Chapter 7

Digital Skills in Europe: Research and Policy

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7.1 Introduction

Digital inclusion policies have been developed across Europe to improve Internet access and skills so that individuals can fully participate in all aspects of social life. At the same time, a great deal of academic work has been done that has led to a better understanding of who is and who is not digitally literate and, as an assumed consequence, more socially included. However, as the Internet becomes increasingly embedded in everyday life for many people in Europe, research on digital inclusion has been criticized for getting into an "intellectual rut." There are concerns about the lack of a strong theoretical development of the field and the measures typically used in this research have their limitations, particularly those concerning skills, engagement, and impact of use. In this chapter, we argue that this is reflected in the way European policy and impact evaluation is implemented.

We start with an exploration around how digital skills have been defined in research and policy. This is followed by a review of how researchers have measured digital skills and engagement and what we know about the status quo of digital literacy in Europe through this research. The chapter is derived from recent research and publications by the authors of this chapter, who used the Eurostat (Directorate-General of the European Commission), British World Internet Project, and Dutch national data. These form the basis for the empirical part of the review related to the unequal distribution of digital skills amongst different sociodemographic groups within different European countries. We also discuss how policy formulation and objectives are linked to this debate around definition and measurement and what the current policy landscape in Europe looks like.

7.2 Digital Inclusion in Europe: The Role of Skills

The concept of the digital divide describes the idea that information and communication technologies (ICTs) have bypassed disadvantaged communities. Recent theorization of Internet adoption recognizes that a binary classification around physical access does not reflect the complexity of what it means to be online and an increasing number of researchers argue that more attention should be paid to motivational and skills aspects of engagement with ICTs and how these relate to different types of social exclusion.[1] Consequently, the focus within digital inclusion debates has shifted from divides to gradations of inclusion.[2] Helsper's conceptualization of the development of the debate is shown in Figure 7.1.

Access, skills, motivation, and engagement with different types of content make up most definitions of digital literacy as developed in Europe in both academia and policy making.[4] *Access* is understood broadly in terms of quality, ubiquity, and mobility; *skills* as having technical, social, critical, and creative elements; *motivation* and awareness of the benefits as determined by both individual and

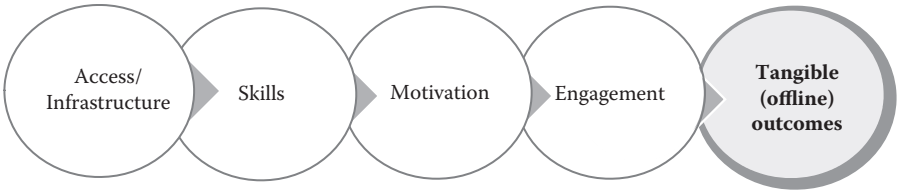

Figure 7.1 Thematical development in the focus of digital inclusion debates. (From Helsper, E. J. (2014). Digital inclusion in Europe: Evaluating policy and practice. European Commission expert peer review discussion paper.[3])

social circumstances; and *engagement* as driven by the everyday life needs of individuals through content created by and for them so that engagement with ICT is effective and sustainable.[5]

Within the theory around digital literacy and inclusion, digital skills, in particular, have gained prominence after decades of focusing on access. Unfortunately, our understanding of this is hampered because digital skills are often inferred from Internet use, and measures rely on self-reports of Internet activities that are context-dependent and positively biased.[6] Furthermore, digital skills are typically conceptualized as a single—often technical—dimension, which is problematic.[7] Several European researchers have tried to tackle this problem by creating more subtle classifications of skills.[8]

In the United Kingdom, for instance, Eynon and Helsper focused in particular on defining different levels of skills and came up with the classification of technical, social, critical, and creative skill types.[9] In the Netherlands, van Deursen and van Dijk came up with two broad skills categories of medium- and content-related skills and six subtypes.[10] They divide medium-related skills into operational (required to operate a digital medium or "button knowledge") and formal (handling the formal structures of the medium; here, browsing and navigating) skills. Content-related skills are subdivided into information (searching, selecting, and evaluating information in digital media), communication (mailing, contacting, creating online identities, drawing attention, and giving opinions), content creation (making contributions to the Internet with a particular plan or design), and strategic skills (using the digital medium as a means to achieve particular professional and personal goals).

