

# Basic digital skills for adults in the Nordic countries

How can we turn challenges  
into opportunities?





# Basic digital skills for adults in the Nordic countries

How can we turn challenges  
into opportunities?

Susanne Anthony,  
Arnheiður Gígja Guðmundsdóttir,  
Alberto Hylander,  
Marjut Kuokkanen,  
Graciela Sbertoli,  
Maria Skoglöf,  
Hanne Størset,  
Halla Valgeirsdóttir

NVL 2019  
© Nordic Network for Adult Learning  
[www.nvl.org](http://www.nvl.org)

This publication has been financed by  
the Nordic Council of Ministers through  
the strategic means of NVL.

ISBN: 978-952-7140-59-8

Writers:

Susanne Anthony, Arnheiður Gígja Guðmundsdóttir,  
Alberto Hylander, Marjut Kuokkanen, Graciela Sbertoli,  
Maria Skoglöf, Hanne Størset, Halla Valgeirsdóttir

Cover photo:

Aidan Hancock/Unsplash

Illustrations:

Shutterstock

Layout:

Marika Elina Kaarlela/Gekkografia



Nordic Network for  
Adult Learning

# Contents

6	<b>1 The importance of basic digital skills</b>
7	Introduction
8	Survey of adult skills (PIAAC)
8	Purpose and structure
9	Definition and boundaries
10	<b>2 Basic digital skills for adults: an overview of the Nordic situation</b>
12	<b>3 Big challenges – can they be turned into opportunities? SWOT analysis – factors of particular Nordic importance</b>
13	Opportunities and threats of particular importance to the Nordic region
14	Strengths
15	Weaknesses
15	Opportunities
18	Threats
21	SWOT analysis summary
22	<b>4 Recommendations</b>
24	<b>5 Learning examples from the Nordic countries</b>
25	A focus on national programs and courses
26	A focus on everyday digital skills
27	A focus on security and democracy
28	A focus on guidance
28	A focus on specific target groups
29	A focus on digital competence for teachers
30	<b>Appendix</b>
31	General situation in each of the Nordic countries
34	Definitions and interpretations
37	Digitalization in the Nordic countries: strategies
42	Policy implementation
46	Results
48	Challenges

1

# The importance of basic digital skills



# Introduction

This report presents the results of the work conducted by the Network for Basic Skills for Adults (referred to hereafter as “the Network”), which is part of the *Nordiskt Nätverk för Vuxnas Lärande* (Nordic Network for Adult Learning, or NVL).

The NVL is part of the Nordic Council of Ministers' program for the development of adult learning. The first initiative for a network in the field of basic skills for adults appeared in 2015 during the Danish Presidency of the Council of Ministers. The idea was that a network would follow up the work on basic skills in the Nordic countries based on the results of the Program for the International Assessment of Adult Competencies (PIAAC).

Other important starting points for the Network's work were the European Agenda for Adult Learning 2015–2020 and the EU Recommendation on Upskilling Pathways: “New Opportunities for Adults”, which was launched in 2016. There is a prioritized goal in the EU agenda that emphasizes the importance of significantly increasing the supply and number of participants in Adult Learning, especially when it comes to improving the capabilities for reading, writing, counting and the use of information and communication technology (ICT) tools for adults. The EU Recommendation on Upskilling Pathways<sup>1</sup> also highlights the need for adults to acquire basic skills as a foundation to enable them to build on their education and acquire qualifications corresponding to the upper secondary level (level 3 or 4 of the EQF European reference framework). This is also in line with Goal 4 (quality education) in the Global Goals and the 2030 Agenda for Sustainable Development, which is intended to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, and to substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship by 2030 (4.4)<sup>2</sup>.

Before the Network began its work in 2017, a Nordic working group examined whether the creation of such a Network within the NVL was justified and if so, what issues the Network should address. During 2018 and 2019, the participants in the Network concentrated their work on the field of basic digital skills.

<sup>1</sup> [www.ec.europa.eu/social/main.jsp?catId=1224](http://www.ec.europa.eu/social/main.jsp?catId=1224)

<sup>2</sup> [regeringen.se/regeringens-politik/globala-malen-och-agenda-2030](http://regeringen.se/regeringens-politik/globala-malen-och-agenda-2030)

## Survey of adult skills (PIAAC)

Four of the five Nordic countries<sup>3</sup> participated in the first round of the PIAAC survey, which was carried out in 2011–2012 in a total of 24 countries.<sup>4</sup> This round of the survey covered nearly 170,000 people aged 16 to 65 years. PIAAC examined people's basic skills in three areas: reading (writing ability was not tested), numeracy, and problem solving in a digital environment. The results of the survey, now collected in an open database, offer great opportunities for analysis and recommendations for improvement in the field of basic skills.<sup>5</sup>

The overall PIAAC results in the Nordic countries show a fairly substantial similarity between the countries. The Nordic countries' results are higher than the international average, but there are significant groups of the population who tested at low levels in all the studied areas.<sup>6</sup>

## Purpose and structure

This report aims to give an overview of the situation in the Nordic countries regarding basic digital skills, what is currently in place, and what may be needed in the future. The Network has created separate descriptions for each of the countries, which have been summarized in the next chapter of this report. The full national descriptions can be read in the Appendix. Based on these national descriptions, the experts in the Network set up a Nordic strengths, weaknesses, opportunities and threats (SWOT) analysis (see Chapter 3), focusing on what works well today and what may need to be improved in the coming years. The SWOT analysis has led to a number of policy recommendations at the Nordic level for continued work in the area.<sup>7</sup> The Nordic countries have come a long way, but the Network's opinion is that there is still a need for improvement in certain areas (see Chapter 4). The Nordic countries have made substantial progress in the area of basic skills, but the PIAAC results also show that a significant number of adults still lack the basic skills needed to be an active part of society and to be able to make a living.

<sup>3</sup> Iceland did not take part in the PIAAC study.

<sup>4</sup> [oecd.org/skills/piaac/about/#d.en.481111](http://oecd.org/skills/piaac/about/#d.en.481111)

<sup>5</sup> [oecd.org/skills/piaac](http://oecd.org/skills/piaac)

<sup>6</sup> [norden.org/no/node/7036](http://norden.org/no/node/7036)

<sup>7</sup> See also action points from OECD to create more and better learning opportunities for low-skilled adults. [oecd.org/els/emp/engaging-low-skilled-adults-2019.pdf](http://oecd.org/els/emp/engaging-low-skilled-adults-2019.pdf)



Basic digital skills also covers the ability to carry out tasks related to private life, work and participation in social contexts.

