

Digital Transformation in the Flemish Education System: Reforming ICT teams at school

Report on relevant international policy and practices
Phase 1: analysis

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Supporting reforms in 27 Member States



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Digital transformation
in the Flemish education system:

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1. Executive summary

This report describes and summarises the comparative study undertaken by our project team on international practices in digital transition, focusing more particularly on the role of ICT coordinators. Our report compares case studies from six EU Member States, including Austria, Estonia, the Netherlands, Portugal, Spain and Sweden; extracted from a longlist of 13 countries. These Member States were selected after discussion with the Flemish Department for Education and Training and DG REFORM, mainly on the basis of the policy initiatives they have undertaken in the area of digital transition and of their potential for mutual learning.

The report is based on a review of the academic literature and policy reports, as well as consultations with relevant stakeholders in case study Member States.

The material from this report will be complemented with information collected during two peer exchanges: a virtual peer exchange (19 and 20 January, TBC) including delegates from Estonia, the Netherlands and Portugal; and a face-to-face study visit in Spain (26-27 January, TBC). These peer exchanges aim at deepening the understanding and mutual learning with selected Member States.

The report shows that the impulse for digital transition across Europe is shared across several Member States, the six case study countries covered by this report having set up national digital education programmes/Action plans or strategies backed by significant investments. National Governments have also set up various support structures to promote digital transition, including further initial (Austria), or continuous professional development (Estonia, Netherlands, Spain, Portugal, Sweden), online platforms to exchange practices (Estonia, Portugal, Sweden, Netherlands) or additional remuneration (Spain).

Our report shows that:

- ICT coordinators have different priorities and work in different constellations across the EU. ICT coordinators have many priorities, including hardware and software maintenance, supporting teachers, administrative staff and students, delivering in-house training, maintaining the school's website and social media or, more rarely, coordinating broader ICT initiatives and fundraising for projects (as is the case in Estonia). In addition, most ICT coordinators are one person, who can be a teacher undertaking tasks on top of their teaching load, resulting in a high work burden. The Estonian model consisting of spreading the ICT coordination roles across three profiles, with highly specialised educational technologists as part of this team, appears to provide more capacity to ICT coordination.
- ICT coordinators tend to limit their role to a school, although Digital Ambassadors in VET training centres in Portugal have a broader remit extended to the community, and ICT coordinators may work across schools depending on demand in Estonia.
- The empirical analysis has also demonstrated that the broad competences required by ICT coordinators and/or teaching staff involved in supporting ICT transition are recognised in some Member States, as evidenced by the guidelines issued by Kennisnet (Netherlands), the self-assessment dimensions in LIKA (Sweden) or recruitment processes in Spain for example. While the role and relevance of the competences of school leaders was seen as a significant factor for successful integration in the literature, this was not as extensively covered in the empirical case studies.
- The case study comparisons shed light on practices which could support the reforms in Flanders and will be further discussed during the virtual peer exchange and study visit. This includes for example having a digital ambassador whose role extends to the community rather than just the school, or ICT coordinators acting as a team in Estonia.



Our report also highlights that further progress remains necessary however in the area of digital transition:

- While several drivers are at play at the national policy level, including the development of competence frameworks, the expansion of access to infrastructure, several barriers remain to further ICT integration. One of those barriers is a clarification of the job profile, workload and remuneration of ICT coordinators, especially if ICT coordinators undertake these activities in addition to other duties.
- Despite their relevance highlighted in the literature, policy plans/written statements/schoolwide strategies are also not commonly used in the EU. Two thirds of pupils were in a school without such written statement on average in the EU in 2017/18. This limits the potential for stakeholders in school to embrace a joint vision and change.
- On average across the EU, the majority of teachers would require further support because they did not feel prepared or very well prepared to use ICT in 2020. Further evaluation indicators could also assess how digital transition affects external factors to the school, such as e-communication with parents.



2. Introduction

This report describes and summarises the comparative study undertaken by our project team on international practices in digital transition in education, with a specific focus on ICT coordinators and how their role, responsibilities and competences can be strengthened. The report sheds light on how governments and education systems across the EU solve the challenge of having to adopt a fast-paced transition toward the digitalisation of education.

Our report compares case studies from six EU Member States, Austria, Estonia, the Netherlands, Portugal, Spain and Sweden. These case studies were selected in discussion with the Flemish Department for Education and Training and DG REFORM on the basis of a longlist of 13 countries taking into account the ambitions they have to promote digital transformation, the role of ICT coordinators in the education systems of these Member States, and potential transferability of lessons learnt to the Flemish context based. This comparative study includes considerations on primary, secondary and adult education.

The objectives of the report are to:

- Map and compare developments related to digital transformation in education, and in particular to the role of ICT coordinators, across a select number of EU Member States, in order to contextualise the Flemish reforms in the context of broader European trends.
- Inform the Flemish stakeholders of other relevant programmes and practices in European countries in order to promote an exchange of good practices.

Our comparative analysis builds on two phases of data collection: first, we conducted extensive desk research, six interviews with key stakeholders in three of the selected case studies countries, as well as further email exchanges. In the second phase, we organised and delivered two peer exchanges with priority countries: a virtual peer exchange on digital education initiatives in Estonia, the Netherlands and Portugal (held on 19th and 20th January 2022), and a face-to-face study visit to Andalusia (26th and 27th January 2022) which allowed the research team and Flemish participants to ask concrete, detailed questions about the digital transformation of education in Spain.

Our presentation and analysis of the findings from these two research phases will be structured as follows: Section 3 summarises the broader context, including relevant European and international developments. Section 4 presents our comparative analysis and section 5 concludes with the main lessons learnt. Annex 1 includes the country fiches for the six case study countries. Annex 2 summarises our methodology. Annex 3 includes our topic guide for the consultation, and Annexes 4 and 5 present the agendas of the peer exchange (19-20 January) and study visit (26-27 January).



3. Context

This section provides a general context to our study by presenting relevant European policy developments, as well as a select literature review on international practices related to ICT integration and ICT coordination.

3.1 Overview of relevant European developments

3.1.1. Toward a Europe fit for the Digital Age

Education fosters economic growth and social cohesion. It plays a critical role in individual and societal prosperity and is essential for personal development and welfare. Its benefits have multiple dimensions both for the individual and the society. Investing in high quality education for all is a Union priority. For this reason, education, training and life-long learning play an important role in the European Pillar of Social Rights, adopted in 2017 and being implemented in Member States (and at EU level)..

Furthermore, education is one of the sectors that is drastically impacted by the use of emerging technologies in learning, teaching, and assessment processes as well as in the management and governance of institutes and schools. Like other sectors, education and training is undergoing a process of change.

The European Commission has outlined its approach towards the future of digital education in its Digital Education Action Plan (DEAP) 2021-2027¹, which contributes to the Commission priority 'A Europe fit for the digital age for 2019-2024 and to the recovery programme 'Next Generation EU'². The first strategic priority of DEAP is 'the development of a high-performing digital education ecosystem'. Under this priority, 'the effective digital capacity planning and development' is underlined as 'vital for education and training systems'. The DEAP is a response to the accentuated relevance of ICT in education resulting from the coronavirus pandemic, and to ICT shortages which were already observed before the pandemic. Less than 40% of teachers across the EU felt ready to use ICT in education according to the OECD in 2018³.

The DEAP encourages education systems to move beyond crisis mitigation and to learn from the lessons of COVID-19, to develop high-performing digital education ecosystems (priority 1), as well as to enhance skills and digital competences for the digital transformation (priority 2). Its action 5 aims to support digital transformation for education and training institutions⁴.

The alignment between the political priorities of the Flemish Department of Education and Training and those of the European Union adds to the political legitimacy of this project. As a part of the 'NextGenerationEU' instrument almost all Member States are drafting a national recovery plan (Recovery and Resilience Plan/RRP) with a focus on a greener, more digital and more resilient economy. In the case of Belgium almost 1/3 of this plan is devoted to digital transition, not at least in the education sector where Digisprong, the Flemish ICT strategy towards qualitative digital education, is an important driver for change.

¹ European Commission (2021) 'Digital Education Action Plan', URL: https://ec.europa.eu/education/education-in-the-eu/digital-education-action-plan_en

² Next Generation EU is the EU stimulus package to rebuild the EU post-coronavirus pandemic.

³ Organisation for Economic Cooperation and Development (2018) TALIS 2018 results: teachers and leaders as lifelong learners', URL: https://www.oecd-ilibrary.org/education/talis-2018-results-volume-i_1d0bc92a-en European Commission (2019) The 2nd Survey of Schools: ICT in Education, in partnership with Deloitte and IPSOS, URL: <https://digital-strategy.ec.europa.eu/en/library/2nd-survey-schools-ict-education>

⁴ The open public consultation on the DEAP received 2,716 responses, which highlights the relevance of the DEAP. European Commission (2020) 'Digital education action plan 2021-2027: Resetting education and training for the digital age', URL: <file:///C:/Users/52669/Downloads/090166e5d496d35c.pdf>



3.1.2 Building on the DigCompOrg framework and SELFIE

Education and training systems need the right tools and processes to plan and develop their digital capacity, involving stakeholders at all levels.

The DigCompOrg framework is particularly relevant to this project. DigCompOrg is a self-assessment framework to guide educational institutions in their progress toward digital learning technologies. The DigiCompOrg framework was discussed by the Working Group on Digital and Online learning (WG DOL) and emerged as an initiative from the Directorate General for Education, Youth, Culture and Sport of the European Commission (DG EAC), and was carried out by the Joint Research Centre - Institute for Prospective Technological Studies (JRC-IPTS) in 2015. The DigCompOrg framework focuses on aspects which are covered in other parts of the Digisprong strategy, including:

- leadership and governance practices
- teaching and learning practices
- professional development
- assessment practices
- collaboration and networking
- infrastructure and sector specific issues.

The DigCompOrg framework is valuable to this project because it encourages a whole school approach to facilitate digital transition. A number of tools extend and complement the framework.

The **SELFIE tool (Self-reflection on Effective Learning by Fostering the use of Innovative Educational technologies)** is such a tool. SELFIE builds on DigCompOrg⁵ and DigiCompEdu⁶ and allows schools to assess their use of technology in support of teaching, learning and assessment. SELFIE places an emphasis on the whole organisation and encourages collective reflection for school leaders, teachers and students. The SELFIE assessment generates a 360 degree school report based on participants' responses to a questionnaire with multiple-choice and reflective questions. SELFIE is currently available for primary and secondary education in all 24 EU languages. The European Commission's Joint Research Centre (JRC) is planning to extend this to cover early childhood education and care (ECEC) as well as Vocational Education and Training (VET) and Work-based Learning (WBL) to ensure more dialogue between schools and the labour market. In addition to SELFIE, the Joint Research Centre has launched a SELFIE tool for Teachers in 2021. SELFIE for Teachers is a self-assessment tool which supports teachers' reflection upon their digital competence.

The JRC's latest research on SELFIE highlights the importance of sharing and discussing the school report with members of the wider school community.

Schools often need assistance before and after using the SELFIE tool itself. This is why the European Commission plans to roll out the SHERPA4SELFIE programme. SHERPA is currently a two-year Erasmus+ project with a mission to strengthen the adoption and systematic use of SELFIE across Europe. The project for developing and piloting two support tools: (1) SELFIE HELPER, a chatbot system that assists schools in using the SELFIE platform by providing them with real-time help and (2) the SELFIE PEDAGOGICAL TOOLKIT, a comprehensive package to help schools transform their SELFIE

⁵ European Commission(n/a) 'SELFIE's sister projects: supporting the digital capabilities of teachers and citizens', URL: https://ec.europa.eu/education/schools-go-digital/news/selfies-sister-projects-supporting-digital-capabilities-of-teachers-and-citizens_en

⁶ European Commission (n/a)'How Selfie Works', URL: https://ec.europa.eu/education/schools-go-digital_en



results into concrete innovation strategies and actions for deploying digital technologies more effectively in teaching and learning.⁷

We will take into account the self-assessment tools DigCompOrg and DigCompEdu, a digital competence framework developed for educators,⁸ to inform the drafting of the guidelines for ICT coordinators (task 5).

3.2 Review of select international literature

This review of the literature provides further information on comparisons related to digital transformation in education, particularly for ICT coordinators, across the EU and internationally. It also highlights some perceived examples of good practices. The literature on ICT coordination tends to be based on country specific examples, where developments may be context dependent. More emphasis has been placed on research in primary schools, than in secondary schools and vocational education and training.

This section starts with the different perceptions of priorities among ICT coordinators (3.2.1). It then looks at the conditions for a successful integration of ICT coordination (3.2.2) before focusing on the desirable personal attributes of ICT coordinators (3.2.3) and school leaders (3.2.4) for success. Finally, this section presents the findings of the literature regarding the impact of ICT coordination (3.2.5) and how the covid-19 pandemic has changed digitalisation in education and the need for ICT coordinators (3.2.6).

3.2.1 Different perceptions of priorities among ICT coordinators

The literature first highlights the priorities that ICT coordinators have of their role. Drawing upon a sample of primary schools in Andalusia, Spain, León-Jariego et al (2020) found that ICT coordinators saw their role differently (even if an official definition of their role was provided by the Government). ICT coordinators mostly saw their role as fulfilling three purposes: supporting ICT use in the classroom (67.1%), promoting ICT use in the classroom (17.8%) and 'planning and maintenance of ICT equipment in the school (15.1%)⁹. ICT coordinators had different preferences about whether to separate their pedagogical and technological function.

In a 2014 study of 101 ICT coordinators in Andalusia, Rodríguez-Miranda et al (2014) also found that school web management was considered as the least important function and that the management of digital tools was prioritised mostly by the youngest female ICT coordinators who did not hold any other school position¹⁰.

3.2.2 The conditions for a successful integration of ICT coordination

Tondeur et al (2010) analysed the key success factors related to how ICT coordination can increase learning outcomes and pedagogical attributes in a longitudinal study across seven primary schools in Australia over a period of four years. They found that the ICT coordinator and school leader play critical but varying roles in the complex process of ICT integration into schools. Success was contingent on the support provided for ICT coordinators, its connection to school leadership and the personal leadership

⁷ <https://sherpa4selfie.eu/> (last consulted 28/03/22)

⁸ European Commission (2021) 'DigiCompEdu: the European Framework for the Digital Competence of Educators', URL: <https://ec.europa.eu/jrc/en/digcompedu> ; The DigiCompEdu framework emerged as the result of a comparison of 15 digital education frameworks Kampilis, P., Punie, Y., and Devine, J. (2015) 'Promoting effective digital-age learning', Luxembourg: Publications Office of the European Union, JRC98209, URL: <https://publications.jrc.ec.europa.eu/repository/handle/JRC98209>

⁹ León-Jariego, J.C., Rodríguez-Miranda, F.P. and Pozuelos-Estrada, F. (2020) 'Building the role of ICT coordinators in primary schools: A typology based on task prioritisation', in *British Journal of Educational Technology*, 51(3), pp. 835–852.

¹⁰ Rodríguez-Miranda, F. Pozuelos-Estrada, F. and León-Jariego, J. (2014) 'The Role of ICT coordinators: priority and time dedicated to professional functions', 72, in *Computers and Education*, 262-70.



characteristics and strategies employed by those in the role¹¹. Further literature on ICT coordination from Uganda corroborated these findings¹².

This suggests that *involving key leadership figures within the school is key to achieve successful digital transition (and external stimulus alone will not be sufficient)*.

A school-wide policy plan was also identified as a key factor for success. An ICT policy plan includes many aspects: vision development, financial policy, infrastructural policy, continuing professional development policy, and curriculum policy. Vanderlinde et al (2010) documented the positive effects of using an online tool to support ICT planning in primary schools in Belgium Flanders (Planning for ICT in Schools, pICTos) on ICT integration. These positive effects included a greater ability to shape the present and future of ICT at school based on data collected in the school and the development of a school vision on ICT integration steering relevant decisions¹³.

Vanderlinde et al (2012) acknowledged that the process linked to involving policy plans varied across schools and school cultures, based on research conducted in a limited sample of three Flemish primary schools. Vanderlinde et al (2012), supporting a distributed leadership model, also emphasised that *it was important to involve stakeholders in the school, including teachers, in the design of the policy plan, as well as in managing its implementation, in order to develop a shared meaning and engagement*¹⁴.

Developing a shared meaning and engagement among school staff, including administrators and teachers, was also identified as a key success factor for ICT transition in a study on Malaysian school. The same study added that the following attributes contributed to successful digital transition: high level of knowledge and skills, cooperation among teachers, a high level of trust and confidence placed on the teachers, having sufficient implementation time (on top of teaching and administrative commitments) and the good and regular maintenance of hardware and on-site support¹⁵.

In an analysis of the structures and mechanisms facilitating leadership for ICT implementation, Woo (2020) argues that another key for successful integration would be for schools to employ more than one ICT coordinator to meet different needs (IT support, pedagogical etc), and to develop the ICT coordinator(s)' teaching load, assignments and routine interactions around school needs.¹⁶

3.2.3 The required personal attributes & competences of ICT coordinators

Avidov-Ungar and Shamil-Inbar (2017) having consulted with 130 ICT coordinators in Hebrew and Arabic schools, in Israel found that ICT coordinators considered that, to be successful, their role required not only to master technological and pedagogical aspects, but also organisational and leadership aspects¹⁷.

