European Parliament

# Research for CULT Committee - Shaping digital education policy

## Concomitant expertise for INI report



**Culture and Education**

EN

# Shaping digital education policy

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**Abstract**

This research project assesses the Digital Education Action Plan published in 2018 in terms of organisational and content-related challenges. It outlines concrete recommendations on how an updated Digital Education Action Plan could mitigate the weaknesses of the current plan, through a more holistic vision of the digital transformation in education, a focus on quality infrastructure for digital education for all, the further empowerment of educators and the further development of 'whole-school' approaches to digital education.

KEY FINDINGS

1. Digital technologies are increasingly integrated in education, and the Digital Education Action Plan (DEAP) 2018-2020 supported agenda-setting. Still, **more action is needed to complete the digital transformation**, now made more urgent by COVID-19.
2. In terms of **organisational challenge**, the DEAP lacks a comprehensive vision on digital education, has too short a timeframe to function as a reference point for policy reforms, and fails to sufficiently ensure synergies between different EU investments.
3. In terms of **content-related challenge**, the DEAP could reflect more on what digital competence means in a digitalised world, better ensure equal opportunities, pay more attention to adult learning, and support more strongly the continuing professional development (CPD) of educators.
4. The most important considerations for the DEAP post-2020 concern:
   a) Developing a **more holistic vision** of the digital transformation in education; extending the timeframe; ensuring synergies across actions; and connecting digital education more strongly with for instance inclusiveness and greening.
   b) Strengthening the **focus on quality infrastructure for digital education for all**, also in the home; addressing the persisting barriers that hamper learners and educators in applying digital technologies; and focusing more on adult learning.
   c) Stimulating the **further empowerment and CPD of educators** in pursuing more advanced integration of digital technologies in education.
   d) Stimulating the further development of '**whole-school' approaches** to digital education, by ensuring quality vision, leadership, infrastructure, guidance, assessment, and CPD for educators; ensuring collaboration with school stakeholders.

# 1. Introduction

Over the years, the issue of improving the quality of education and, in this context, the role of the 'digital', has come to occupy a high-priority status on the European agenda. Already in 2000, the Lisbon Strategy emphasised the need to modernise education and training systems for living and working in the knowledge society[1]. The role of quality education for innovation and smart growth was re-emphasised in the Europe 2020 strategy[2]. Within these strategic documents, 'digital' is referred to as a key aspect of modernising education. The Lisbon Strategy, for instance, called on Member States to ensure that 'all schools in the Union have access to the Internet and multimedia resources by the end of 2001, and that all the teachers needed are skilled in the use of the Internet and multimedia resources by the end of 2002'. The role of the 'digital' in the economy and society is expanding, and the same is the case with its role in education, which now requires a more comprehensive European approach to its consolidation. The 2012 Commission communication 'Rethinking Education' affirms that the digital revolution brings important opportunities for education and that it is time to scale up the use of information and communications technologies (ICTs) in learning and teaching[3]. Furthermore, in 2013 the Commission launched the initiative 'Opening up Education' to boost innovation and digital skills in schools and universities, described as an action plan to tackle digital problems which are hampering schools and universities from delivering high-quality education and developing digital skills[4]. Later, in 2016, the Commission communication 'Improving and Modernising Education' promised to intensify work on identifying challenges and implementing best practices for digital education[5]. In the same year, the New Skills Agenda was published, presenting actions for redefining the key competences for lifelong learning (including digital) and improving the digital skills of the wider population, not just IT professionals[6]. In the context of the Education and Training 2020 (ET2020) strategic framework, the working group 'Digital Education: Learning, Teaching and Assessment' (DELTA) has been set up to examine the use of digital technologies and the development of digital competences for teachers and learners.

In this context, to place digital education centre stage, the Digital Education Action Plan (DEAP) was adopted in 2018, setting out 'how education and training systems can make better use of innovation and digital technology and support the development of relevant digital competences, needed for life and work, in an age of rapid digital change.'[7]. This three-year action plan consists of 11 actions, clustered under three priorities: 1) making better use of digital technology for teaching and learning; 2) developing digital competences and skills; and 3) improving education through better data analysis and foresight. As the DEAP comes to a close in 2020, the Commission is preparing a follow-up DEAP.

[1] European Presidency (2000), Lisbon European Council 23 and 24 March 2000 Presidency Conclusions: https://www.europarl.europa.eu/summits/lis1_en.htm

[2] European Commission (2010), Communication from the Commission - Europe 2020: A strategy for smart, sustainable and inclusive growth COM(2010)2020: https://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf

[3] European Commission (2012), Communication from the Commission to the Council, the European Economic and Social Committee and the Committee of the Regions on Rethinking Education: Investing in skills for better socio-economic outcomes (COM(2012)0669): https://ec.europa.eu/digital-single-market/en/news/communication-rethinking-education

[4] European Commission (2013), Communication from the Commission to the Council, the European Economic and Social Committee and the Committee of the Regions on Opening up Education: Innovative teaching and learning for all through new Technologies and Open Educational Resources (COM/2013/0654): https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52013DC0654&from=EN

[5] European Commission (2016a), Communication from the Commission to the Council, the European Economic and Social Committee and the Committee of the Regions on Improving and Modernising Education (COM(2016)0941): https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52016DC0941&from=EN

[6] European Commission (2016b), Communication from the Commission to the Council, the European Economic and Social Committee and the Committee of the Regions on A New Skills Agenda for Europe: Working together to strengthen human capital, employability and competitiveness (COM(2016)0381): https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52016DC0381

[7] European Commission (2018), Communication from the Commission to the Council, the European Economic and Social Committee and the Committee of the Regions on the Digital Education Action Plan (COM(2018)0022), p. 1: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2018:22:FIN

To provide the MEPs of the CULT Committee with expertise for an own-initiative report (INI report) on 'Shaping digital education policies: reflections on the current DEAP and input for the new DEAP', the objective of this introductory briefing is threefold, namely:

ʃ Providing a very brief overview of the state of digital education and related policies in the EU (Section 2);
ʃ Describing the weaknesses of the initial Digital Education Action Plan (Section 3);
ʃ Making concrete recommendations on how the EU, through the updated version of the Digital Education Action Plan, could mitigate the weaknesses mentioned above and draw lessons from the COVID-19 crisis in the field of digital education (Section 4).