The participants in the Network are experts in the field of basic skills for adults and represent all the Nordic countries.<sup>8</sup> The Network hopes that the report will be read and used not only by policy and decision makers, but also by all stakeholders working with adults in educational programs and projects covering basic skills for adults. The Network participants are presented on the Network's website.<sup>9</sup>

## Definition and boundaries

The report's cornerstone concept is "basic digital skills". The definitions and terms used in this report are based on the PIAAC formulation, which refers to "problem solving in technology-rich environments".<sup>10</sup> In this report, basic digital skills are understood as the skills needed for problem solving in a digital environment; i.e. the ability to use digital technology, communication tools and networks to find information, communicate with others and perform practical tasks. Basic digital skills also covers the ability to carry out tasks related to private life, work and participation in social contexts. In the Appendix we have collected relevant definitions and interpretations for each country.

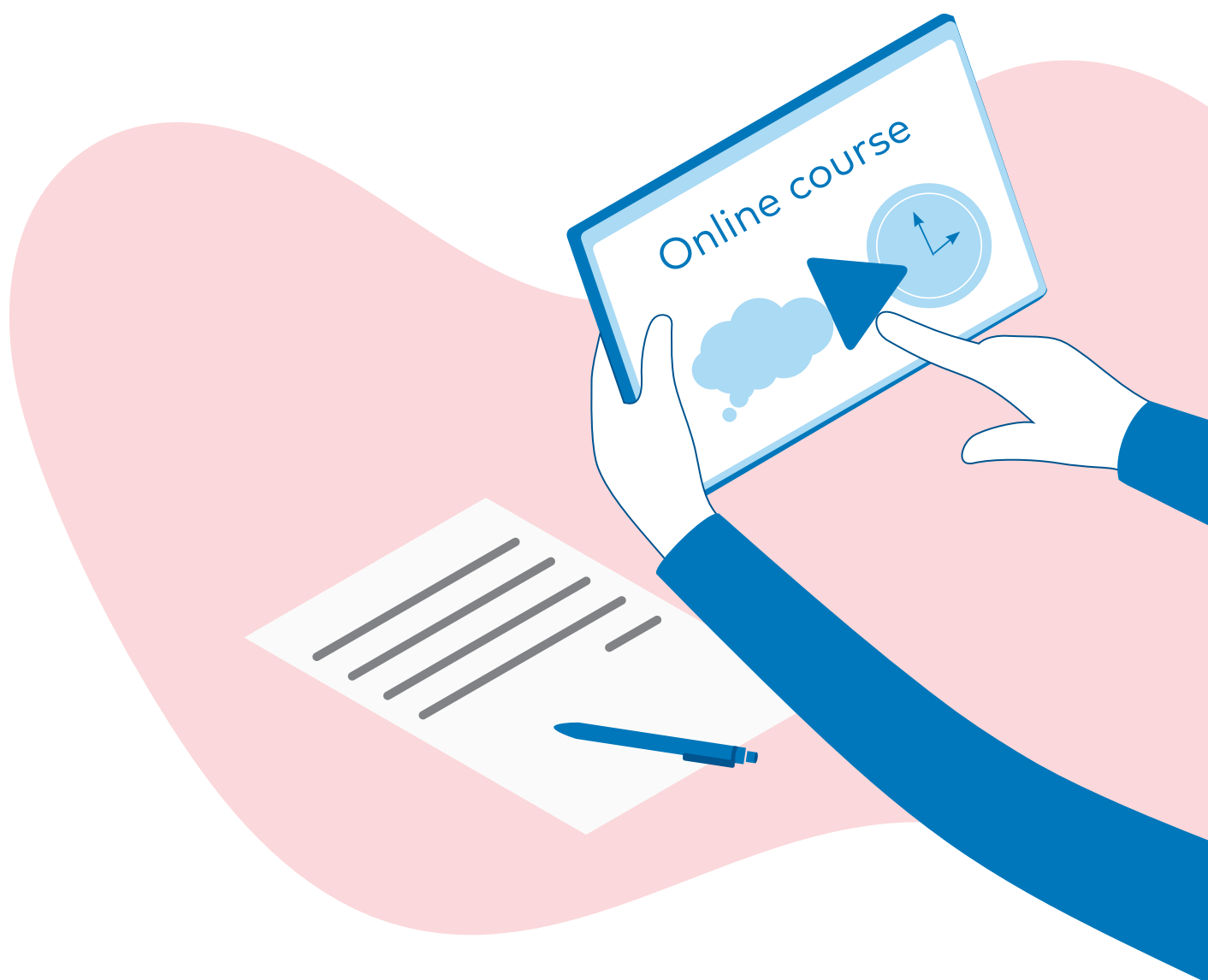
<sup>8</sup> Information about the Network: [nvl.org/Natverk/Grundlaggande-fardigheter](http://nvl.org/Natverk/Grundlaggande-fardigheter)

<sup>9</sup> [nvl.org/natverk/grundlaggande-fardigheter#kontakt](http://nvl.org/natverk/grundlaggande-fardigheter#kontakt)

<sup>10</sup> [oecd-ilibrary.org/education/oecd-skills-outlook-2013\\_9789264204256-en](http://oecd-ilibrary.org/education/oecd-skills-outlook-2013_9789264204256-en)

# 2

## Basic digital skills for adults: an overview of the Nordic situation



Based on the country descriptions the Nordic representatives put together for this report (see Appendix), it is evident that there is a high level of awareness in all Nordic countries about the importance of basic skills in general, and specifically basic digital skills.

Most countries have participated in PIAAC and have access to reliable data about the levels of basic skills in their adult populations. Iceland did not participate in the PIAAC survey, but nevertheless has reliable statistics about its population's access to and use of digital tools.

All Nordic countries report a high level of digitalization in customer services, and a high level of access. They also report, however, a common understanding that the use of digital services is not really accessible to all adult target groups. The most vulnerable sectors of the population are the elderly and adults with very low levels of basic skills, particularly among the unemployed.

Although there are differences among the countries in the degree to which the issues involved in basic digital skills have been targeted through national laws, frameworks, and programs, most countries have dealt with these issues at the governance level, including digital skills as a transversal objective in all national curricula and generally attempting to reach all groups in need of training.