¹¹ Tondeur, J.; Cooper, M.; Newhouse, C. P. (2010) 'From ICT coordination to ICT integration: a longitudinal case study', in *Journal of Computer Assisted Learning*, 26(4): 296-306.

¹² Kyakulumbye, S.; Katono, I.W. (2013) 'The Management Practices of ICT Integration in the Curriculum of Primary Schools in Uganda', in *Proceedings of the International Conference on e-Learning*, pp. 453-461. Kyakulumbye and Katano, through a large scale survey of primary schools in Uganda, found that planning, coordination, managerial support and organisation (as well as the availability of hardware and software) significantly impacts ICT integration.

¹³ Vanderlinde, R., Van Braek, J. and Tondeur, J. (2010) '**Using an online tool to support school-based ICT policy planning in based on interviews conducted across five Israeli schools implementing a national ICT reform plan, primary education**', in *Journal of Computer Assisted learning*, 26(5): 434-447.

¹⁴ Vanderlinde, R., Van Braak, J. and Dexter, S. (2012) 'ICT policy planning in a context of curriculum reform: Disentanglement of ICT policy domains and artifacts', in *Computers & Education*, 58(4): 1339-1350. This finding is also supported by Divarahan, S. and Cher Ping, L. (2010) 'Secondary school socio-cultural context influencing ICT integration: a case study approach', in *Australian Journal of Education Technology*, 26(6): 741-63.

¹⁵ Termit Kaur Ranjit, S. and Kalaivani, M. (2012) 'Factors Affecting School Administrators' Choices in Adopting ICT Tools in Schools--The Case of Malaysian Schools', in *International education studies*, 5(4): 21-30.

¹⁶ Woo, D. (2020) 'The Leadership of ICT coordinators: a distributed perspective', 16 December, URL: <https://journals.sagepub.com/doi/pdf/10.1177/1741143220979714>

¹⁷ Avidor-Ungar, O. and Shamil-Inbar, T. (2017) 'ICT Coordinators' TPACK leadership knowledge in their roles as agents of change', in *Journal of Information Technology, Research*, v16, pp. 169-88. See also Vanderlinde, R., Aesaert, K. and Van



Studying 513 primary as well as middle school education (12-15 year olds) in Israel, Blau et al. (2020) found that the ICT coordinator's leadership experience was a powerful predictor of students' digital collaboration skills, and that the coordinators' emotional perceived learning predicted the sustainability of e-collaboration¹⁸. *More generally, school personnel involved in digital transition also need the organisational, managerial and leadership skills required to be able to embrace changes and paradigm shifts, or specific communication skills, for example the ability to communicate effectively in non-traditional face-to-face settings.*¹⁹

3.2.4 The relevance of personal attributes and competences of school leaders

Given how much the support of key leadership figures matters in achieving digital transition, the personal attributes and competences of school leaders also have a significant impact on the teachers' readiness and commitment to implementing change. Cohen (2019) found that the *school principals' enthusiasm toward the reforms, their vision and potential contributions to the school, their ability to listen, to provide support and individual feedback were significant factor for school change*. Cohen (2019) also highlighted that principals who made the effort to learn and use ICT skills were role models who inspired teachers' motivation and led transformation. The sample used was limited for this study however and based on interviews conducted across five Israeli schools implementing a national ICT reform plan²⁰.

Ng and Ho (2012) showed that, in fact, different managers needed to be involved to achieve digital transition in schools in Singapore because they provided different types of leadership: the senior management performs transformational leadership, middle management instructional leadership and both senior and middle management provide emotional leadership²¹.

3.2.5 The impact of ICT coordination

Avidov-Ungar and Shamir-Inbal (2013), drawing upon a survey of 226 ICT leaders, found that introducing ICT plans at school led to the following pedagogical, technological and organisational benefits for the school: increasing information sharing management optimisation, pedagogical change, bridging the gaps, and community visibility. In addition, they also found that ICT leaders achieved a sense of empowerment as leaders of organisational change when they achieved pedagogical change at school²². In a follow-up study, Avidov-Ungar and Shamir-Inbal (2019) specified that the sense of empowerment could be personal, related to leadership competences or to a subject area and that teachers who were also ICT coordinators were more likely to modify and adapt their teaching to digital technologies²³. Shamir-Inbal and Blau (2017) analysed how school principals and ICT coordinators measured the quality of the ICT integration in a survey carried out across 358 Israeli primary schools. Their results show that *school principals and ICT coordinators tend to measure quality of ICT integration based on internal factors such as intraschool collaboration, digital content used and design, pedagogical updates of class websites and e-communication within the teaching staff* – these factors

Braak, J. (2015) 'Measuring ICT use and contributing conditions in primary schools', in *British Journal of Educational Technology*, 1056-63.

¹⁸ Blau, I; Shamar-Inbal, T. and Hadad, S. (2020) 'Digital collaborative learning in elementary and middle schools as a function of individualistic and collectivistic culture: The role of ICT coordinators' leadership experience, students' collaboration skills, and sustainability', in *Journal of Computer Assisted Learning*, URL: <https://onlinelibrary.wiley.com/doi/abs/10.1111/jcal.12436>

¹⁹ Eshet-Alkalai, Y. (2012). Digital literacy: A revised model. *Issues in Informing Science and Information Technology*, 9, pp. 267–276. Shamir-Inbal, T., Dayan, J., & Kali, Y. (2009). Assimilating online technologies into school culture. *Interdisciplinary Journal of E-Learning and Learning Objects*, 5, 307-334, URL: <http://www.ijello.org/Volume5/IJELLOv5p307-334Samir-Inbal675.pdf>

²⁰ Cohen, J. (2019) 'Principals' leadership behaviours that shaped teachers' motivation to implement an educational ICT reform imposed by state authorities in Israel', in *Israel affairs*, 25(3): 554-70.

²¹ Ng, D. and Ho, J. (2012) 'Distributed leadership for ICT education in Singapore', in *Peabody Journal of Education*, 67(2): p235-252 2012.

²² Avidov-Ungar, O. and Shamir-Inbal, T. (2013) Empowerment Patterns of Leaders in ICT and School Strengths Following the Implementation of National ICT Reform, in *Journal of Information Technology Education: Research*, volume 12, pp. 141-158.

²³ Avidov-Ungar, O. and Hanin-Itzak, L. (2019) 'Sense of empowerment among school ICT coordinators: personal, subject-area and leadership empowerment', in *Technology, Knowledge and Learning*, 24: 401-17.



accounted for 47.1% of the variance in the perceived general quality of ICT integration; rather than external factors, such as collaborative activities between schools or e-communication with students and parents²⁴.

3.2.6 The impact of the COVID-19 pandemic

Reports looking at the impact of the COVID-19 pandemic highlight the need for further support around competence development and integration of digital technologies in pedagogical tools across all levels of education. A recent survey conducted across 24 countries by the OECD comparing the use of digital technology for education for early education (3-8 year olds) pre- and during COVID-19 school closures showed how the pandemic has accelerated the need for a greater use of digital technology in early education, and how national governments have adjusted their priorities to meet these needs. Digital technologies were more used for communication than for pedagogy in early education before the pandemic. In addition, the expectations of teachers for the inclusion of digital technology were relatively moderate. During the pandemic, digital technologies were used in variable ways across the surveyed countries: they were at times used to communicate material to parents/caregivers without exposing children to screens, and more frequently for real-time activities in primary than pre-primary education. Since the pandemic, more than 75% of countries surveyed have changed strategies and aim to integrate new technologies in early education up to 2025, to increase workforce training and to develop learning tools specifically designed for young children.²⁵

A 2021 report published by the Joint Research Centre also highlighted the needs for support that the COVID-19 lockdown brought to the forefront²⁶. This report, based on 144 interviews conducted among education stakeholders in Belgium, Estonia, Greece, Italy and Poland in primary and secondary education, showed that the role of remote educators required adequate training for teachers, including the development of competence in digital pedagogy, as well as how to monitor and assess students' learning progress remotely, and to identify potential mental health issues. IT assistance in schools, and further attention on privacy and safety when using digital resources.

In vocational education and training (VET), a European Commission survey which gathered 200 replies in March 2020 showed that further support was required to create online courses/learning modules which are specific to VET content and contain specific practical sectoral skills. The report suggested further developing the digital skills of teachers, trainers, and mentors to develop their teaching and training material; further information and guidance about organising distance learning, or a common platform for VET topics as potential ways forward in VET²⁷.

The following section focuses on the six European case studies selected for this report.

²⁴ Shamir-Inbal, T. and Blau, I. (2017) 'Which pedagogical parameters predict the general quality of ICT integration from the perspective of elementary school leaders?', in *Computers in the school*, 34(3): 168-191.

²⁵ Jamet, S., Gonzalez-Sancho, C. and Pal, J. (2021) 'The Use of digital technologies for the education of young children', OECD, Paris.

²⁶ Carratero, S. et al (2021) 'What did we learn from schooling practices during the COVID-19 lockdown', in Joint Research Centre Science for Policy Report, Luxembourg: Publications Office of the European Union.

²⁷ European Commission (2020) 'Survey of how VET stakeholders are facing the COVID-19 emergency: summary note', Directorate General for Employment, Social Affairs and Inclusion.



4. Comparative overview

This section summarises our comparative analysis of digital education initiatives in relevant countries within and beyond the European Union. The main questions this section seeks to answer are:

- How is ICT coordination at school structured across case study countries? (section 4.1)
- What are the main initiatives to support ICT coordinators and other teachers? (Section 4.2)
- How are ICT reforms/ICT coordination evaluated and monitored? (Section 4.3)
- Which drivers and barriers exist to ICT reforms and coordination? (Section 4.4)

4.1 Overview of ICT coordination across the European Union

This section examines how ICT coordination at school is structured across case study countries, and how it is integrated into wider national digital education initiatives.

4.1.1 General overview of emerging patterns across the European Union

The emerging patterns allow us to classify the digital education initiatives into three different governance types, which largely overlap with geographic and socio-cultural traditions: A. Nordic; B. Mediterranean; C. Hybrid.

- In the **Nordic** case study countries (Denmark, Estonia, Finland, Sweden) the physical technological infrastructure is highly developed, there is a high or very high level of ICT skills among teachers and students (for instance, in Estonia, 75% of teachers use digital tools in their teaching at least once a week), and ICT tools and approaches are used at all education levels. Instead of having designated ICT coordinators in each school, the aim is to train all teachers in digital education technologies to integrate ICT into their teaching.²⁸ ICT is not a separate subject but integrated into all exercises as a matter of habit. Teachers have access to digital skills assessments, usually via a mobile app (e.g. Sweden).²⁹ Self-assessment at school level is common. These countries usually had a strong digital education policy in place before the COVID-19 pandemic, which was reinforced to cope with the effects of digitisation on teaching, learning and the labour market.
- In the **Mediterranean** countries (Greece, Spain, Italy, Portugal), the physical technological infrastructure was often unevenly or insufficiently developed across the national territory before the COVID-19 pandemic. This led to uneven access to high-speed internet and digital social services, including digital education.³⁰ ICT skills among both students, teachers and school administrators varied by region and educational level. To counteract some of these imbalances, Mediterranean countries – and Spain in particular – rely on school-based ICT

²⁸ Gustafsson, U. (2021) "Taking a step back for a leap forward: policy formation for the digitalisation of schools from the views of Swedish national policymakers", in *Education Inquiry*, 12:4, 329-346.

²⁹ Belényesi, P. (2015) 'Sweden: Digital Competitiveness and Digital Evolution - Why Are Nordic Countries Ahead?' in *European Networks Law and Regulation Quarterly* 3.3 (2015): 215. Web. Volungevičienė, A., Brown, M., Greenspon, R., Gaebel, M. & Morrisroe, A. (2021). *Developing a High-Performance Digital Education System: Institutional Self-Assessment Instruments*. URL: <https://eua.eu/downloads/publications/digitaldesk%20research%20report.pdf>

³⁰ The 2018 PISA study reported that 9% of Spanish pupils did not have a digital device (except mobile phones) at home and 7% of students lack a reliable internet connection. <https://www.educacionyfp.gob.es/en/prensa/actualidad/2020/06/20200616-educaendigital.html>. The government has since launched the "Kit Digital" initiative to invest in digital hardware and coverage. <https://www.educacionyfp.gob.es/en/prensa/actualidad/2020/06/20200616-educaendigital.html>



coordinators, a position created in 2000, which is compulsory in some regions, including Andalusia. These ICT coordinators have multiple functions: “support of ICT use in the classroom” (67.1%), “promote ICT use in the classroom” (17.8%) and “planning and maintenance of ICT equipment in the school” (15.1%).³¹ This can lead to role ambiguity and difficulties in reconciling the technical and pedagogical aspects of the ICT coordinator’s job profile. Nonetheless, the role of school-based ICT coordinator has attracted much interest and attention in the wake of the COVID-19 pandemic. Public authorities are now collaborating with a host of private training providers to promote digital transformation at school.

- The third group is constituted by countries with **hybrid** ICT governance patterns. They are usually located along the central European belt (Austria, Germany, Luxembourg...) and have highly developed digital infrastructures, but uneven ICT skills among educators and school administrators. ICT coordinators, where they exist, do not always operate in teams and are rarely integrated into the wider school mission and identity. Their time is often occupied with maintenance tasks and ad-hoc trainings. The COVID-19 pandemic, however, highlighted the importance of digital teaching, learning and school administration. This led to vast education reforms placing ICT skills at the centre of a holistic digital transformation. This includes a digital competence framework for teachers and administrators, regular self-evaluations, collective knowledge-sharing on digital training platforms and generously subsidised schemes to distribute digital devices for learners at all education levels. These countries, which can draw on a traditionally strong training infrastructure, are fast becoming models of rapid digital transformation.

4.1.2 Overview of ICT coordination in case study countries

Focusing on the six case studies of our study, ICT coordinators appear relatively common, similarly to the rest of the EU. Using the International Standard Classification of Education (ISCED) level 3 as an example, 79% of pupils at this education level were in a school with an ICT coordinator on average in the EU in 2017-18 according to the European Commission’s second survey of schools³². Table 4.1 provides an overview of the use of ICT coordination in the case study Member States.

Table 4.1: Overview of ICT coordination in case study countries

Member State	Further description
Austria	95% of pupils were in a school with an ICT coordinator (previously called IT-custodians, now IT-Managers, ‘IT-Manager/innen’) in 2017-18 at ISCED-level 3, more than the EU average ³³ . However, ICT coordinators in Austria were less likely to offer pedagogical support than the EU average, based on a 2012 study. ³⁴

³¹ Moreira, M.A., Hernández Rivero, V. M. & Sosa Alonso, J.S. (2018). "Leadership and School Integration of ICT. Teachers Perceptions in Spain." *Education and Information Technologies* 24.1 (2018): 549-65. URL: <https://link.springer.com/article/10.1007/s10639-018-9789-0>. Area Moreira, M., Cepeda Romero, O. & García, L. F. (2018) . "El Uso Escolar De Las TIC Desde La Visión Del Alumnado De Educación Primaria, ESO Y Bachillerato." *Educatio Siglo XXI : Revista De La Facultad De Educación* 36:2. URL: <http://revistas.um.es/educatio/article/view/333071>

³² European Commission (2019) ‘Second survey of schools: ICT in education, Objective 1: benchmark progress in ICT in schools’, p. 107 URL. : <https://data.europa.eu/euodp/data/storage/f/2019-03-19T084831/FinalreportObjective1-BenchmarkprogressinICTinschools.pdf>

³³ Idem

³⁴ European Schoolnet and University of Liege (2012) ‘Survey of schools: ICT in education, Country profile: Austria’, November, p. 20 URL https://ec.europa.eu/information_society/newsroom/image/document/2018-3/austria_country_profile_2EEA9CE6-DEBB-90FC-9BC1E567E4489935_49428.pdf



Member State	Further description
<p>Estonia</p>	<p>Most pupils in ISCED level 3 (94%) were in a school with an ICT coordinator in 2017-18³⁵. The role is understood as fulfilling three distinct functions, split across different professionals:</p> <ul style="list-style-type: none"> • The ICT teacher teaches the compulsory subject of computer science. • The IT Manager focuses on acquisition and maintenance of hard- and software infrastructure • The Educational Technologist is an ICT teacher with an additional specialised MA degree to qualify for this role. The Educational Technologist is responsible for integrating the right digital technologies into the teaching and learning process and therefore needs to combine pedagogical, technological and strategic skills. Educational Technologists <p>Educational technologists and IT managers tend to collaborate closely, and more occasionally with the ICT administrator³⁶.</p> <p>Depending on the needs and financial resources of the school, these three positions might be full-time or part-time. Even if one or more positions are part-time, however, different staff members will ensure that the three roles remain distinct, since the pedagogical, technical and strategic elements of ICT coordination rely on different skillsets. In rural areas where schools are small, one professional could work across more than one school. These roles may also not exist consistently in all schools³⁷.</p> <p>However, all teachers are encouraged to include digital teaching and learning methods in their pedagogic practice. 74.1% of teachers reported that ICT skills for teaching were included in their professional development activities (OECD average: 60.4%),³⁸ and 57% of them used computers and digital presentation tools in more than 25% of their lessons as early as 2012. This is the fourth-highest rate of ICT classroom use in the EU.³⁹</p>
<p>Netherlands</p>	<p>89% of pupils were in a school with an ICT coordinator in 2017-18 at ISCED level 2⁴⁰. The pedagogical and technical aspects of ICT coordination are separated, with most of the technical maintenance outsourced to private providers. “i-coaches”, who focus on the pedagogical aspect of the digital transition, design ICT plans in line with the school’s educational goals. Kennisnet has supported the transition toward ICT coordination since 2012 by providing training and advisory services to school-based i-coaches. In the most successful cases i-coaches occupy a cross-structural position, linking the operational, tactical and strategic levels of school management. Collaboration between different types of teachers is encouraged, but still lower than</p>

³⁵ European Commission, 2019, op. cit.