The methodology used for this note mainly consists of: desk research of relevant studies and reports on digital education; analysis of data on the use of digital education; and a limited number of scoping interviews with the Commission.

## 2. Overview of the state of digital education and related policies in the EU

For digital technologies to improve education, specific conditions need to be met, including: having equipment and infrastructure in place; providing support, both technical and pedagogical; having a supportive school vision and showing leadership on using digital technologies; and providing policy structures and support. Research shows that without those conditions being in place 'general programmes on using digital technologies in education are at risk of having no effect on students' outcomes or – even worse – have detrimental effects on their academic achievements.'[8]

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[8]  Escueta et al. (2017). 'Education technology: An Evidence-Based Review'. NBER Working Paper; OECD (2015). 'Students, Computers and Learning: Making the Connection, PISA'. European Commission (2019), Education and Training Monitor 2019, p. 86.

## In many Member States policy reforms have taken place for the integration of digital technologies in education

The 2019 Eurydice report on digital education in primary and general secondary schools in Europe[9] concludes that digital competences across Europe are consistently defined as key competences. Furthermore, half of the European education systems are currently reforming the curriculum related to digital competence (see figure). In vocational educational and training (VET), between 2011 and 2018, almost all EU countries adopted and started implementing policies that promoted digital competence in VET[10]. Policies on digital education in higher education and adult learning are less widespread, also given that these sectors usually do not have centralised or national curricula, in which (through policy initiatives) digital competences could be embedded. Policies, however, can relate to using ICT in education, or to better equipping educators with digital competences.

Ongoing curriculum reforms related to digital competences in primary and general secondary education (ISCED 1-3), 2018/19
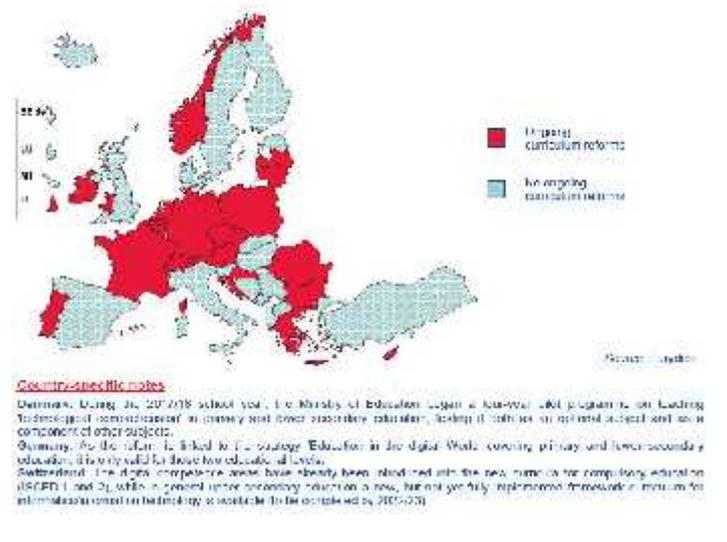


## Integration of digital technologies in education is taking place, but with large differences between countries and education sectors

The ET2020 monitor 2019 concludes[11], on the basis of research, statistics and reports[12], that while progress is being made in terms of integration and effective use of digital technologies in <u>primary and secondary schools</u>, there is still a need to mobilise education staff and stakeholders in embracing digital technologies in education. In most Member States (two out of three), digital competences are considered as an essential competence that teachers are expected to have[13]. Nevertheless, teachers also report that 'ICT skills for teaching' is one of their greatest training needs. In terms of equipment and infrastructure, significant investments are being made, but still many schools in the EU lack access to high-speed internet. The Commission's study entitled '2nd Survey of Schools: ICT in Education' calculated that the average cost (per student, per year) of equipping and connecting an average EU classroom at ISCED level 2 (lower secondary education) is in the range of EUR 224 – 536[14]. Finally, as concluded by the ET2020 monitor 2019, 'digital technologies can support a variety of assessment methods - aimed at different educational purposes - and they are increasingly adopted for national

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9   Eurydice (2019), Digital education at school in Europe, p. 9.
10  Cedefop (forthcoming), Key competences in VET.
11  European Commission (2019), Education and Training Monitor 2019, pp. 85-86.
12  Such as: European Commission (2019), 2nd Survey of Schools: ICT in Education.
13  Eurydice (2019), Digital education at school in Europe, p. 11.
14  European Commission (2019), 2nd Survey of Schools: ICT in Education; Objective 2: Model for a 'highly equipped and connected classroom', p. 10. 'This cost range includes costs for digital technology equipment (91 EUR – 150 EUR per student per year), network requirements (48 – 226 EUR per student per year), professional development of teachers (55 EUR – 110 EUR per student per year) and costs for access to content (30 EUR – 50 EUR per student per year). It is important to note that setting up the physical infrastructure in terms of high-capacity networks (e.g. fibre networks) is not included in this overall figure.'

testing purposes. Still, capacity-building for digital assessment is needed for learners, teachers, schools and education systems alike'[15]. For vocational education and training (VET), a recent Cedefop study concluded that digital competence is offered in all VET programmes to some extent and that in half of the programmes digital competence is integrated in other learning outcomes and subjects. There are, however, differences per economic sector. Digital competence is, for instance, less likely to be included in the construction sector as compared to the accommodation and food service sector and the manufacturing sector[16]. In adult learning, a recently developed Index of Readiness for Digital Lifelong Learning (IRDLL) shows, on the basis of available statistics and experts' assessments, that there are clear differences between Member States, that progress is uneven and that all countries have room to grow. The study further concludes that digital learning can only really take off through a serious national approach that is inclusive to all and ensures that both privacy and individuals' interests are protected[17].