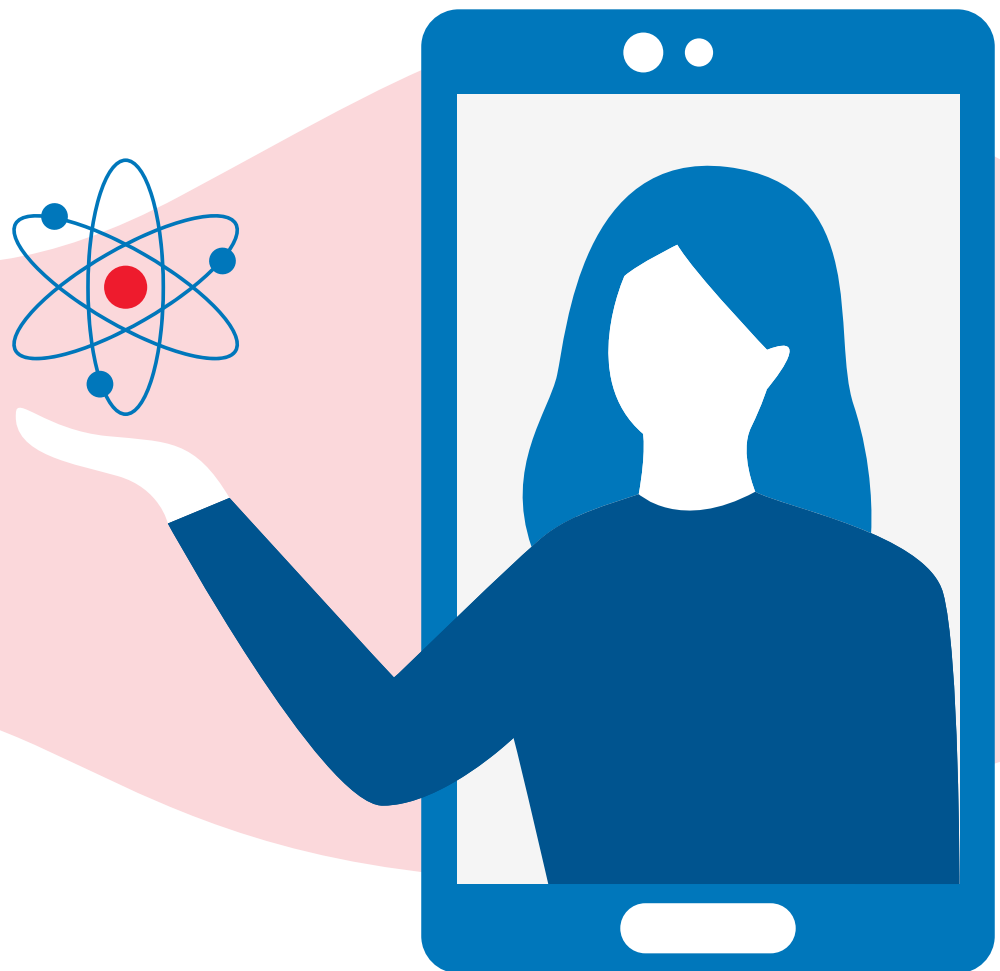
Several challenges remain, however (see SWOT chapter below). Besides the need to find innovative ways of reaching the most vulnerable groups, there is a great need for flexible and adequate further professional development of adult teachers and trainers. Although the Nordic countries excel in their dedication to adult education compared to most other European countries, there are still few official qualification requirements for adult education staff.

Given the current pace of technical development – which is not likely to slow – it is obvious that both the challenges and opportunities identified in the national reports will be present in the Nordic societies for the foreseeable future. One of the most important challenges reported is the need to raise awareness and knowledge around digital security, and the need to increase critical thinking skills among adults and young adults. This is an issue of importance for the individual safety of the persons in the target group, but it also needs to be dealt with to safeguard democracy and the values the Nordic societies are built upon.

3

## Big challenges – can they be turned into opportunities

SWOT analysis – Factors of  
particular Nordic importance



The elements presented in the first two parts of the SWOT are a summary of the ideas presented in the previous chapter and the texts gathered in the Appendix. The analyses of strengths and weaknesses describe the situation as it is at present.

The analyses of opportunities and threats describe perspectives about the future, and are therefore of greater importance. These are issues that are under debate and are not seen as peculiarly Nordic. An optimistic attitude about digitalization seems to have been replaced with a relatively high level of scepticism, and even fear, as several opportunities are interwoven with the capability to address threats that may have global origin and impact. In our analysis we have tried to look at how these issues affect our subject – basic digital skills – and show why this is important for the Nordic countries.

## Opportunities and threats of particular importance to the Nordic region

The context of the SWOT is that many of the opportunities and threats related to digitalization are mostly international issues, but the effects might be somehow particular to the Nordic region and the Nordic countries. The effects might even be of special importance in the Nordic region as it is the region with the highest levels of social trust in the world. Trust is seen as Nordic "gold".<sup>11</sup> The "Nordic model" comes from a history linked to the foundation of popular movements (whether they were temperance, revivalist or worker's movements), which largely coincided with a comprehensive restructuring of the Nordic societies. The Nordic welfare state is seen as very important. It largely avoids creating the type of underclass that can be found in other welfare models, where benefits are linked to stricter conditions.

The welfare state is one main pillar of the triangular Nordic model, next to the pillars for economic governance and tripartite cooperation for wage setting. The first report from an ongoing Nordic research project about the future of work describes the main drivers and trends expected to shape the future of work and examines these Nordic pillars.<sup>12</sup> How will digitalization and technological transformation interfere with, alter or threaten the Nordic model? Overall the Nordic countries are seen as well equipped, but digitalization might lead to a change to a more divided society:

<sup>11</sup> [norden.diva-portal.org/smash/record.jsf?pid=diva2%3A1095959&dswid=9138](https://norden.diva-portal.org/smash/record.jsf?pid=diva2%3A1095959&dswid=9138)

<sup>12</sup> [norden.diva-portal.org/smash/record.jsf?pid=diva2%3A1265618&dswid=-2519](https://norden.diva-portal.org/smash/record.jsf?pid=diva2%3A1265618&dswid=-2519)

*“Yet, in several ways, the changes flowing from the digital shift are likely to challenge cornerstones of the Nordic labour and welfare models, built around the wage earner relationship, where the value of egalitarian distribution and power relations has been appreciated as a comparative advantage. If the trajectory of (radical) digital disruption materializes and middle-skill jobs – the stronghold of trade unions and collective agreements – are hollowed out, there is indeed a risk that the recent rise in inequality is [sic] amplified”.<sup>13</sup>*

A further source of unique Nordic “gold” are the well-established data register systems with personal social security numbers for each citizen, which, combined with data from sources such as biological samples stored in biobanks, quality registers and databases created for research purposes, represent a wealth of untapped potential. These registers and banks rely upon public trust in terms of how the data are used by researchers, and the state’s years of experience in preventing the unwanted disclosure of sensitive information.<sup>14</sup> The importance placed upon social homogeneity, trust, wide political engagement and cooperation in the Nordic countries labour markets might make it particularly urgent to ensure that digitalization does not endanger social cohesion and inclusion.

## Strengths

As shown in the previous chapter, the Nordic countries are increasingly digitalized. Their overall digital infrastructures are good, with high rates of access to the internet and high-speed connections. Broadband availability scores are among the best in the OECD. Internet use by individuals is widespread and a high proportion of people in the Nordic countries are regular users of the internet and various digital services. In addition, several studies have shown that people in the Nordic countries have good digital skills compared to other countries.<sup>15</sup>

Furthermore, the Nordic countries have adopted digitalization strategies or initiatives at the national level – and in some cases also at the regional and local levels – covering different areas, such as promoting individual digital competence. Within the formal Nordic education systems, the issue of digital competence is addressed by curricula at all levels aimed at strengthening individual digital competence, as well as preparing learners for the constantly reshaping work life and society skill needs.