To understand the importance of digital literacy in the broader sense of the word (i.e., including access, skills, motivation, and engagement), European theorists have argued that we need to refocus the debate around the tangible, "real" outcomes that digital inclusion policies and interventions can address.[11] It is necessary to determine categories in which benefits from online engagement can occur and link these to the particular skills and types of engagement needed to achieve these outcomes. Often, the classification of resources in economic, cultural, and

social capital is used as a starting point for classifying benefits provided by the Internet. Economic capital refers to monetary assets, property, and other economic possessions, while social capital consists of resources drawn from relationships, networks, and social support. Cultural capital comprises the types of knowledge, skills, and education that increase one's social status. van Dijk elaborated on this idea of resources in his classification of participation in the different societal fields, adding spatial (the extent to which one is able to visit geographical locations and lead a mobile life), political (expressing and participating civically and politically in society), and institutional participation dimensions (engagement with public information and services).[12] Helsper added personal resources, such as an individual's psychological and physical health.[13]

As outlined above, there are several participatory fields in which the Internet matters. From digital divide research, we have learned that benefits from Internet use are not equally distributed in society. Access is being tackled through policy in most European countries with varying levels of success in regards to decreasing digital and socioeconomic inequalities. Digital skills are increasingly considered to be the key factor in determining whether individuals can participate in these fields through their engagement with ICTs and beyond the access they have to ICTs.[14] Unfortunately, the distribution of these skills is as, if not more, unequal as the distribution of access.[15]

7.2.1 Theory around Digital Literacy Policies

In European policy, there is a strong focus on supporting initiatives that ensure a workforce and citizenry capable of living in an information society. There is now sufficient research demonstrating the multivariate nature of digital literacy (i.e., access, skills, motivations, attitudes) that informs our understanding of the ways in which people use the Internet. Nevertheless, implementation of policy remains problematic because there is not enough theoretical clarity about how individuals' skills and types of engagement with services should be measured and defined. European policy research has proposed several ways in which digital literacy policies should be implemented and evaluated.[16] Helsper argues that "sustainable and successful digital inclusion initiatives start and end with tangible (offline) outcomes."[17] Policies incorporating digital access, skills, motivations, and engagement, therefore, should aim to "alleviate challenges encountered in the 'real' lives of disadvantaged groups" (p. 2). She suggests that after identifying the relevant social outcomes and groups vulnerable to exclusion and the organizations that are best positioned to engage with these, the next step is to identify the extent to which digital literacy, in terms of access, skills, motivation, and engagement, inhibit reaching the desired tangible offline social outcomes. van Dijk and van Deursen question the dominant focus on access provision in their critical theoretical framework for digital skills programs. They argue that digital literacy policy should:[18]

- *Take a social-contextual perspective*. Evidence shows that a techno-determinist approach, focusing on infrastructure provision, is not a sufficient solution for those lacking digital skills. Hardware provision programs that offer tax reductions and price discounts have not significantly improved diffusion of ICTs in disadvantaged populations, let alone improved digital skills.[19]
- *Combine technical and substantive views* and pay more attention to content-related digital skills. The techno-determinist view has created policies focusing on technical skills, ignoring the multiplexity of skills needed to engage with online content.
- *Adopt a clear target group strategy*. Current standardization and certification of digital skills in policy specifies clear learning goals, but is not adapted to the particular needs of disadvantaged groups.[20] Impact evaluation theories can suggest more effective ways in which groups that struggle with digital literacy, such as the elderly, the disabled, illiterate individuals, and migrants, can improve their skills.[21]
- *Accommodate individual needs and local cultures*. The design of digital media, courses, and training is more attractive for individuals when it is built around contents and assignments that are appealing to those concerned. Participatory design of courses and policy implementations, therefore, is best practice.

Besides the multiplicity of elements that make up digital literacy and the difficulties in identifying (vulnerable) target groups, the compound nature of digital exclusion is a complicating factor for European policy debates and implementation. Especially in countries with high levels of ICT diffusion, those most likely to have low levels of digital literacy tend to be simultaneously economically, socially, and personally disadvantaged. Identifying these individuals is difficult because they do not make up neatly, separate target groups as most policy impact evaluation frameworks stipulate. However, identification is fundamentally important for effective policy and interventions.

7.2.2 Stakeholders

Because digital inclusion is a cross-sectional issue in policymaking, policy implementation needs to take place across a range of stakeholders. van Dijk and van Deursen specify the roles that different stakeholders are expected to play in European digital skills and inclusion policy.[22] These roles can be largely identified as policy development, infrastructure and software provision, ICT-related training, and awareness raising about the benefits of digital inclusion (and the costs of exclusion). In their framework, national and local governments across different departments should engage with most of these aspects providing infrastructure, building a skills framework, raising awareness, organizing stakeholders, developing educational policy, supporting and motivating citizens to use online government

services, and providing public access in public libraries, community centers, and other public buildings.

Three types of institutions are identified as involved in public access provision: schools, public libraries, and community access centers. In van Dijk and van Deursen's multisector stakeholder model, these also are ideally positioned to provide formal and informal ICT training within particular communities.[23] ICT training institutes can define the standards and certificates, and specialized skills training for particular professional groups. This is done in collaboration with publishers of learning tools; these provide skill assessments and training material.

In the category of awareness training and design, van Dijk and van Deursen identify the ICT industry and labor organizations as responsible for creating awareness about the social and economic costs of malfunctioning or badly designed ICT within businesses and organizations.[24] They also can push for and produce more user-friendly hardware and software. Helsper identified digital champions as another way in which European governments and third-sector organizations could try to promote awareness and motivate people to "get online."[25]

7.3 Status Quo in Europe

This section first overviews how digital literacy is distributed across European households and individuals from different sociodemographic backgrounds and then discusses European policy formulation and implementation in relation to the different elements of digital literacy, elaborating in particular on digital skills.

