events, arrange them in a chronological order or link them to present events. These tools offer an innovative learning environment that opens up a visual approach to history as a traditionally text-based subject. It supports creative play with sources which normally are subjected exclusively to a methodologically controlled analysis. 'Play' in this context does not mean to trivialise the sources or to mix fact with fiction, rather it views the source as an open puzzle and motivates pupils to find connections between sources, interpret them accordingly and use them for their arguments. By adopting the concept of play, which has been valued as a core media literary skill (Jenkins 2009, p. 35), the IHEA project goes beyond the digital learning requirements in European guidelines.

Maren Tribukait et al.
106
Digital learning in European education policies and history curricula

The approach aspires to enable pupils to use sources responsibly in history lessons and beyond. The IHEA learning environment offers structured access to and focussed use of digital materials which can be drawn from the Historiana source collections or any other source. It consequently addresses a specific problem experienced in history education which depends on a wide range of sources but has a tendency to overload and confuse pupils with material. By offering a 'bounded and structured environment' (Thomas & Brown 2011, p. 19), the IHEA tools allows pupils scope to explore digital sources taken from the internet, question their audience and purpose, relate them to other materials and learn how to use them as evidence. It serves as a protected space where pupils can critically engage with sources under the guidance of their teacher and (prospectively) in collaboration with other pupils. We consider this contextual and critical source analysis to be important preparation for the candid use of facts and for responsible participation in public debates and therefore, to be a crucial contribution by history education to the development of active citizenship.

Furthermore, the Historiana source collections offer historical materials from different national contexts which are difficult to find in traditional school materials. They allow pupils to engage with cross-border perspectives and learn about the plurality of memory within Europe and beyond. This corresponds with the advice of many history curricula to include multiperspectivity and with references in European guidelines to transnational perspectives in the context of digital learning despite the fact that neither has laid great stress on these issues so far.

In summary, digital learning with the IHEA tools and source collections stimulates creativity and critical thinking by providing opportunities to play with, analyse and interpret multiple sources in order to learn to argue soundly and gain cross-border perspectives on history. Thus, the IHEA learning environment aims to contribute to a better mutual understanding of historical experiences and memories in Europe.

Challenges of the curricular adaptation of digital learning

The study indicates that there is a growing consensus that digital education can only be realised with an integrated approach. This should at least include the development of the organisational structures, the IT infrastructures, learning materials and the digital competences of teachers. In most countries examined for this report, there is still a lot to be done on all levels, only Denmark has made concerted efforts on a nationwide level. At

the curricular level, there is a tendency to define digital competence as a transversal competence that should be taught in all subjects. While the interdisciplinary approach seems a sensible way to raise the status of digital education, it might not be enough to convince teachers to adapt their own teaching to the digital age. At first glance, it seems obvious that the integration of digital learning requirements into subject-specific curricula could have an impact. There are, however, several challenges to be faced:

- Some countries do not have the tradition of detailed curricula, or have, like Poland, abolished them for political reasons. In other countries such as Greece, rigid curricula are considered to be an obstacle to education reform. Therefore it seems questionable whether detailed requirements decreed by curricula will have the desired effect of innovating teaching.

- History educators have developed many ideas concerning how to make better use of digital media for history teaching. But there is still some reluctance to rethink the goals of history education and adapt to the digital age (Demantowsky 2015). As the IHEA project has shown, new approaches such as playing with sources in order to interpret history could change the current concept of history education (Kelly 2013). Any potential shifts in direction should ideally be discussed with history educators before digital learning requirements are implemented in history curricula.

- Teachers are key in realising digital education. Curricula reform cannot impose innovative approaches without supporting and training the teachers.

In summary, the implementation of digital learning would decisively be supported by curricula reform. It seems equally important, though, to create conditions that render digital learning possible and to encourage teachers to take up the challenge.

Maren Tribukait et al.
Digital learning in European education policies and history curricula
108

5 Literature

5.1 General

Alavi, Bettina (ed.) (2010): Historisches Lernen im virtuellen Medium [Historical Learning through Virtual Media]. Heidelberg: Mattes.

Apple, Michael W. (1979): Ideology and Curriculum. London: Routledge.

Bernsen, D., König, A., & Spahn, T. (2012): Medien und historisches Lernen. Eine Verhältnisbestimmung und ein Plädoyer für digitale Geschichtsdidaktik [Media and Historical Learning: Defining new Relationships and a Plea for Digital History Didactics]. In: Zeitschrift für digitale Geschichtswissenschaft 1 [Journal of Digital History Studies] (2012), p. 1–27,

http://universaar.uni-saarland.de/journals/index.php/zdg/article/view/294/358,

19/12/2016.

Blaschitz, E., Brandhofer, G., Nosko, C., et al. (eds.) (2012): Zukunft des Lernens. Wie digitale Medien Schule, Aus- und Weiterbildung verändern [Future of Learning: How Digital Media are Changing Education]. Glückstadt: VWH.

Butcher, N., Kanwar, A., & Uvalic-Trumbic, Stamenka (2015): A Basic Guide to Open Educational Resources. Paris: UNESCO; Vancouver: Commonwealth of Learning, http://unesdoc.unesco.org/images/0021/002158/215804e.pdf, 19/12/2016.

Davidson, C. N., & Goldberg, D. T. (2010): The Future of Thinking. Learning Institutions in a Digital Age. Cambridge: MIT, https://mitpress.mit.edu/books/future-thinking, 19/12/2016.

Demantowsky, M., & Pallaske, C. (eds.) (2015): Geschichte lernen im digitalen Wandel [Learning about History During the Digital Revolution]. Berlin: de Gruyter.

Demantowsky, M. (2015): Die Geschichtsdidaktik und die digitale Welt. Eine Perspektive auf spezifische Chancen und Probleme [History Didactics in the Digital World]. In: M. Demantowsky & C. Pallaske (eds.): Geschichte lernen im digitalen Wandel [Learning History During the Digital Revolution]. Berlin: de Gruyter, p. 149–161.

Fraillon, J., Ainley, J., Schulz, W., et al. (2014): ICILS 2013. International Computer and Informational Literacy Study. Preparing for Life in a Digital Age. The IEA International Computer and Information Literacy Study. International Report. The International Association for the Evaluation of Educational Achievement (IEA): SpringerOpen,

http://link.springer.com/book/10.1007%2F978-3-319-14222-7, 19/12/2016. (ICILS 2013)

Gitelman, L. (2009): Always Already New. Media, History, and the Data of Culture. Cambridge: MIT.

Gruber, H., Prenzel, M., & Schiefele, H. (2006): Spielräume für Veränderung durch Erziehung [Scope for Changes through Education]. In: A. Krapp & B. Weidenmann (eds.): Pädagogische Psychologie. Ein Lehrbuch [A Textbook of Pedagogical Psychology]. Weinheim: Beltz, p. 99–135.

Hattie, J. A. C. (2009): Visible Learning. A Synthesis of Over 800 Meta-Analyses Relating to Achievement. London: Routledge.

Haydn, T. (ed.) (2013): Using New Technologies to Enhance Teaching and Learning in History. Abingdon: Routledge.

Hesse, F. W. (2004): E-Learning als Chance für eine neue Lernkultur [E-Learning: A Chance for a New Learning Culture]. In: C. Aeberli (ed.): Lehrmittel neu diskutiert. Ergebnisse des 1. Schweizer Lehrmittelsymposium vom 29. und 30. Januar 2004 [New Discussion of Learning Materials: Results from the 1st Swiss Educational Materials Symposium]. Zürich: Lehrmittelverlag des Kantons Zürich, p. 41–51.

Hodel, J. (2013): Verkürzen und Verknüpfen. Geschichte als Netz narrativer Fragmente – Wie Jugendliche digitale Netzmedien für die Erstellung von Referaten im Geschichtsunterricht verwenden [Contract and Connect: History as a Mesh of Narative Fragments – How Young People use Digital Media to Write History Reports]. Bern: hep.

Ito, M., Gutiérrez, K., Livingstone, S., et al. (2013): Connected Learning. An Agenda for Research and Design. A Research Synthesis Report of the Connected Learning Research Network. Irvine: Digital Media and Learning Research Hub, http://clrn.dmlhub.net/publications/connected-learning-an-agenda-for-research-and-design, 19/12/2016.