<sup>13</sup> [norden.diva-portal.org/smash/get/diva2:1265618/FULLTEXT01.pdf](https://norden.diva-portal.org/smash/get/diva2:1265618/FULLTEXT01.pdf) page 11

<sup>14</sup> [nordforsk.org/no/publikasjoner/publications\\_container/joint-nordic-registers-and-biobanks-a-goldmine-for-health-and-welfare-research](https://nordforsk.org/no/publikasjoner/publications_container/joint-nordic-registers-and-biobanks-a-goldmine-for-health-and-welfare-research)

<sup>15</sup> Results from Eurostat and PIAAC. According to Pisa results we can assume that the situation in Iceland is comparable with the other Nordic countries.

Special measures should therefore be taken to reach these most vulnerable groups.

## Weaknesses

Increasing digitalization and rapid technological development continue to raise the demands made on individual digital competence in everyday life, in society and at work. In all of the Nordic countries there are sizable differences in skill levels within the population. The groups with weak basic digital skills largely coincide with those outside the workforce or are at risk of dropping out of the workforce. In Nordic society, people with less formal education, elderly people, the unemployed, immigrants and employees not participating in continuing education are at risk of digital exclusion.

Reaching people with weak digital skills has proven a major challenge, one of the reasons being that they are often not aware of the need to strengthen their skills. People in this group tend to use fewer learning strategies than people with stronger digital skills.<sup>16</sup> The strategies used to learn digital skills are complex and require the individual to have a high level of other basic skills (literacy and numeracy). Special measures should therefore be taken to reach these most vulnerable groups.

In addition, there are few formal requirements for teacher competence in adult education, especially in terms of digital competences. There are also few opportunities for teacher training in the field of adult education, especially training aimed at how to address the needs of individuals with weak basic skills. These subjects should be a focus of further research at the Nordic level.

## Opportunities

### **Digital tools and services will be easier to use, more available and better adapted to user needs**

Digitalization has been driven forward by both official authorities and private companies who have decided to make their information and services available to individuals independent of geographical location and office opening hours. Digital tools and services have been developed to facilitate easier and more flexible access. User experience (UX) design, service design, user interface design and/or accessibility testing are some of the methods used to ensure that the needs of users are taken into account, and tools and

<sup>16</sup> [kompetansenorge.no/statistikk-og-analyse/grunnleggende-digital-ferdigheter/hvordan-lare-digitale-verktoy-og-tjenester](https://kompetansenorge.no/statistikk-og-analyse/grunnleggende-digital-ferdigheter/hvordan-lare-digitale-verktoy-og-tjenester)

services are made more user-friendly.<sup>17</sup> The fast increasing Internet of Things (IoT) is also making the practical use of digital tools and services easier.<sup>18</sup>

Online services and digital tools, however, must be constantly improved, made more available, be better adapted to the needs of users, and more user-friendly and intuitive. Increasing the focus on this type of development is an important opportunity for reaching those users with weaker digital skills.

### **Digitalization as a revitalizer or facilitator of democracy**

The strong belief from the '70s that digitalization and technology would automatically strengthen democracy has faded and is now seen as a utopian narrative. New technologies don't by themselves cause transformation of societies already characterized by a democratization of political decision-making processes.<sup>19</sup> Digital technologies, however, can offer opportunities that may lead to better democratic processes.

The term e-democracy – also called digital or internet democracy – is used to describe a new paradigm in which political decision-making is more open to the people and works better. These objectives can be reached if digital tools and services are used to extend community engagement, expand suffrage and citizen agency, create real-time decision-making, rapidly aggregate opinion data, and pave the way for a shift from representative to more direct forms of democracy.<sup>20</sup> These opportunities are dependent on finding proper solutions to the risks and threats (further described in the chapter below) that digitalization also brings to democracy.<sup>21</sup>

### **The development of education technology (EdTech) provides more flexible access for the constant update of individually adapted digital skills and competences**

New technology leads to changes in the field of education in line with what is going on in the labour market and society. The digitalization of education involves (new) technology, but also new pedagogical methods and new attitudes and roles for teachers and trainers, new designs for educational tools and services, and a new type of interaction between all these factors.

17 [en.wikipedia.org/wiki/User\\_experience\\_design](https://en.wikipedia.org/wiki/User_experience_design), [en.wikipedia.org/wiki/Service\\_design](https://en.wikipedia.org/wiki/Service_design), [en.wikipedia.org/wiki/User\\_interface\\_design](https://en.wikipedia.org/wiki/User_interface_design) and [wearecitizensadvice.org.uk/building-accessible-digital-tools-d994149ba974](https://wearecitizensadvice.org.uk/building-accessible-digital-tools-d994149ba974)

18 [blogg.hioa.no/relink/2019/06/24/relink-conference-successfully-delivered/](https://blogg.hioa.no/relink/2019/06/24/relink-conference-successfully-delivered/) and [researchgate.net/project/Any-Thing-for-Anyone-Internet-of-Things-skills-and-use](https://researchgate.net/project/Any-Thing-for-Anyone-Internet-of-Things-skills-and-use)

19 [researchgate.net/publication/313178460\\_The\\_Logic\\_of\\_Digital\\_Utopianism](https://researchgate.net/publication/313178460_The_Logic_of_Digital_Utopianism)

20 [ssir.org/articles/entry/edemocracy\\_an\\_emerging\\_force\\_for\\_change#](https://ssir.org/articles/entry/edemocracy_an_emerging_force_for_change#)

21 [researchgate.net/publication/327271384](https://researchgate.net/publication/327271384), [raconteur.net/digital-transformation/digital-democracy-opportunity-threat](https://raconteur.net/digital-transformation/digital-democracy-opportunity-threat) and [oecd-forum.org/users/38724-holly-richards/posts/38811-oecd-forum-2018-the-future-of-democracy-in-a-digital-age](https://oecd-forum.org/users/38724-holly-richards/posts/38811-oecd-forum-2018-the-future-of-democracy-in-a-digital-age)



It also affects the learners themselves and their proficiency in, or attitude towards, the use of different tools and methods.

Both the education system and the learning methods we use are changing, but opinions differ as to in what way and how quickly. Most providers of learning technology promise that their technology leads to better learning, but very few have conducted studies to confirm their claims.<sup>22</sup> Many opportunities for more flexible and adaptive teaching and training are offered, and learning technology for adults is undoubtedly a market that more developers should explore, in particular when it comes to adults with basic skills needs.<sup>23</sup> Efficient use of the new technologies, however, depends on a thorough analysis of the didactic changes they represent, and much better preparation of teachers and trainers than we have seen thus far.