³⁶ Interview, 23 November 2021.

³⁷ Interview 25 November 2021.

³⁸ Kaplan, R., James, J., Toledo Figuera, D., Rawkins, C., Dumont, C. et al. (2020), "OECD Education Policy Outlook: Estonia country profile, URL: <https://www.oecd.org/education/policy-outlook/country-profile-Estonia-2020.pdf>

³⁹ European Schoolnet (2012), ICT in Education: Estonia country profile, p. 9. URL: <https://silo.tips/download/survey-of-schools-ict-in-education-country-profile-estonia>

⁴⁰ European Commission, 2019, op. cit. Data for ISCED level 3 missing.



Member State	Further description
	<p>expected. A survey of 200 teachers during the COVID-19 pandemic revealed that they had experienced less collaboration with ICT coordinators than they had expected.⁴¹</p>
<p>Portugal</p>	<p>72% of pupils were in a school with an ICT coordinator in 2017-18 at ISCED level 3, which was lower than the EU average⁴². Teamwork is encouraged: Schools have Digital Development Teams which bring together subject expertise and leadership skills. In the framework of the “Universalisation of Digital Schooling Programme” (2020) and the Action Plan for Digital Development (<i>Plano de Ação para o Desenvolvimento Digital das Escolas – PADDE</i>), these Digital Development Teams were asked to undertake a skills assessment (often using SELFIE) and draft a digital development plan tailored to the school’s digital competence level and digital goals. ICT coordinators were less likely to be full-time employees than the EU average⁴³. ICT coordinators at school are complemented by “Digital Ambassadors” at the Directorate-General for Education’s 91 local Training Centres (<i>Centros de Formação - CFAE</i>), to facilitate the implementation of local digital transition plans.</p>
<p>Spain (Andalusia)</p>	<p>Almost all students (97%) were in schools with an ICT coordinator in Spain at ISCED level 3⁴⁴. Andalusia introduced ICT coordinators in 2003, closely coinciding with the rollout of digital whiteboards in classrooms from 2004. In the wake of the COVID-19 pandemic, the ICT coordinator became the Coordinator for the Digital Transformation in Education (Spanish: <i>coordinador de la transformación digital educativa</i> or “<i>coordinador TDE</i>”) to account for a broader set of responsibilities. The concept of TDE at school encompasses three areas of action: (1) organisation and management of the school (2) the processes of teaching and learning and (3) the area of information and communication, both internal and with external stakeholders. The workload relative to each of these tasks varies across school size, type and budget. In some schools, some of the technical tasks are outsourced to contract agents to allow the ICT coordinator to focus on how to integrate ICT in the pedagogical mission of the school. Generally speaking, ICT coordinators are involved in the procurement and maintenance of hardware, train other teachers in methods to integrate ICT in their teaching practice and have a pivotal role in designing the school’s “Digital Activation Plan” every year. Coordination teams exist in VET centers but they are not officially considered as ICT coordinator teams. The Coordination team can include: the management team, the head of the training, innovation and evaluation department or a similar body, a member of the guidance department and the teaching staff⁴⁵.</p>

⁴¹ Van der Spoel, I., Noroozi, I., Schuurink, E. & Van Ginkel, S. (2020) “Teachers’ online teaching expectations and experiences during the Covid19-pandemic in the Netherlands”, *European Journal of Teacher Education*, 43:4, 623-638, DOI:10.1080/02619768.2020.1821185; Rizza, C. (2011) “ICT and Initial Teacher Education: national policies”, OECD Directorate for Education Working Paper no. 61. P. 15 URL: <https://www.oecd-ilibrary.org/docserver/5kg57kjj5hs8-en.pdf?expires=1637858508&id=id&accname=guest&checksum=A894D2EEDB08FA2F97F216A21D9D6EF3>

⁴² European Commission, 2019, op. cit.

⁴³ European Schoolnet and University of Liege (2012) ‘Survey of schools: ICT in education, Country profile: Portugal’, p. 20, URL: <https://silo.tips/download/survey-of-schools-ict-in-education-country-profile-portugal>

⁴⁴ European Commission, 2019, op. cit.

⁴⁵ Interview, 23 November 2021. T



Member State	Further description
Sweden	76% of pupils in ISCED level 3 were in schools which had an ICT coordinator in 2017-19 ⁴⁶ .
Belgium	76% of pupils in ISCED level 3 were in schools which had an ICT coordinator in 2017-18 ⁴⁷ . These ICT coordinators juggle technical and pedagogical tasks. Schools are allocated a certain number of hours for ICT coordination, depending on the school size and type. Reforms are planned to increase the strategic role and help schools transition towards embedded ICT teams.
EU average	79% of pupils in ISCED level 3 were in a school with an ICT coordinator on average in the EU in 2017-18 ⁴⁸

All the case study countries used ICT coordinators, and the use of ICT coordinators is quasi-universal in Austria, Estonia and Spain in particular (at ISCED level 3).

However, **some variations** remain by level of education. For example, the likelihood to be in a school with an ICT coordinator increases between ISCED levels 1 and ISCED levels 2 and 3: 62% of pupils were in a school with an ICT coordinator at ISCED level 1; 81% at ISCED level 2 and 79% at ISCED level 3 on average across the EU in 2017-18⁴⁹. Variations also exist between regions (e.g. Estonia and Spain).

In addition, the function of ICT coordinators takes different forms across Member States. ICT coordinators in Austria (called IT custodians) (IT managers, *'IT-Manager/innen'*) are typically teachers, who offer other teachers and students additional help with technology, who maintain hardware and software and who deliver in school-training, and often work in teams of three to six, but who have limited involvement in school strategies and broader visions. IT coordinators in Austria do not typically coordinate broader school ICT policies.

Schools in Spain also have an allocated ICT coordinator who appears to fulfil a similar role. ICT coordinators in Spain provide guidance to teachers; encourage content development and its dissemination; and manage educational tools and facilitating their use to teachers. They also guide the teachers in technical problem solving; ensure dissemination of knowledge within and across schools; and manage the school intranet and update school website content.

In Estonia, the function of ICT coordination is divided across three different categories of professionals: education technologists, who coordinate activities in the field of digital learning and pedagogy and teach digital skills to teachers and school staff members ICT managers, involved in ICT administration and technical support, someone who ensures that the infrastructure and software is running.

ICT coordinators tend to limit their role to a school, although Digital Ambassadors in VET training centres in Portugal have a broader remit extended to the community.

The job profile of ICT coordinator is specified by the Government in Spain, takes the form of guidelines in the Netherlands and official job descriptions issued by the Education and Youth Board in Estonia. In Estonia, the qualification requirements for the function of educational technologist are a master's

⁴⁶ European Commission, 2019, op. cit.

⁴⁷ European Commission, 2019, op. cit.

⁴⁸ European Commission, 2019, op. cit.

⁴⁹ European Commission, 2019, op. cit.



degree in a relevant discipline, which means that schools with such a position benefit from a specialised in-house staff member.

In general, an essential requirement for the position of ICT coordinator is digital literacy. Some Member States also factor in the managerial and leadership skills that ICT coordinators/change agents would require in schools. The Dutch organisation Kennisnet articulates its guidelines on the ICT competence of teachers around broader competence areas than digital literacy to also include: learning situation (e.g. how does the teacher decide which ICT resources are best for a particular subject or learning context?); professionalisation (how can teachers be enabled to use ICT individually and collectively?) and organisation (how can institutional demands and policy be implemented uniformly?). In Spain, ICT coordinators are recruited on the basis of their digital competence and mastery of digital methods and platforms, as well as their organisational capabilities⁵⁰. In Estonia, Educational Technologists are required to have project management skills to plan and facilitate change across the school community.

4.3 Comparison of support initiatives

This section focuses on the question “What are the main initiatives to support ICT coordinators and other teachers?”.

4.3.1 National/regional

ICT coordinators and teachers are supported in all countries we analysed through national policy frameworks and various ICT initiatives, but the form and frequency of support varies as indicated in table 4.2.

⁵⁰ Interview, 23 November 2021.



Table 4.2: Overview of relevant national frameworks and ICT initiatives

Member State	National policy framework	Examples of relevant ICT initiative
<p>Austria</p>	<p>The main framework for the digital transformation of the Austrian education system is "Digital School 4.0", a comprehensive strategy presented in 2017 and revised in light of the "COVID-19 opportunity" in 2020. This strategy includes: (1) the master plan for the digitalisation of the education system; (2) the PODS portal for digital schools; (3) a new training plan and competence framework for the fundamental digital skills of students and educators; (4) a revision of teacher training and continuous professional development via the training portal eEducation; (5) subsidised digital devices.</p>	<p>The framework for digital competences Digi.kompP specifies the key areas of digital competences for teachers, including in school administration and community building.</p> <p>Teachers can also develop their digital competences through the the digi.folio learning centre [accessible via the eEducation network]. They can access a self-assessment tool, digi.checkP, tailored training plans, self-evaluations and certified qualifications. Teachers can also exchange teaching material through the Eduthek platform.</p> <p>The teacher education curriculum revised in 2017 includes at least one term (60 ECTS) of compulsory courses like "digital pedagogy", and new teachers are required to expand their digital skills through structured professional development during their first 5 years in office. Access to continuous professional development for experienced teachers is more difficult however.</p>
<p>Estonia</p>	<p>The Education Strategy 2021-2035,⁵¹ a follow-up plan to the Estonian Lifelong Learning Strategy 2020,⁵² acts as the main national policy document for education. Digital transformation is part of Estonia's Education Strategy, which promotes the development of students' and teachers' digital literacy,</p>	<p>99% of schools in Estonia already had ICT solutions before the COVID-19 pandemic because the drive to digitise education already started 1997, when a project called <i>Tiigrihüpe</i> (Tiger Leap) was launched to provide computers and internet access for schools. This hardware was accompanied by free and vital professional</p>

⁵¹ <https://www.hm.ee/en/activities/strategic-planning-2021-2035/education-strategy-2035-objectives-and-preliminary-analysis> (last consulted 11/02/2022).

⁵² https://www.hm.ee/sites/default/files/estonian_lifelong_strategy.pdf (last consulted 11/02/2022).



Member State	National policy framework	Examples of relevant ICT initiative
	and access to digital tools and infrastructure, to develop a digital culture at all educational levels, and to disseminate good practices.	development for teachers on ICT essentials. Estonia aimed to digitise all education materials in 2015 and supported professional development for digitalisation in schools.
Netherlands	The Dutch Digital Strategy 2021 lists "Digital skills and inclusion" as one of 4 focus areas. The Government is preparing an action plan for the digitalisation of education within the framework of the Dutch Growth Strategy. The Government is currently preparing an action plan for the digitalisation of education within the framework of the Dutch Growth Strategy. €63 million have been earmarked to scale up promising prototypes to support the EU's Digital Education Action Plan (DEAP) 2021–2027. To prepare the public for future developments, the Netherlands have also launched a foresight report entitled "Digitalisation 2030". ⁵³	The public Kennisnet Foundation provides various sources of support including teachers' professional development, ICT infrastructure, information security and privacy, digital literacy and learning resources. A recent study and training programme entitled <i>Bruggen Bouwen</i> ("Building Bridges"), for example, identified success factors for the role of "i-coaches" and is bringing together school sector councils and school-based "i-coaches" to discuss strategic solutions in the area of ICT in education. ⁵⁴ Kennisnet has also developed the official guidelines on the ICT competences of teachers.
Portugal	The Action Plan for the Digital Transition (2019) includes "digital education". The "Universalisation of Digital Schooling Programme" is being implemented as of this academic year 2020/2021 and aims at providing access to all students and teachers to digital educational tools and resources as well as to provide teachers with professional development. The Portuguese Government recognised how the coronavirus pandemic has intensified the need for further professional development and launched the Action Plan for Digital Development (<i>Plano de Ação para o Desenvolvimento Digital das</i>	The Ministry of Education initiated a number of key initiatives aimed at consolidating the various parts of this programme, including: an analysis of teachers' level of competence, which will enable the programme to focus on their education and qualifications; the professional development of teacher educators which will enable a large number of teachers to acquire the appropriate and required skills; Digital transition plans for each school cluster; the creation of "Digital Ambassadors" at Training Centres (Centros de Formação -

⁵³ <https://www.nederlanddigitaal.nl/documenten/publicaties/2021/06/01/outlook-digitalisation-2030>

⁵⁴ Kennisnet and saMBO-ICT (2021), 'Bruggen Bouwen: De succesfactoren voor i-coaches in het mbo'. URL: <https://mbodigitaal.nl/wp-content/uploads/2018/06/iCoaches-Bruggenbouwen-ijpdf.pdf> (last consulted 04/02/2022).



Member State	National policy framework	Examples of relevant ICT initiative
	<p><i>Escolas – PADDE</i>) with the participation of 98% of schools in the first year of the programme.</p>	<p>CFAE), to facilitate the implementation of local digital transition plans; a virtual school textbooks pilot programme. This measure is geared towards students and teachers, with a budget of €400 million financed by European funds.⁵⁵</p>
<p>Spain (Andalusia)</p>	<p>In response to the educational gaps highlighted by the COVID-19 pandemic, the Spanish Government launched the "<i>Educa en Digital</i>" programme in June 2020 and ratified a comprehensive education reform in 2021. The LOMLOE (Organic Law Amending the Organic Law of Education), which came into force on 19 January 2021, seeks to achieve better educational performance by focusing on 5 pillars, one of which is "Adapting the education system to digital advances". The new law is complemented by a wider strategy called "<i>España Digital 2025</i>" ("Digital Spain 2025"), which supports plans to improve digital infrastructure (and the rollout of 5G in particular), the development of a national Artificial Intelligence (AI) strategy, the digitalisation of SMEs, the digitalisation of public administration, the renewal of the audio-visual sector and a Plan for Digital Competences. The budget is €70m, co-financed by the Spanish administration (€20m - of which up to €15m from EU Recovery funds) and the private sector (€50m).</p> <p>Although ICT coordinators have existed in Andalusia since 2004, the Ministry for Education and Sport published an updated "Instruction on measures for the digital transition in education in public teaching centres" on 31 July 2021. Its main aim was to bridge the gap between the available technology and the broader educational vision. The ICT coordinator became the Coordinator for</p>	<p>ICT coordinators ("<i>coordinadores TIC</i>", now called "<i>coordinadores TDE</i>") cover technological, didactic and strategic tasks. Generally speaking, ICT coordinators are involved in the procurement and maintenance of hardware, train other teachers in methods to integrate ICT in their teaching practice and have a pivotal role in designing the school's "Digital Activation Plan" every year. All ICT coordinators in Andalusia benefit from continuous professional development via the government-funded platform Seneca (<i>Portal Séneca - Consejería de Educación y Deporte</i> (juntadeandalucia.es) and eAprendizaje (see below: eAprendizaje <i>Punto de encuentro de la Comunidad Educativa</i> (juntadeandalucia.es)), which assemble more than 30.000 learning resources ready to use in the classroom.</p>

⁵⁵ This includes a contribution of 96 million through European Social Funds. For more information, see: <https://ec.europa.eu/esf/main.jsp?catId=67&langId=en&newsId=9962>



Member State	National policy framework	Examples of relevant ICT initiative
	<p>the Digital Transition in Education (Spanish: <i>coordinador de la transformación digital educativa – coordinador TDE</i>) to account for a broader set of responsibilities. The concept of the digital transformation in education includes “the set of actions aimed at improving and modernising processes, procedures, habits and behaviours of educational organisations and people who, making use of digital technologies, improve their ability to face the challenges of our current society.” At school, this digital transformation encompasses three areas of action: (1) organisations and management of the education centre, (2) the processes of teaching and learning and (3) the area of information and communication, both internal and with external stakeholders.</p>	
<p>Sweden</p>	<p>The Swedish National Digitalisation Strategy for the School System 2017-2022 aims to create further opportunities for nationwide digitalisation, achieve a high level of digital competence (especially for children, students, and younger people). The National Digitalisation Strategy for the School System in Sweden is built on 3 focus areas, each accompanied by a set of sub-goals: (1) Digital Competence for Everyone: all children and students must develop adequate digital skills; (2) Equal access and use: Children, students and staff must have good and equal access to digital tools and resources in order to improve education activities; (3) Research and follow-up on the possibilities of digitalisation. Detailed information for different stakeholder groups is accessible via the #skoldigiplan website and information campaign. Sweden is a country where a National Coalitions for Digital Skills and Jobs is well established. Such national coalitions are innovative partnerships between digital skills organisations that work to develop digital skills at national or local level and to tackle the lack of digital skills.</p>	<p>LIKA offers a self-assessment tool validated by external researchers as part of a framework/guidelines to facilitate digital transition for school managers and teachers. LIKA focuses on: management, infrastructure, competence, use and analysis & action plan to facilitate digital transition in schools. LIKA supports the national plan for action for digitalisation #skolDigiplan. LIKA represents an interesting example to consider how guidelines for transition can be operationalised in schools through a self-assessment questionnaire. SKR is run by the Swedish Municipalities and Regions (<i>‘Sveriges Komuner och Regioner’</i>, SKR), which gather all Swedish municipalities and regions.</p>



Table 4.2 highlights how much Governments from across the European Union are prioritising digital education. All case study countries have national strategies or programmes in place to support digital education, backed by significant investments, e.g. the Austrian Digital School Strategy 4.0, launched in 2017, currently benefits from an investment of 250 million euros over seven years and the Spanish “Educa en Digital” programme, which started in June 2020 as a response to the COVID-19 pandemic, has an initial budget of 230 million euros⁵⁶. **Improving infrastructure and/or connectivity** is at the forefront of various national programmes and strategies (e.g. Austria, Estonia, the Netherlands, Portugal, Spain and Sweden).