Jenkins, H., Purushotma, R., Weigel, M., et al. (2009): Confronting the Challenges of Participatory Culture. Media Education for the 21st Century. Cambridge: MIT, https://mitpress.mit.edu/books/confronting-challenges-participatory-culture, 19/12/2016.

Kelly, A. V. (2009): The Curriculum. Theory and Practice. London: Sage.

Maren Tribukait et al.
Digital learning in European education policies and history curricula
110

Kelly, T. M. (2013): Teaching History in the Digital Age. Michigan, Univ of Michigan Press.

OECD (2015): Students, Computers and Learning. Making the Connection. PISA, OECD Publishing,

http://dx.doi.org/10.1787/9789264239555-en, 28/07/2016. (OECD 2015)

Ornstein, A. C., & Hunkins, F. P. (2013). Curriculum: Foundations, Principles, and Issues. Boston: Pearson.

Pallaske, C. (2015): Die Vermessung der (digitalen) Welt. Geschichtslernen mit digitalen Medien [Surveying the (Digital) World. Learning History through Digital Media]. In: M. Demantowsky & C. Pallaske (eds.): Geschichte lernen im digitalen Wandel [Learning History During the Digital Revolution]. Berlin: de Gruyter.

Pinar, W., Reynolds, W. M., Slattery, P., et al. (2004): Understanding Curriculum. An Introduction to the Study of Historical and Contemporary Curriculum Discourses. New York: Lang.

Popkewitz, T. S. (2001): The Production of Reason and Power. Curriculum History and Intellectual Traditions. In: T. S. Popkewitz, B. M. Franklin & M. A. Pereyra (eds.): Cultural History and Education. Critical Essays on Knowledge and Schooling. New York: RoutledgeFalmer, p. 151–183.

Selwyn, N. (2014): Distrusting Educational Technology. Critical Questions for Changing Times. New York: Routledge.

Thomas, Douglas, & Brown, John Seely (2011): A New Culture of Learning. Cultivating the Imagination for a World of Constant Change. Charleston: Soulellis Studio.

UNESCO (2012): 2012 Paris OER Declaration,

http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/Events/English _Paris_OER_Declaration.pdf, 19/12/2016. (2012 Paris OER Declaration)

5.2 Europe

Council of the European Union (2009): Council Conclusions of 12 May 2009 on a Strategic Framework for European Cooperation in Education and Training ('ET 2020'). In: Official Journal of the European Union C119, 52 (2009), 2–10. (ET 2020)

Council of the European Union (2015): Joint Report of the Council and the Commission on the Implementation of the Strategic Framework for European Cooperation in Ed-

ucation and Training (ET 2020). New Priorities for European Cooperation in Education and Training,

http://data.consilium.europa.eu/doc/document/ST-14440-2015-REV-1/en/pdf
26/07/2016. (New Priorities 2015)

European Commission (2010), Europe 2020. A Strategy for Smart, Sustainable and Inclusive Growth,

http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:P
DF, 29/07/2016. (Europe 2020)

European Commission (2012): Rethinking Education: Investing in Skills for Better Socio-economic Outcomes,

http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012DC0669&fr
om=EN, 26/07/2016. (Rethinking Education 2012)

European Commission (2013): Opening up Education. Innovative Teaching and Learning for All through New Technologies and Open Educational Resources, http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013DC0654&from=EN,
22/06/2017. (Opening up Education 2013)

European Commission (2015): Education and Training Monitor 2015,

http://ec.europa.eu/education/library/publications/monitor15_en.pdf,   26/07/2016.
(ET Monitor 2015)

European Parliament and the Council of the European Union (2006): Key Competences for Lifelong Learning.

http://eur-lex.europa.eu/legal-
content/EN/TXT/PDF/?uri=CELEX:32006H0962&from=EN.   (Key   Competences
2006)

5.3 Countries

Albania

Fletorja Zyrtare e Republikës së Shqipërisë (2012): Ligji 69/2012 Për Sistemin Arsimor Parauniversitar në Republikën e Shqipërisë [Law 69/2012 on the Pre-university School System in the Republic of Albania],

http://www.arsimi.gov.al/files/userfiles/arkiva/dok-0029.pdf, 29/01/2016;

https://phzh.ch/globalassets/ipe.phzh.ch/projekte/laenderubergreifende-projekte/nezi-netzwerk-albanischer-sprachraum/4_nezi-konferenz-2/lapu-nr.69-2012-english.pdf. (Law 69/2012)

Ministria e Arsimit dhe Sportit (2014): Dokumenti i Strategjisë së Zhvillimit të Arsimit Parauniversitar 2014-2020, Draft [Document of the National Strategy for the Development of Pre-university Education 2014-2020, draft], http://www.arsimi.gov.al/files/userfiles/apu/2016/STRATEGJIA-2014-2020.pdf, 25/01/2016. (National Strategy 2014a)

Ministria e Arsimit dhe Sportit (2014): Dokumenti i Strategjisë së Zhvillimit të Arsimit Parauniversitar 2014-2020, Draft [Document of the National Strategy for the Development of Pre-university Education 2014-2020, draft], http://www.arsimi.gov.al/files/userfiles/apu/karta/Strategji_APU_dokumenti_perfund imtar_24_03_2015.pdf, 18/07/2016. (National Strategy 2014b)

Ministria e Arsimit dhe Sportit (2014): Korniza Kurrikulare e Arsimit Parauniversitar të Republikës së Shqipërisë [Curriculum Framework of the Pre-university Education System of the Republic of Albania], http://izha.edu.al/wp-content/uploads/2015/10/Korniza-Kurrikulare.pdf, 01/02/2016. (Curriculum Framework 2014)

Ministria e Arsimit dhe Sportit (2015): Plani Mësimor, Klasat 1-9 [Syllabus, Year 1-9], http://www.arsimi.gov.al/files/userfiles/kurrikula/Plani-Mesimor-1-9-2014-Kurrikula-Re.pdf, 06/022016. (Syllabus 2015)

Ministria e Arsimit dhe Sportit, Instituti i Zhvillimit të Arsimit (2014): Programi i Lëndës së Historisë në Arsimin Bazë, Shkalla e Katërt, Klasa e 9-të [History Curriculum for Compulsory Education, level four, year nine], http://www.arsimi.gov.al/files/userfiles/kurrikula/histori/Programi_Histori_Klasa_9.p df, 09/02/2016. (History Curriculum level four 2014)

Ministria e Arsimit dhe Sportit, Instituti i Zhvillimit të Arsimit (2015): Programi i Lëndës së TIK-ut, Shkalla e Pestë [ICT Curriculum, fifth level] http://www.arsimi.gov.al/files/userfiles/kurrikula/2016/ZIP_KURRIKULA_BERTH AME.zip, 04/02/2016. (ICT Curriculum 2015)

Ministria e Arsimit dhe Sportit, Instituti i Zhvillimit të Arsimit (2015): Programi i Lëndës së Historisë, Shkalla e Pestë dhe e Gjashtë [History Curriculum, levels five and six],

http://www.arsimi.gov.al/files/userfiles/kurrikula/HISTORI_E_SHQIPTAREVE,_KL
ASA_12.pdf, 08/02/2016. (History Curriculum, levels five and six 2015)

UNESCO (2011): World Data on Education VII Ed. 2010/2011, Albania,
http://www.ibe.unesco.org/fileadmin/user_upload/Publications/WDE/2010/pdf-
versions/Albania.pdf, 28/01/2016. (UNESCO 2011)

Denmark

Aaen, J., Mathiasen, H., & Christian, D. (2013): Anvendelse af digitale un-
dervisningsmaterialer i AVU, HF og gymnasiet. En forskningsrapport om Projekt e-
læring [The Use of Digital Teaching Materials in AVU, HF and High School. A Re-
search Report on the E-learning Project], Aarhus: Center for Undervisningsudvikling
og Digitale Medier, Aarhus Universitet.
http://tdm.au.dk/fileadmin/tdm/Publikationer/Anvendelse_af_digitale_undervisnings
materialer_AU-rapport_2013.pdf, 14/03/2016. (Aaen & Christian 2013)

Digitaliseringsstyrelsen (22/01/2016): Ny digitaliseringsstrategi 2016-2020 [New Digi-
tal Strategy 2016-2020],
www.digst.dk/Digitaliseringsstrategi/Ny-digitaliseringsstrategien-2016-2020,
18/04/2016. (DSt 2016-2020)