### **Digitalization is making academic institutions' knowledge, research and teaching more accessible**

There are several ways digitalization changes academia, particularly in terms of how academics and researchers interact with the public. It is interesting to explore how digitalization is influencing the scholarship of application, which refers to scholarship involving engagement with the wider world outside academia, but still based on the scholars' disciplinary knowledge and background.<sup>24</sup> Digital platforms now provide many Open Educational Resources (OERs), which are to a large degree freely available to learners.<sup>25</sup> These processes should also contribute to the creation of more and better resources for teachers of adult learners with basic skills needs and for learners themselves, improving access to learning and the quality of the learning provided.

### **Digitalization and changes in the work environment have increased interest in adult education and training**

Digitalization in general and the constant restructuring of the work environment, public services and everyday life have placed a new focus on the need for lifelong learning in a broad sense. Digital skills must be regularly updated. The current interest in social and emotional skills (what have been

22 [litmos.com/blog/articles/the-realities-of-artificial-intelligence-and-adaptive-learning](https://litmos.com/blog/articles/the-realities-of-artificial-intelligence-and-adaptive-learning)  
[povertyactionlab.org/sites/default/files/documents/education-technology-evidence-review.pdf](https://povertyactionlab.org/sites/default/files/documents/education-technology-evidence-review.pdf)  
[skolfi.se/other-languages/in-english/research-summaries/published-systematic-reviews/digital-learning-resources-in-mathematics-education/](https://skolfi.se/other-languages/in-english/research-summaries/published-systematic-reviews/digital-learning-resources-in-mathematics-education/)

23 [lincs.ed.gov/publications/pdf/power-in-numbers-market-scan-3.pdf](https://lincs.ed.gov/publications/pdf/power-in-numbers-market-scan-3.pdf) and  
[digitalpromise.org/wp-content/uploads/2016/03/dp-accelerating\\_change\\_guide-1.pdf](https://digitalpromise.org/wp-content/uploads/2016/03/dp-accelerating_change_guide-1.pdf)

24 [frontiersin.org/research-topics/7251/how-are-digital-tools-and-technologies-influencing-the-scholarship-of-application](https://frontiersin.org/research-topics/7251/how-are-digital-tools-and-technologies-influencing-the-scholarship-of-application)

25 [europarl.europa.eu/RegData/etudes/STUD/2015/563397/IPOL\\_STU\(2015\)563397\\_EN.pdf](https://europarl.europa.eu/RegData/etudes/STUD/2015/563397/IPOL_STU(2015)563397_EN.pdf)

called 21st century skills or transversal skills) points to the need for multiple skills, while others have pointed to the need for bundles of skills in the digital age.<sup>26</sup> Digitalization can bring new opportunities by focusing more attention on the need to update national skills policies. It can increase interest in adult education and training in general, and basic skills training provision in particular, for the benefit of society and the individual.

## Threats

### Digitalization and the Internet of Things can marginalize vulnerable groups of citizens

Digitalization has spread rapidly in all Nordic countries – in the public services, at work and in everyday life – and this development will continue in the future. The Internet of Things (IoT) will alter the process of digitalization, and it remains difficult for most people to understand what is actually happening in the IoT, even after they have used IoT devices and employed IoT skills. Practical use might be easy, but the implications of use are complex and require advanced strategic skills.

Researchers question whether the population at large will ever understand what happens in complex IoT systems, who owns the data they generate, and what decisions those data can be used for. IoT interventions can be unintended, unforeseen and unexpected, and there is a need for individual skills as well as public policies to address this. Research further suggests that policies should simultaneously address transparency and disclosure as to how personal data are used, incorporate better privacy and security practices, and work towards improving material access while increasing efforts to support the acquisition of further skills. Because the IoT may widen inequalities, these are critical issues to understand and act upon in order to prevent increased digital divides and digital exclusion.

Fortunately, public institutions and policy makers are beginning to realize that the effects of digital development are not just technological, but also societal, socio-legal and socio-psychological. At the same time, the level and types of the necessary basic digital skills are changing. Digital divides can be caused by inequalities in resources, positions in society and personal characteristics. The threat is complex, which is why it is even more important to meet the needs of individuals with weak basic skills. To guarantee the participation in civic society of the whole population we must avoid the marginalization that may result from digital exclusion or an increased digital divide.

26 [oecd.org/education/school/UPDATED%20Social%20and%20Emotional%20Skills%20-%20Well-being,%20connectedness%20and%20success.pdf%20\(website\).pdf](https://oecd.org/education/school/UPDATED%20Social%20and%20Emotional%20Skills%20-%20Well-being,%20connectedness%20and%20success.pdf%20(website).pdf), [oecd.org/publications/oecd-skills-outlook-2019-df80bc12-en.htm](https://oecd.org/publications/oecd-skills-outlook-2019-df80bc12-en.htm) and [oecd-ilibrary.org/industry-and-services/which-skills-for-the-digital-era\\_9a9479b5-en](https://oecd-ilibrary.org/industry-and-services/which-skills-for-the-digital-era_9a9479b5-en)

## Digital and technical development are proceeding at a higher speed than the education system can cope with

Technical development is proceeding at such a high speed that the updating and reskilling of digital skills for the entire population constitutes a huge challenge for the education system. There is also a growing need for more and new types of digital skills.

## Social and ethical challenges related to digitalization in our "onlife" societies

The term "onlife" is new, and refers to the blurred lines between our offline and online lives and to how interwoven these are now.<sup>27</sup> Digitalization is penetrating our entire socio-cultural world, and this has spurred discussions about concepts such as information flow, fake news, echo chambers, freedom of expression and democratic governance. The digitalized society faces new types of risks that may challenge democratic structures, national institutions and our shared moral boundaries.

For instance, privacy is necessary to protect and maintain a democracy. Privacy is not only a personal issue, but also a collective one.<sup>28</sup> To maintain a democracy, people have to vote according to their beliefs and without undue pressure, protest without fear of repercussions, have freedom to associate, speak their minds, and read what they are curious about. These rights cannot be safeguarded over time without ensuring our individual privacy. A potential future authoritarian government or regime may misuse information left in the digital arena. The Nordic countries' register data are seen as extremely valuable, and the region's authorities are currently praised for the way they register data for the benefit of both people and society, while simultaneously respecting human rights and individual privacy.

Several issues related to privacy, autonomy, security, human dignity, justice, and the balance of power have been raised in discussions about digitalization and the pressure it can exert on public values. Relevant issues in this context are autonomy, freedom of choice, freedom of expression, and the danger of being exposed to manipulation, paternalism and controlling influences. Some of these issues are mentioned in international treaties, while others are rather seen as following from fundamental human rights. The treaties or agreements to protect these public values may be losing their relevance because of the radical impact digital services and tools have on our societies. A main governance task is therefore to create national policy

<sup>27</sup> [link.springer.com/article/10.1007/s10676-018-9452-x](https://link.springer.com/article/10.1007/s10676-018-9452-x)

<sup>28</sup> [aeon.co/essays/privacy-matters-because-it-empowers-us-all](https://aeon.co/essays/privacy-matters-because-it-empowers-us-all)

Cyber security in general, as well as the challenge posed by hybrid threats, will be on the agenda in all Nordic countries in the coming years

and work internationally to safeguard widely acknowledged public values. Governments, national institutions, private companies, businesses and individuals are all seen to share the responsibility for this task in terms of the new digital society's practices concerning everyday life, social life and work.