Support for ICT coordinators includes: access to project-based funding from local governments (as in Estonia), facilitating the creation of formal and informal networks or platforms (also in Estonia and Portugal), or achieving recognition: for example, in Portugal, “Digital Ambassadors” in Training Centres (Centros de Formação - CFAE) are assigned to facilitate the implementation of local digital transition plans. In Austria, a seal of approval is awarded to schools which show an excellent commitment to digitalisation. Financial compensation for additional work was mentioned in Spain.

Support to develop teacher competences takes various forms. In Spain, there are three sources of training for ICT coordinators and other teachers: first, all ICT coordinators in Andalusia benefit from continuous professional development via the government-funded platform Seneca (Portal Séneca - Consejería de Educación y Deporte (juntadeandalucia.es)) and eAprendizaje (eAprendizaje | Punto de encuentro de la Comunidad Educativa (juntadeandalucia.es)), which offer MOOCs and learning resources that are ready to use in the classroom and a national or regional platform for exchange of best practices. At the local level, Andalusia’s 91 Teacher Centres (Centros del Profesorado) guide and advise schools on their digital transition plans through an annual review system that often includes training suggestions tailored to school needs. ICT coordinators and school leaders can also request training from these Teacher Centres. The third option for professional development is is national, regional or local practitioners’ networks such as Pluma y Arroba, which offers training on the latest technologies at its annual congress.⁵⁷ This third category also includes private training providers, Microsoft or smaller organisations such as InerciaDigital.⁵⁸ Yet ICT coordinators are not the only ones who can access ICT training. Since most teachers will ultimately have to collaborate with the ICT coordinator to implement the school’s educational mission and Digital Activation Plan, both initial teacher education and continuous professional development include compulsory learning modules about ICT at school. In recent years, these courses have focused on priority areas identified by researchers, for example, closing the gender gap in ICT perceptions and teaching. The Government offers a digital platform for student teachers, teachers and teacher educators to ask questions and exchange good practices. Spain’s “Seneca” platform offers different professional development MOOCs for teachers in all Spanish regions as well as regular presentations of good practices.⁵⁹ In some cases,

⁵⁶ Red.es (2021) ‘Educa en digital’, <https://red.es/es/iniciativas/educa-en-digital> (last consulted 04/02/2022)

⁵⁷ <https://sites.google.com/site/plumayarroba/home> (last consulted 11/01/2022).

⁵⁸ <https://inerciadigital.com/> (last consulted 11/02/2022).

⁵⁹ For more information, see: <https://www.educacionyfp.gob.es/contenidos/ba/ceuta-melilla/ceuta/formacion-profesorado/planes-formacion.html>. In Andalusia, pedagogues also have access to the eLearning web space: <https://www.juntadeandalucia.es/educacion/eaprendizaje> . Ireland represents another relevant example: In Ireland, Ireland’s Professional Development Service for Teachers (PDST) is currently focusing on “Technology in Education” and offers continuous professional development for teachers who seek to develop digital education content. “Scoilnet” is a complementary digital platform which assembles and distributes educational material for all age groups online. For more information, see: <https://www.scoilnet.ie/>; Republic of Ireland, Professional Development Service for Teachers, <https://www.pdsttechnologyineducation.ie/en>



the centralised training offer is complemented by decentralised regional associations and private training providers who offer localised group training.⁶⁰

In Portugal, for example, the private digital training programme “Apps for Good” has recently been integrated into the Education Ministry’s Department for special and technological projects.⁶¹

In Nordic case study countries, teachers, school administrators and school leaders may develop digital skills following school-based initiatives (Estonia), or via decentralised self-assessment tools which help the user tailor training to their personal needs (Sweden).⁶² Self-assessment tools are also in use in Austria (e.g. digi.komp, digi.folio and PODS). ICT coordinators provide a significant source of support to develop teacher competences, by answering queries, supporting the integration of digitalisation in learning and in-house continuous professional development in the case of Estonia.

4.3.2 School-wide support

One key element of school-wide support identified by the literature is the existence of a policy plan/school strategy/written statement to provide a coherent vision to ICT integration. Table 4.3 shows that the use of such statements varies by Member State and level of education.

Table 4.33: Frequency of policy plans/written statements about ICT use in school, % of students, country and EU level, 2017-18)

Member State	ISCED level 1	ISCED level 2	ISCED level 3
Austria	10%	33%	36%
Estonia	68%	69%	79%
Netherlands	61%	68%	n/a
Portugal	13%	22%	27%
Spain	51%	61%	56%
Sweden	35%	45%	55%
Belgium	40%	54%	n/a
EU average	35%	38%	33%

Source: European Commission (2019) ‘Second survey of schools: ICT in education, Objective 1: benchmark progress in ICT in schools’ p. 100

Only about a third of pupils - between 33 and 38% depending on the ISCED level – were in a school with a written statement about the use of ICT on average in the EU in 2017-18⁶³. The use of policy

⁶⁰ One example is the private organisation Inercia Digital, which collaborates with the regional administration of Andalusia.

⁶¹ Interview with Joao Baracho, CEO of the Centre for Digital Innovation, on 22/11/2021.

⁶² E.g. LIKA. For more information, see: <http://lika.pbworks.com/w/page/17299736/LIKA%20in%20English>

⁶³ European Commission (2019) ‘Second survey of schools: ICT in education, Objective 1: benchmark progress in ICT in schools’, p. 100, URL. : <https://data.europa.eu/euodp/data/storage/f/2019-03-19T084831/FinalreportObjective1-BenchmarkprogressinICTinschools.pdf>



plans (strategic documents) appears more widespread in some Member States, including the Netherlands⁶⁴, Estonia and Spain; and less common in Austria and Sweden.

Portugal is an example of recent, but radical change in the way ICT policy plans are used at school. When the COVID-19 pandemic highlighted the country's digital divide, improving digital skills became a national priority as reflected in Portugal's Recovery and Resilience Plan (RRP). The Economic and Social Stabilisation Programme (2020) specifically highlighted the necessity to equip schools, teachers and students with hardware and digital skills for schoolwork. The Directorate-General for Education thus launched the 'Universalisation of Digital Schooling Programme' (2020) based on four cornerstones: equipment, connectivity, teacher education and digital teaching resources.

The first priority was to assist schools in designing their own Action Plan for Digital Development (Plano de Ação para o Desenvolvimento Digital das Escolas – PADDE). In each school, the Digital Development Team, a multidisciplinary team of teachers responsible for defining and implementing a vision for the school's digital development, run through the following 5 steps: first, the diagnostic phase, in which the results of the SELFIE self-assessment tool, the Portuguese Check-In tool and the school's past performance in digitalisation is analysed. Then, the Digital Development Team defines objectives and priorities tailored to school needs. This is followed by a medium- to long-term plan with actions and guidance on implementation. Step 4 is to communicate these plans and tasks to all relevant stakeholders in the school community and beyond (e.g. submitting the Digital Development Plan to the Ministry). The fifth and final step is monitoring and evaluation. This 5-step-model leads to a feedback loop between the immediate school community, the school-based Digital Development Team and the central Directorate-General for Education. So far, 98% of schools have submitted a Digital Development Plan.

4.4 How ICT coordinators/digital transition are evaluated

This section looks at how digital transition/the activities of ICT coordinators are monitored and evaluated. Various comparative surveys exist at the European level to evaluate the level of ICT integration in schools. The European Commission runs surveys of ICT in schools, the latest instalment having been published in 2019⁶⁵. A few years earlier, European Schoolnet and the University of Liège conducted a review of ICT in schools⁶⁶. The OECD's 2018 Teaching and Learning International Survey (TALIS) also includes various indicators of ICT for teaching⁶⁷. We have included the percentage of teachers who felt 'well prepared' or 'very well prepared' for the use of ICT in teaching from the TALIS survey as an example of performance indicator which could be used in evaluations to table 4.4; which summarises the evidence collected regarding evaluation and monitoring practices on ICT coordination/digital transition across the case studies.

⁶⁴ Eight out of ten Dutch schools used a policy plan in 2012 and half of the schools implemented the plans. Vier-in-Balans Monitor 2011 (English version 'Four in Balance') published by Kennisnet, from European Schoolnet and University of Liege (2012) 'Survey of schools: ICT in education, Country profile: Netherlands, p. 6, URL: https://ec.europa.eu/information_society/newsroom/image/document/2018-3/netherlands_country_profile_2FE28D05-0DDC-4AEB-3400625E40C86921_49448.pdf. According to the European Commission, between 61 and 68% of pupils in the Netherlands had a written statement about ICT use in 2017-18 (European Commission, 2019, idem, p. 100).

⁶⁵ European Commission (2019) 'Second survey of ICT in schools: ICT in education', URL: <https://data.europa.eu/euodp/data/storage/f/2019-03-19T084831/FinalreportObjective1-BenchmarkprogressinICTinschools.pdf>

⁶⁶ European Schoolnet and University of Liege, op. cit.

⁶⁷ Organisation for Economic Cooperation and Development (OECD) (2018) 'Talis indicators: ICT for teaching', URL: <https://stats.oecd.org/Index.aspx?QueryId=97203>



Table 4.4: Evaluation and monitoring of ICT coordination/digital transition activities

Member State	Existence of evaluation and monitoring reports	Example of performance indicator: Teachers who felt 'well prepared' or 'very well prepared' for the use of ICT for teaching, 2018 ⁶⁸
Austria	<p>The Federal Institute for Quality Assurance in the Austrian Education System (IQS) publishes its "National Education Report" every 3 years.</p> <p>A survey of 25% of Austrian IT Custodians was conducted in 2020 and will be repeated regularly.⁶⁹</p>	19.9%
Estonia	<p>Indicators to track that progress is aligned with the national curriculum and strategic action plans, but also with the European Commission's DigCompEdu and DigComp frameworks, are used⁷⁰</p> <p>A teacher satisfaction survey showed that 95% of teachers in general education schools use digital solutions in the classroom, with two-thirds assigning students tasks to be completed in a digital environment. 39% of teachers reported using computer-based tasks when assessing students.⁷¹</p>	29.7%
Netherlands	<p>Kennisnet's annual Four in Balance ("Vier-in-balans") monitor tracks the progress of schools from the perspective of multiple stakeholders in the school community.⁷²</p>	29.3%
Portugal	<p>Organisations such as the Center for Digital Innovation are regularly evaluated</p> <p>No nationwide evaluation of the most recent digital plans yet</p>	40.2%

⁶⁸ OECD, op. cit.

⁶⁹ Swertz, C. & Graf, C. (2020), "IT-Kustodinnen und -Kustoden zwischen Heterogenität und Verantwortung", Medienimpulse 58:1, doi: 10.21243/mi-01-20-10

⁷⁰ Digital competence in education - Estonia (educationestonia.org)

⁷¹ OECD (2020) 'Education Policy Outlook: Estonia', URL: <https://www.oecd.org/education/policy-outlook/country-profile-estonia-2020.pdf>

⁷² <https://www.kennisnet.nl/publicaties/vier-in-balans-monitor/> (last consulted 28/03/22)



Member State	Existence of evaluation and monitoring reports	Example of performance indicator: Teachers who felt 'well prepared' or 'very well prepared' for the use of ICT for teaching, 2018 ⁶⁸
Spain	Regular evaluations by regional governments and private digital service providers, complemented with academic studies	36.2%
Sweden	The Association of Local Authorities and Regions (SALAR) runs evaluations such as the Lika Teachers report 1.0	37%
Belgium Flanders	To be confirmed – pending task 2 report.	34.5%
EU average ⁷³		40.3%

Table 4.4 shows that regular evaluations were reported in four of the case Member States (Austria, Estonia, Spain and Sweden); with organisation-wide evaluations taking place in Portugal. We will explore these evaluations further upon suggestions from the virtual peer exchange and study visits. Table 4.4 also shows that the percentage of teachers who felt 'well prepared' or 'very well prepared' for the use of ICT for teaching was lower than the EU average across all the case studies (as well as Belgium/Flanders). Teachers' perception of how prepared they are to use ICT may be influenced by various factors: their initial education, the infrastructure available, their broader sense of confidence etc. Further evidence would however be required to establish a relationship, if at all, with the role played by ICT coordination in teachers' perceptions of their own preparedness.

4.5 Main drivers and barriers to digital transition

The impact assessments, ex-post evaluations and surveys that national contacts provided to complement interviews suggest that there are recurring drivers and barriers to holistic ICT reform, which can be identified by dimension of influence (macro, school-level or individual level), as identified by table 4.5 below.

Table 4.4: overview of drivers and barriers

Dimension	Drivers	Example	Barriers	Example
National policy framework	Digital Education reform embedded in post-COVID-19 recovery programme or having been prioritised over time	AT, ES, NL, PT	Time-limited policy programmes	AT, EE

⁷³ Out of 20 EU Member States included in the OECD TALIS data for ICT in teaching.



Dimension	Drivers	Example	Barriers	Example
	Digital competence framework for all teachers	AT, EE, NL, SE	Scepticism of teachers whose disciplines are less overtly technological	AT, ES, PT
	Expansion of physical technological infrastructure and connectivity	AT, EE, ES, NL, PT	Slow or patchy development of physical technological infrastructure, esp. fibre-optic broadband access	ES, EL
Other macro level factors	Collaboration at the subnational level (local, regional)	AT, ES	Diversity of governance traditions and priorities across regions	EE, ES
	Public-Private Partnerships (PPPs) can be a way to add capacity to provide training or further support on digital literacy and pedagogy	NL, PT	Public-private partnerships may create distortions through a private sector growth imperative	ES, NL, PT
	Support from and collaboration with Teachers' Associations and Unions	AT, EE	Teachers' Associations and Unions might be opposed to radical change (upskilling could imply questioning their expertise)	ES, PT
School level	Policy planning and distributed leadership	EE, ES, NL	Centralised leadership leads to potential scepticism	AT, PT
Individual level	Self-paced, personalised training for teachers and administrators	AT, NL, SE	Reduced oversight for school leaders; greater difficulty in forming ICT teams	AT, EE, SE
	Access to continuous ICT training	AT, EE, NL, SE	ICT training primarily as part of initial teacher education	AT



Dimension	Drivers	Example	Barriers	Example
	Access to networks and online platforms	AT, NL, EE, PT, ES	Limited connectivity & exchange with peers	
	Self-assessment tools	AT, NL, SE	Reduced oversight for school leaders	AT, NL, SE
	Clear job profiles	EE, ES, NL		
	Working conditions: adequate compensation in terms of remuneration, working hours	EE, ES	ICT coordination can be added to already full teaching and admin schedule with little or no compensation	AT

Table 4.5 shows that drivers occur at different levels. National policies are an important driver. They include setting policy priorities, competence frameworks or expanding infrastructure, other macro level factors, such as the potential for collaboration, potentially between private and public organisations, obtaining support from the union, the expansion of infrastructure and connectivity.

At the school level, including key stakeholders in policy design and implementation, through a distributed leadership model and strategic planning can encourage stakeholders to embrace change.

At the individual level, having access to adequate working conditions, clear job profiles, providing access to training, networking opportunities, and self-assessments were also mentioned as relevant drivers.

When inexistent or insufficient, these drivers can conversely become barriers to digital transition. When taking the example of working conditions, the higher workload links to ICT related tasks, or ICT coordination coming on top of teaching responsibilities, and can disincentivise teachers to pursue digital integration. In Austria, for example, a recent survey of 517 IT custodians revealed that 72.3 % of respondents thought that compensation was insufficient. This, however, depended on the school level and type: the time spent on ICT maintenance and management per week varied from 1 to 11 additional hours per week. As a solution, the authors of the survey proposed that effective feedback loops for different types of stakeholders could allow to understand opposition to ICT reform in all its complexity – and to formulate collective ways forward⁷⁴.

⁷⁴ Swertz, & Grat, 2020, op. cit.



5. Conclusion: summary of findings and overview of preliminary lessons learnt

5.1 Summary of findings

In conclusion, this report showed that the impulse for digital transition at the European level is shared across several Member States, the six case study countries covered by this report having set up national digital education programmes/Action plans or strategies backed by significant investments. National Governments have also implemented various support structures to promote digital transition, including further initial (Austria), or continuous professional development (Estonia, Netherlands, Spain, Portugal, Sweden), online platforms to exchange practices (Estonia, Portugal, Sweden, Netherlands) or additional remuneration (Spain).