Lauterbach, T. (2015): It-anvendelse i befolkningen 2015 [People's use of IT in 2015].
Danmarks Statistik,
http://www.dst.dk/Site/Dst/Udgivelser/GetPubFile.aspx?id=20737&sid=itbef2015,
18/04/2016. (Lauterbach 2015)

Digitaliseringsstyrelsen (15/02/2016): Status for alle initiativer [Status for All Initiati-
ves],
tp://www.digst.dk/Digitaliseringsstrategi/Status-for-digitaliseringsstrategien/Status-
for-alle-initiativer, 18/04/2016. (DSt 2011-2015 Status)

Digitaliseringsstyrelsen (11/04/2016): Initiativer for digitaliseringsstrategien 2011-2015
[Digitisation Strategy Initiatives 2011-2015],
http://www.digst.dk/Digitaliseringsstrategi/Digitaliseringsstrategiens-initiativer,
18/04/2016. (DSt 2011-2015)

EURYDICE (2009): National Summary Sheets on Education Systems in Europe and
Ongoing Reforms 2009 Edition. Denmark (September 2009). Brussels, Belgium.
(EURYDICE 2009)

Danmarks Evalueringsinstitut (2009): It i skolen. Undersøgelse af erfaringer og per-spektiver [IT in Schools. A Study of Experiences and Perspectives],
https://www.eva.dk/projekter/2008/it-i-folkeskolen/projektprodukter/it-i-skolen-erfaringer-og-perspektiver/view, 3/1/2017. (EVA 2009)

Danmarks Evalueringsinstitut (2013): TALIS 2013. OECD's lærer- og lederun-dersøgelse [OECD's Teacher and Leader Survey],
http://www.oecd.org/edu/school/talis-country-notes-and-country-profiles.htm,
15/03/2016. (EVA 2013)

Danmarks Evalueringsinstitut (2015): It på ungdomsuddannelserne. En kortlægning af it som pædagogiskredskab på gymnasier og ungdomsuddannelser [IT in Secondary Education. A Survey of IT as a Teaching Tool in High Schools and Secondary schools], Danmarks Evalueringsinstitut,
https://www.eva.dk/projekter/2015/anvendelsen-af-it-i-ungdomsuddannelsessystemet/hent-rapporten/it-pa-ungdomsuddannelserne, 15/03/2016. (EVA 2015)

Harlung, A., Bang, J., & Dalsgaard, C. (2010): Open Educational Resources in Den-mark. Status Report 2010, Center for IT and Learning, Aarhus University. (Harlung et al. 2010)

Købmand Petersen, B. et al. (2010): Den pædagogiske effekt af ITiF læremidlerne. En analyse og vurdering af ti digitale læremidler og deres anvendelse i Københavns Kommune [The Educational Impact of ITIF Teaching Aids. An Analysis and As-sessment of Ten Digital Learning Materials and their Use in Copenhagen Municipali-ty],
http://laeremiddel.dk/projekter/afsluttede-projekter/evaluering-af-itif-laeremidler/rapport/, 18/04/2016. (Købmand Petersen et al. 2010)

Kvorning Hansen, K., et al. (2010): Fælles mål 2009. It- og mediekompetencer i folke-skolen [Common goals 2009. IT and Media Skills in Elementary School]. In: Un-dervisningsminsteriets håndbogsserie (5), p. 1–13,
http://uvm.dk/Uddannelser/Folkeskolen/Fag-timetal-og-overgange/Faelles-Maal/Historisk-oversigt/Historiske-faelles-maal-2009, 11/04/2016. (Common Goals 2009)

Mathiasen, H., Aaen, J., Dalsgaard, C., Degn, H.-P., & Brinch Thomsen, M. (2014): Undervisningsorganisering, -former og medier – på langs og tværs af fag og gymna-siale uddannelser. Hovedrapport 4. runde, 2012-2014. [Education Organisation,

Maren Tribukait et al.
Digital learning in European education policies and history curricula
115

Forms, and Media – within and across Disciplines and Secondary Schools. Main Report 4th round, 2012-2014]. (Forsknings- og udviklingsprojekt udarbejdet for Undervisningsministeriet, der har sat fokus på udvikling af pædagogiske it-anvendelser i de gymnasiale uddannelser). Aarhus: Center for Undervisningsudvikling og Digitale Medier, Aarhus Universitet, http://www.emu.dk/modul/teknologi-og-medier-p%C3%A5-det-gymnasiale-omr%C3%A5de, 03/04/2016. (Mathiasen et al. 2014)

Ministeriet for børn, undervisning og liegestilling (2010): Historie A - Stx Vejledning/Råd og vink [History A - Stx Guide/Counsels]. Kontoret for Gymnasiale Uddannelser, https://www.uvm.dk/Uddannelser/Gymnasiale-uddannelser/Fag-og-laereplaner/Fag-paa-stx/Historie-stx, 18/02/2016. (Historie A – Stx Vejledning 2010)

Ministeriet for børn, undervisning og liegestilling (2016): Kort om de gymnasiale uddannelser [Short on Secondary Education], http://uvm.dk/Uddannelser/Gymnasiale-uddannelser/Fakta-om-gymnasiale-uddannelser/Kort-om-de-gymnasiale-uddannelser, 15/02/2016. (MBUL 2016)

Ministry of Education (2010): Welcome to the Danish Folkeskole: Municipal Primary and Lower Secondary School. Copenhagen: The Ministry of Education. (MBUL 2010)

Undervisningsministeriet (2008): De gymnasiale uddannelser i Danmark [Upper Secondary Education in Denmark], http://uvm.dk/Uddannelser/Gymnasiale-uddannelser/Fakta-om-gymnasiale-uddannelser/Kort-om-de-gymnasiale-uddannelser/Studentereksamen-stx, 15/02/2016. (MBUL 2008)

Undervisningsministeriet (2010): Bekendtgørelse om valgfag fælles for de gymnasiale uddannelser Valgfagsbekendtgørelsen (= BEK nr 693 af 23/06/2010) [Announcement on Elective Subjects for Secondary Schools]:

· Bilag 30: Multimedier,
https://www.retsinformation.dk/Forms/R0710.aspx?id=132670#B30, 29/03/2016. (Multimedier 2010)

· Bilag 32: Programmering.,
https://www.retsinformation.dk/Forms/R0710.aspx?id=132670#B32, 29/03/2016. (Programmering 2010)

· Bilag 16: Informationsteknologi,

Maren Tribukait et al.
116
Digital learning in European education policies and history curricula

https://www.retsinformation.dk/Forms/R0710.aspx?id=132670#B16,   29/03/2016.
(Informationsteknologi 2010)

· Bilag 6: Datalogi,

https://www.retsinformation.dk/Forms/R0710.aspx?id=132670#B6, 29/03/2016. (Da-
talogi 2010)

· Bilag 38: Mediefag, https://www.retsinformation.dk/Forms/R0710.aspx?id=152507#,

29/03/2016. (Mediefag 2010)

Undervisningsministeriet (2013): Bekendtgørelse om uddannelsen til studentereksamen
(= BEK nr 776 af 26/06/2013). Bilag 27: Historie A – stx, juni 2013 (Læreplan) [His-
tory A - stx, June 2013 (Curriculum)],
https://www.retsinformation.dk/Forms/R0710.aspx?id=152507#Bil27,   18/02/2016.
(Historie A – Stx Læreplan 2013)

Tænketank for Digital Dannelse i Gymnasieskolen (2012): Strategi: Digital dannelse i
gymnasieskolen [Strategy: Digital Education in High School]
http://static.sdu.dk/mediafiles/E/E/B/%7BEEBF120D-2BF3-436E-A560-
00F4C32B9915%7DDigital%20dannelse-strategi.pdf, 14/03/2016 (Tænketank 2012)

Pawlowski, J. M., et al. (2013): The Nordic Alliance for Open Education - State of the
Art, Challanges and Opportunities.In: A. Szűcs & M. F. Paulsen (eds.): The Joy of
Learning - Enhancing Learning Experience, Improving Learning Quality. European
Distance and e-Learning Network Annual Conference (EDEN 2013); Oslo, Norway,
12 - 15 June 2013. Red Hook, NY: Curran, p. 506–513. (Pawlowski et al. 2013)

Germany

Bos, W., Eickelmann, B., Gerick, J. ,et al. (eds.) (2014): ICILS 2013. Computer- und
informationsbezogene Kompetenzen von Schülerinnen und Schülern in der 8. Jahr-
gangsstufe im internationalen Vergleich [International Comparison of Computer and
Information-related Competences of Year 8 Pupils], Münster,
https://www.waxmann.com/fileadmin/media/zusatztexte/ICILS_2013_Berichtsband.
pdf, 22/12/2015. (ICILS 2013 Germany)

Bundesministerium für Bildung und Forschung (2010): Kompetenzen in einer digital
geprägten Kultur. Medienbildung für die Persönlichkeitsentwicklung, für die gesell-
schaftliche Teilhabe und für die Entwicklung von Ausbildungs- und Erwerbsfähigkeit

Maren Tribukait et al.
117
Digital learning in European education policies and history curricula

[Competences in a Digital Culture. Media Education for Personal Development, for Social Participation and for the Development of Educational and Employment Opportunities], Berlin,
http://www.dlr.de/pt/Portaldata/45/Resources/a_dokumente/bildungsforschung/Medi enbildung_Broschuere_2010.pdf, 10/12/2015.