### **Cyber security challenges change how we define basic digital skills and the need for good basic skills in general**

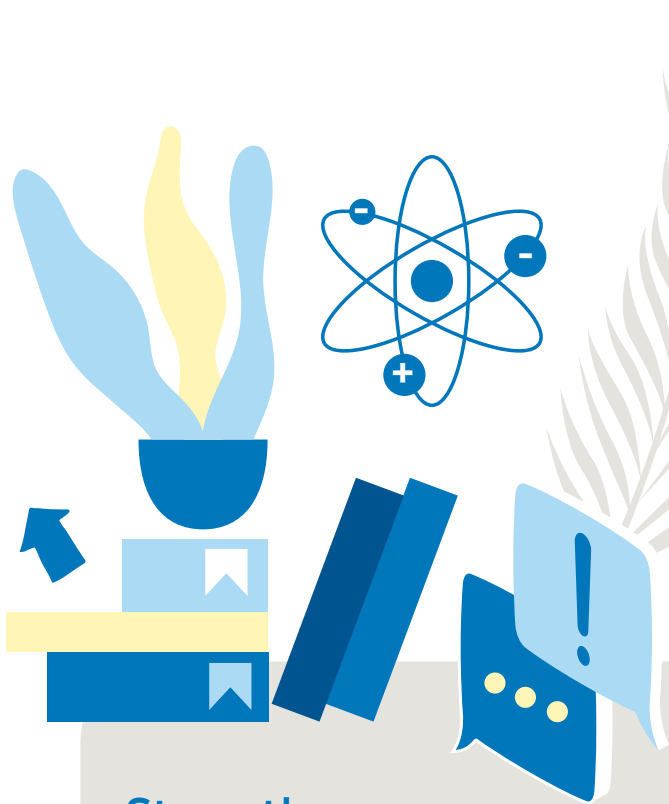
Cyber security in general, as well as the challenge posed by hybrid threats (i.e. manipulation and dissemination of false news, sabotage of strategic infrastructure, elections), will be on the agenda in all Nordic countries in the coming years.<sup>29</sup> These threats have not diminished, and are not likely to diminish in the future. An overview of threats published in 2019 by The European Union Agency for Cybersecurity (ENISA), shows a negative trend and more sophisticated threats.<sup>30</sup> Spam and phishing, for instance, are now well known threats, and warnings about these methods abound; these practices are constantly becoming more difficult to detect, however, because of more sophisticated and targeted use by criminals. New threats are also appearing according to ENISA, such as cryptojacking.<sup>31</sup> All of these threats affect how we define basic digital skills. The only way we can fight these challenges is by regularly providing further education and training for adults of all ages and at all stages of life. Security issues can't be solved solely by creating awareness of the threats; people need the skills to avoid the threat, and an understanding that the skills will be effective.<sup>32</sup>

29 [eu2019.fi/en/priorities/comprehensive-security/hybrid-and-cyber-threats](https://eu2019.fi/en/priorities/comprehensive-security/hybrid-and-cyber-threats)

30 [etl.enisa.europa.eu/#/](https://etl.enisa.europa.eu/#/)

31 Cryptojacking, also cryptomining, refers to programs that use the victim's device processing power to mine cryptocurrencies without the victim's consent.

32 [enisa.europa.eu/publications/cybersecurity-culture-guidelines-behavioural-aspects-of-cybersecurity](https://enisa.europa.eu/publications/cybersecurity-culture-guidelines-behavioural-aspects-of-cybersecurity)



# SWOT

## analysis summary

### Strengths

- Highly digitalized countries, good digital policies and infrastructures.
- High population access to internet, regular users of digital services.
- Upskilling opportunities for adults with basic digital skills needs.

### Weaknesses

- Inequality in basic digital skills levels.
- Those with low skills are usually not participating in work or education.
- Difficulties reaching and motivating groups with weak digital skills.
- Few formal requirements in digital competences for teachers in adult education.
- Too little teacher training on how to meet the needs of individuals with low basic digital skills.

### Opportunities

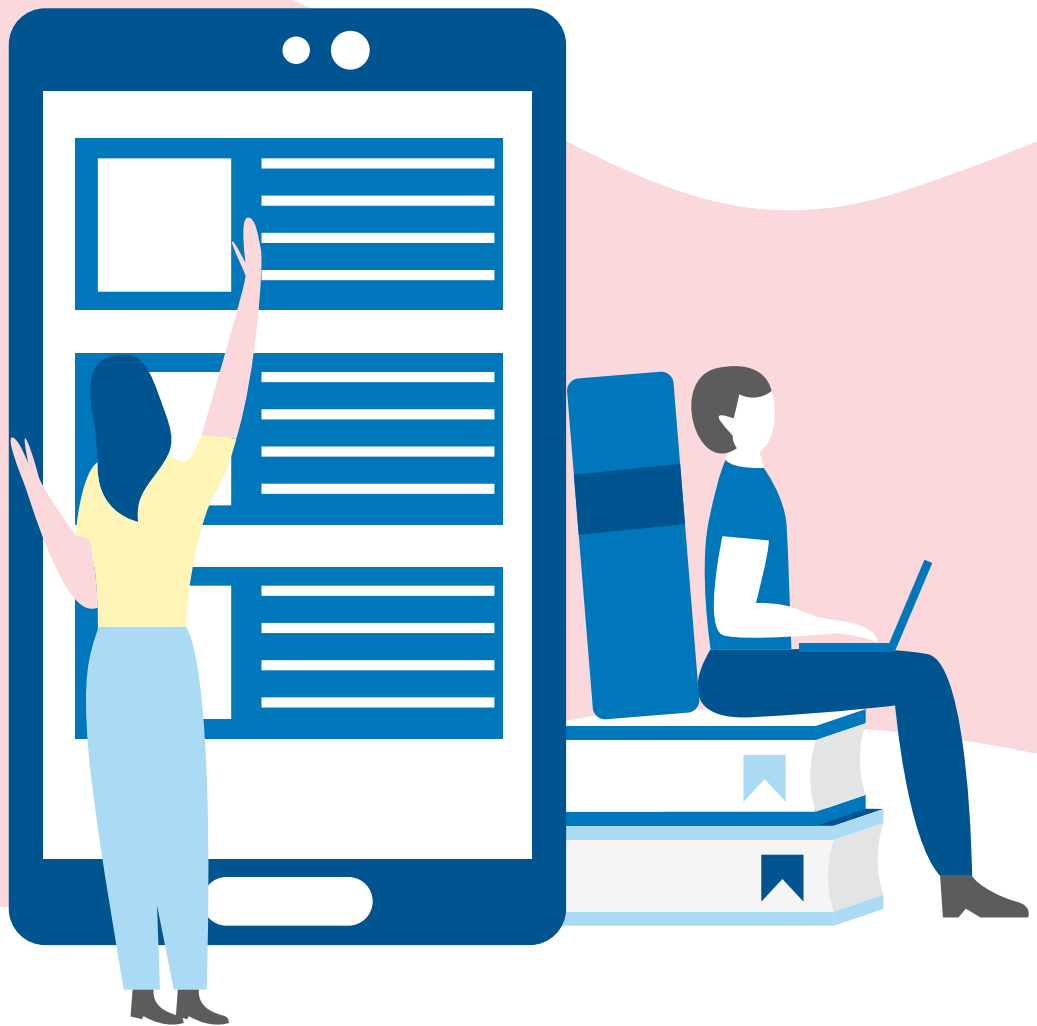
- Digital tools and services are becoming more user-friendly and flexible.
- Education technology (EdTech) provides faster and more flexible updates of digital competences adapted to the individual.
- Digitalization has encouraged a stronger interest in lifelong learning.
- Digitalization may make knowledge, research and teaching more accessible.