To compare Europe in the global context, the analysis of the 2018 OECD Programme for International Student Assessment (PISA) shows that European countries are generally among the top achievers when it comes to student access to the digital world and preparedness of teachers and schools. However, there are large differences between European countries, for instance related to schools' reported internet bandwidth being generally sufficient in Denmark, Lithuania and Slovenia and less so in Germany and Portugal[18].

## COVID-19 and the transition to digital education

As a result of the COVID-19 pandemic and the associated 'great lockdown', from early March 2020 education and training institutions in all sectors were closed (prohibited from delivering face-to-face courses). Simultaneously, institutions made a 'shift' to digital learning as a safeguard to ensure that learning continues in some form[19]. From the beginning of May 2020, in many countries education and training institutions gradually opened again, but the situation triggered developments in educational institutions in all educational sub-sectors, from primary education to VET and from higher education to adult learning. Institutions are getting organised online at a pace that was never imagined before. As indicated by the World Economic Forum, there are currently more than 1.2 billion children worldwide affected by school closures due to the pandemic (in 186 countries). As a result, 'education has changed dramatically, with the distinctive rise of e-learning, whereby teaching is undertaken remotely and on digital platforms. Research suggests that online learning has been shown to increase retention of information, and take less time, meaning the changes coronavirus [has} caused might be here to stay.'[20]. For adult learning, an inventory by the ET2020 Working Group on Adult Learning found that, across Europe, 'the sector faced challenges in getting organised online, reaching out to adult learners, and ensuring that adult educators have the right skills and equipment to continue providing adult learning online.' It further found: 'Adult learning systems have largely managed to respond quickly and effectively to the challenges posed, making a swift transition into online delivery. The immediate responses from the adult learning system show a weakness in the ability to reach those that matter the most: specific vulnerable groups. Also, on the longer term, there is a need to substantially improve the quality of the online and blended delivery and increase the financial resources for the sector.'[21]. This

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[15]  European Commission (2019), Education and Training Monitor 2019, p. 86.
[16]  Cedefop (forthcoming), Key competences in VET.
[17]  CEPS (2019), Index of Readiness for Digital Lifelong Learning: Changing How Europeans Upgrade Their Skills, p. 14-15 and summary.
[18]  OECD (2020), Education disrupted – education rebuilt: Some insights from PISA on the availability and use of digital tools for learning; in: OECD Education and Skills Today, 1 April 2020: https://oecdedutoday.com/coronavirus-education-digital-tools-for-learning/
[19]  See, for example: https://www.wmca.org.uk/news/adult-education-providers-adapt-training-to-help-learners-during-covid-19-outbreak/; https://www.nytimes.com/2020/03/18/us/politics/education-schools-coronavirus.html and https://www.rolandberger.com/en/Point-of-View/Three-scenarios-for-how-Coronavirus-may-affect-economies-and-industries.html
[20]  WEF (2020), The COVID-19 pandemic has changed education forever. This is how, 29 April 2020: https://www.weforum.org/agenda/2020/04/coronavirus-education-global-covid19-online-digital-learning/
[21]  European Commission (forthcoming), Adult Learning and COVID-19: state of play and future orientation: A Report from the ET2020 Working Group on Adult Learning (WGAL), cited from the draft conclusions.

means that the adult learning sector needs financial resources to allow it more substantially make the shift to online and blended modes of teaching and learning in a qualitative manner, in order, especially, to support those learners who are most vulnerable. The issue of a rise in dropouts and learners who have 'fallen off the radar' is also reported for VET and general education during the COVID-19 situation. The crisis has widened the divide between those learners who have access (in terms of equipment, skills, (parental) support and time) to education through digital technologies, and those learners who have no or limited access. Those who do not have access, often owing to their disadvantaged socio-economic status, hence fall behind on their education pathway[22].

### The Digital Education Action Plan (DEAP) 2018-2020

The initial DEAP ('DEAPI') has been a good 'first step'[23], given that it was the first instance where the various Commission Directorates-General (DGs) that work on digital education themes cooperated on the topic[24], thus contributing to the agenda-setting and coordination of the topic in this fragmented field (e.g. by establishing a culture of 'working together'). Furthermore, the (pre-) existence of EU frameworks that support the digital education field (e.g. the European Digital Competence Framework for Citizens (DigComp), the European Framework for Digitally Competent Educational Organisations (DigCompOrg), and the European Framework for the Digital Competence of Educators (DigCompEdu)) have also contributed to the momentum of the DEAP. Some of the actions included in the DEAP have become highly visible, such as the SELFIE tool (reaching more than 650 000 users in more than 7 300 schools from 57 countries)[25], the EU Code Week, the Europass Technical Framework for Digitally Signed Credentials, and the European Big Data Hackathon.