Bundesministerium für Wirtschaft und Energie, Bundesministerium des Innern, Bundesministerium für Verkehr und digitale Infrastruktur (2014): Digitale Agenda 2014-2017 [Digital Agenda 2014-2017],
http://www.digitale-agenda.de/Content/DE/_Anlagen/2014/08/2014-08-20-digitale-agenda.pdf?__blob=publicationFile&v=6, 10/12/2015. (BMWi 2014)

Die Bundesregierung (2015): Fortschritte bei der Umsetzung der Digitalen Agenda. Schwerpunkte der auf der CeBIT 2015 vertretenen Ressorts der Bundesregierung im 1. Halbjahr 2015, [Advances in the Implementation of the Digital Agenda. Key Points from the Government Departments Represented at CeBIT 2015 for the First Half of 2015],
http://www.bmwi.de/BMWi/Redaktion/PDF/I/infopapier-fortschritte-umsetzung-digi tale-agenda,property=pdf,bereich=bmwi2012,sprache=de,rwb=truedf, 10/12/2015. (Bundesregierung 2015)

Deutscher Bundestag (2015a): Antwort der Bundesregierung auf die Kleine Anfrage des Abgeordneten Dr. Konstantin von Notz, Tabea Rößner, Özcan Mutlu. Weiteres Vorgehen der Bundesregierung nach Vorlage des Berichts der Bund-Länder-Arbeitsgruppe zu Open Educational Resources im Januar 2015 [Government Reply to the Minor Interpellation from the Members of the Bundestag Dr. Konstantin von Notz, Tabea Rößner, Özcan Mutlu. Further Action by the Government in Response to the Report by the Federal and State Working Group on Open Educational Resources in January 2015], Drucksache 18/5515,
http://dip21.bundestag.de/dip21/btd/18/055/1805515.pdf, 10/12/2015. (Bundestag 2015a)

Deutscher Bundestag (2015b): Antrag der Fraktionen der CDU/CSU und SPD. Durch Stärkung der Digitalen Bildung Medienkompetenz fördern und digitale Spaltung überwinden [Request from the CDU/CSU and SPD. Promoting Digital Educational Media Competence and Bridging the Digital Divide], Drucksache 18/4422,

http://dipbt.bundestag.de/dip21/btd/18/044/1804422.pdf, 10/12/2015. (Bundestag 2015b)

Deutscher Bundestag (2015c): Beschlussempfehlung und Bericht des Ausschusses für Bildung, Forschung und Technikfolgenabschätzung zu dem Antrag der Fraktionen der CDU/CSU und SPD. Durch Stärkung der Digitalen Bildung Medienkompetenz fördern und digitale Spaltung überwinden [Recommendation and Report of the Committee for Education, Research and Technological Impact Assessment in Response to the Request from the CDU/CSU and SPD. Promoting Digital Educational Media Competence and Bridging the Digital Divide], Drucksache 18/5368, http://dipbt.bundestag.de/dip21/btd/18/053/1805368.pdf, 10/12/2015. (Bundestag 2015c)

Enquete-Kommission des Deutschen Bundestages „Internet und Digitale Gesellschaft" (2011): Zweiter Zwischenbericht der Enquete-Kommission „Internet und digitale Gesellschaft". Medienkompetenz [Second Interim Report from the Enquete Commission 'Internet and Digital Society'. Media Competence], Drucksache 17/7286, http://dipbt.bundestag.de/dip21/btd/17/072/1707286.pdf, 10/12/2015. (Enquete-Kommission 2011)

Enquete-Kommission des Deutschen Bundestages „Internet und Digitale Gesellschaft" (2013): Sechster Zwischenbericht der Enquete-Kommission „Internet und digitale Gesellschaft". Bildung und Forschung [Sixth Interim Report from the the Enquete Commission 'Internet and Digital Society'. Education and Research], Drucksache 17/12029, http://dipbt.bundestag.de/dip21/btd/17/120/1712029.pdf, 10/12/2015. (Enquete-Kommission 2013)

Initiative D21, atene KOM GmbH (2014): Medienbildung an deutschen Schulen. Handlungsempfehlungen für die digitale Gesellschaft, [Media Education in German schools. Recommendations for the Digital Society], http://www.initiatived21.de/wp-content/uploads/2014/11/141106_Medienbildung_Onlinefassung_komprimiert.pdf, 10/12/2015. (D21 2014)

Kultusministerkonferenz (2012): Medienbildung in der Schule. Beschluss der Kultusministerkonferenz vom 8. März 2012, [Media Education in Schools. Resolution by the Standing Conference of Education Ministers from 8 March 2012]

Maren Tribukait et al.
Digital learning in European education policies and history curricula
119

http://www.kmk.org/fileadmin/veroeffentlichungen_beschluesse/2012/2012_03_08_
Medienbildung.pdf, 10/12/2015. (KMK 2012)

Medienpädagogischer Forschungsverbund Südwest (ed.) (2014): JIM-Studie 2014. Jugend, Information, (Multi-) Media. Basisstudie zum Medienumgang 12- bis 19-Jähriger in Deutschland [JIM study 2014. Youth, Information, (Multi-) Media. Baseline Study on Media Behaviour of 12 to 19-Years Old in Germany], Stuttgart, http://www.mpfs.de/?id=631, 22/12/2015. (JIM 2014)

Niedersächsische Staatskanzlei (2012): Medienkompetenz in Niedersachsen. Meilensteine zum Ziel, [Media Competence in Lower Saxony. Milestones and Objectives] http://www.medienkompetenz-niedersachsen.de/fileadmin/bilder/allg/Medienkompet enz_in_Niedersachsen_Landeskonzept.pdf, 24/22/2016. (NSK 2012)

Niedersächsische Staatskanzlei (2016): Medienkompetenz in Niedersachsen. Ziellinie 2020, [Media Competence in Lower Saxony. Goal Line 2020] http://www.medienkompetenz-niedersachsen.de/fileadmin/bilder/allg/Konzept_Medi enkompetenz_Niedersachsen_2016_06_24_.pdf, 24/22/2016. (NSK 2016)

Niedersächsische Kultusministerium (2008): Kerncurriculum für die Realschule Schuljahrgänge 5-10. Geschichte, Hannover, [Core Curriculum for Realschule Years 5-10. History, Hannover] http://db2.nibis.de/1db/cuvo/datei/kc_rs_gesch_08_nib.pdf, 24/22/2016. (NKM 2008)

Niedersächsische Kultusministerium (2011): Kerncurriculum für das Gymnasium – gymnasiale Oberstufe. Geschichte, [Core Curriculum for Gymnasium – Upper Level. History] Hannover,
http://db2.nibis.de/1db/cuvo/datei/kc_geschichte_go_i_03-11.pdf, 24/22/2016. (NKM 2011)

Niedersächsische Kultusministerium (2014a): Kerncurriculum für die Hauptschule Schuljahrgänge 5-10. Geschichte, Hannover, [Core Curriculum for Hauptschule Years 5-10. History, Hannover]
http://db2.nibis.de/1db/cuvo/datei/kcgeschichtehs.pdf, 24/22/2016. (NKM 2014a)

Niedersächsische Kultusministerium (2014b): Kerncurriculum für die Schulformen des Sekundarbereichs I Schuljahrgänge 5-10. Informatik, Hannover, [Core Curriculum for Secondary Schools Years 5-10. Computer Studies, Hannover]
http://db2.nibis.de/1db/cuvo/datei/kc_informatik_sek_i.pdf, 24/22/2016. (NKM 2014b)

Niedersächsisches Kultusministerium (2015a), Niedersächsisches Schulgesetz (NSchG). Nichtamtliche Textfassung, Hannover, [Lower Saxony Education Act. Unofficial Text Version, Hanover]

http://www.mk.niedersachsen.de/service/rechts_und_verwaltungsvorschriften/niedersaechsisches_schulgesetz/das-niedersaechsische-schulgesetz-6520.html, 24/22/2016. (NSchG 2015)

Niedersächsisches Kultusministerium (2015b): Runderlass „Die Arbeit in den Schuljahrgängen 5 bis 10 des Gymnasiums", [Circular Decree 'Work in Gymnasium Years 5 to 10']

http://www.mk.niedersachsen.de/schule/unsere_schulen/allgemein_bildende_schulen /gymnasium/gymnasium-6319.html, 24/22/2016. (NKM 2015b).