7.3.1 Digital Literacy

The potential impact of digital inclusion policies in Europe is best demonstrated by describing current inequalities in digital literacy levels. Comparative data are collected yearly by Eurostat, the European statistics office, using measures of Internet access, use and (indirect measures of) skills. The European Union (EU) Kids Online Survey has shown that similar inequalities in use, skills, and engagement also exist between European children of different age, gender, and sociodemographic groups, putting vulnerable children at risk of negative outcomes of Internet use.[26]

7.3.1.1 Access

Eurostat data show that in 2013 around 80 percent of households had Internet access at home. This comparatively high average diffusion rate masks significant differences between countries in Europe and, within individual countries, between different types of households.

Figure 7.2 shows that the difference in Internet access between households within the first income quartile (55 percent) and the fourth income quartile (79 percent) is

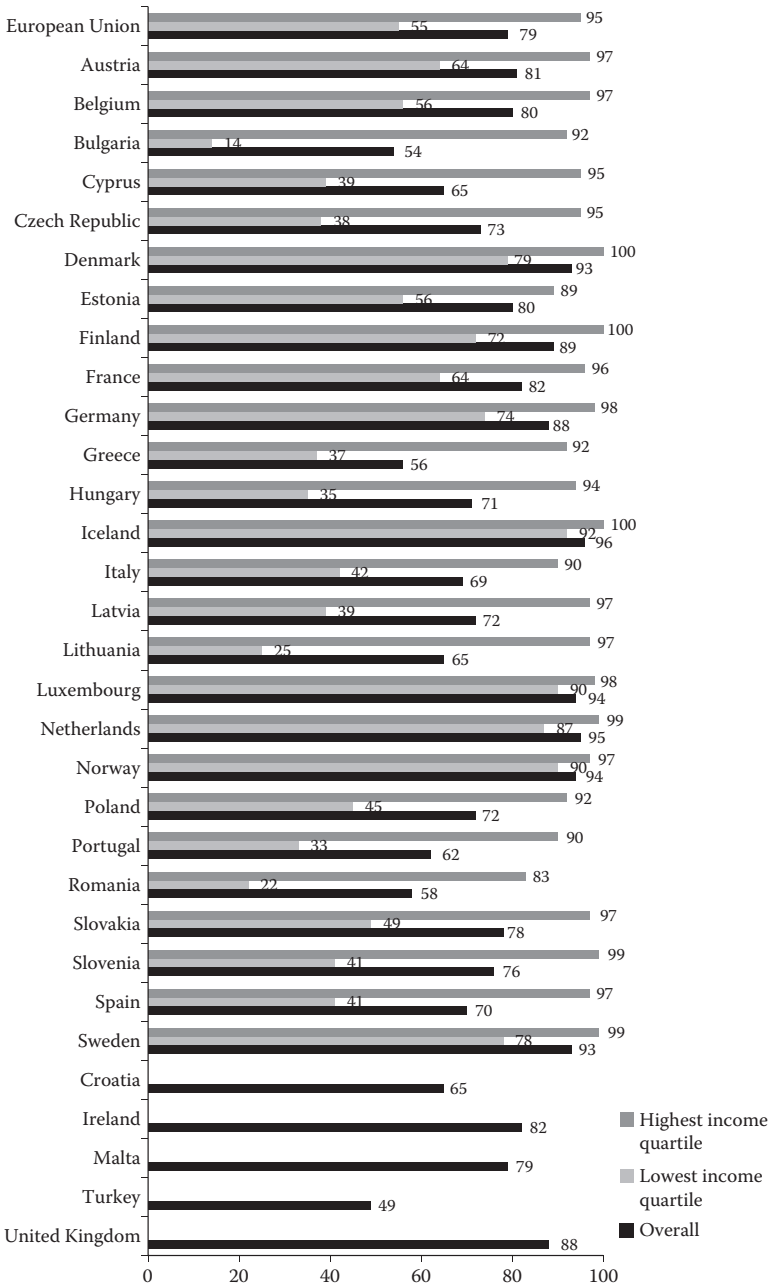

Figure 7.2 Internet access at home in EU households (in percentages). Note: For Croatia, Ireland, Malta, Turkey, and the United Kingdom, no income level data were available. (From Eurostat, 2013.)

40 percentage points,[27] almost all highest income quartile households are connected while only just over half of lower income households are. The Nordic countries have high household access rates of above 90 percent (96 percent in Iceland, 95 percent in the Netherlands), while the Southern and Eastern European countries (49 percent, Turkey; 54 percent, Bulgaria) have much lower rates. The smallest differences between households from the highest and lowest income quartiles (around Δ7 percent) can be found in the Nordic countries and the largest difference in the Eastern European countries (Bulgaria, 14 percent in the lowest, and 92 percent in the highest income quartile, i.e., Δ78 percent, Lithuania, Δ72 percent, Romania, Δ61 percent).