# 3.   Challenges of the DEAP 2018-2020

Despite the establishment of momentum by the DEAP, there are indications that there is room for improvement. Here below, some identified weaknesses are discussed. The first set (challenges 1-3) focus on some of its more 'organisational' aspects – the approach and its timeframe and visibility; the second set (challenges 4-7) focus on specific topics that are insufficiently addressed in the DEAP. For each challenge, considerations for a future DEAP are presented (in addition to those presented in Section 4 (Recommendations)).

### Challenge 1: The DEAP presents (by design) more a 'collection of actions' than a comprehensive vision on digital education and the digital transformation of education

The European Parliament resolution of 11 December 2018 on education in the digital era 'regrets that no overarching digital skills strategy has been developed at EU level, while the implications of the digital transformation for the EU's internal market are clear; believes that disparities among Member States illustrate the need for such a strategy; […] and believes that the Digital Education Action Plan should be viewed as the first step towards a fully-fledged EU strategy on digital education and skills based on a lifelong-learning approach, which can provide both a more coordinated policy framework

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[22]   See for example, Cedefop (2020), Digital gap during COVID-19 for VET learners at risk in Europe.
[23]   European Parliament (2018), European Parliament resolution of 11 December 2018 on education in the digital era: challenges, opportunities and lessons for EU policy design (2018/2090(INI)), Committee on Culture and Education, (A8-0400/2018), p.11, paragraph 46.
[24]   More specifically: DG Connect, DG EMPL and EG EAC, as well as other EC bodies, such as the JRC.
[25]   https://schools-go-digital.jrc.ec.europa.eu/

and simultaneously be adaptable to changing realities'[26]. As indicated in the CEPS report on the Index of Readiness for digital LLL as well, there is a need to strengthen a comprehensive vision (at EU level) in order to facilitate coordinated and coherent policy action on digital learning, indicating that 'in spite of many examples of cooperation, each DG still too often tends to look at digital learning from their own perspective and within their own competences and mission.'[27]. Also, the European Parliament study of 2020 concluded that 'in the European Union, there is a high complexity in and overlapping responsibilities for policies and programmes on digital education.'[28]. Hence, as evidenced by various sources, the DEAP has, in this regard, not been able to prevent this complexity from leading to fragmentation as regards what is done at European level on digital education. It is stressed in the European Parliament resolution on education in the digital era that 'Union initiatives often emanate from different Directorates-General within the Commission, frustrating a coordinated approach to digital skills policy'[29]. This is in part facilitated by the DEAP being more of a collection of actions - to be performed by different stakeholders –than a structured and systemic approach based on a solid underlying needs analysis and having clear objectives and envisaged results. To illustrate: only one of the actions included in the DEAP specified a measurable 'target' or benchmark to reach, namely 'making the SELFIE self-assessment tool reach one million teachers, trainers and learners by end of 2019 in all EU Member States and the Western Balkans'[30]. As a result, being a good first step, the DEAP delivers a rather mixed bag of initiatives, without a clear orientation towards 'completing' the digital transformation.

Developing a less 'individual' (fragmented) and more comprehensive (holistic) approach that includes more 'measurable' benchmarks and indicators would allow: 1) better coordination of actions; 2) monitoring of the progress made in the digital transformation in schools and other learning environments; and 3) better insight for stakeholders (DGs/Member States) into their own progress, while simultaneously identifying areas where progress can still be made. This development should involve Member States and stakeholders in education and training through continuous dialogue, in order to sufficiently take into account the diversity in background conditions and interests across Europe. This, together with a monitoring and benchmarking system, would also allow capitalisation on past experiences and increased learning potential between Member States on how to make the digital transformation[31]. Inspiration could be taken from the recent benchlearning initiatives in the context of the Public Employment Services and the benchlearning for apprenticeships, a process of benchmarking and peer learning[32]. This plays into the current increased need for coordination due to

[26] European Parliament (2018), European Parliament resolution of 11 December 2018 on education in the digital era: challenges, opportunities and lessons for EU policy design - Texts adopted, PA_TA(2018)0485 - report of the Committee on Culture and Education (A8-0400/2018), pp.10-11, paragraphs 44 and 46.

[27] CEPS (2019), Index of Readiness for Digital Lifelong Learning - Changing How Europeans Upgrade Their Skills, p. 33.

[28] European Parliament (2020), Rethinking education in the digital age; study, p. 4: https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641528/EPRS_STU(2020)641528_EN.pdf : 'The European Commission has three General Directorates working on digital education: the Directorate-General for Education and Culture (DG EAC: education, culture, youth, languages and sport), the Directorate-General Employment, Social Affairs and Inclusion (DG EMPL: adult education and vocational training) and the Directorate-General Informatics (DG DIGIT). Within the Council of the EU, the Education, Youth, Culture and Sport (EYCS) Council deals with digital education. Within the European Parliament, there are two Committees in charge of (digital) education and training issues: the Committee on Culture and Education (CULT) and the Committee on Employment and Social Affairs (EMPL).'

[29] European Parliament (2018), European Parliament resolution of 11 December 2018 (cited in note 26 above), Committee on Culture and Education, (A8-0400/2018), p.11, paragraph 39.

[30] European Commission (2018), Communication from the Commission to the Council, the European Economic and Social Committee and the Committee of the Regions on the Digital Education Action Plan (COM(2018)0022), p. 6: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2018:22:FIN

[31] European Committee of the Regions (2018), opinion on the Digital Education Action Plan, SEDEC/VI-039, 131st plenary session, p. 7.