Niedersächsisches Kultusministerium, Kerncurriculum für das Gymnasium Schuljahrgänge 5-10. Geschichte, Hannover, [Core Curriculum for Gymnasium. Years 5-10. History, Hannover]

http://db2.nibis.de/1db/cuvo/datei/ge_gym_si_kc_druck.pdf, 24/22/2016. (NKM 2015c)

Niedersächsisches Landesinstitut für Qualitätsentwicklung Hildesheim (NLQ) (2015): Orientierungsrahmen „Medienbildung in der Schule". Arbeitsfassung Stand 30.10.2015, [Guidelines 'Media Education in Schools". Working Draft Dated 30/10/2015]

http://ormedien.nline.nibis.de/userdata/moderator/Orientierungsrahmen%20Medienbildung%20in%20der%20Schule%20-%20Arbeitsfassung.pdf, 24/22/2016. (NLQ 2015)

Thüringer Ministerium für Bildung, Wissenschaft und Kultur (2010): Medienkunde [Media Studies],

https://www.schulportal-thueringen.de/web/guest/media/detail?tspi=1897, 10/12/2015. (TMBWK 2010)

Thüringer Ministerium für Bildung, Wissenschaft und Kultur (2011a): Lehrplan für den Erwerb der allgemeinen Hochschulreife. Geschichte [Curriculum for General School-leaving certificate. History],

https://www.schulportal-thueringen.de/web/guest/media/detail?tspi=2839, 10/12/2015. (TMBWK 2011a)

Maren Tribukait et al.
121
Digital learning in European education policies and history curricula

Thüringer Ministerium für Bildung, Wissenschaft und Kultur (2011b): Leitgedanken zu den Thüringer Lehrplänen für den Erwerb der allgemein bildenden Schulabschlüsse, [Concept for the Thuringian Curricula for the General School-leaving Certificate], https://www.schulportal-thueringen.de/media/detail?tspi=1382, 10/12/2015. (TMBWK 2011b)

Thüringer Ministerium für Bildung, Wissenschaft und Kultur (2012): Lehrplan für den Erwerb des Hauptschul- und des Realschulabschlusses. Geschichte [Curriculum for Secondary School-leaving Certificates. History], https://www.schulportal-thueringen.de/web/guest/media/detail?tspi=2847, 10/12/2015. (TMBWK 2012)

Greece

Erdmann, E., & Hasberg, W. (eds.) (2011): Facing – Mapping – Bridging Diversity Part 1 & 2. Foundation of a European Discourse on History Education. Schwalbach am Taunus: Wochenschau. (Erdmann & Hasberg 2011)

European Commission (2013): Survey of Schools. ICT in Education, https://ec.europa.eu/digital-agenda/en/news/survey-schools-ict-education, 29/01/2016. (EC 2013)

European Commission (2015): Education and Training Monitor 2015. Greece, http://ec.europa.eu/education/tools/docs/2015/monitor2015-greece_en.pdf, 22/07/2016. (ET 2020 Greece)

EURYDICE (2015a): Greece. Organisation and Governance, https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/index.php/Greece:Organisation_and_Governance, 14/01/2016. (EURYDICE 2015a)

EURYDICE (2015b): Greece. Overview, https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/index.php/Greece:Redirect, 14/01/2016. (EURYDICE 2015b)

Greek Association of Computer Scientists [Ένωση Πληροφορικών Ελλάδας] (2006): Η Πληροφορική στην Εκπαίδευση [Computer Studies in Training Schemes]. In: Greek Association of Computer Scientists [Ένωση Πληροφορικών Ελλάδας] (ed.): Μελέτη Επισκόπησης της Πληροφορικής στην Ελλάδα 2006 [A Study of Computer Studies in Greece 2006], p. 20–133, https://www.epe.org.gr/meleth/final/MEP2006.pdf, 17/12/2015. (GACS 2006)

Greek Digital School [Πανελλήνιο Σχολικό Δίκτυο] (2015): Τι είναι το Πανελλήνιο Σχολικό Δίκτυο [What is the Greek Digital School?], http://www.sch.gr/files/memo_analytiko_PSD_site_Nov2015.pdf, 15/01/2016. (Greek Digital School 2015)

Pädagogisches Institut [Παιδαγωγικό Ινστιτούτο] (undated): Πρόγραμμα Σπουδών για τις ΤΠΕ στην Πρωτοβάθμια Εκπαίδευση [Curriculum for ICT in Primary School], http://ebooks.edu.gr/info/newps/%CE%A0%CE%BB%CE%B7%CF%81%CE%BF %CF%86%CE%BF%CF%81%CE%B9%CE%BA%CE%AE%20%CE%BA%CE% B1%CE%B9%20%CE%9D%CE%AD%CE%B5%CF%82%20%CE%A4%CE%B5 %CF%87%CE%BD%CE%BF%CE%BB%CE%BF%CE%B3%CE%AF%CE%B5% CF%82/%CE%A4%CE%A0%CE%95%20%CE%94%CE%B7%CE%BC%CE%BF %CF%84%CE%B9%CE%BA%CF%8C.pdf, 14/01/2016. (PI ICT)

Pädagogisches Institut [Παιδαγωγικό Ινστιτούτο] (2003a): Διαθεματικό Ενιαίο Πλαίσιο Προγραμμάτων Σπουδών Ιστορίας [Thematic Framework Programme for the Subject of History], www.pi-schools.gr/download/programs/depps/9deppsaps_Istorias.zip, 14/01/2016. (PI 2003a)

Pädagogisches Institut [Παιδαγωγικό Ινστιτούτο] (2003b): Διαθεματικό Ενιαίο Πλαίσιο Προγραμμάτων Σπουδών Πληροφορικής [Thematic Framework Programme for the Subject of Computer Studies], www.pi-schools.gr/download/programs/depps/18deppsaps_Pliroforikis.zip, 14/01/2016. (PI 2003b)

Pädagogisches Institut [Παιδαγωγικό Ινστιτούτο] (2003c): Διαθεματικό Ενιαίο Πλαίσιο Προγραμμάτων Σπουδών Τεχνολογίας [Thematic Framework Programme for the Subject of Technology], http://www.pi-schools.gr/download/programs/depps/20deppsaps_Texnologias.pdf, 14/01/2016. (PI 2003c)

Pädagogisches Institut [Παιδαγωγικό Ινστιτούτο] (2011): Πρόγραμμα Σπουδών για τον Πληροφορικό Γραμματισμό στο Γυμνάσιο [Curriculum for ICT at secondary level], http://ebooks.edu.gr/info/newps/%CE%A0%CE%BB%CE%B7%CF%81%CE%BF %CF%86%CE%BF%CF%81%CE%B9%CE%BA%CE%AE%20%CE%BA%CE% B1%CE%B9%20%CE%9D%CE%AD%CE%B5%CF%82%20%CE%A4%CE%B5 %CF%87%CE%BD%CE%BF%CE%BB%CE%BF%CE%B3%CE%AF%CE%B5%

Maren Tribukait et al.
Digital learning in European education policies and history curricula
123

CF%82/%CE%A4%CE%A0%CE%95%20%CE%93%CF%85%CE%BC%CE%BD
%CE%AC%CF%83%CE%B9%CE%BF.pdf, 14/01/2016. (PI 2011)

Routsis, F. [Ρούτσης, Φ.] (2010): Ψηφιακό Σχολείο [Digital School],
http://www.edulll.gr/?page_id=276, 15/01/2016. (Routsis 2010)