7.3.1.2 Individual Use

According to Eurostat, 77 percent of Europeans have used the Internet in the last year, but this again masks differences between groups. Overall in Europe the difference between men and women is small (Δ4 percent), but there are considerable differences related to age (Δ54 percent) and education levels (Δ42 percent).

Figure 7.3 shows that the size of these differences varies by country; there are significant differences between men and women, between older and younger persons, and between those with high and low levels of education, especially in southern and Eastern European countries.

The largest difference between men and women is around 21 percent (in Turkey), the largest difference between those under 35 and over 65 is 79 percent (in Croatia and Lithuania), and the largest difference between those with higher and lower levels of education is 70 percent (in Romania). Generally, in the Nordic countries over 90 percent of all the different sociodemographic groups are online. However, education remains a considerable barrier even there; only Iceland, Denmark, and Norway have over 90 percent of Internet users in both higher and lower educated groups. This pattern is different for age; in the "top" countries (Iceland and Sweden), only around 80 percent of 65 to 74-year-olds use the Internet.

7.3.1.3 "Skills" and Engagement

A problem with the current data for skills provided by Eurostat is that the indicators measure different types of use rather than skills and, thus, assume that someone who undertakes more activities is more skilled. Six different types of Internet use are measured to indicate Internet skill levels (see Figure 7.4 for overall percentages).

More detailed analysis by Helsper showed that there are considerable differences between age groups (32 percent to 67 percent differences between 25 to 34 and 65 to 74-year-olds) and education groups (12 percent to 50 percent differences between those with no/low educational levels and those with higher education levels), and smaller, but not negligible, gender differences (4 percent to 8 percent between men and women) in the ways in which Europeans engage with the Internet.[29] These differences are larger for more common uses, such as search engine use.

		Age		*Gender*		*Education*	
	All	*25–34*	*65–74*	*M*	*F*	*None/Low*	*High*
European Union	77	93	39	79	75	54	96
Austria	82	97	35	85	78	58	95
Belgium	83	95	49	85	81	65	97
Bulgaria	56	78	10	58	55	22	89
Croatia	68	97	18	76	62	31	92
Cyprus	66	88	16	68	64	33	92
Czech Republic	76	90	29	77	75	64	91
Denmark	95	100	78	96	95	92	99
Estonia	82	99	33	83	81	69	93
Finland	92	100	67	93	92	84	99
France	84	96	48	85	82	66	97
Germany	86	98	51	88	83	74	95
Greece	61	86	10	65	58	26	92
Hungary	74	94	23	75	73	44	95
Iceland	97	100	80	98	96	94	100
Ireland	80	95	37	80	81	52	97
Italy	61	80	19	65	56	37	89
Latvia	76	98	26	77	76	58	93
Lithuania	69	94	15	69	69	49	94
Luxembourg	95	100	77	96	93	79	98
Malta	70	94	23	72	69	41	98
Netherlands	94	100	78	96	93	85	99
Norway	96	100	76	96	95	92	99
Poland	65	92	18	66	64	42	95
Portugal	65	94	20	69	61	46	96
Romania	55	73	12	57	53	26	96
Slovakia	81	97	30	81	81	59	98
Slovenia	74	97	26	75	72	41	97
Spain	74	94	23	76	71	51	96
Sweden	95	100	78	96	95	87	99
Turkey	46	63	5	57	36	29	95
United Kingdom	91	99	66	91	91	65	98

Figure 7.3 Internet use by individuals (in percentages) (From Eurostat, 2013; Helsper, E. J. (2014). Digital inclusion in Europe: Evaluating policy and practice. European Commission's expert peer review discussion paper.)

	Search Engine Use	*Emailing Attachments*	*Chat*	*VOIP*	*File Sharing*
European Union	75	65	37	33	14
Austria	81	71	35	33	7
Belgium	81	72	45	37	15
Bulgaria	56	42	30	35	19
Croatia	65	45	29	30	19
Cyprus	64	49	40	40	10
Czech Republic	76	70	29	40	8
Denmark	92	83	63	52	16
Estonia	78	65	39	55	24
Finland	90	78	56	45	14
France	81	72	31	40	12
Germany	83	69	28	24	4
Greece	62	47	39	34	12
Hungary	73	69	48	36	20
Iceland	93	84	47	75	37
Ireland	76	64	26	38	7
Italy	62	55	38	31	15
Latvia	75	59	37	53	25
Lithuania	71	57	57	58	34
Luxembourg	91	79	43	48	12
Malta	66	55	31	32	19
Netherlands	92	84	13	46	31
Norway	91	81	31	44	25
Poland	64	50	41	28	14
Portugal	65	53	39	29	17
Romania	50	43	27	15	6
Slovakia	81	73	37	52	15
Slovenia	74	58	36	34	20
Spain	73	60	41	25	25
Sweden	92	79	54	54	26
Turkey	47	29	20	9	10
United Kingdom	86	78	47	39	na