A comparison of the empirical analysis in section 4 against the normative principles listed in the literature review in section 3 leads us to the following conclusions:

- ICT coordinators cover different priorities and work in different constellations across the EU. ICT coordinators have many priorities, including hardware and software maintenance, supporting teachers, administrative staff and students, delivering in-house training, maintaining the school's website and social media or, more rarely, coordinating broader ICT initiatives and fundraising for projects (as is the case in Estonia). In addition, most ICT coordinators are one person, who can be a teacher undertaking tasks on top of their teaching load, resulting in a high work burden. The Estonian model consisting of spreading the ICT coordination roles across three profiles, with highly specialised educational technologists as part of this team, appears to provide more capacity to ICT coordination.
- ICT coordinators tend to limit their role to a school, although Digital Ambassadors in VET training centres in Portugal have a broader remit extended to the community.
- The empirical analysis has also demonstrated that the broad competences required by ICT coordinators and/or teaching staff involved in supporting ICT transition are recognised in some Member States, as evidenced by the guidelines issued by Kennisnet (NL), the self-assessment dimensions in LIKA (SE) or recruitment processes in Spain for example. The role and relevance of the competences of school leaders, which was highlighted in the literature, was not as extensively covered in the empirical case studies.

Further progress remains necessary however in the area of digital transition:

- While several drivers are at play at the national policy level, including the development of competence frameworks, the expansion of access to infrastructure, several barriers remain to further ICT integration. One of those barriers is a clarification of the job profile, workload and remuneration of ICT coordinators, who are often, although not systematically, individual teachers taking on an additional role on top of their teaching duties.
- Despite their relevance highlighted in the literature, policy plans/written statements/schoolwide strategies are also not commonly used in the EU. Two thirds of students were in a school without such written statement on average in the EU in 2017/18. This limits the potential for stakeholders in school to embrace a joint vision and change.
- The evaluation data collected also shows that further efforts are required to support digital transition: On average across the EU, the majority of teachers does not feel prepared or very well prepared to use ICT. Further evaluation indicators could also include factors external to the school, such as e-communication with parents.



5.2 Summary of lessons learnt

In terms of preliminary lessons learnt, the case study comparisons shed light on practices which could inform reforms in Flanders and will be further discussed during the virtual peer exchange and study visit. This includes for example having a digital ambassador whose role extends to the community rather than just the school in Portugal, or ICT coordinators acting as a team in Estonia. Table 4.6 provides a more detailed overview and summarises preliminary lessons learnt for each of the case study countries included in the country fiches in annex 1⁷⁵.

Table 4.6: Summary of lessons learnt (by Member State)

Member State	Lessons Learnt
Austria	<ul style="list-style-type: none"> ▪ Embedding digital education reform in wider national reforms (of education or administration) makes it easier for stakeholders to upskill adapt in a single wave of reform ▪ School-based ICT coordinators need informal and formal recognition (e.g. adequate pay) for their efforts ▪ Digital education reforms have differential impacts on different school types ▪ Clear job profile for ICT coordinators which does not interfere with normal teaching functions would be helpful in the case of Austria
Estonia	<ul style="list-style-type: none"> • Relevance of prior investment: The first ICT specialists were introduced to Estonian schools 20 years ago and Educational Technologists became obligatory in 2005. The early adoption of new technologies helps whole school communities learn together.⁷⁶ • ICT coordinators can operate as part of a constellation (educational technologist, ICT teacher and IT manager) which may allow each professional to provide more support in each of their focus areas. • Support from practitioners' networks: The Estonian Association of Educational Technologists brings together key stakeholders to exchange good practices and test new ideas. They exchange best practices via online groups and organise an annual summer school for the continuous training of Educational Technologists. Such associations are often good sounding boards for policy initiatives.
Netherlands	<ul style="list-style-type: none"> • Guidelines for ICT competences should include points related to digital literacy and ability to incorporate ICT in learning, as well as consideration on managerial support and organisation. • Technological maintenance tasks could be outsourced to external providers to allow the i-coach (school-based ICT coordinator) to

⁷⁵ Further information are included in the individual summaries for the virtual peer exchange and study visits as well as the one-page summary of lessons learnt, developed as separate documents.

⁷⁶ Interview, 25 November 2021.



Member State	Lessons Learnt
	<p>focus on the pedagogical, strategic and managerial aspects of the digital transformation at school.</p> <ul style="list-style-type: none"> ICT policy plans help school managers and teachers to be in agreement about the vision for ICT in schools.
Portugal	<ul style="list-style-type: none"> Digital ambassadors, based in local training hubs, could be appointed to facilitate change across communities, and not just schools. Access to IT hardware is essential for participation in educational innovation; digital connectivity must be improved to counteract exclusion. Private education providers can be integrated into the Education Ministry's strategy to deliver digital training directly to their local communities via public-private partnerships (PPPs).
Spain	<ul style="list-style-type: none"> Access to IT hardware is essential for participation in educational innovation; digital connectivity must be improved to counteract exclusion Create procedures that require regular dialogue between local administrative units, like Andalusia's 91 Teacher Centres, which approve each school's Digital Activation Plan and offer tailored advice for skills development on an annual basis. Encourage and support practitioners' networks at local, regional and national level to allow for organic knowledge-sharing among specialists Private education providers can be used to deliver digital training and advice directly to their local communities via public-private partnerships (PPPs). This includes advisory services to create "classrooms of the future" which support digital teaching and learning.
Sweden	<ul style="list-style-type: none"> Self-assessment tools such as LIKA can support evaluations of competences and encourage teachers to improve their digital skills and may act as a 'soft governance tool' in highly decentralised systems.



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Annexes

Annex 1 Country fiches

AUSTRIA

	Name of the initiative	Digitale Schule 4.0 (Digital School 4.0)
Key info	Lead organisation and partners	Federal Ministry for Education, Science and Research (Bundesministerium für Bildung, Wissenschaft und Forschung – BMBWF)
	Contact	BMBWF, Presidential Section 15/ IT didactics
	Percentage of pupils in a school with an ICT coordinator	95% of pupils were in a school with an ICT coordinator (previously called IT-custodians, currently IT managers) in 2017-18 at ISCED-level 3, more than the EU average ⁷⁷ .
Context	Rationale	<p>As a small country with great administrative resources, Austria is rapidly transforming its multi-level education system. The system offers multiple learning pathways (tracking at age 10 and 14) with differentiated thematic focus areas, but the rollout of ICT hardware and software has changed schools across the board.</p> <p>The main programme to reform the Austrian education system is "Digital School 4.0", a comprehensive strategy presented in 2017 and revised in light of the "COVID-19 opportunity" in 2020⁷⁸. This strategy embeds the digital transformation of the education experience into a much wider transformation of the digital citizenship experience. Digital schooling is complemented by digital public employment services, digital tax records and digital communication with local governments.</p> <p>The Digital School 4.0 strategy has been integrated into the Digital Austria 2050 Strategic Action plan and supported by 250m euros until 2024⁷⁹.</p>
	Implementation stage	The priority in 2020 was the unification of learning platforms and the professional development of teachers according to the digi.kompP competence framework. In 2021, the priority is to extend the distribution of subsidised digital devices to students aged 11 and 12 (previously only 13-18). 2022 should see quality-assured official learning apps widely used by students to support their learning objectives. By 2023, the ICT infrastructure in public schools should

⁷⁷ European Commission (2019) 'Second survey of schools: ICT in education, Objective 1: benchmark progress in ICT in schools', p. 107 URL. : <https://data.europa.eu/euodp/data/storage/f/2019-03-19T084831/FinalreportObjective1-BenchmarkprogressinICTinschools.pdf>

⁷⁸ Ministry for Education, Culture and Research ('Bundesministerium für Bildung, Wissenschaft und Forschung'), (2010) 'Digital School' ('Digitale Schule'), URL: <https://digitaleschule.gv.at/>

⁷⁹ Idem.



	Name of the initiative	Digitale Schule 4.0 (Digital School 4.0)
		enable the seamless transition to digitally supported teaching. By 2024, digital learning practices should be consolidated in all schools, regardless of geographic location or school type. ⁸⁰
	Relevance for Flanders	Austria and Belgium (FL) are both West European high-income countries and long-term Member States of the EU. But the Austrian school system is more centralised compared to the school system in Flanders. Therefore, the potential for transferability is only middle range in our view. Nonetheless, there are some important lessons that could be transferred: (1) Holistic digital education strategy which coordinates school administrators, teachers, pupils, parents into a larger national digitisation plan; (2) the teacher education curriculum has been revised to include at least 1 term (60 ECTS) of "digital pedagogy"; (3) teachers learn from each other via the eEducation and Eduthek platforms, where educators can create and share digital learning resources. The high standard of learning resources is ensured through continuous harmonisation with the national curriculum.
	Other relevant ongoing or planned reforms	The Digital Austria 2050 Strategic Action Plan (set out in 2019 and revised in 2020) aims to improve digital skills in the labour force, general population and the education sector to build a "responsible information society" ⁸¹ . The strategy envisages shaping education, training and lifelong learning in Austria as a digital competitive advantage. One of its priorities is to digitally transform the education system, which bears some similarities to the DigiSprong strategy in Flanders. This has been complemented by a comprehensive reform of the education system initiated in 2017, with many planned measures accelerated by the COVID-19 pandemic. The Digital School 4.0 strategy, presented by the Education Ministry in 2017, has been developed further by the current government, integrated into the 2050 Strategic plan, and supported by 250m euros until 2024 ⁸² . The 8-point plan for digital education covers the following: (1) All pedagogues are to be prepared for digitally supported teaching as part of a qualification offensive (including via MOOCs and knowledge exchange platforms for teachers); (2) Schools should standardise their processes, reduce the number of learning management and communication systems used and thus create clear structures for digitally supported teaching and learning (e.g. through the publicly funded eEducation portal and Eduthek) (3) The most important educational and administrative applications are to be bundled and made accessible via single sign-on. This also supports improved communication between school and legal guardians.

⁸⁰ Idem.

⁸¹ Aktionsplan (digitalaustria.gv.at)

⁸² Bundesministerium für Bildung, Wissenschaft und Forschung, *op. cit.*



	Name of the initiative	Digitale Schule 4.0 (Digital School 4.0)
		<p>(4) The existing online portal for educational content (Eduthek) will be aligned more closely with the standardised curriculum</p> <p>(5) The range of innovative, high-quality and quality-assured educational media is to be expanded so that teachers and learners are offered the best possible service.</p> <p>(6) Access to digital infrastructure will be enhanced through a nationwide investment scheme to ensure that Federal schools will be connected to fibre optic broadband and adequate WiFi will be available in all classrooms.</p> <p>(7) All secondary school students should receive the necessary digital devices via their schools (laptops, ipads), paying only 25% of the price.</p> <p>(8) Teachers should receive the necessary hardware via their employers⁸³.</p>
Governance	Centralised/decentralised education system	Centralised. The Federal Ministry for Education, Science and Research (BMBWF) designs, implements and evaluates all policy initiatives in this sector. According to Eurydice, "the federation has overwhelming responsibility for the education system, including virtually all areas of school organisation, the organisation of school instruction, private schools as well as the remuneration and retirement law governing education staff" ⁸⁴ .
	ICT leadership	The level of integration/communication between ICT coordinators (called IT managers) & the school leadership is uncertain. ICT coordinators do not automatically participate in strategy meetings with the school administration.
	ICT policy plans	ICT policy plans are not widespread. Between 10 and 36% of pupils (depending on ISCED level) were in a school which had a written statement about ICT ⁸⁵ .
	ICT support aspect	<p>Digi.folio, an online platform to support teachers in developing their digital skills, sharing educational content and exchanging good practices.</p> <p>Extensive government programmes make all teachers comfortable with teaching, learning and delivering their administrative/mentoring responsibilities online.</p>
	Role of ICT coordinators	Every school has at least one IT coordinator, who – in addition to his or her normal teaching load – helps other teachers and students use

⁸³ Idem

⁸⁴ Eurydice (20121) 'Austria overview', URL: https://eacea.ec.europa.eu/national-policies/eurydice/content/austria_en

⁸⁵ European Commission, 2019, op. cit.



	Name of the initiative	Digitale Schule 4.0 (Digital School 4.0)
		<p>technological hard- and software, maintains hardware and software, and delivers in-school training.</p> <p>Austrian IT coordinators (called IT-custodians) are not always coordinators, meaning that they do not necessarily coordinate ICT initiatives.</p>
Evaluation	How 'success' is measured	<p>The Federal Institute for Quality Assurance in the Austrian Education System (IQS) publishes its "National Education Report" every 3 years. Additional information can be found in written responses to ministerial questions to this report. A seal of approval is awarded to schools which show an excellent commitment to developing digital competences. These schools are listed on the internet. The 2018 National education report found some variation in the level of commitment of schools by type of education. Additionally, a survey of 25% of Austrian IT custodians was conducted in 2020 and will be repeated regularly.⁸⁶</p> <p>As an example of 'performance indicator', 19.9% of teachers felt 'well prepared' or 'very well prepared' for the use of ICT for teaching according to the OECD TALIS survey (2018 data)⁸⁷.</p>
	Drivers of ICT reform	<p>Digital education reform embedded in wider education reform: Austria reformed its entire secondary education offer between 2012 and 2017. Some features of the digital strategies which were published from 2017 onwards were already built into these larger reforms.</p> <p>Attention to all different school types, including VET: specialised teacher education to enhance the digital skills of teachers for different types of institutions led to tailor-made skills development adapted to evolving labour market needs.</p> <p>Digital skills included in a lifelong learning plan for active digital citizenship: Austria's rapid rollout of e-government (e.g. digital citizen's ID, digital public employment services; digital communication between citizens and their local council) nudges people of all ages to enhance their digital skills.</p>
	Barriers to ICT reform	<p>The continuous professional development of teachers on "digital pedagogy" is unbalanced between new and more senior teachers. The teacher education curriculum, revised in 2017, includes at least one term (60 ECTS) of compulsory courses like "digital pedagogy" and new teachers are required to expand their digital skills through structured trainings during their first five years in office.</p>

⁸⁶ Swertz, & Graf, op. cit.

⁸⁷ OECD, 2018, op. cit.



	Name of the initiative	Digitale Schule 4.0 (Digital School 4.0)
		<p>Structural limits of the ICT coordinator role: Austrian ICT coordinators maintain and develop ICT infrastructure at school in addition to their normal teaching load. One advantage of this approach is that they are not perceived as external experts, but colleagues. A recent survey of ICT coordinators suggests, however, that as many as 30.2% of IT custodians, deliver their tasks outside of contractual working hours and thus do not feel adequately valued⁸⁸.</p>
	Lessons learnt	<p>Embedding digital education reform in wider national reforms (of education or administration) makes it easier for stakeholders to upskill in a single wave of reform</p> <p>School-based ICT coordinators need informal and formal recognition (e.g. adequate pay) for their efforts</p> <p>Digital education reforms have differential impacts on different school types</p> <p>Clear job profile for ICT coordinators which does not interfere with normal teaching functions would be helpful in the case of Austria</p>
Sources	Key documents	<p>Digital Austria 2050 Strategic Action Plan: Aktionsplan (digitalaustria.gv.at)</p> <p>8-Point Plan for Digital Education: Masterplan für die Digitalisierung im Bildungswesen (bmbwf.gv.at)</p> <p>Digital School 4.0: DIGITALE SCHULE // Bundesministerium für Bildung, Wissenschaft und Forschung</p> <p>National Education Report 2018: https://www.iqs.gv.at/themen/bildungsberichterstattung/nationaler-bildungsbericht-2018</p>
	Additional information	<p>Swertz, C, "IT-Kustodinnen und -Kustoden zwischen Heterogenität und Verantwortung", 2020, URL: https://journals.univie.ac.at/index.php/mp/article/view/3432?article_sBySameAuthorPage=3 (last consulted 28/03/22)</p> <p>"Bericht des Rechnungshofes: IT-Betreuung an Schulen", 2018, https://www.parlament.gv.at/PAKT/VHG/XXVI/III/III_00188/imfname_710632.pdf</p>

⁸⁸ Swertz, & Graf, op. cit.



ESTONIA

	Name of the initiative	Education Strategy 2021-2035
Key info	Lead organisation and partners	Estonian Ministry of Education and Research (Harius- Ja Teadusministeerium) Education and Youth Board (Harno)
	Contact organisation	Estonian Association of Educational Technologists
	Percentage of pupils in a school with an ICT coordinator	Most pupils, i.e. 94% at ISCED level 3 were in a school with an ICT coordinator in 2017-18 ⁸⁹ .
Context	Rationale	Estonia's education system is highly decentralised, but the coordination of digital education initiatives seems to work very well. The key to success in this thriving start-up nation lies in matching lifelong skills development with evolving labour market needs. Digital transformation is part of Estonia's Lifelong Learning Strategy (embedded in successive education policies, most recently the Education Strategy 2035), which promotes the development of students' and teachers' digital literacy, and access to digital tools and infrastructure, to develop a digital culture at all educational levels, and to disseminate good practices.
	Implementation stage	Advanced. The drive to digitalise education started in 1997, when computers, digital access and professional development for teachers was provided through a project called <i>Tiigrihüpe</i> (the Tiger Leap) ⁹⁰ . 99% of schools in Estonia already had ICT solutions before the COVID-19 pandemic. Estonia aimed to digitalise all education materials in 2015 and supported professional development for digitalisation in schools ⁹¹ .
	Relevance for Flanders	Estonia shows how to integrate ICT training into initial teacher education and continuous professional development. It offers insights into a mature model of ICT coordination where the multiple roles (technological, pedagogical, strategic) are split across an ICT coordination team.

⁸⁹ European Commission, 2019, op. cit.