[32] See, for Public Employment Services (PES): https://www.pesnetwork.eu/tag/benchlearning/. For apprenticeships, the benchlearning is currently implemented by DG EMPL in the context of the Apprenticeship Support Service. In the context of PES, benchlearning is 'the process of creating a systematic and integrated link between benchmarking and mutual learning activities, that consists of identifying good performances through indicator-based benchmarking systems, including data collection, data validation, data consolidation and assessments, with appropriate methodology, and of using findings for tangible and evidence-informed mutual learning activities, including good or best practice models.' - Decision No 573/2014/EU of the European Parliament and of the Council of 15 May 2014 on enhanced cooperation between Public Employment Services (PES), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2014.159.01.0032.01.ENG

the COVID-19 situation, as a more collaborative approach and better cooperation would result in a more efficient approach to addressing the digital transformation at EU level.

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**Challenge 1-related considerations for a DEAP post-2020:**

    a) Develop a more comprehensive approach, based on a clear orientation, inspired by a holistic vision on how to facilitate the digital transformation in education.

    b) Consider including (more) specific targets and measurable output indicators, for the separate actions within each DEAP priority, as well as for the DEAP as a whole.

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## Challenge 2: The three-year timeframe of the DEAP is too short to function as a reference point for policy reforms

Another weakness identified in this context is that the timeframe for the DEAP (3 years) is too short, both for facilitating change and reforms and for determining to what extent change has been made. This also affects the extent to which joint activities between Commission DGs can be developed, as these would require more time to coordinate and implement than individual activities. At the same time, this poses a risk to the 'advocacy' of DEAP – meaning that the short timeframe makes it difficult to keep digital education on the EU agenda for an extended period of time and to establish crosslinks between the DEAP and other policy fields, such as linking digital education more closely to the greening agenda. Furthermore, educational reforms are generally a long process and thus it would be better to have a reference point that is 'valid' for a longer period. This is even more the case within the context of the COVID-19 situation, given that the shockwave of sudden digitalisation and the resulting increased awareness of the importance (and opportunities) of digital education also calls for a reference point for the 'recovery' of affected countries. To align the DEAP with the Multiannual Financial Framework 2021-2027, the new DEAP could have a seven-year timeframe, running from 2021 to 2027.

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**Challenge 2-related considerations for a DEAP post-2020:**

    c) Consider increasing the timeframe for the new DEAP (DEAPII) to seven years (in line with the MFF), to enhance the function of the DEAP as a reference point for policy reform and to establish links with other policy fields.

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## Challenge 3: The results of EU investments in digital education lack synergies and could be linked more strongly to other policy areas (e.g. greening)

Numerous initiatives have taken place within the European funding programmes, such as Erasmus+ and Horizon 2020, that are related to specific aspects of digital education. What is done, however, in specific Erasmus+ or Horizon 2020 projects on digital education and the solutions found on specific topics - such as digital assessment, online delivery, online guidance, simulation, etc - is not sufficiently monitored, connected or jointly presented to ensure a wider impact on digital education through EU-funded initiatives. This is despite there being considerable interest in the developments in digital approaches in, for instance, Erasmus+[33]. Furthermore, to refer to an element that was already valid but

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[33] The 'Erasmus goes Digital' webinar, organised by the Commission on 7 March 2019, attracted representatives from over 750 institutions from 40 countries: https://ec.europa.eu/education/events/webinar-erasmus-goes-digital_en; https://ec.europa.eu/programmes/erasmus-plus/news/%E2%80%9Cerasmus-goes-digital%E2%80%9D-webinar-attracts-record-number-higher-education-institutions_en

has now been even more emphasised through the COVID-19 situation, the digital transformation is clearly linked to other ambitious developments and reform programmes, such as greening the European economy and society. The link between innovativeness, sustainability, greening and the need for digital transformation is well recognised, for instance in the recent report on the Science, Research and Innovation Performance of the EU (SRIP)[34]. In this wider context, the role of digital education could be better emphasised by making more substantial links between digital education and sustainability, innovativeness of firms, and fair and just societies. The DEAP could provide a better platform for making these linkages.

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**Challenge 3-related considerations for a DEAP post-2020:**

    d)  Gather, analyse and present results of EU investments across actions and funding programmes in digital education, in order to improve and widen the knowledge base for the digital education transformation and increase its impact.

    e)  Connect digital education more strongly with other policy areas and show how digital education contributes to fair and just societies, inclusive and innovative economies, and sustainable and green societies.

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## Challenge 4: The DEAP does not go far enough in facilitating future-oriented reflections on what digital competence means in a world where all aspects of work and life are digitally connected

Given the rapidly changing nature of digital technologies, and the extent to which the digital society and economy have already become the norm, individuals with limited (or no) access to digital infrastructure are easily excluded from today's society, meaning that *digital skills are relevant for all citizens* for both their professional and their day-to-day life. This is highlighted by the inclusion of digital competences in the key competences for lifelong learning[35], but also in the Opinion of the European Committee of the Regions on the DEAP, which states that 'the digital revolution will continue to significantly change the way Europeans live, study, work and relate to one another' and that 'digital skills and competences are fundamental alongside literacy and numeracy, in order to help citizens to meet the challenges of a constantly moving, globalised and interconnected world'[36]. The COVID-19 situation has been a key example in showing this fundamental need, as the persisting digital divides and challenges regarding the digital transition became more visible.