### Threats

- The complexity of digitalization can lead to digital exclusion.
- Cyber security threats are becoming more sophisticated and targeted.
- Digital development outpaces education and training.
- Ethical dilemmas related to new digital technology may challenge democracy and Nordic values.

# 4

## Recommendations



### **Increase the participation of low-skilled adults in basic digital skills learning**

This can be achieved by focusing on: (1) good guidance systems and outreach measures; and (2) the availability of adequate learning pathways adapted to the needs of the individuals in these target groups. Flexible learning pathways and quality tailored provision of basic digital skills learning need to be available to all target groups of low-skilled individuals, including young adults. Guidance and outreach measures are needed to ensure enhanced participation of these groups in learning, education, employment and civic society. Adults with low levels of digital skills need specific guidance and measures aimed at motivating them in terms of further empowerment and career development.

### **Renew all efforts to bridge the digital divide and promote digital inclusion**

The increasingly rapid pace of digital development is transforming our work, society, and our everyday lives in many ways. Although this transformation offers many possibilities, it also poses a serious risk of marginalization for groups of people who lack the basic digital skills needed to profit from digital innovation. Increasing the basic digital skills of the population is crucial in order to bridge the digital divide and promote digital inclusion in every aspect of life.

### **Increase efforts to create and maintain a lifelong learning system**

A lifelong learning system should be flexible and able to quickly adapt to digital changes in the labour market and in society. The government must ensure that the general population is always equipped to engage in digital society in a wise and safe manner. National lifelong learning systems must increase their flexibility to be able to adapt quickly to digital changes and to the opportunities and challenges these changes can create. The system should take into account the wide disparity in the population's digital skills levels and be able to provide adequate training for each individual.

### **Promote the development of education technologies for adults**

Governments should further explore and support the development of education technologies and examine how they can be adapted to different life situations, learning strategies and needs. Education technology can be tailored to better address the learning needs of adults lacking basic skills in general and basic digital skills in particular, whether the needs are present in the realms of work, society, or everyday life.

### **Enhance the digital competence of teachers in adult education and training**

Competences for teachers in adult education must be defined, as must the teaching skills necessary to address the needs of individuals with low digital skills. National policymakers must also keep track of digital developments, create innovative professional development opportunities, and require teachers to make use of those training opportunities so they are able to adequately teach citizens at all levels. Research needs to be organized at the Nordic level to find out how to enhance digital development in a lifelong learning system.

### **Enhance national measures dealing with cyber security**

Focusing on increasing the knowledge and skills of the Nordic population in this field can help ensure individual privacy and security and safeguard our acknowledged Nordic public values. We need to address cyber security and the ethical issues created by rapid technological development at both the individual and societal levels. Reliable information needs to be available to the public to ensure awareness about the fact that these are both personal and collective issues, but awareness alone is not enough to counter cyber security threats. National systems need to be created to ensure that the public has access to acquiring the skills that will make it possible for them to avoid these threats.

# 5

## Learning examples from the Nordic countries





A number of learning examples from the Nordic countries are presented in the chapter below. These examples refer to one or several of the recommendations presented in the report. The initiatives, actions and programs presented are just a selection of the many such examples in the Nordic region.

## A focus on national programs and courses

### **SkillsPlus work life and civic society program – Norway**

SkillsPlus is a Norwegian program aimed at giving adults the opportunity to acquire the basic skills they need to keep up with the demands and changes in modern working life and civil society.<sup>33</sup> The program focuses on reading, writing, numeracy, and digital skills, as well as oral communication in combination with other skills. Any enterprise in Norway can apply for funding, and efforts are made to include SMEs and encourage applications from industries that employ people with relatively low levels of formal skills. Organizations can also apply for funding of courses outside of work, where participants are primarily adults with low levels of formal education who need to strengthen their basic skills or knowledge of the Norwegian language and/or Sami.

There is a wide range of training providers, including study associations. The providers are stakeholders in the program and can write applications on behalf of an enterprise or organization or on their own behalf. Providers may apply for seed money to prepare good applications, and to work on project planning and motivation activities.

### **National courses in adult municipal education – Sweden**

Basic digital competence has been strengthened in the national courses in adult municipal education at a basic level in Sweden in order to develop the students' ability to understand how digitalization affects the individual and society.<sup>34</sup> Students are meant to have the opportunity to develop their ability to use and understand digital tools and media and approach digital technologies in a responsible way using critical evaluation. Digital competence also includes how to solve problems using digital technologies, and in courses in mathematics at a basic level, for example, programming has been included. Since 2018, municipalities have also had the opportunity to offer

<sup>33</sup> [kompetansenorge.no/English/Basic-skills/#ob=9958](https://kompetansenorge.no/English/Basic-skills/#ob=9958)

<sup>34</sup> [skolverket.se/undervisning/vuxenutbildningen/komvux-grundlaggande/laroplan-for-vux-och-kursplaner-for-komvux-grundlaggande/kursplaner-for-komvux-pa-grundlaggande-niva](https://skolverket.se/undervisning/vuxenutbildningen/komvux-grundlaggande/laroplan-for-vux-och-kursplaner-for-komvux-grundlaggande/kursplaner-for-komvux-pa-grundlaggande-niva)

an orientation course in basic digital competence<sup>35</sup> where students can learn how to use digital tools, media and services in a very simple way in everyday life situations or in the workplace. The course can be individualized depending on the student's prior knowledge and needs, and can also be combined with vocational education, training, and learning in the workplace.

### **Digidel.no recourse web site – Norway**

Digidel.no is a site for teachers or trainers who offer courses and training in basic digital skills and competence. The resources are developed by the Digidel program and by others who train adults with low digital competence; they are free to download, use and adapt, and users can share their presentations with others. The *Test yourself* resource<sup>36</sup> is included in digidel.no, and offers free testing of computer skills, as well as literacy and numeracy. It also includes resources in Norwegian for e-learning related to these skills, as well as a guide for teachers. Individual adults, teachers and institutions can use the resources.