⁹⁰ Weale, S. (2020) 'Lessons from Estonia: why it excels at digital learning during Covid', 30 October, URL: <https://www.theguardian.com/world/2020/oct/30/lessons-from-estonia-why-excels-digital-learning-during-covid>

⁹¹ Estonian Ministry of Education and Research (2019) 'Education Strategy 2035: objectives and preliminary analysis', URL: <https://www.hm.ee/en/activities/strategic-planning-2021-2035/education-strategy-2035-objectives-and-preliminary-analysis>



	Name of the initiative	Education Strategy 2021-2035
	Other relevant ongoing or planned reforms	<p>“Startup Estonia”, a government initiative, which lays the groundwork for an experimental and synergetic relationship between the state and the start-up scene.</p> <p>The abovementioned “Startup Estonia” programme interlocks with the Education Strategy 2035. Its general objective is that “Estonian people have knowledge, skills and attitudes supporting the promotion of life in Estonia and opportunities to fulfil themselves in personal and work-life, and in the society.” The 3 sub-objectives are (1) Learning opportunities are diverse, accessible and permeable for smooth transition between levels and types of education; (2) Learning and teaching are learner-centred and future-oriented and help the learner to succeed in life; (3) Lifelong learning opportunities match the needs of the labour market.⁹²</p> <p>Measures include a “Digital nomad visa” and the expansion of e-government (registering a new company in 15 minutes; filing tax return in 3 minutes).</p>
Governance	Centralised/ decentralised education system	<p>De-centralised⁹³. Both design and implementation give considerable space for expression and adaptation to stakeholders on the ground, who can find the best ICT solution for their context together.</p> <p>The managerial autonomy of schools on digital education varies depending on the local government⁹⁴.</p>
	ICT leadership	<p>The educational technologists and ICT managers appear to drive digitalisation in school, with the support of ICT teachers and IT managers⁹⁵.</p> <p>The amount of support from the school leadership varies across schools.</p>
	ICT policy plans	<p>Common. Between 68 and 79% of pupils (depending on ISCED level) were in a school with a written statement about ICT use in 2017-18⁹⁶. These statements are regularly submitted to the Education and Youth Board.</p>
	ICT support aspect	<p>Teachers have access to generalised teacher education to gain and develop digital skills. Continuous learning is encouraged for both educational and administrative staff & educational technologists (see</p>

⁹² Idem

⁹³ Eurydice (2018) 'Estonia: organisation and governance', 10 December, URL: https://eacea.ec.europa.eu/national-policies/eurydice/content/organisation-and-governance-24_en

⁹⁴ Interview, 25 November 2021.

⁹⁵ Interview, 25 November 2021.

⁹⁶ European Commission, 2019, op. cit.



	Name of the initiative	Education Strategy 2021-2035
		<p>below) are available to answer queries and provide training daily. Informal platforms are also available, e.g. Facebook group.</p> <p>Educational technologists are computer scientists who receive additional training at university via a master’s degree in educational technology.</p> <p>The Estonian Association of Educational Technologists constitutes a support network for educational technologists⁹⁷ and offers regular opportunities for training, for example, its winter and summer schools.</p> <p>The local government allocates project-based funding depending on requests./needs.</p>
	<p>Role of ICT coordinators</p>	<p>No single ICT coordinator per school</p> <p>The role of ICT coordinator is spread across three profiles, which respectively focus on the pedagogical, technological and strategic skills- ICT teacher: teaches the compulsory subject of computer science.</p> <ul style="list-style-type: none"> - IT Manager: focuses on acquisition and maintenance of hard- and software, - Educational Technologist: an ICT teacher with an additional specialised MA degree to qualify as an educational technologist. These teachers need to combine pedagogical, technological and strategic skills (e.g. project management) since they are responsible for integrating digital technologies effectively into the teaching and learning process. The educational technologist coordinates activities in the field of digital learning and pedagogy & teaches informatics to teachers and school staff members when required. - Depending on the needs and financial resources of the school, these three positions might be full-time or part-time. Even if one or more positions are part-time, however, different staff members will ensure that the three roles remain distinct, since the pedagogical, technical and strategic elements of ICT coordination rely on different skillsets. In rural areas where schools are small, one professional could work across more than one school. ⁹⁸. <p>School-based Educational Technologists collaborate with other teachers and ICT managers to generate long-term ICT strategies aligned with the school vision. This strategic aspect of their work may include: designing professional development plans, organising or delivering training for teachers, liaising with external providers (e.g, IT</p>

⁹⁷ Interview, 25 November 2021. For more information, see also: <https://tehnoloogia.ee/en/>

⁹⁸ Interview, 25 November 2021.



	Name of the initiative	Education Strategy 2021-2035
		security specialists) to ensure the school community has adequate access to hard- and software.
Evaluation	How 'success' is measured	<p>Indicators are to track that progress is aligned with the national curriculum and strategic action plans, but also with the European Commission's DigCompEdu and DigComp frameworks⁹⁹</p> <p>Estonian teachers also regularly use digital solutions in teaching but still feel that their digital skills are in need of improvement. A 2018 teacher satisfaction survey showed that 95% of teachers in general education schools use digital solutions in the classroom, with two-thirds assigning students tasks to be completed in a digital environment. 39% of teachers reported using computer-based tasks when assessing students. About 75% of the surveyed teachers use computers and presentation tools daily or weekly, while less than 10% of teachers have used digital tools such as measuring sensors, 3D printers, robotic and mechatronic devices. Nevertheless, teachers self-assess their own digital skills as insufficient.</p> <p>Only 29.7% of teachers reported in the 2018 OECD TALIS survey that they feel sufficiently prepared to use ICT in teaching".¹⁰⁰</p>
	Drivers of ICT reform	<p>Estonia benefits from a long-established policy prioritisation of digital education in schools. The Tiger Leap programme for digital skills was launched in 1997.</p> <p>Public-private partnerships tend to be growing, for example schools use Google Classroom or Microsoft resource sharing options.</p> <p>Educational technologists who are highly specialised (with specific master's degree training) are available in schools to provide regular training to teachers, students and admin staff.¹⁰¹</p>
	Barriers to ICT reform	<p>Lack of central guidance leads to considerable variation across regions and school types.</p> <p>Some schools may be limited to be able to afford professionals covering the functions of ICT coordination.</p> <p>Access to digital learning material and softwares would need to be more widespread¹⁰². During the lockdown, access to relevant hardware (such as cameras) for some pupils was uneven.</p>

⁹⁹ Digital competence in education - Estonia (educationestonia.org)

¹⁰⁰ OECD (2020) 'Education Policy Outlook: Estonia', URL: <https://www.oecd.org/education/policy-outlook/country-profile-Estonia-2020.pdf>

¹⁰¹ Interview, 25 November 2021.

¹⁰² Interview, 25 November 2021.



	Name of the initiative	Education Strategy 2021-2035
		Recent evaluations suggest that in the school year 2020/21 digital skills were applied and improved. This also helped convince sceptics of the potential of personalised remote learning. ¹⁰³
	Lessons learnt	<p>ICT coordinators can operate as part of a constellation (educational technologist, ICT manager and tech. support) which may allow each professional to provide more support on each of the relevant dimensions they cover.</p> <p>Relevance of prior investment: The first ICT specialists were introduced to Estonian schools 20 years ago and Educational Technologists became obligatory in 2005. The early adoption of new technologies helps whole school communities learn together.¹⁰⁴</p> <p>Support from practitioners networks The Estonian Association of Educational Technologists brings together key stakeholders to exchange good practices and test new ideas. Such associations are often good sounding boards for policy initiatives.</p>
Sources	Key documents	<p>Startup Estonia: White Paper for 2021-2027 https://startupestonia.ee/blog/startup-estonia-launches-a-white-paper-for-2021-2027</p> <p>Estonia Lifelong Learning Strategy 2014-2020, https://www.hm.ee/sites/default/files/estonian_lifelong_strategy.pdf</p>

¹⁰³ Estonian Education Forum (Eesti Haridusforum) 'Spring students, teachers and parental views' (teine koroonakevad õpilaste, õpetajate ja lastevanemate vaates' URL: https://haridusfoorum.ee/images/2021/EHF_distantspe_2021_uuring.pdf

¹⁰⁴ Interview, 25 Novemebr 2021.



NETHERLANDS

	Name of the initiative	Kennisnet
Key info	Lead organisation and partners	Kennisnet
	Contact organisation	Kennisnet
	Percentage of pupils in a school with an ICT coordinator	89% of pupils were in a school with an ICT coordinator in 2017-18 at ISCED level 2 ¹⁰⁵ .
Context	Rationale	The Netherlands is highly digitalised: it ranks 4 th out of 28 EU-Member States on the DESI Index for 2021 ¹⁰⁶ . Despite sharing many structural features, Belgium (Flanders) ranks 12 th on the same index. ¹⁰⁷ Multiple structural and cultural features offer a good basis for exchanging good practices. Both the Netherlands and Belgium (Flanders) are West European high-income countries, long-term Member States of the EU, and comparable in size. Information exchange is made easy by the shared language and shared expectations towards the school system. Some tools – like the Kennisnet platform – are already used in both countries, but more good practices could be shared and developed together.
	Implementation stage	Kennisnet has advocated for the use of ICT coordinators in schools since 2012. Kennisnet focuses on building an ICT foundation for primary, secondary and vocational education, and on guiding schools in the process of making use of digital technology in education. The Kennisnet model looks particularly close to the ambitions of the Flemish Government for the Digisprong Knowledge Centre and may therefore be an interesting example.
	Relevance for Flanders	The Netherlands and Flanders are both small West European high-income countries and long-term Member States of the EU. They have similar school systems and also close cultural bonds through the sharing of similar languages. The transfer of knowledge and learning materials (e.g. through Kennisnet) is easy and desirable. Potential focus areas: (1) How to integrate ICT training into the compulsory professional development for teachers and education administrators. (2) How to

¹⁰⁵ European Commission, 2019, op. cit. Data for ISCED level 3 missing.

¹⁰⁶ European Commission (2021) 'The Netherlands in the Digital Economy and Society Index: DESI country profile', URL: file:///C:/Users/52669/Downloads/DESI_2021__Netherlands__eng_kO0jx7Dm9KzeGxeVI7inoYqnNI0_80493.pdf

¹⁰⁷ For more information, see: <https://digital-strategy.ec.europa.eu/en/policies/desi-netherlands>



	Name of the initiative	Kennisnet
		create and support an online community of educators, parents and pupils, where educators are trusted to create high-quality content. (3) Self-regulating platform.
	Other relevant ongoing or planned reforms	The Dutch Digitalisation Strategy 2.0 (a 2021 update of the 2018 strategy) lists "Digital skills" as one of four focus areas. ¹⁰⁸ During the coronavirus pandemic in 2020, the Government invested approximately €24 million in order to provide 75,000 devices to students, so that they could fully participate in online education. Now the Government is preparing an action plan for the digitalisation of education within the framework of the Dutch Growth Strategy. This strategy will focus on providing targeted skills support to teachers and improving digital learning resources - often through public-private partnerships (PPPs). The National Growth Fund committee has already made €80 million available for a National Artificial Intelligence Education Lab32. ¹⁰⁹ An additional €63 million have been earmarked to scale up promising prototypes, to support the EU's Digital Education Action Plan (DEAP) 2021–2027, and particularly the Digital Education - the Netherlands are already participating in the associated exploratory study. ¹¹⁰
Governance	Centralised/decentralised education system	Mixed. The Ministry of education and culture has overall responsibility for the education system. The administration and management of schools (primary, secondary, VET) is locally organised ¹¹¹ .
	ICT leadership	ICT leadership is diffused across several stakeholders who need to follow a shared vision. Broad guidelines are provided by national strategies like the Dutch Digitalisation Strategy 2.0 and the sectoral school boards. ICT leadership at school is the task of the "i-coach", who focuses on the pedagogical and strategic elements of the digital transition, while technical maintenance tasks are outsourced. School leaders select and hire contractors who help the school achieve its vision for digital learning. To operate effectively, these "i-coaches" ideally occupy cross-structural position, linking operational, tactical and strategic levels of school management. ¹¹²

¹⁰⁸ For more information, see URL: <https://www.nederlanddigitaal.nl/english/dutch-digitalisation-strategy-2.0>

¹⁰⁹ For more information, see URL: <https://www.government.nl/latest/news/2021/04/21/innovative-projects-given-additional-%E2%82%AC1.35-billion-boost-due-to-funding-from-national-growth-fundv>

¹¹⁰ The Netherlands, Non-paper on the 2020 update of the EU Digital Education Action Plan (DEAP). URL: The Netherlands Non-paper on the 2020 update of the EU Digital Education Action Plan (DEAP)

¹¹¹ Eurydice (2018) 'Netherlands: organisation and governance', 5 February, URL:

https://eacea.ec.europa.eu/national-policies/eurydice/content/organisation-and-governance-53_en

¹¹² Kennisnet and saMBO-ICT (2021), 'Bruggen Bowen: De succesfactoren voor i-coaches in het mbo'. URL: <https://mbodigitaal.nl/wp-content/uploads/2018/06/iCoaches-Bruggenbouwen-ipdf.pdf> (last consulted 04/02/2022).



	Name of the initiative	Kennisnet
	ICT policy plans	Between 61 and 68% of pupils were in a school with a written statement about ICT in 2017-18. In 2011, approximately 8 out of 10 schools had a policy plan, with 50% of the schools implementing the plan ¹¹³ . This helps school managers and teachers to be in agreement about the vision for ICT in schools.
	ICT support aspect	Kennisnet provides teachers' development, ICT infrastructure, information security and privacy, digital literacy and learning resources, developing, diffusing knowledge on the effective and efficient use of ICT, advising school sector councils in the area of ICT in education, and negotiating between various parties involved in the process of carrying out activities in relation to digital education. Kennisnet has also developed guidelines on the ICT competence of teachers. These are practically oriented and are structured around 4 competence areas: 1. digital literacy, 2. learning situation (e.g. how does the teacher decide which ICT resources are best for a particular subject or learning context?), 3. professionalisation (how can teachers be enabled to use ICT individually and collectively?), 4. organisation (how can institutional demands and policy be implemented uniformly?) ¹¹⁴ .
	Role of ICT coordinators	School-based "i-coaches" focus on the pedagogical and strategic dimension of the digital transition, while other, commercial organisations provide technical support. They work with school leaders and teachers to create a shared vision for the digital transformation in education. They receive regular training through the public Kennisnet foundation, which is based on 6 success factors for i-coaches: <ul style="list-style-type: none"> • Link the use of i-coaches to educational goals • Pay attention to selection and the profile of the i-coach • Give "i-coaches" cross-structural position, linking operational, tactical and strategic levels of school management • Let i-coaches share their knowledge through a central national hub • Ensure transparency about roles and ownership • Support the role with realistic workloads and sufficient resources¹¹⁵
Evaluati	How 'success' is measured	According to the OECD TALIS survey (2018), 29% of teachers on average felt 'well prepared' or 'very well prepared' for the use of ICT for teaching

¹¹³ Vier-in-Balans Monitor 2011 (English version 'Four in Balance') published by Kennisnet; from European Schoolnet and University of Liege (2012) 'Survey of schools: ICT in education, country profile Netherlands', p. 6.

¹¹⁴ For more information, see: URL: <https://www.kennisnet.nl/app/uploads/kennisnet/publicatie/kennisnet-guideline-ict-competence-of-teachers.pdf>

¹¹⁵ Kennisnet and saMBO-ICT (2021), 'Bruggen Bouwen: De succesfactoren voor i-coaches in het mbo'. URL: <https://mbodigitaal.nl/wp-content/uploads/2018/06/iCoaches-Bruggenbouwen-ipdf.pdf> (last consulted 04/02/2022).



	Name of the initiative	Kennisset
		<p>¹¹⁶. 49% of teachers in the Netherlands reported that the "use of ICT for teaching" has been included in their formal education or training.</p> <p>Just before the COVID-19 pandemic, 73% of teachers in Netherlands felt that they could support student learning through the use of digital technology (e.g. computers, tablets, smart boards) "quite a bit" or "a lot", which is higher than the average of the OECD countries participating in TALIS (67%)¹¹⁷.</p> <p>Between 61 and 68% of pupils were in a school with a written strategy about the use of ICT in teaching and learning in 2017-18.¹¹⁸ This helps school managers and teachers agree on a shared vision for ICT in schools.</p>
	Drivers of ICT reform	<p>High connectivity and pre-existing digital skills across the population: ranked 4th in the European DESI index;¹¹⁹</p> <p>Digital Education initiatives are embedded in the larger Dutch Digitalisation Strategy, first adopted in 2018 and updated bi-annually remains a solid political and strategic foundation for the country's digital ambitions;¹²⁰</p> <p>Close collaboration between the government and the education ecosystem: the state funds research and training delivered by intermediary organisations to understand and address school needs. Kennisset, for example, supports the digital transition in education by analysing best practices in ICT coordination, drafting guidelines for ICT coordinators, providing professional development for teachers and school leaders. Rapid response to COVID-19 pandemic: a special edition of the Dutch Digitalisation Strategy was published in 2021 to minimise future disruptions.¹²¹ Lessons learnt from distance learning have fed into the foresight report "Outlook Digitalisation 2030".¹²²</p>

¹¹⁶ OECD (2018) TALIS indicators: ICT for teaching', URL: <https://stats.oecd.org/Index.aspx?QueryId=97203>

¹¹⁷ OECD (2020) 'School education during covid-19, were teachers and students ready?', Country note, <https://www.oecd.org/education/Netherlands-coronavirus-education-country-note.pdf>

¹¹⁸ Vier-in-Balans Monitor 2011 (English version 'Four in Balance') published by Kennisset; from European Schoolnet and University of Liege (2012) 'Survey of schools: ICT in education, country profile Netherlands', URL: https://ec.europa.eu/information_society/newsroom/image/document/2018-3/netherlands_country_profile_2FE28D05-0DDC-4AEB-3400625E40C86921_49448.pdf (last consulted 12/01/22).