The Commission Staff Working Document accompanying the Digital Education Action Plan states: 'Digital competence refers to the ability to be efficient, critical, and creative in a digital environment. The concept has been evolving since its appearance, going from a specialised competence in the 60s, relevant for computer scientists, to being a relatively widespread operational skill mainly for the workplace centred on the use of a limited amount of applications and specific software in the 80s. Nowadays, digital technology is used by almost everyone for almost any purpose and domain and the concept of digital competence widened.'[37]. While the three DigComp frameworks[38] provide a solid basis to discuss digital competences for citizens, education providers and educators, the DEAP could

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[34]   European Commission (2020), Science, Research and Innovation Performance of the EU 2020: A fair, green and digital Europe.

[35]   European Council (2018), Council Recommendation of 22 May 2018 on key competences for lifelong learning (2018/C 189/01)

[36]   European Committee of the Regions (2018), Opinion of the European Committee of the Regions – Digital Education Action Plan, SEDEC/VI-039, 131st plenary session, p. 3, item 3.

[37]   European Commission (2018), Commission Staff Working Document: Accompanying the document Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Digital Education Action Plan (SWD(2018)0012), p. 15.

[38]   https://ec.europa.eu/jrc/en/digcomp

still facilitate a reflection on the scope of digital competences in a context where 'digital' intervenes in every aspect of life, even without us being aware of it. In this sense, going 'digital' can be regarded more as a domain in which one needs all other (key) competences, instead of as a concretely defined self-standing competence. Within a digitally connected world, one needs to be literate in one's mother tongue; needs foreign language skills; needs to be able to interpret numerical and science-related information; needs to have personal and social competences; needs to be creative and innovate, and to be entrepreneurial; and finally, needs to be culturally sensitive[39]. In addition to interpreting 'digital competence' more broadly, there are also voices indicating that more emphasis should be placed on computational thinking in the DEAP and the European DigComp frameworks[40].

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**Challenge 4-related considerations for a DEAP post-2020:**

    f)   Further conceptually develop digital competence; its link to other competences; the role of computational thinking; and the use of digital competence in society and at work. In addition, further undertake research into what is needed to teach and learn digital competences in education and training leading to the best learning outcomes.

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## Challenge 5: Providing equal opportunities needs more attention as a multi-faceted issue in the DEAP (besides the focus on infrastructure and skills)

The DEAP addressed infrastructural and access challenges and worked on reducing the 'digital divide' in terms of access to digital infrastructure, as well as building the digital skills of young learners and their educators/trainers. However, even though the differences in computer access (in households and schools) between advantaged and disadvantaged students have decreased over time, there is still considerable variance between countries[41], and lack of funding and insufficient and inoperative equipment and/or bandwidth still represent barriers for the use of ICTs for teaching and learning. It is through the progress made in access to digital technology that persisting differences in digital competence (and digital *confidence*) have become more apparent[42]. Parliament's study of 2020 states: 'Even though today's students are considered "digital natives" - as they are growing up in an increasingly digitalised world, generally using digital devices on a daily basis - considerable differences remain in their digital skills'[43]. Especially, individuals from disadvantaged socio-economic backgrounds tend to lack the ability to engage with digital technologies in a way that is beneficial for their personal development and further skills acquisition, and this divide has only become more visible through the COVID-19 situation. Interestingly, there are indications that this group does in fact spend more time 'online', but this is generally as passive consumers of entertainment - whereas students from higher socio-economic backgrounds are more likely to use technology for content creation, reading the news and searching for specific information deliberately[44]. These differences in digital literacy and in the way technologies are used (referred to as the 'second' or 'second-order' digital divide) represent, in fact, a progression from the first digital divide, indicating that merely providing equality in terms of access does not translate directly into 'equality of opportunities', and that digital capacity development and the empowerment of learners in their use of digital technologies are key to further reducing the digital

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[39]    European Council (2018), Council Recommendation of 22 May 2018 on key competences for lifelong learning (2018/C 189/01)
[40]    As discussed in European Parliament (2020), Rethinking education in the digital age - study, p. 18: https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641528/EPRS_STU(2020)641528_EN.pdf
[41]    European Parliament (2020), Rethinking education in the digital age - study, pp. 5-6: https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641528/EPRS_STU(2020)641528_EN.pdf
[42]    European Parliament (2020), Rethinking education in the digital age - study, p. 9: https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641528/EPRS_STU(2020)641528_EN.pdf
[43]    European Parliament (2020), Rethinking education in the digital age - study, p. 8: https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641528/EPRS_STU(2020)641528_EN.pdf
[44]    OECD (2015), Students, computers and learning: Making the connection, PISA, p. 135. http://dx.doi.org/10.1787/9789264239555-en

divide. In this regard, the development of the DigComp frameworks has raised awareness among policymakers on the importance of building digital capacities, but there is still considerable variation between Member States in how well their citizens are able to engage with the digital world[45], especially those who are in a more disadvantaged socio-economic position.

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**Challenge 5-related considerations for a DEAP post-2020:**

g) Strengthen the focus on ensuring quality infrastructure for digital education for all, in education institutions and in the home, in order to provide equal opportunities for all in accessing education through digital technologies (also in times of crisis).

h) Address more strongly the persisting barriers that hamper learners and educators in beneficially applying digital tools besides the lack of infrastructure and skills (e.g. lack of confidence in using digital technologies for educational purposes).