Figure 7.4 Individual Internet use in the last 12 months: Different "skills." (Adapted from Helsper, E. J. (2014). Digital inclusion in Europe: Evaluating policy and practice. European Commission's expert peer review discussion paper.[28])

Helsper's detailed examination of inequalities for the five types of Internet activities showed that the level of inequality within a country depends on the activity under review.[30] Generally, the Nordic countries showed smaller differences, and the southern and eastern countries showed larger differences between age, gender, and education groups. There were exceptions. For example, for *emailing attachments,* the largest gender differences observed across the European continent were in Turkey (Δ15 percent) and Luxembourg (Δ11 percent) and the smallest in Lithuania (Δ-2 percent) where women do this more than men. The largest and smallest age group differences in the use of *chat* rooms were found in Lithuania (Δ88 percent), Turkey (Δ38 percent), and the Netherlands (Δ8 percent). The largest gender differences for this activity were in Croatia (Δ13 percent). The largest and smallest gender differences in VOIP (voice-over Internet protocol) was also in Croatia (Δ8 percent) as well as Norway, while it was smallest in Iceland and Malta (Δ-2 percent). The largest gender differences in *file sharing* were observed in southern and northern European countries (Δ21 percent in Iceland) and the smallest in Malta (Δ1 percent). The largest differences between educational groups were in Bulgaria and Malta (Δ32 percent).

Considering the inadequacy of current measures, the European Commission's Media Literacy Unit attempted to define and test media literacy levels in Europe (2010).[31] Their initial evaluation of *basic use skills* (e.g., visit a specified web address or print a web page), *medium use skills* (e.g., use and compare search engines/websites to find information or download software), *advanced use skills* (e.g., creating a blog/web page or sharing text, games, images, films, or music to websites), *critical understanding* (e.g., trust of information that is presented by different media sources or awareness of information that is presented by different media sources), and *communicative* skills (e.g., engagement with public debate or social networking) showed that use skills' levels were highest (16 percent basic and 35 percent advanced level), followed by critical skills (28 percent basic and 31 percent advanced), and the lowest levels of competencies could be found for communicative skills (64 percent basic and 16 percent advanced).

So far, the core questions proposed by the Media Literacy Unit have not been implemented in representative national or European surveys. Therefore, it is not yet possible to draw conclusions about distributions of skills levels within and between countries.

7.3.2 Digital Skills Case Studies: The Netherlands and the United Kingdom

In order to paint a picture of digital literacy levels in Europe, two case studies are discussed here: The Netherlands and the United Kingdom. Recent skills research has been conducted in these high diffusion countries and the data can shed light on skills distribution and the factors explaining digital skills in Europe when physical access issues have been largely resolved.

van Deursen and van Dijk measured operational, formal, information, and strategic Internet skills in three large-scale performance tests in which subjects were asked to complete assignments on the Internet.[32] The main conclusion of these tests was that Dutch citizens show a fairly high level of operational and formal skills. On average, 80 percent of the operational skill assignments and 72 percent of the formal skill assignments were successfully completed. However, the levels of information skills and strategic Internet skills attained were much lower. Information skill assignments were completed on average by 62 percent and strategic skill assignments on average by only 25 percent of those subjected to these performance tests.

The second conclusion was that there are significant differences in performance depending on the resources of the individual. The most important explanatory factor for these differences was educational background. People with higher education performed better on all skills than people with a lower educational background. While no gender differences were observed in actual performance, men indicated having more confidence in their Internet skills than women. Age also directly contributed positively to the level of content-related skills, that is, older people performed better in information and strategic skills compared to younger people with the same levels of Internet use experience.[33] Nevertheless, older people were limited in applying these content-related skills because they lacked the medium-related Internet skills necessary to gain access to Internet content. The amount of Internet use and years of experience did not seem to affect content-related Internet skills.

In a recent survey conducted in the United Kingdom, Helsper and Eynon considered critical, social, creative, and technical skills.[34] These four types of digital skills are both operational (creative and technical) and strategic (social and critical) in nature, making them comparable to the skills used in the Dutch performance tests. They showed that different types of resources significantly predicted different types of skill. Education was related to all indicators of digital skills and self-efficacy; those with university education perceived themselves to be more skilled than those without, for all types of skill. Age also related to all skills. Older individuals were less confident and felt less skilled. Gender was similarly related to all skills. Men perceived themselves to be more skilled and had higher levels of digital self-efficacy. Social isolation was (negatively) related to all skills except for social skills and digital self-efficacy. Socially isolated people were less likely to indicate that they knew, for example, how to judge whether information online is reliable. In general, they argued that, when an exclusion indicator was related to one skill, it was related to other skills in the same manner, but that this did not always result in the same types of engagement for different groups, thus suggesting that different resources compound to form complex, multilayered explanations of digital inclusion.

7.3.3 European Digital Literacy Policy

In this section, we briefly review the current European policy landscape and its implementation and challenges in terms of the broad definition of digital literacy, including access, skills, motivation, and engagement.