The Council of Economic Advisors, Ministry of Finance, Ministry of Interior and Administrative Reconstruction, Ministry of Culture, Education and Religious Affairs, Ministry of Reconstruction of Production, Environment and Energy, & Ministry of Economy, Infrastructure, Maritime Affairs and Tourism, Ministry of Labour (2015): The 2015 National Reform Programme,
http://ec.europa.eu/europe2020/pdf/csr2015/nrp2015_greece_en.pdf, 28/01/2016. (NRP 2015)

Tziafetas, K., Avgerinos, A., & Tsampika, K. (2013): Views of ICT Teachers About The Introduction of ICT in Primary Education in Greece. In: The Turkish Online Journal of Educational Technology 12, 1, p. 201–209,
http://www.tojet.net/articles/v12i1/12120.pdf, 28/07/2016. (Tziafetas et al. 2013)

Tzimogiannis, A. [Τζιμογιάννης, Α.] (2011): Τα Νέα Προγράμματα Σπουδών για τις ΤΠΕ στην υποχρεωτική εκπαίδευση [New ICT Curricula in Compulsory Schooling], http://ebooks.edu.gr/info/newps/%CE%A0%CE%B1%CF%81%CE%BF%CF%85% CF%83%CE%B9%CE%AC%CF%83%CE%B5%CE%B9%CF%82/%CE%A0%CE %A3%20%CE%A4%CE%A0%CE%95.pdf, 22/12/2016. (Tzimogiannis 2011)

UNESCO (2012): World Data on Education. Greece,
http://www.ibe.unesco.org/fileadmin/user_upload/Publications/WDE/2010/pdf-versions/Greece.pdf, 14/01/2016. (UNESCO 2012)

The Netherlands

Examenblad (2016a): Syllabus 2016 geschiedenis, HAVO [Syllabus 2016 History, HAVO],
https://www.examenblad.nl/examenstof/syllabus-2016-geschiedenis-havo/2016/f=/geschiedenis_havo_def_versie_2016.pdf, 28/08/2016. (Syllabus 2016 geschiedenis, HAVO)

Examenblad (2016b): Syllabus 2016 geschiedenis, VMBO [Syllabus 2016 History, VMBO],

https://www.examenblad.nl/examenstof/syllabus-2016-geschiedenis-vmbo/2016/f=/geschiedenis_vmbo_def_versie_2016.pdf, , 28/08/2016. (Syllabus 2016 geschiedenis, VMBO)

Examenblad (2016c): Syllabus 2016 geschiedenis, VWO [Syllabus 2016 History, VWO],

https://www.examenblad.nl/examenstof/syllabus-2016-geschiedenis-vwo/2016/f=/geschiedenis_vwo_def_versie_2016_aanpassing_Verona.pdf, 28/08/2016. (Syllabus 2016 geschiedenis, VWO)

Informatica Voortgezet Onderwijs (IVO) (undated): Over het vak [About the Subject], http://www.informaticavo.nl/over-het-vak, 08/06/2016.

Kennisnet (undated): Kennisnet onderwijs & ICT Scan [Knowledge Net Education & ICT Scan],

https://www.kennisnet.nl/diensten-voor-de-school/kennisnet-onderwijs-ict-scan/, 08/06/2016.

Kennisnet (undated): Opvattingen, betekenisverlening en de inzet van ICT in het onderwijs [Interpretations, Perspectives and Usage of ICT in education],

http://archief.kennisnet.nl/onderzoek/alle-onderzoeken/opvattingen-betekenisverlening-en-de-inzet-van-ict-in-het-onderwijs/, 29/07/2016.

Kennisnet (2004): Vier in Balans Plus [Four in Balance Plus],

http://downloads.kennisnet.nl/onderzoek/vierinbalansplus.pdf, 29/07/2016. (Kennisnet 2004)

Kennisnet (2013): Vier in Balans Monitor 2013. De laatste stand van zaken van ICT en onderwijs [Four in Balance Monitor 2013. The Current State of Affairs in ICT and Education],

http://archief.kennisnet.nl/fileadmin/contentelementen/kennisnet/Over.kennisnet/Vier_in_balans/Vier_in_balans_monitor_2013.pdf, 26/07/2016. (Kennisnet 2013)

Kennisnet (2015): Vier in Balans Monitor 2015. De laatste stand van zaken van ICT en onderwijs [Four in Balance Monitor 2015. The Current State of Affairs in ICT and Education],

https://www.kennisnet.nl/publicaties/vier-in-balans-monitor/, 26/07/2016. (Kennisnet 2015)

Meijer, J., et al. (2014): Gebruik van tablets in de school [The Usage of Tablets in School], Amsterdam,

http://archief.kennisnet.nl/onderzoek/alle-onderzoeken/gebruik-van-tablets-in-de-school/, 08/06/2016. (Meijer et al. 2014)

Netwerk Digitaal Erfgoed (2015): Nationale Strategie Digitaal Erfgoed [National Digital Heritage Strategy], http://www.den.nl/art/uploads/files/Publicaties/Nationale_Strategie_Digitaal_Erfgoed_MinOCW.pdf, 29/07/2016. (Netwerk Digitaal Erfgoed 2015)

The Organisation for Internationalisation in Education (NUFFIC) (2014): Het onderwijssysteem van Nederland beschreven [The Dutch Educational System in Detail], https://www.epnuffic.nl/publicaties/vind-een-publicatie/onderwijssysteem-nederland.pdf, 26/07/2016. (NUFFIC 2014)

Onderwijsraad (2014): Een eigentijds curriculum, https://www.onderwijsraad.nl/publicaties/2014/een-eigentijds-curriculum/volledig/item7128, 21/07/2016. (Onderwijsraad 2014)

Onsonderwijs2032: Digitale geletterdheid [Digital literacy], http://onsonderwijs2032.nl/digitale-geletterdheid/ 26/05/2016. (Onsonderwijs2032)

Stichting Leerplanontwikkeling (SLO) (2006a): Karakteristieken en kerndoelen voor de onderbouw, Onderbouw-VO [Characteristics and Target Goals for Lower Secondary level], http://downloads.slo.nl/Documenten/karakteristieken-en-kerndoelen-onderbouw-vo.pdf, 26/07/2016. (SLO 2006a)

Stichting Leerplanontwikkeling (SLO) (2006b): Wat moet en mag in de onderbouw. Onderbouw-VO [What Could and Should Be Done in Lower Secondary Level?], http://www.slo.nl/voortgezet/onderbouw/kerndoelen/wat-moet-en-mag-in-de-onderbouw/, 26/07/2016. (SLO 2006b)

Stichting Leerplanontwikkeling (SLO) (2007a): Conretisering van de kerndoelen. Onderbouw-VO [Realisation of Target Goals. Onderbouw-VO)], http://www.slo.nl/downloads/Concretisering_20van_20de_20kerndoelen_20handleiding.pdf/, 26/07/2016. (SLO 2007a)

Stichting Leerplanontwikkeling (SLO) (2007b), Vakdossier Informatica, http://www.slo.nl/downloads/archief/341330003_Vakdossier_2007_informatica.pdf/, 29/07/2016. (Vakdossier Informatica 2007)

Stichting Leerplanontwikkeling (SLO) (2007c): Handreiking Informatica [Guide to Computer Science],

Maren Tribukait et al.
126
Digital learning in European education policies and history curricula

http://www.slo.nl/downloads/archief/Handreiking_Informatica_DEFINITIEF.pdf/ ,
26/07/2016. (Handreiking Informatica 2007)

Stichting Leerplanontwikkeling (SLO) (2010a): Inzet van de elektronische leeromgeving in het voortgezet onderwijs [Usage of Electronical Learning Environments in Higher Education],
http://www.slo.nl/downloads/2010/Inzet-elektronische-leeromgeving-vo.pdf/,
26/07/2016. (SLO 2010a)

Stichting Leerplanontwikkeling (SLO) (2010b): Vakdossier Geschiedenis. Stand van zaken in de tweede fase [Subject File History. Status of Upper Secondary Level],
http://www.slo.nl/downloads/2010/vakdossier-geschiedenis.pdf/, 26/07/2016. (Vakdossier Geschiedenis 2010)

Stichting Leerplanontwikkeling (SLO) (2015): Examenprogramma geschiedenis havo/vwo,
http://www.slo.nl/downloads/archief/Examenprogramma_geschiedenis_DEFINITIEF
.pdf, 29/07/2016. (Examenprogramma geschiedenishavo/vwo 2015)