¹¹⁹ European Commission, 2021, op. cit.

¹²⁰ For more information, see URL: <https://www.nederlanddigitaal.nl/documenten/publicaties/2019/11/13/english-version-of-the-dutch-digitalisation-strategy-2.0>

¹²¹ For more information, see URL: <https://www.nederlanddigitaal.nl/english/the-dutch-digitalisation-strategy-2021>

¹²² <https://www.nederlanddigitaal.nl/documenten/publicaties/2021/06/01/outlook-digitalisation-2030> (last consulted 13/02/2022).



	Name of the initiative	Kennisnet
	Barriers to ICT reform	<p>Shortage or inadequacy of digital technology and hardware in some schools;</p> <p>High decentralisation and school autonomy generate variations in educational institutions' digital policies and competences;¹²³</p> <p>Skepticism towards the platformisation of education: tension between public service provision and private enterprise.¹²⁴</p>
	Lessons learnt	<p>Guidelines for ICT competences should include points related to digital literacy and ability to incorporate ICT in learning, as well as consideration on managerial support and organisation.</p> <p>ICT policy plans help school managers and teachers to be in agreement about the vision for ICT in schools.</p>
Sources	Key documents	<p>Dutch Digitalisation Strategy 2021: https://www.nederlanddigitaal.nl/documenten/publicaties/2021/06/22/the-dutch-digitalisation-strategy-2021-eng</p> <p>Dutch Digitalisation Strategy 2.0 (2019): https://www.nederlanddigitaal.nl/documenten/publicaties/2019/11/13/english-version-of-the-dutch-digitalisation-strategy-2.0</p> <p>Dutch Digitalisation Strategy (2018): https://www.nederlanddigitaal.nl/english/dutch-digitalisation-strategy</p> <p>The Netherlands, "Non-paper on the 2020 update of the EU Digital Education Action Plan": https://www.permanentrepresentations.nl/binaries/nlATIO/documents/publications/2020/09/30/non-paper-on-the-2020-update-of-the-eu-digital-education-action-plan/The_Netherlands_Non-paper_on_the_2020_update_of_the_EU_Digital_Education_Action_Plan_%28DEAP%29.pdf</p>

¹²³ World Bank (2012) 'Netherlands: School Autonomy and Accountability. Systems Approach for Better Education Results (SABER) country report'. URL: <https://openknowledge.worldbank.org/handle/10986/17670> License: CC BY 3.0 IGO.

¹²⁴ Kerssens, N., & Van Dijck, J. (2021), "The Platformization of Primary Education in The Netherlands." Learning, Media and Technology 46:3: 250-63. URL: <https://www.tandfonline.com/gate3.library.lse.ac.uk/doi/full/10.1080/17439884.2021.1876725>



PORTUGAL

	Name of the initiative	Action Plan for the Digital Transition
Key info	Lead organisation and partners	Ministry of Education; Centre for Digital Innovation (CDI), Inovação Portugal (Portugal Innovation Agency)
	Contact	Ministry of Education; Team for Resources and Educational technologies, General directorate for education Centre for social inclusion and digital innovation which collaborates with "Apps for Good" and the "Centre for Digital Citizenship" to digitalise the Portuguese education sector in line with the National Digital Strategy.
	Percentage of pupils in a school with an ICT coordinator	72% of pupils were in a school with an ICT coordinator in 2017-18 at ISCED level 3, which was lower than the EU average ¹²⁵ .
Context	Broad policy context	Portugal's Action Plan for Digital Transition (2019) seeks to harness digital opportunities in three areas: (1) training and digital inclusion of people, (2) digital transformation of businesses, (3) digitalisation of public administration. The first priority area includes "digital education", "requalification and vocational training" and "inclusion and digital literacy" ¹²⁶ . The response to the COVID-19 pandemic reinforced the need to further equip Portuguese schools, teachers and students with digital skills. The "Universalisation of Digital Schooling Programme" is being implemented as of academic year 2020/2021 and aims at providing access to all students and teachers of digital educational tools and resources. Priority will be granted to students from vulnerable socioeconomic backgrounds for whom 100,000 computers are planned to be made available until the end of 2020. The social section of the Economic and Social Stabilisation Programme (2020) considers that the impact of COVID-19 pandemic highlighted an existing and reported structural need: the necessity to equip schools, teachers and students with digital skills for school work. The universalisation of the digital school model is based on four cornerstones: equipment, connectivity, teacher training and digital teaching resources ¹²⁷ .
	Implementation stage	At the level of infrastructure, the acquisition of computers and correspondent software licenses enhances the connectivity for

¹²⁵ European Commission, 2019, op. cit.

¹²⁶ Ministry of Economy and Digital Transition (2019) 'Action Plan for the Digital Transition', URL: <https://portugaldigital.gov.pt/wp-content/uploads/2020/06/Presentation-Action-Plan-For-Digital-Transition.pdf>

¹²⁷ Portuguese Programme of Economic and Social Stabilisation (PEES), URL: <https://pees.gov.pt/>;



	Name of the initiative	Action Plan for the Digital Transition
		<p>public schools and makes didactic resources available to students and teachers, giving priority to the students receiving school social support until universal use is achieved – the first 100,000 computers were delivered by December 2020 and the programme continues until 2023. Models vary according to the education cycle and all equipment is installed and ready to use with access to the internet; digital training programme for teachers; increasing the production of paperless/digital textbooks along with new and adapted digital resources.</p> <p>The Ministry of Education initiated a number of key initiatives aimed at consolidating the various parts of this programme, including: an analysis of teachers’ level of competence, which will enable the programme to focus on their training and qualifications; the training of trainers which will enable a large number of teachers to acquire the appropriate and required skills; Digital transition plans for each school cluster; the creation of "Digital Ambassadors" at Training Centres (Centros de Formação - CFAE), to facilitate the implementation of local digital transition plans; a virtual school textbooks pilot programme .</p> <p>This measure is geared towards students and teachers, with a budget of €400 million financed by European funds.</p> <p>Although Portugal's digital education measures are relatively recent, many of the schemes introduced during the COVID-19 pandemic continue to be popular and effective. The Support Schools website includes tools, resources and guidance for online learning to help students, parents and teachers. An online course for teachers, "Training for Digital Teaching", launched with around 750 schools and has been expanded. The pre-existing COLIBRI and NAU – forever learning (‘Sempre a Aprender’) platforms have been reinforced during closures to complement online learning in the future.</p>
	<p>Relevance for Flanders</p>	<p>Transferability: Large: Portugal and Belgium (Fl) are both long-term Member States of EU. They both have a de-centralised governance structure of their school systems. But differences in size of population (Portugal being almost twice as large as Flanders) and in economic structure makes the potential for transferability only middle range. What Flanders could learn: In our view: (1) Universalised right to digital education as an active component of social inclusion policy; (2) Digital Ambassadors" at Training Centres (Centros de Formação - CFAE), to facilitate the implementation of local digital transition plans (not just schools but communities). (3) Public-private partnerships to offer coding bootcamps (Academia deCodigo) and other training (often in</p>



	Name of the initiative	Action Plan for the Digital Transition
		rural locations) to boost labour market participation and social cohesion.
	Other relevant ongoing or planned reforms	Portugal's Action Plan for the Digital Transition (2019) is complemented by COVID-19 recovery measures: The social section of the Economic and Social Stabilisation Programme (2020) considers that the impact of the COVID-19 pandemic highlighted an existing structural need: the necessity to equip schools, teachers and students with digital skills for schoolwork. The universalisation of the digital school model is based on four cornerstones: equipment, connectivity, teacher training and digital teaching resources.
Evaluation	Centralised/ decentralised education system	Decentralised ¹²⁸
	ICT leadership	Further information pending virtual peer exchange
	ICT policy plans	Between 13 and 27% of pupils (depending on ISCED level) were in a school with a written statement about the use of ICT in 2017-18 ¹²⁹ .
	ICT support aspect	Organisations such as the Center for Digital Innovation support schools, teachers and students by providing training, and providing material on a virtual platform ¹³⁰ . ICT coordinators at school complemented by "Digital Ambassadors" at local Training Centres (Centros de Formação - CFAE), to facilitate the implementation of local digital transition plans ¹³¹ .
	Role of ICT coordinators	Variable, "digital ambassadors" at Training Centres (Centros de Formação - CFAE) have a remit for the surrounding community rather than the school.
	How 'success' is measured	40.2% of teachers felt that they were to very well prepared to use ICT in teaching in 2018. Organisations such as the Center for Digital Innovation are regularly evaluated

¹²⁸ Eurydice (2021) 'Portugal: organisation and governance', 3 January, URL: https://eacea.ec.europa.eu/national-policies/eurydice/content/organisation-and-governance-60_en

¹²⁹ European Commission, 2019, op. cit.

¹³⁰ Interview, 22 November 2021.

¹³¹ Eurydice (2020) 'Portugal: universalisation of digital schooling programme', 17 September, URL: https://eacea.ec.europa.eu/national-policies/eurydice/content/portugal-universalization-digital-schooling-programme_en



	Name of the initiative	Action Plan for the Digital Transition
	Drivers of ICT reform	<p>Digital Ambassadors – the Directorate for general education aims to organise them a network and organise meetings through events (the first one took place mid November).</p> <p>According to an interviewee, public-private partnerships can be way to provide additional support to schools over a short timeframe¹³². More generally, public-private partnerships offer coding bootcamps (Academia deCodigo) and other training (often in rural locations) to boost labour market participation and social cohesion.</p>
	Barriers to ICT reform	Supporting schools in integrating ambitious ICT plans; harmonising the education system with the national digital innovation economy
	Lessons learnt	<p>‘Digital ambassadors’ could be appointed to facilitate change across communities, and not just schools.</p> <p>Access to IT hardware is essential for participation in educational innovation; digital connectivity must be improved to counteract exclusion</p> <p>Private education providers are used to deliver digital training directly to their local communities via public-private partnerships (PPPs).</p>
Sources	Key documents	<p>Ministry of Economy and Digital Transition (2019) ‘Action Plan for the Digital Transition’, URL: https://portugaldigital.gov.pt/wp-content/uploads/2020/06/Presentation-Action-Plan-For-Digital-Transition.pdf</p> <p>Eurydice (2020) ‘Portugal: Universalisation of Digital Schooling Programme’, 17 September URL: https://eacea.ec.europa.eu/national-policies/eurydice/content/portugal-universalization-digital-schooling-programme_en</p>

¹³² Interview, 22 November 2021.



SPAIN

	Name of the initiative	Educate in digital! (Educa en digital!)
Key information	Lead organisation and partners	State Education Authority
	Contact organisation	Ministry of Education and Sport, Unit Educational Innovation, Government of Andalusia Universidad de la Laguna (author of the largest survey on ICT coordinators in Spain) Inercia Digital (an Andalusian VET center officially accredited by the regional government)
	Percentage of pupils in a school with an ICT coordinator	Almost all students (97%) of students were in schools with an ICT coordinator in Spain at ISCED level 3 ¹³³ .
Context	Rationale	"Educa en digital" aims to promote the technological transformation of Education in Spain and close 3 gaps: uneven access to technology, variable quality of use of digital learning and teaching tools, insufficient training to develop and use those digital education tools ¹³⁴ . To address the first gap (access), the program will provide half a million devices with connectivity to educational centers that will make them available to students to promote digital education. (The 2019 Survey on Equipment and Use of Information and Communication Technologies in households prepared by the National Institute of Statistics concluded that among households with children in Spain there were 792,048 without electronic devices and 284,243 without internet connection.). To address the second gap, the programme establishes assistance platforms for teachers, students and educational authorities through the application of Artificial Intelligence to promote a more personalised education experience. This development will allow the establishment of personalised itineraries for students, a more effective monitoring of their progress and an individualised analysis of their evolution by the teaching staff. The final gap, insufficient training, will be addressed through partly through the abovementioned online learning communities and partly through targeted training to ICT coordinators and their teams, who now

¹³³ European Commission, 2019, op. cit.

¹³⁴ Ministry of education and professional training (Ministerio de Education y formación profesional), (2020) 'The Government launches the Educa en digital program to promote the technological transformation of education in Spain', 16 June, URL: <https://www.educacionyfp.gob.es/en/prensa/actualidad/2020/06/20200616-educaendigital.html>. For more information on "Educa en Digital", see: <https://www.educacionyfp.gob.es/en/prensa/actualidad/2020/06/20200616-educaendigital.html>



	Name of the initiative	Educate in digital! (Educa en digital!)
		<p>have to handle more and newer issues around distance learning. The programme has an initial budget of 230 million euros and is co-funded by the local governments of the autonomous communities and cities, the private network provider red.es and European Regional Development Funds.</p>
	Implementation stage	<p>Depends on the region. Andalusia has had ICT coordinators since the academic year 2003/04; in some other regions ICT coordination teams were introduced in 2013, but new legislation (2020) makes it obligatory for all schools to have at least 1 ICT coordinator.</p>
	Relevance for Flanders	<p>Spain and Belgium (FL) are both long-term EU Member States who use ICT coordinators at various types of schools. Spanish schools also have a considerable amount of autonomy in implementing central guidelines. Spain's economic and political system is more centralized than Belgium's, but some autonomous regions (e.g Andalusia) are very advanced in the transition towards ICT coordinator-led digital transformation of their education system. The government programmes and platforms for the exchange of good practices between ICT coordinators launched in Andalusia may also be relevant for Flanders.</p>
	Other relevant ongoing or planned reforms	<p>Before the COVID-19 pandemic, the use of ICT in the Spanish education system was uneven, despite the widespread role of at least one ICT coordinator per school. ICT Coordinators have become common in Spanish schools, especially in the region of Andalusia. They provide guidance to teachers; encourage content development and its dissemination; and manage educational tools and facilitating their use to teachers. They also guide the teachers in technical problem solving; ensure dissemination of knowledge within and across schools; and manage the school intranet and update school website content. The degree of teamwork is difficult to assess. According to the OECD TALIS survey, since 2013, there has been a significant increase in the proportion of teachers who participate at least once a month in team teaching (7 percentage points) and in feedback based on classroom observations (3 percentage points). However, 59% of teachers point out that they never teach together as a team in the same class (average OECD 39%).</p> <p>In response to the educational gaps highlighted by the COVID-19 pandemic, the Spanish Government launched the "Educa en Digital" programme in June 2020. The main initiative "Educa en digital" is a collaboration of the Ministry for Education, the Ministry for Economic affairs and digital transformation and the private network provider red.es. This partnership aims to work with teachers, pupils, parents and wider community stakeholders to transform the Spanish education system. This is complemented by</p>



	Name of the initiative	Educate in digital! (Educa en digital!)
		a wider strategy called "Digital Spain 2025", which supports plans to improve digital infrastructure (and the rollout of 5G in particular), the development of a national AI strategy, the digitisation of SMEs, the digitisation of public administration, the renewal of the audiovisual sector and a Plan for Digital Competences. The budget is €70m, co-financed by the Spanish administration (€20m- of which up to €15m from EU Recovery funds) and the private sector (€50m)."
Governance	Centralised/decentralised education system	Hybrid. Central State Education Authority, but the Autonomous Education Authorities develop the regulations and have executive and administrative responsibility for managing the education system in their own territory. The competences regarding digital education are decentralized by community. However, the implementation of the digitisation strategy of the educational system is carried out by the central government, with the Education and VET ministry. The distribution to the Autonomous Communities of almost 1,000 million euros has been approved for the digitisation of the educational system, including the distribution of digital devices, the installation of interactive classrooms and the training of teachers in the use of these technologies ¹³⁵ . Finally, schools have pedagogical, organisational and managerial autonomy for their resources which is accompanied by the participation of the education community in the school's organisation, government, running and evaluation.
	ICT leadership	The responsibility for ICT coordination mostly falls with the teaching team ¹³⁶ .
	ICT policy plans	Between 51% and 56% of pupils (depending on ISCED level) were in a school with a written statement about ICT in 2017-18 ¹³⁷ . The education programme "Educa en digital" is already complemented by the larger digital strategy "Digital Spain 2025". Digital competences have been included in study plans, both at the organisational level of the centers (such as Inercia Digital) and through the community and national legislation in this regard. However, the responsibility falls on teachers, who are not always well prepared ¹³⁸ .
	ICT support aspect	Well-established channels for knowledge-sharing and communication exist in Andalusia: The regional administration has

¹³⁵ Interview, 23 November 2021.

¹³⁶ Interview, 23 November 2021.

¹³⁷ European Commission, 2019, op. cit.

¹³⁸ Interview, 23 November 2021.