The Digital Agenda for Europe (DAE) is the most important policy framework at the European level.[35] Three particular pillars are related to digital literacy: pillar 4 relates to access, pillar 6 relates to skills, and pillar 7 relates to engagement. The European Road Map for Digital Inclusion was established in 2011 after a DAE working group came together and established key priorities, mostly around infrastructure. The primary objective of infrastructure policy was

> … to bring basic broadband to all Europeans by 2013 and seeks to ensure that, by 2020, (i) all Europeans have access to much higher Internet speeds of above 30 Mbps and (ii) 50 percent or more of European households subscribe to Internet connections above 100 Mbps (p. 19).

Besides infrastructure (as emphasized in pillar 4), the DAE stipulates the need for a common framework for understanding and evaluating digital skills levels (in pillar 6). According to the documents produced around the roadmap, this framework is required to design effective, contextualized formal education, and training and certification that can be used outside formal education systems. The skills needed to participate in the digital society are indirectly identified in the policy along the lines of technical, social, cultural, civic, and creative skills and related to a variety of different tangible outcomes, such as employability, health, and countering social isolation. The emphasis, however, is mostly on the skills needed to work in information technology (IT) industries. Gender issues are particularly stressed because women continue to be severely underrepresented in the IT sector. This focus on (high level) IT industry skills partly ignores the type of digital illiteracy that prevents many from doing everyday tasks and making it hard for them to participate fully in society. Elsewhere, the DAE identifies these groups at risk of digital exclusion as consisting of the elderly, low income, unemployed, and less educated.

In relation to engagement, there is an emphasis (in pillar 7) on the provision of universal cross-border national and European e-government services. Many of the other objectives under pillar 7 do not directly deal with digital inclusion; they identify a few additional important areas of personal and social well-being where ICT could help in overcoming disadvantages. In particular, "… ICT is becoming a critical element for delivering policy objectives like supporting an ageing society, … empowering patients and ensuring the inclusion of persons with disabilities" (p. 27). The specific targets in the DAE under pillar 7 are mostly technological interventions, rather than user-driven design of technologies in areas such as e-health. User-driven or needs-driven policy is clearer in the area of cultural and creative content, but focuses on stimulating national cultural projects, such as

cinema and language preservation rather than in the sense of cultural diversity and underrepresented groups.

Five targets and priority areas were identified in the Gdansk Roadmap with reference to grassroots sectors and linked to the e-skills policy for small- and medium-sized enterprises (SMEs) and disadvantaged groups.[36] The five areas reflect van Dijk and van Deursen's multistakeholder framework:[37] awareness raising about the costs of digital exclusion, accessible and stable funding for digital inclusion initiatives, digital literacy, supporting the creation of knowledge hubs for digital inclusion stakeholders, and developing and promoting common tools. The roadmap leaves open which target groups should be addressed, but mentions gender inequality, ageing, and disability in reference to digital inclusion issues.

7.3.3.1 Related European Policies

The DAE needs to be seen in the context of the wider Europe2020* framework of which the aim is to "… turn the EU into a smart, sustainable, and inclusive economy delivering high levels of employment, productivity, and social cohesion" (p. 5).[38] There are clear links between the specific target areas of Europe2020 and the digital inclusion objectives within the DAE. The access aspect of the DAE is explicitly mentioned as a flagship initiative (p. 14, Europe2020) with the objective "… to speed up the roll-out of high-speed Internet and reap the benefits of a digital single market for households and firms" (p. 6). This explicitly digital aspect of Europe2020 does not go farther than infrastructure policies, although the "circulation of content with high level of trust for consumers and companies on digital platforms as regulated by national legislation" (p. 21) is also mentioned.

In related policy documents, such as the Social Investment Package (SIP), two policy objectives regarding social innovation can be linked to digital literacy (p. 6):[39]

- "*Preserving access to adequate social protection benefits, services, health, and long-term care.*" Access and digital skills to use the Internet effectively and in a sustainable way should be a priority, especially among the most vulnerable in society (i.e., those in need of care or benefits).
- "*Access to more personalized services ('one-stop shop').*" This relates to digital engagement, in particular to guarantee that content is available for particular vulnerable populations and targeted to the specific needs of those individuals.

7.3.3.2 Previous Policies

There was one round of policies related to digital literacy that preceded the DAE and Europe2020. The i2010 and its accompanying eEurope 2005–2009 action plan consisted of a strategic framework with broad policy guidelines for the information

* http://ec.europa.eu/europe2020/index_en.htm

society. i2020 was the first time that there was an "integrated policy, which aimed to encourage knowledge and innovation with a view to boosting growth and creating more, better-quality jobs."[40] Concerns were raised about the lack of digital R&D development in Europe and these were tackled partly through the DAE. Even though the i2010 was considered a success in creating a better infrastructure and increasing engagement in Europe, the current DAE incorporates many of the same objectives as the eEurope 2005–2009 action plan. It was clear that digital inclusion objectives had to be readjusted in a changing digital landscape. There was a strong need for a better understanding of the complexity of factors leading to digital and social exclusion. Particularly prominent was the concern about a lack of digital skills and the relative lack of policy understanding and impact assessment in this area.