Van der Neut, I., Teurlings, C., & Vink, R. (2015): Opvattingen, betekenisverlening en de inzet van ICT in het onderwijs [Interpretations, Perspectives and Usage of ICT in Education],
http://archief.kennisnet.nl/onderzoek/alle-onderzoeken/opvattingen-betekenisverlening-en-de-inzet-van-ict-in-het-onderwijs/, 29/07/2016. (Van der Neut et al. 2015)

Voogt, J., et al. (2015): Didactische ICT bekwaamheid nader bekeken [A Closer Look at Didactical ICT Capacity],
http://archief.kennisnet.nl/onderzoek/alle-onderzoeken/didactische-ict-bekwaamheid-nader-bekeken/, 29/07/2016. (Voogt et al. 2015)

Voogt, J., et al. (2016): E-didactiek. Welke ict-applicaties gebruiken leraren en waarom? [Electronic Didactics. Which ICT-applications Do Teachers Use and Why?], Amsterdam,
https://www.nro.nl/wp-content/uploads/2016/05/E-didactiek_Welke-ict-applicaties-gebruiken-leraren-en-waarom.pdf, 29/07/2016. (Voogt et al. 2015)

Poland

Biedrzycki, K., et al. (2014): Kompetencje komputerowe i informacyjne młodzieży w Polsce. Raport z międzynarodowego badania komptenecji komputerowych i informacyjnych ICILS [International Computer and Information Literacy Study of Polish youth. Report on the International Computer and Information Literacy Study ICILS 2013], Instytut Badań Edukacyjnych.

http://eduentuzjasci.pl/images/stories/publikacje/ibe-raport-icils.pdf., 27/11/2015. (ICILS 2013 Poland)

Dąbrowska, A. J. et al. (2012): Kształtowanie kompetencji medialnych i informacyjnych w podstawach programowych MEN [Development of Media and Information Technology Competence in the Framework Curriculum by the Ministry for National Education]. In: Cyfrowa przyszłość. Edukacja medialna i informacyjna w Polsce – raport otwarcia [Digital Future. Media and Information Technology Education in the Framework Curriculum – a Report], Fundacja Nowoczesna Polska,

https://nowoczesnapolska.org.pl/wp-content/uploads/2012/01/Raport-Cyfrowa-Przysz%C5%82o%C5%9B%C4%87-.pdf, 27/11/2015. (Dąbrowska et al. 2012)

Julkowska, V. (2013): Gemeinsame Orte der Geschichtsdidaktik und des Gedächtnisses [Places in Common for History Didactics and Memory]. In: Hans Henning Hahn & Robert Traba (eds.): Deutsch-polnische Erinnerungsorte. Bd. 4: Reflexionen [German-Polish Places of Memory. Vol 4: Reflection], Paderborn, S. 365 ff. (Julkowska 2013)

Ministerstwo Administracji i Cyfryzacji (2013): Polska 2030. Trzecia fala nowoczesności. Długookresowa strategia rozwoju kraju [Poland 2030. Third Wave of Modernity. Long Term Government Development Strategy],

https://mac.gov.pl/files/wp-content/uploads/2013/02/Strategia-DSRK-PL2030-RM.pdf., 26/11/2015. (Poland 2030)

Śliwerski, B. (2009): Problem współczesnej edukacji. Dekonstrukcja polityki oświatowej III RP. Wydawnictwa akademickie i profesjonalne. (Śliwerski 2009)

Ministerstwo Edukacji Narodowej we współpracy z Ministerstwem Administracji i Cyfryzacji (2014): Sprawozdanie z realizacji Rządowego programu rozwijania kompetencji uczniów i nauczycieli w zakresie stosowania technologii informacyjno-komunikacyjnych „Cyfrowa szkoła" [Report on the Progress of Government Programmes for the Development of Pupil and Teacher Competences with Regard to the

Use of Information and Communication Technologies 'Digital School''. Report Prepared by the Ministry of National Education in Cooperation with the Ministry for Administration and Digitisation],

http://men.gov.pl/wp-content/uploads/2014/02/sprawozdaniecyfrowaszkola-przyjeteprzezrm25_02_2014.pdf. (Report Digital School 2014)

Stunża, G. D. (2012): Edukacja medialna w podstawie programowej [Media Education in the Curriculum Framework]. In: Cyfrowa przyszłość. Edukacja medialna i informacyjna w Polsce − raport otwarcia. Aneks [Digital Future. Media and Information Technology Education in the Framework Curricula − Report. Attachment], Fundacja Nowoczesna Polska,

https://nowoczesnapolska.org.pl/wp-content/uploads/2012/01/Cyfrowa-Przysz%C5%82o%C5%9B%C4%87-aneks-14.pdf, 27/11/2015.

Ministerstwo Edukacji Narodowej (2012): Rozporządzenie Ministra Edukacji Narodowej z dnia 27 sierpnia 2012 r. w sprawie podstawy programowej wychowania przedszkolnego oraz kształcenia ogólnego w poszczególnych typach szkół. Załącznik nr 4 Podstawa programowa kształcenia ogólnego dla gimnazjów i szkół ponadgimnazjalnych, których ukończenie umożliwa uzyskanie świadectwa dojrzałości po zdaniu egzaminu maturalnego [Decree by the Ministry of National Education from 27 August 2012 on the Framework Curricula for Children's Education and General Education in Different School Types. Enclosure No. 4 Framework Curricula for General Education in Grammar Schools and Secondary Schools with High School Leaving Qualifications],

http://men.gov.pl/wp-content/uploads/2011/02/podstawa_programowa_2012.pdf., 27/11/2015. (Curriculum framework 2012)

Prezes Rady Ministrów (2012): Uchwała Nr 40/2012 Rady Ministrów z dnia 3 kwietnia 2012 roku w sprawie Rządowego programu rozwijania kompetencji uczniów i nauczycieli w zakresie stosowania technologii informacyjno-komunikacyjnych − „Cyfrowa szkoła" [Resolution No. 40/2012 of the Ministry Council of 3 April 2012 on the Government Programme on the Development of Competences in Pupils and Teachers with Regards to the Use of Information and Communication Technology 'Digital School'.

http://efs.men.gov.pl/dodatki/moc-w-regionach/Program%20rzadowy%20Cyfrowa %20szkola%20-%20MEN.pdf, 27/11/2015. (Digital School 2012)

Spain

Comunidad de Madrid (2008): DECRETO 67/2008, de 19 de junio, del Consejo de Gobierno, por el que se establece para la Comunidad de Madrid el currículo del Bachillerato [DECREE 67/2008, of 19 June of the Governing Council, Establishing the Baccalaureate Curriculum for the Community of Madrid], http://www.bocm.es/bocm/Satellite?cid=1188556258222&language=es&pagename=Boletin%2FPage%2FBOCM_ultimoBoletin, 04/03/2016.

Comunidad de Madrid (2015a): DECRETO 48/2015, de 14 de mayo, del Consejo de Gobierno, por el que se establece para la Comunidad de Madrid el currículo de la Educación Secundaria Obligatoria [DECREE 48/2015, of 14 May of the Governing Council, Establishing the Curriculum of Secondary Education for the Community of Madrid. In: Bolletín official de la Comunidad de Madrid de 20 de mayo, 2015, http://www.madrid.org/wleg/servlet/Servidor?opcion=VerHtml&idnorma=10079&word=S&wordperfect=N&pdf=S, 25/02/2016.

Comunidad de Madrid (2015b): DECRETO 52/2015, de 21 de mayo, del Consejo de Gobierno, por el que se establece para la Comunidad de Madrid el currículo del Bachillerato [DECREE 52/2015, of 21 May, the Governing Council, Establishing the Baccalaureate Curriculum for the Community of Madrid]. In: Bolletín official de la Comunidad de Madrid de 22 de mayo, 2015, http://www.madrid.org/wleg/servlet/Servidor?opcion=VerHtml&idnorma=10082&word=S&wordperfect=N&pdf=S , 25/02/2016.

Diálogos de ADEME...: Los nuevos Currículos LOMCE. Análisis [The New Curricula LOMCE], https://ademeblog.wordpress.com/los-nuevos-curriculos-lomce-analisis/, 25/02/2016.

EURYDICE (2015): Secondary and Post-Secondary Non-Tertiary Education, https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/index.php/Spain:Secondary_and_Post-Secondary_Non-Tertiary_Education, 09/03/2016.