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## Challenge 6: The DEAP is more oriented to youth education and formal education than to adult learning and non-formal learning

The 2019 CEPS report noted that the 'comprehensive approach' to digital education (discussed in key message 3) should look at all types of learning, from early childhood to continuous professional development[46]. This is also indicated in the 2018 own-initiative report of the Committee on Culture and Education, in that 'digital skills are essential for the successful professional realisation and personal development of all citizens'[47]. In a similar vein, the opinion of the European Committee of the Regions on the DEAP agrees that 'acquisition of digital skills and competences needs to start at an early age and carry on throughout life, as part of educational curricula for early childhood and adult education'[48]. Finally, digital and technology-based competences are included as one of the eight key competences for lifelong learning, emphasising a lifelong perspective in their acquisition.[49] The focus of the DEAP, however, is mainly on youth and educators/trainers in formal education (general education, vocational education and training, higher education) and is thus not sufficiently inclusive of adult learning and non-formal learning, such as learning in the workplace - even though numerous developments are occurring in this area as time goes by[50]. Considering that the digital transformation will continue the digitalisation of (among other things) learning environments and workplaces, it may become increasingly difficult to, in particular, (re)integrate older workers into the labour market. Furthermore, given that the (second) digital divide in terms of the digital competence of individuals is especially visible between educational backgrounds, age groups and gender[51], there is a need to consider expanding the scope of DEAP to include (more) aspects of adult and non-formal learning. The area of non-formal learning can also be highly relevant for younger people when it relates to volunteering or

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[45]  European Parliament (2020), Rethinking education in the digital age -  study, figure 3, p. 10:
      https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641528/EPRS_STU(2020)641528_EN.pdf
[46]  CEPS (2019), Index of Readiness for Digital Lifelong Learning Changing How Europeans Upgrade Their Skills, p. 33.
[47]  European Parliament resolution of 11 December 2018 on education in the digital era: challenges, opportunities and lessons for EU policy design (see note 26 above) - page 5, recital B.
[48]  Opinion of the European Committee of the Regions – Digital Education Action Plan (2018), SEDEC/VI-039, 131st plenary session, p. 3, item 4.
[49]  European Council (2018), Council Recommendation of 22 May 2018 on key competences for lifelong learning (2018/C 189/01).
[50]  See for instance the numerous articles on the Electronic Platform for Adult Learning in Europe (EPALE). For instance: https://epale.ec.europa.eu/en/blog/use-digital-tools-adult-education;     https://epale.ec.europa.eu/en/blog/good-practice-examples-epale-event-digital-adult-learning
[51]  European Parliament (2020), Rethinking education in the digital age; study - p. 11, figure 4:
      https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641528/EPRS_STU(2020)641528_EN.pdf

youth work[52]. The European Parliament resolution on education in the digital era also makes reference to the current gap in the DEAP concerning 'the harder-to-reach adult population'[53].

Another target group that is 'mentioned', but not further addressed in DEAP is parents. As stated in the DEAP communication: 'Even the youngest children are in daily contact with digital technologies yet do not understand the risks, and parents worry about inappropriate content and risks but do not know how to address them'[54]. This is even more the case in the context of the COVID-19 situation – given that, across the EU, parents have had to take on the additional role of guiding their children's shift to digital education. Furthermore, for working parents this meant juggling their own shift to distant working as well (and for adult learners this also included the shift in their own learning). This is a difficult feat, even for 'up-to-date' or 'tech-savvy' parents, due to the sudden nature of the transition, as well as the variety in the technologies used (especially considering the potential differences between 'commonly used' technologies for education and those for work). Therefore, even parents who are up-to-date on technologies they need for their work may not be familiar with the technologies used in their children's education, and thus lack the competences necessary to properly guide their children on *their* use of digital technologies.

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**Challenge 6-related considerations for a DEAP post-2020:**

i)   Strengthen the focus of digital education across all education levels and sectors, including adult learning and non-formal education; improve the infrastructure for adult learning providers; develop educators' competences and skills in embedding digital technologies in education; highlight the importance of digital literacy for adult learners and support adult learners in accessing education and training through digital technologies.

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## Challenge 7: Empowering educators and trainers in digital education needs even more attention in the DEAP

To facilitate the process of integrating digital technologies in education, critical aspects for its success are teachers´ digital competences and digital confidence,[55] and their mindset towards new technologies[56]. On the one hand, a majority of teachers interviewed in the last International Computer and Information Literacy Study (ICILS) indicated that they had at least five years of experience in using ICT during lessons (65 %) and for preparing lessons (72 %), with considerable variance between countries and between male and female teachers[57]. On the other hand, only about half of teachers actually use digital technologies when teaching on a daily basis[58]. Furthermore, it was found that when teachers do use digital technologies, this is generally for predominantly simple tasks, rather than for specialised learning and teaching applications. Here as well, the COVID-19 situation has made the

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[52]   E.g. in the context of the European Solidarity Corps: https://europa.eu/youth/solidarity_en
[53]   European Parliament (2018), European Parliament resolution of 11 December 2018 on education in the digital era: challenges, opportunities and lessons for EU policy design (see note 26 above), p. 11, paragraph 46.
[54]   European Commission (2018), Communication from the Commission to the Council, The European Economic and Social Committee and the Committee of the Regions on the Digital Education Action Plan (COM(2018)0022), p. 8: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2018:22:FIN
[55]   This is strongly linked to participation in professional development activities and the skills developed through them (EPRS 2020, p. 24).
[56]   European Parliament (2020), Rethinking education in the digital age - study, p. 24: https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641528/EPRS_STU(2020)641528_EN.pdf
[57]   Fraillon, J., Ainley, J., Schulz, W., Friedman, T. and Duckworth, D., (2019), Preparing for a life in a digital world - IEA International Computer and Information Literacy Study, International Association for the Evaluation of Educational Achievement (IEA), p. 179: https://research.acer.edu.au/ict_literacy/23/
[58]   European Parliament (2020), Rethinking education in the digital age; - study, p. 21: https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641528/EPRS_STU(2020)641528_EN.pdf

challenges regarding the digital competences and digital confidence of teachers more visible. Given that the vast majority of teachers do agree that the use of ICTs in teaching provides positive benefits[59], it is more likely to be an issue of insufficient and inadequate provision of teacher training in ICT-related instructional design (rather than an issue with educators' mindset regarding ICT use). In this regard, the findings of the 2nd Survey of Schools show that only between 14 % and 25 % of teachers have completed advanced courses on internet use or applications[60].