7.3.4 Policy Classification in European Countries

There is no space in this chapter to describe all the national policy landscapes in detail. There is a wide variety of formulas across Europe and there are significant differences in where responsibility is located within countries. Often the involvement of different government departments and other sector actors is left unspecified. Helsper classified a number of European countries by whether or not publicly available policy documents mention digital inclusion in terms of access, skills, awareness, and engagement as objectives in their government policies.[41] She showed that they do not often specify how targets related to digital literacy are to be achieved, if they specify targets at all, as illustrated in Figure 7.5.

7.3.4.1 Access

Infrastructure provision (e.g., rural rollout, high-speed broadband, and accessibility) was part of almost all countries' national policies and many mention the establishment of a platform that joins up all government and public services to provide easy access. None of the policies mentioned setting up a cross-border service, with the exception of Norway. The main challenge for the access area is that these policies focus on geography (e.g., increasing connectivity in rural areas) rather than on targeted access provision or funding for organizations working with specific vulnerable groups. Monitoring of whether sites and platforms are used by individuals from groups with different sociodemographic backgrounds is not transparently done, in particular, in countries with lower levels of diffusion. This universal, as opposed to a contextualized, approach is likely to be one of the reasons why implementation is less effective than expected for these policies.

7.3.4.2 Skills

A number of countries have digital skills initiatives that focus on school or libraries/Community Technology Centers (CTCs) training and, as indicated by van Dijk

Strategic Policy Areas	*Operational Objectives*	*AT*	*CZ*	*DE*	*EE*	*EL*	*GB*	*HU*	*IT*	*NL*	*NO*	*PT*	*PL*	*RO*
Infrastructure	Increasing speed	V	V	V		V	V	V	V		V		V	V
	Integrated platforms for services (e.g., G-Cloud)			V	V	V	V	V		V	V		V	V
Access	Ubiquitous access (CTCs, libraries, schools)		V			V	V	V	V		V	V	V	V
	Accessibility					V	V		V	V	V	V		
Skills	Formal education in schools	V		V	V	V	V	V		V	V	V	V	V
	Formal certification for adults (on-the-job training)	V		V			V			V	V	V	V	
	Stimulating informal learning	V		V			V			V	V		V	
Awareness	Digital champion	V					V			V			V	
	Public awareness campaigns about benefits of the Internet	V		V	V	V				V				V
	Public awareness of online risks			V	V	V	V		V	V	V	V		V
Engagement	Content for specific vulnerable/excluded groups	V			V		V			V	V			V
	eGov content	V		V	V	V	V	V	V	V	V	V	V	V
	Commercial content		V	V	V	V	V	V	V	V	V		V	V

Note: This overview refers to the reported focus in public policy documents and not to implementation.

Figure 7.5 Strategic digital inclusion policy foci of selected European countries. (Adapted from Helsper, E. J. (2014). Digital inclusion in Europe: Evaluating policy and practice. European Commission's expert peer review discussion paper.[42])

and van Deursen, assume that access provision in these locations is akin to increasing literacy in vulnerable groups.[43] Very few policies mention specific certifications for those who are not in education. The least prevalent are policies that refer to stimulating informal learning either through volunteer digital champion schemes or by encouraging public–private partnerships that set up learning through play programs or provide such training online. If anything is mentioned, the elderly are usually the focus and the European Computer Driver's License (ECDL) is the certification. Conspicuously absent from implementation and evaluation of digital skills initiatives are those from disadvantaged socioeconomic backgrounds, those with lower levels of education, and migrants and women from particular socioeconomic backgrounds identified in Europe2020 as at risk of social exclusion. Even when specific target groups are mentioned, national policies are not contextualized. That is, they do not discuss which types and levels of skills initiatives are needed for different groups and instead rely heavily on the decontextualized and universal ECDL.

7.3.4.3 Motivation

Digital champions are seen as a good way to create awareness and engagement about the benefits of digital literacy. Digital champions are either volunteers who help the disconnected online and increase their skills or national figureheads who raise awareness among industry and third-sector stakeholders. The European Safer Internet program has been successful in bringing together different stakeholders at the national and regional level in matters around making people aware of online risks. Most of these awareness-raising activities focus on children. At the moment, there is no equivalent for awareness raising around the benefits and there is no cross-European initiative nor is it connected to specific government departments in national policies. There is a notable absence of any awareness of benefits initiatives targeted at specific vulnerable groups with the exception of the elderly. In many countries, nongovernment organizations (NGOs) take on this role in a nationally uncoordinated manner. This slightly chaotic approach is partly due to the lack of integration in national policies that links digital literacy to traditional fields of social exclusion. The role of digital champions is not specified along those lines and there is no solid evidence for tangible positive social outcomes because most evaluations refer to individual, anecdotal success stories.