EURYDICE (2016): Description of National Education Systems – Spain: Overview, https://webgate.ec.europa.eu/fpfis/mwikis/eurydice/index.php/Spain:Overview, 09/03/2016.

Generalitat de Catalunya, Departamento de Educación (2008): DECRETO 142/2008, de 15 de julio, por el que se establece la ordenación de las enseñanzas del bachillerato

Maren Tribukait et al.
130
Digital learning in European education policies and history curricula

[DECREE 142/2008, of 15 July, Establishing the Organisation of the Management of Teaching of the Baccalaureate],

http://portaldogc.gencat.cat/utilsEADOP/PDF/5183/1011500.pdf, 21/07/2016.

Generalitat de Catalunya, Departamento de Educación (2015a): DECRETO 187/2015, de 25 de agosto, de ordenación de las enseñanzas de la educación secundaria obligatoria. [DECREE 187/2015, of 25 August, Regulating the Teaching of Compulsory Secondary Education],

http://www.siis.net/documentos/legislativa/503987.pdf, 20/12/2016.

Generalitat de Catalunya, Departament d'Ensenyament (2015b): Competències bàsiques de l'àmbit digital [Basis Competences of the Digital Sphere],

http://ensenyament.gencat.cat/web/.content/home/departament/publicacions/colleccions/competencies-basiques/eso/eso-ambit-digital.pdf, 18/02/2016.

Generalitat de Catalunya, Departament d'Ensenyament (2015c): Competències bàsiques de l'àmbit social. Ciéncies socials: geografía I història [Basic competences of the social sphere. Social Sciences: geography and history],

http://ensenyament.gencat.cat/web/.content/home/departament/publicacions/colleccions/competencies-basiques/eso/eso-social.pdf , 18/02/2016.

Gobierno de España: Agenda digital para España. Objetivos [Digital Agenda for Spain. Aims],

http://www.agendadigital.gob.es/objetivos-agenda-digital/Paginas/Objetivos.aspx, 19/01/2016.

Gobierno de España, Jefatura del Estado (2006): Ley Organica 2/2006, de 3 de mayo, de Educación – LOE [Organic Law 2/2006 for Education]. In: Boletín Oficial del Estado, núm. 106, de 4 de mayo de 2006, págs. 17158 a 17207,

https://www.boe.es/buscar/doc.php?id=BOE-A-2006-7899, 03/03/2016.

Gobierno de España, Jefatura del Estado (2013): Ley Orgánica 8/2013, de 9 de diciembre, para la mejora de la calidad educativa – LOMCE [Organic Law 8/2013 for the Improvement of Quality in Education]. In: Boletín Oficial del Estado, núm. 295, págs. 97858 a 97921,

https://www.boe.es/diario_boe/txt.php?id=BOE-A-2013-12886, 29/01/2016.

Gobierno de España, Ministerio de Educación y Ciencia (2007): Real Decreto 1467/2007, de 2 de noviembre, por el que se establece la estructura del bachillerato y se fijan sus enseñanzas mínimas. [Royal Decree 1467/2007 of 2 December, Estab-

lishing the Structure of the Baccalaureate and Fixing Minimum Teaching Requirements], https://www.boe.es/boe/dias/2007/11/06/pdfs/A45381-45477.pdf, 21/07/2016.

Gobierno de España, Ministerio de Educación, Cultura y Deporte: Educación Secundaria Obligatoria (ESO) [Compulsory Secondary Education], http://www.mecd.gob.es/educacion-mecd/en/areas-educacion/estudiantes/educacion-secundaria.html, 19/01/2016.

Gobierno de España, Ministerio de Educación, Cultura y Deporte: Bachillerato [Baccalaureate], http://www.mecd.gob.es/educacion-mecd/en/areas-educacion/estudiantes/bachillerato.html, 19/01/2016.

Gobierno de España, Ministerio de Educación, Cultura y Deporte: Ley orgánica para la mejora de la calidad educativa LOMCE [Organic Law for the Improvement of Quality in Education], http://www.mecd.gob.es/educacion-mecd/mc/lomce, 19/01/2016.

Gobierno de España, Ministerio de Educación, Cultura y Deporte: Procomun Red de Recursos Educativos en Abierto [Procomun OER Network], https://procomun.educalab.es/en/, 11/03/2016.

Gobierno de España, Ministerio de Educación, Cultura y Deporte (2014): Real decreto 1105/2014, de 26 de diciembre, por el que se establece el currículo básico de la Educatión Secundaria Obligatoria y del Bachillerato [Royal Decree 1105/2014 of 26 December, Establishing the Core Curriculum for Compulsory Secondary Education and Baccalaureate], http://www.madrid.org/cs/Satellite?c=CM_Media_FA&cid=1354488829364&pagename=ComunidadMadrid%2FCM_Media_FA%2FabrirDocumento, 25/02/2016

Gobierno de España, Ministerio des Educación, Cultura y Deporte (2015a): Orden ECD65/2015, de 21 de enero, por lo que se describen las relaciones entre las competencias, los contenidos y los criterios des evaluación de la educación primaria, las educación secundaria obligatoria y el bachillerato [Order ECD 65/2015, of 21 January, Description of the Relationships between Competencies, Content and Evaluation Criteria of Primary Education, Compulsory Secondary Education and High School]. In: Boletín oficial de España núm. 25, de 29 de enero de 2015, https://www.boe.es/diario_boe/txt.php?id=BOE-A-2015-738, 11/03/2016.

Gobierno de España, Ministerio des Educación, Cultura y Deporte (2015b): Orden ECD/1361/2015, de 3 de julio, por la que se establece el currículo de Educación Secundaria Obligatoria y Bachillerato para el ámbito de gestión del Ministerio de Educación, Cultura y Deporte, y se regula su implantación (…) [Order ECD/1361/2016, of 3 July, for the Regulation of the Establishment of the Curriculum of Compulsory Secondary Education and High School for the Field of Management of Ministry of Education, Culture and Sport and for its Implementation (...)]. In: Boletín oficial de España núm. 163, de 9 de julio de 2015,

https://www.boe.es/diario_boe/txt.php?id=BOE-A-2015-7662, 21/07/2016.

International Consultants for Education and Fairs - ICEF (2015): Spanish education at a crossroads. ICEF Monitor, http://monitor.icef.com/2015/03/spanish-education-at-a-crossroads/, 05/02/2016.

Instituto de Formación del Profesorado, Investigación e Innovación Educativa – IFIIE (eds.) (2011): Alfabetización mediática y competencias básicas. [Media Literacy and Basic Competences],

https://sede.educacion.gob.es/publiventa/PdfServlet?pdf=VP15157.pdf&area=E, 29/01/2016.

Instituto Nacional de Tecnologías Educativas y de Formación del Profesorado – INTEF (2013): Plan de Cultura Digital en la Escuela. INTEF Blog, abril 16, 2013. [Digital Culture Plan for Schools. INTEF blog, April 16th, 2013],

http://blog.educalab.es/intef/2013/04/16/plan-de-cultura-digital-en-la-escuela/, 03/03/2016.

Medina Cambrón, A., & Ballano Macías, S. (2015): Retos y problemáticas de la introducción de la educación mediática en los centros de secundaria [Challenges and Problems: the Introduction of Media Education in Secondary Schools]. Revista des Educación, 369,

http://www.mecd.gob.es/dctm/revista-de-educacion/articulos369/espanol-igles/06retos-y-problematicas-de-la-introduccion-de-la-educacion-mediatica-en-los-centros-de-secundaria.pdf?documentId=0901e72b81ea08ae, 29/01/2016.

Montes Gutiérrez, R.: LOMCE. Cambios introducidos por la Ley Orgánica 8/2013, de 9 de diciembre, para la mejora de la calidad educativa. Calendario de implantación. [Changes Introduced by the Organic Law 8/2013, of 9 December, for the Improve-

ment of Quality in Education. Implementation Schedule], http://goo.gl/kkPbvp, 11/03/2016.

Parlament de Catalunya (2006): Statute of Autonomy of Catalonia – Consolidated Text. http://web.gencat.cat/en/generalitat/estatut/estatut2006/, 22/07/2016.

Policies for OER Uptake – POERUP (2014): Overview of European and International Policies Relevant for the Uptake of OER, http://www.poerup.info/resources/public%20deliverables/POERUP_D4.1_Overview%20of%20European%20and%20international%20policies%20relevant%20for%20the%20uptake%20of%20OER_v1.0.pdf, 3/1/2017.