	Name of the initiative	Educate in digital! (Educa en digital!)
		<p>put in place a portal for communication between policymakers and teachers ("Seneca"), as well as a blog where teachers post to learn from each other ("Averroes").</p> <p>ICT coordinators also get a bonification from hours and a retribution¹³⁹.</p> <p>In Andalusia, the most studied region because of its longstanding policy on ICT coordinators, the regional government requires all schools to submit an annual "Digital Activation Plan". This is examined by the 91 local Teacher Centres, who advise schools on their digital strategy and also provide tailored training.</p> <p>The regional administration has put in place a portal for communication between policymakers and teachers ("Seneca"), as well as a blog where teachers post to learn from each other ("Averroes").</p>
	Role of ICT coordinators	<p>Depends on the region & educational stage. In the wake of the implementation gaps revealed by the COVID-19 pandemic, the Andalusia's Regional Ministry for Education and Sport, published the "Instruction on measures for the digital transition in education in public teaching centres" (31 July 2021). The ICT coordinator became the Coordinator for the Digital Transition in Education (Spanish: <i>coordinador de la transición digital educativa</i>) to account for a broader set of responsibilities. At school, this digital transformation encompasses three areas of action: (1) organisations and management of the education centre, (2) the processes of teaching and learning and (3) the area of information and communication, both internal and with external stakeholders.</p> <p>According to a survey of 101 coordinators, ICT coordinators in Andalusia prioritise guiding teachers to work out and use digital content over other tasks such as web management¹⁴⁰.</p> <p>ICT coordinators in Spain work closely with the school leadership, with the other teachers (who have to vote on all major decisions) and with the local teacher centres. This allows them to integrate ICT into a broader education vision.</p>
Evaluation	How 'success' is measured	<p>Regular evaluations by regional governments and private digital service providers, complemented with academic studies (the topic is more developed among Spanish academics since have had ICT coordinators for longer than any other European country). For example, Area Moreira et al. (2019) interviewed 5,161 teachers from different Spanish regions and concluded that the coordinator must have skills of various kinds that are more complex than mere</p>

¹³⁹ Interview, 23 November 2021.

¹⁴⁰ Rodríguez-Miranda et al, op. cit. 2014.



	Name of the initiative	Educate in digital! (Educa en digital!)
		<p>instrumental mastery of technology. They recommended that regional educational policies should include proper training of ICT coordinators with diverse skill sets to become agents of change¹⁴¹. Rodriguez-Miranda et al. (2014) examined how much time ICT coordinators dedicated to different tasks and functions and concluded that ICT coordinators prioritised professional tasks close to traditional teachers functions in classrooms and thereby missed opportunities to integrate ICT in the broader school vision and strategy¹⁴².</p> <p>36.2% of teachers felt prepared to very well prepared to use ICT in 2018 according to the OECD TALIS survey.</p>
	Drivers of ICT reform	<p>COVID-19 as a catalyst and digital education reform financially embedded in COVID-recovery package;</p> <p>The digital education programme “Educa en digital” is embedded in the wider priority programme “Digital Spain 2025”;</p> <p>Established networks of practitioners: school-based ICT coordinators already use formal platforms like “Seneca” for professional development and good practice exchange and informal alumni networks and local training courses to develop their skills</p>
	Barriers to ICT reform	<p>Uneven connectivity makes access to IT hardware and software difficult for some already marginalised communities who could benefit greatly from upskilling and digital inclusion programmes. The central government’s most recent “Educa en digital” (2020) programme, for example, applies to only 11 of Spain’s 17 autonomous communities.</p> <p>There is also a tension between technological and pedagogical roles of ICT coordinators, whose resolution might require further specialisation, continuous professional training, clearer job descriptions, a greater incorporation of digital pedagogy in the curriculum, additional staffing and funding¹⁴³.</p>

¹⁴¹ Moreira, M.A., Hernández Rivero, V.M. Alonso, J.S.A. (2019) ‘Leadership and School Integration of ICT. Teachers Perceptions in Spain’, in *Education and Information Technologies* 24.1 (2019): 549-65

¹⁴² Rodríguez-Miranda, Francisco P, Francisco J Pozuelos-Estrada, and José C León-Jariego. "The Role of ICT Coordinator. Priority and Time Dedicated to Professional Functions." *Computers and Education* 72 (2014): 262-70. Web.

¹⁴³ Leon-Jariego et al. (2020), ‘Building the role of ICT coordinators in primary schools: A typology based on task prioritisation’, in *British Journal of Education Technology*, vol. 51, no. 3, URL: <https://bera-journals.onlinelibrary.wiley.com/doi/abs/10.1111/bjet.12888>



	Name of the initiative	Educate in digital! (Educa en digital!)
	Lessons learnt	<p>Access to IT hardware is essential for participation in educational innovation; digital connectivity must be improved to counteract exclusion</p> <p>Digital skills are no longer an “add-on”, but a foundational requirement for participation in civic and economic life</p> <p>Active networks of practitioners make sectors more agile in adapting to policy reforms; they should be supported</p> <p>Encourage and support practitioners’ networks to allow for organic knowledge-sharing among specialists</p> <p>Private education providers are used to deliver digital training directly to their local communities via public-private partnerships (PPPs)</p>
Source	Key documents	<p>“Educa en digital” (2020) https://www.educacionyfp.gob.es/en/prensa/actualidad/2020/06/20200616-educaendigital.html</p>



SWEDEN

	Name of the initiative	LIKA
Key information	Lead organisation and partners	Swedish Association of Local Authorities and Regions (SALAR)
	Contact organisation	SALAR
	Percentage of pupils in a school with an ICT coordinator	76% of pupils were in schools which had an ICT coordinator in 2017-19 ¹⁴⁴ .
Context	Rationale	<p>Sweden is already a digital leader, with high levels of ICT skills across the population, but wants to promote digital skills and innovation further through a broad National Digitalisation Strategy and comprehensive skills development at all education levels. The strategy is based on five interim objectives: digital competence, digital innovation, digital security, digital infrastructure and digital management. Sectoral digitalisation policies like the National Digitalisation Strategy for the School System (2017) engage different types of stakeholders via integrated multi-level communications campaigns and regular feedback mechanisms. The National Digitalisation Council ('Digitaliseringsrådet') was established in 2017 to promote and track this digital transformation.</p> <p>In education, the Swedish National Digitalisation Strategy for the School System 2017-2022 is coordinated by the Ministry of Education and Research and implemented in cooperation with representatives from the Academic and school sector. The main objective of the Swedish Strategy is to create further opportunities for nationwide digitalisation, achieve a high level of digital competence (especially for children, students, and younger people), and to promote the development of knowledge and equal opportunities and access to technology. The National Digitalisation Strategy for the School System in Sweden is built on 3 focus areas, each accompanied by a set of sub-goals: (1) Digital Competence for Everyone: all children and students must develop adequate digital skills; (2) Equal access and use: Children, students and staff must have good and equal access to digital tools and resources in order to improve education activities; (3) Research and follow-up on the possibilities of digitalisation. Detailed information for different stakeholder groups is accessible via the #skoldigiplan website and information campaign¹⁴⁵.</p>

¹⁴⁴ European Commission, 2019, op. cit.

¹⁴⁵ Swedish Department for Education (2019) 'National digitalisation strategy for the school system', ("Nationell digitaliseringsstrategi för skolväsendet"), URL:



	Name of the initiative	LIKA
		In terms of ICT integration/digital transition in schools, teachers have access to a self-assessment tool called LIKA. LIKA offers a self-assessment tool validated by external researchers as part of a framework/guidelines to facilitate digital transition for school managers and teachers. LIKA contains 96 indicators which focus on leadership, infrastructure, competence development and use to facilitate digital transition in schools. Lika supports the national plan for action for digitalisation #skolDigiplan[1]. LIKA represents an interesting example to consider how guidelines for transition can be operationalised in schools through a self-assessment questionnaire.
	Implementation stage	To be confirmed
	Relevance for Flanders	Large: Sweden and Belgium are both long-term Member States of EU. They both have a de-centralised governance structure of their school systems. Sweden has almost twice the number of inhabitants compared to Flanders and is much less densely populated. Even so, we assume the potential for transferability, for example of the main self-assessment method/tool, to be large.
	Other relevant ongoing or planned reforms	The broadband strategy “A Completely Connected Sweden by 2025” (2017) has been reinforced annually to expand fibre-optic broadband to remote areas, including via the Rural Development Fund Innovation Partnership programmes bring together companies, universities, and civil society actors to identify innovative solutions to major challenges facing society and to contribute to Sweden’s competitiveness: Climate neutral industry; Skills supply and lifelong learning; Digital transformation of industry; and Health and life sciences
Governance	Centralised/decentralised education system	Decentralised: The municipalities (“kommun”) have the autonomy to administer the education system within the legislative framework set up by the Government ¹⁴⁶ .
	Description of transition toward ICT teams: timeline, main factors etc.	The Lika Teachers report 1.0 showed that access to digital tools was good, that many teachers used digital tools to plan their lessons and saw their potential to collaborate with colleagues. The report added that there was scope to refine the use of digital tools to facilitate the teacher's work, including in terms of assessment, and that the work of evaluating and reflecting on the use of digital tools could be improved;

<https://www.regeringen.se/4a9d9a/contentassets/00b3d9118b0144f6bb95302f3e08d11c/nationell-digitaliseringsstrategi-for-skolasendet.pdf>. For a presentation of the National Action Plan for Digitisation, see URL: <https://www.oru.se/contentassets/337be4420f20454fb65cbc22d970c9f6/a.agelii.genlott.pdf>

¹⁴⁶ Eurydice (2020) 'Sweden: organisation and governance', 15 January, URL https://eacea.ec.europa.eu/national-policies/eurydice/content/organisation-and-governance-80_en



	Name of the initiative	LIKA
		and that there was room to develop, anchor and use routines, guidelines and strategies at school / principal level on how the digital tools are handled. (Many teachers state that this does not exist or is not known) ¹⁴⁷ .
	ICT leadership	To be confirmed
	ICT policy plans	Between 35 and 55% of pupils were in a school with a written statement about ICT in 2017-18 ¹⁴⁸ .
	ICT support aspect	To be confirmed
	Role of ICT coordinators	To be confirmed
Evaluation	How 'success' is measured	<p>The Lika Teachers report 1.0 evaluated ICT integration. It showed that access to digital tools was good, that many teachers used digital tools to plan their lessons and saw their potential to collaborate with colleagues. The report added that there was scope to refine the use of digital tools to facilitate the teacher's work, including in terms of assessment, and that the work of evaluating and reflecting on the use of digital tools could be improved; and that there was room to develop, anchor and use routines, guidelines and strategies at school / principal level on how the digital tools are handled. (Many teachers state that this does not exist or is not known)¹⁴⁹.</p> <p>37% of teachers felt that they were prepared to very well prepared for the use of ICT in schools according to the 2018 edition of OECD TALIS.</p>
	Drivers of ICT reform	Sweden is a country where a National Coalitions for Digital Skills and Jobs are well established. Such national coalitions are innovative partnerships between digital skills' organisation that work to develop digital skills at national or local level and to tackle the lack of digital skills.
	Barriers to ICT reform	<p>Regional variation through de-centralisation.</p> <p>Nation-wide implementation of strategy.</p>

¹⁴⁷ Swedish municipalities and regions (Svenska Kommuner och Regioner) (n/a) Lika Teachers report 1.0 (Rapport Lika lärare 1.0), URL: <https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Aascds%3AUS%3A32a684a0-2c58-4c9c-902c-127bcd7e61af#pageNum=1>

¹⁴⁸ European Commission, 2019, op. cit.

¹⁴⁹ Swedish municipalities and regions (Sverige Komuner och Regioner) (n/a) Lika Teachers report 1.0 (Rapport Lika lärare 1.0), URL: <https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Aascds%3AUS%3A32a684a0-2c58-4c9c-902c-127bcd7e61af#pageNum=1>



	Name of the initiative	LIKA
		Schools lack guidelines or routines on the use of ICT ¹⁵⁰ .
	Lessons learnt	Self-assessment tools such as LIKA can support evaluations of competences and encourage teachers to improve their digital skills and may act as a 'soft governance tool' in highly decentralised systems.
Sources	Key documents	Swedish municipalities and regions (Svenska Kommuner och Regioner) (n/a) Lika Teachers report 1.0 (Rapport Lika lärare 1.0), URL: https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Asc ds%3AUS%3A32a684a0-2c58-4c9c-902c-127bcd7e61af#pageNum=1

¹⁵⁰ Swedish municipalities and regions (Sverige Komuner och Regioner) (n/a) Lika Teachers report 1.0 (Rapport Lika lärare 1.0), slide 12, URL: <https://documentcloud.adobe.com/link/track?uri=urn%3Aaaid%3Asc ds%3AUS%3A32a684a0-2c58-4c9c-902c-127bcd7e61af#pageNum=1>



Annex 2 Methodology

The main tasks undertaken to produce this report were:

- Desk research: based on policy documents in case study Member States as well as on a review of the extent literature on ICT coordination. This review included journal articles in English published between 2004 and 2021 on the topic of “ICT coordination” and “ICT integration” in specialised academic journals.
- The production of a scoreboard to shortlist of 13 relevant international policy and practices
- A limited number of interviews, which were initially planned as at least one per case study.

International practices were shortlisted along the following selection criteria:

- They had a diverse geographical scope
- Focus on relevant policy initiatives
- Cover all education levels
- Share similarities with Flanders in terms of education system governance (e.g. school autonomy)
- Face similar challenges (e.g. ICT coordinator’s increased workload)
- Offer a clear output metric for assessment of effectiveness (e.g. OECD TALIS data on the level of preparedness of teachers to use ICT in the classroom)
- Have a high potential for transferability of lessons learnt for the Flemish context.

Based on discussions with the project team, the Steering Committee and Stakeholder Group, and our preliminary research conducted to compile the scoreboard (summarised in table 4 below), the countries selected for task 3 are:

- The Netherlands, Portugal, Estonia for the virtual peer exchange in January 2022
- Spain for the face-to-face study visit scheduled end of January 2022
- Austria and Sweden as additional case studies.

Further material was added based on intelligence gathered during:

- The virtual peer exchange
- A face-to-face study visit to Sevilla (Andalusia)



Annex 3 Topic guide for interviews

The Flemish Department for Education and Training has requested support from the European Commission under Regulation (EU) 2021/240 establishing a Technical Support Instrument (“TSI Regulation”) to promote the digital transformation of the Flemish education system.

In the Flemish education system, the digitalisation of school education is necessary both to increase the quality of education and to help learners and teachers alike develop relevant digital competences and skills necessary to participate in a reshaped society and labour market.

The COVID-19 crisis has triggered unprecedented measures for the Flemish school system. Digital resources were the first helpline to communicate and to make distance learning possible. In addition, digital skills proved to be undeniably important for the functioning of education. The crisis highlighted that ICT-policy and coordination in most Flemish schools is lagging behind ambitions and requirements. Many of the challenges revolve around the function of ICT co-ordinator. In this situation some schools are not equipped to develop the digital competences of both students and teachers.

The general objective of this service contract is to contribute to institutional, administrative and growth sustaining structural reforms in Belgium. The more specific objective of this project is to assist national authorities in improving their capacity to design, develop and implement a digital transformation in the Flemish education system.

In order to gain a better understanding of ICT reforms and ICT education in other Member States, we are conducting targeted interviews with key stakeholders. The aim of these interviews is to identify challenges, lessons and good practices which could be relevant in designing and supporting the digital transformation of the Flemish education system.

This interview will consist of 16 questions.

Thank you very much for your time and cooperation.

You are helping other EU-Member States learn from your example.



Topic guide for interviews

1. How is the governance of ICT at school organised in your country? Could you please tell us a bit more about how the school system is organised and who decides on ICT planning in primary, secondary and adult education?
 - Centralised
 - Decentralised
 - School autonomy
2. Our preliminary research has indicated that xxx initiative was set up to support ICT coordination. Please explain the main ICT initiative and your role in it. When did this initiative start? What was the initial rationale? What has been its impact so far? How has this initiative provided support to ICT coordinators?
3. What are the main characteristics of ICT coordination in your country? How do ICT coordinators work in your country? What is their role? How integrated are they at school? Are they part of a school strategy or plan? Do they work alone or in a team? Do they have a job profile?
 - Work alone?
 - Work in a team?
 - Included in school strategy?
 - Details:
 - Job profile
 - Details:
4. How are ICT coordinators trained and recruited? What training do they have access to? Is there continuous training on the job to keep up with technological change? Who recruits ICT coordinators and according to which selection criteria?
 - Standardised training
 - Details:
 - Continuous training
 - Details:
5. What are/have been the drivers of ICT reforms/the creation of ICT teams in your country? To what extent is ICT coordination the remit of one individual or a team?
6. If relevant, how has the transition toward ICT teams occurred? What were the key changes in this transition? What helped the most?
7. Who takes care of what in schools? Who decides on ICT coordination? Are there any significant barriers to ICT reform in your education system? If so, how could they be overcome?



8. Is there a job description for ICT coordinators? What are the main competencies of the ICT coordinator? Is the role mostly technological or also included in pedagogical practices? Could you give us some examples of inclusion in pedagogical practices? What does this job description entail? Could you please share a copy with us?
9. How is communication organised?
10. Who sets the direction etc. and how?
11. What are the sources of support for ICT coordinators?
12. How has the COVID-19 pandemic affected the digitisation of your education system? Are there any measures that were designed as a direct response to the new requirement for distance learning? Did you gain any insights from those adjustments?
 ICT reform caused by COVID-19
 1. ICT reform planned
13. How do you measure the success of the initiative? Are there any relevant documents (e.g., evaluation reports) that you can recommend?
14. Finally, what would you say are the main lessons learnt from this initiative (a- for your institution/organisation/the school system in your country b- for schools in other Member States) ?
15. Would you have further recommendations regarding contacts and publications?
16. Would you be interested in taking part in further research activities?



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