7.3.4.4 Engagement

Most policy initiatives around the provision of content for identified vulnerable groups are aimed at the elderly or at the disabled. For the former, this focuses on skills training and awareness of age-relevant digital services and, for the latter, on accessibility or care. Platforms with content for youth also are common. Policy rarely mentions guaranteeing or stimulating relevant content production for specific vulnerable groups that are underrepresented online. Conspicuously absent are

the DAE target groups: women, ethnic minorities, low income, and the unemployed. Nor are other specific groups mentioned, which take prominence in the Europe2020 framework, such as disadvantaged youth (e.g., NEETs (not in education, employment, or training)). One challenge here is that those most likely to benefit from the full range of services offered online often have compound levels of social and digital exclusion. Content targeted at any one of these groups is likely to reach the most engaged within these groups and not those who are socially excluded.

Most country policies mention the creation of electronic government content without specifying (1) how this will affect particular groups at risk of social exclusion or (2) whether the content of these services is designed around the specific needs of these groups. The roadmap suggests participatory design, user-driven social innovation projects, and public–private partnerships, but the lack of definition of clear target groups means that NGOs and volunteer organizations are often on their own in figuring out what to do and with whom.

Policies that mention stimulating commercial content, for example, for SMEs, focus on safety and payment systems rather than on support for SMEs in creating content suitable to their needs. Worrying is that representation of target groups (e.g., women) in the creation of commercial online content is not part of national policies, reflecting the lack of these groups in IT industry and education.

7.4 Conclusion and Policy Recommendations

This chapter focused on digital literacy in European research and policy. We used a broad definition of digital literacy, seeing it as the sum of access, skills, and engagement. Most of the discussion focused on skills in particular because, increasingly, this is considered a key variable in inclusion theory. Furthermore, current European (and often national) policy development increasingly prioritizes digital skills. The good news, therefore, is that the emphasis is no longer primarily on access provision. Nevertheless, the measurement of digital skills is still contentious and lacks nuance, as evidenced by its lack of inclusion in large-scale European surveys. As a consequence, the evaluation of policy effectiveness beyond infrastructure provision, related to digital skills and engagement, is poor. This is problematic because individuals' skills and motivations seem more important than infrastructure, especially in northern and western European countries where diffusion rates are reaching saturation.

Policies dealing with inequalities in engagement with ICTs have focused on the supply rather than the demand side. Unfortunately, user-driven and participatory design is to a large extent absent in the provision of European e-government content and services for specific socially excluded groups. To support more effective and efficient policies, there is a need for a theoretical framework that not only links different digital skills to engagement with ICTs, but also explains how this relates to the needs of specific disadvantaged groups. This chapter showed that European

researchers are making steps in this direction and that initiatives have started to go beyond seeing skills as the sum of merely operation of hard- and software. Thus, theory and practice are improving in regards to different skill levels and their antecedents and measurement adjustments are following, albeit slowly.

For this to be truly successful, cooperation between European countries is needed so that policymakers and digital inclusion stakeholders can learn from each other. Even at the national level, there is often a lack of interdepartmental and cross-sector collaboration. As a consequence, no real comparison is possible between and within European countries because integrated frameworks are underdeveloped and agreement on measurements is lacking. This is reflected in poor national policy development, implementation, and the absence of evaluations. A more valid and reliable universal definition of digital skill types would facilitate improved understanding and better monitoring of policy effectiveness at both national and international levels.

So, what do we know about the status quo of digital literacy in Europe? The research presented on the relationship between education, age, Internet experience, and Internet skills in Europe suggest that inequalities in digital skills will not automatically disappear in the future, even in countries with high Internet diffusion levels, unless clearly targeted interventions are implemented. One problem is that European policy emphasizes training (entrepreneurs) to work in IT industries, while there is still clearly a lack of knowledge of the basic skills needed for "everyday" jobs or for volunteer intermediaries helping others to get online.

Helsper showed that publicly available national policy documents rarely specify how targets related to digital literacy are to be achieved, if targets are specified at all.[44] Consequently, but not solely for that reason, evaluation of the effectiveness of the implementation of specific European policies in relation to improvements in access, skills, motivation, and engagement is extremely difficult. This review of national European policies also showed that the involvement of different government departments and actors in other sectors is often left unspecified. This is worrying especially in light of the multistakeholder framework set out by van Dijk and van Deursen that argues that digital skills policies only work if it has multisector support and is integrated across the work of a variety of actors.[45]

It is important to keep in mind that, in the end, it is not digital engagement or skills that matter, but the narrowing of inequality in relation to everyday social challenges like employability and general well-being. We have argued in this chapter that the current confusion around digital literacy and effective policies hinder thinking about how digital inclusion can help achieve tangible outcomes. A concerted European effort to create awareness about the benefits, targeted at specific disengaged populations and their everyday needs and a platform organizing public–private partnerships is desperately needed. European scholarly work on digital inclusion is moving toward the key areas of social exclusion and deprivation that need to be addressed and toward identifying the types of digital inclusion interventions and policies that are most effective in reaching these.[46] Encouragingly, this

thinking seems to be filtering through in recent policy debates at the European level where digital inclusion is moving to education, business, and health departments instead of being located in isolated or separate policies.

Endnotes

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