One of the main challenges here lies in not only *introducing* teachers to digital learning opportunities, but also in *training them* in *embedding digital technologies* in education in a qualitative manner, so as to build their confidence in applying digital technologies in education as well. A central barrier for the *participation* of educators and trainers in professional development programmes, on the other hand, is that this would often conflict with their work schedules – and then the question remains as to what extent self-selection occurs (meaning more motivated teachers are more likely to self-select for purposes of training, whereas less motivated ones are harder to engage). Furthermore, in order to engage educators to lead upcoming change (e.g. to go beyond trying to catch up with developments), the experiences from SELFIE showed the importance of school leaders providing a clear vision 'at the top' to stimulate engagement in training and in empowering educators and trainers as agents of change. Another challenge in this regard concerns the difficulties in standardising the professional development of teachers and trainers, due to the variety in school systems (and regulations) in place across Europe. Finally, the acquisition of certificates for professional development constitutes an issue. Especially in network-based collaboration such as e-Twinning, instruments to build digital competence that have proven to be effective are often not standardised and are informal in character, entailing problems with obtaining certificates or other career-promoting proofs of the acquired competences'[61]. This could constitute a discouragement for teachers to take part in such professional development activities.

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**Challenge 7-related considerations for a DEAP post-2020:**

j)   Stimulate the further empowerment of educators in digital education and pursue more advanced integration of digital tools, through offering quality and 'recognised' CPD courses and through providing school support.

k)   Stimulate the further development of 'whole-school' approaches to digital education, by ensuring quality vision, leadership, infrastructure, guidance, assessment, and CPD for educators, and promoting engagement of individual schools with the wider school community (learners, parents, municipalities, social organisations, and if relevant, companies).

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[59]   In that it helps students develop greater interest in learning; enables students to access better sources of information; and helps students to work at a level appropriate to their learning needs (EPRS 2020, p. 21).

[60]   Deloitte & Ipsos (2019), 2nd Survey of Schools: ICT in education (Objective 1 - Benchmark progress in ICT in schools), European Commission, p. 83: https://doi.org/10.2759/23401

[61]   Vuorikari, R, Punie, Y, Carretero, S, & van den Brande, L, (2016), DigComp 2.0: The Digital Competence Framework for Citizens [JRC Science for Policy Report], European Commission: http://dx.doi.org/10.2791/11517; cited from European Parliament (2020), Rethinking education in the digital age; study, p. 26: https://www.europarl.europa.eu/RegData/etudes/STUD/2020/641528/EPRS_STU(2020)641528_EN.pdf

# 4. Considerations for a DEAP post-2020

Related to these challenges, considerations are presented for strengthening the organisational aspects of the DEAP post-2020, as well as strengthening the content- and focus-related aspects of the DEAP post-2020.

a) Develop a more comprehensive approach, based on a clear orientation, inspired by a holistic vision on how to facilitate the digital transformation in education.

b) Consider including (more) specific targets and measurable output indicators, for the separate actions within each DEAP priority, as well as for the DEAP as a whole.

c) Consider increasing the timeframe for the new DEAP (DEAPII) to seven years (in line with the MFF), in order to enhance the function of the DEAP as a reference point for policy reform and to establish links with other policy fields.

d) Gather, analyse and present the results of EU investments across actions and funding programmes in digital education, in order to improve and widen the knowledge base for digital education transformation and increase its impact.

e) Connect digital education more strongly with other policy areas and show how digital education contributes to fair and just societies, inclusive and innovative economies, and sustainable and green societies.

f) Further conceptually develop digital competence, regarding its links to other competences, the role of computational thinking, and the use of digital competence in society and at work. In addition, undertake further research into what is needed to teach and learn digital competences in education and training leading to the best learning outcomes.

g) Strengthen the focus on ensuring quality infrastructure for digital education for all, in education institutions and in the home, in order to provide equal opportunities for all in accessing education through digital technologies (also in times of crisis).

h) Address more strongly the persisting barriers that hamper learners and educators in beneficially applying digital tools besides the lack of infrastructure and skills (e.g. lack of confidence in using digital technologies for educational purposes).

i) Strengthen the focus of digital education across all education levels and sectors, including adult learning and non-formal education; improve the infrastructure for adult learning providers and the educators' competences and skills in embedding digital technologies in education; highlighting the importance of digital literacy for adult learners and supporting adult learners in accessing education and training through digital technologies.

j) Stimulate the further empowerment of educators in digital education and pursue more advanced integration of digital tools, through offering quality and 'recognised' CPD courses and through providing school support.

k) Stimulate the further development of 'whole-school' approaches to digital education, by ensuring quality vision, leadership, infrastructure, guidance, assessment, and CPD for educators; and promoting engagement of individual schools with the wider school community (learners, parents, municipalities, social organisations and if relevant, companies).

This research project assesses the Digital Education Action Plan published in 2018 in terms of organisational and content-related challenges. It outlines concrete recommendations on how an updated Digital Education Action Plan could mitigate the weaknesses of the current plan, through a more holistic vision of the digital transformation in education, a focus on quality infrastructure for digital education for all, the further empowerment of educators and the further development of 'whole-school' approaches to digital education.