## **A focus on everyday digital skills**

### **Online training in everyday digital skills – Sweden**

Online training in everyday digital skills is offered by the Digidel network and Digidel centres.<sup>37</sup> The Swedish Digidel network works to increase digital participation and access to digital services in every aspect of life. The network today coordinates 18 municipal accessible and staffed Digidel Centers, whose purpose is to increase digital inclusion and people's basic digital skills. Individuals can get help with tasks like sending emails, getting an e-identification, navigation on government websites, buying tickets, etc. The network also coordinates *All Digital Week*<sup>38</sup> and provides a knowledge bank for anyone who works in increasing participation in the digital age.

**A free online training course for anyone who wants to become more confident using digital services in everyday life** is offered by The Swedish Public Employment Service and Google *Digitalakademi*.<sup>39</sup> The training includes different course tracks and the courses can be combined depending on each individual's needs. The courses cover areas such as security and integrity, digital communication, and how to apply online for a job.

35 [skolverket.se/skolutveckling/anordna-och-administrera-utbildning/anordna-utbildning-inom-vuxenutbildningen/anordna-utb/anordna-orienteringskurser-inom-vuxenutbildningen](https://skolverket.se/skolutveckling/anordna-och-administrera-utbildning/anordna-utbildning-inom-vuxenutbildningen/anordna-utb/anordna-orienteringskurser-inom-vuxenutbildningen)

36 [kompetansenorge.no/test-yourself/](https://kompetansenorge.no/test-yourself/) and in Norwegian [kompetansenorge.no/test-deg-selv/](https://kompetansenorge.no/test-deg-selv/)

37 [digidel.se](https://digidel.se)

38 [digidel.se/all-digital-week/](https://digidel.se/all-digital-week/)

39 [digitalajag.se](https://digitalajag.se)

The Strategy requires basic cyber security skills to be included in the curricula at all education levels.

The Swedish Internet Foundation works under the motto that everybody should want, dare and be able to use the internet, and their work builds upon the European Digital Competence Framework. They offer reports, online digital lessons, conferences and teacher training. At their website, [Internetkunskap.se](http://Internetkunskap.se), the Foundation provides everyday knowledge about the internet and digital services and discusses issues like online integrity, how companies handle our personal data, how to avoid being scammed online, how to detect fake news, etc.<sup>40</sup>

#### **A special program to strengthen digital skills – Finland**

In Finland, a special program was launched by the Finnish Government at the end of 2018 to **strengthen the basic skills**, digital skills and multiliteracy skills of adult citizens with inadequate skills by making training more accessible to people of all ages.<sup>41</sup> The final aim of the program is to increase equality among Finland's citizens. The program (2018–2020) is being carried out mainly by adult liberal education institutions.

## A focus on security and democracy

#### **A national initiative on media and information literacy and democratic dialogue – Sweden**

In August 2018, the Swedish Government appointed the **Commission for a National Initiative on Media and Information Literacy and Democratic Dialogue**.<sup>42</sup> The Commission will work until October 2020, and its mission is to collaborate on existing initiatives in the field of media and information literacy with the intent of increasing the level of activity in the field. The Commission will achieve this, among other measures, by spreading good examples and methods to all citizens, and by inspiring new players in society to join the work of strengthening citizens' resilience in the face of disinformation, propaganda and hate speech.

#### **A cyber security strategy – Finland**

According to **Finland's Cyber Security Strategy**, the Finnish Education system must see to the preservation and development of the top-level competence needed to ensure and improve the security of society's vital functions in the cyber domain.<sup>43</sup> The Strategy requires basic cyber security

40 [internetkunskap.se](http://internetkunskap.se)

41 [minedu.fi/artikkeli/-/asset\\_publisher/lisatalousarviosta-iso-koulutuspaketti-osaavan-ty-ovoiman-pulaan-toisen-asteen-oppimateriaaleihin-ja-digiajan-perustaitoihin?\\_101\\_INSTANCE\\_vnXMrwx9pG9\\_languageld=sv\\_SE](http://minedu.fi/artikkeli/-/asset_publisher/lisatalousarviosta-iso-koulutuspaketti-osaavan-ty-ovoiman-pulaan-toisen-asteen-oppimateriaaleihin-ja-digiajan-perustaitoihin?_101_INSTANCE_vnXMrwx9pG9_languageld=sv_SE)

42 [demokratiskasamtalet.se](http://demokratiskasamtalet.se)

43 [turvallisuuskomitea.fi/wp-content/uploads/2018/09/Cyber-Strategy-for-Finland.pdf](http://turvallisuuskomitea.fi/wp-content/uploads/2018/09/Cyber-Strategy-for-Finland.pdf)

skills to be included in the curricula at all education levels. As a result, basic cyber security skills are being included in the qualification requirements in vocational education and training.<sup>44</sup>

### **National Cybersecurity Month – Norway**

The Cybersecurity Month aims to increase knowledge of digital security in all businesses and the population. The goal of the annual campaign is for all Norwegian companies to train employees each year during the month of October. To help with this, NorSIS (The Norwegian Centre for Information Security) has developed a training package that includes an e-learning course in 8 modules and other materials to help managers or security officers conduct internal training on digital security.<sup>45</sup>

## A focus on guidance

### **Workplace guidance to reach adults with short formal education – Iceland**

Iceland has put in place specific measures to reach adults with short formal education. One of these is the *Workplace Guidance* project, where career counsellors from lifelong learning centres around the country contact companies to get access to workers in the target group. Through introductory meetings, the workers are offered career guidance and information about opportunities for education and training, including different courses in basic skills.<sup>46</sup>

### **Guidance to reach vulnerable groups – Iceland**

The European GOAL project (Guidance and Orientation for Adult Learners), which ended in January 2018, was aimed at developing or expanding guidance and orientation interventions for under-educated people in six countries. In Iceland, the project was targeted at **vulnerable adults** facing multiple barriers to progress in education and employment. This group was reached through cooperation with different institutions, including the Directorate of Labour and Social Services.<sup>47</sup>

## A focus on specific target groups

### **Programs aimed at specific target groups – Finland**

In Finland, a wide variety of programs and projects have been launched aimed at specific target groups (teachers, trainers, specified vocational sectors,

<sup>44</sup> [eperusteet.opintopolku.fi/#/sv/selaus/kooste/ammattillinenkoulutus?hakutyyppe=perusteet](https://eperusteet.opintopolku.fi/#/sv/selaus/kooste/ammattillinenkoulutus?hakutyyppe=perusteet)

<sup>45</sup> [norsis.no/nsm](https://norsis.no/nsm)

<sup>46</sup> [elgpn.eu/elgpndb/view/10](https://elgpn.eu/elgpndb/view/10)

<sup>47</sup> [adultguidance.eu](https://adultguidance.eu)

migrants, the unemployed, etc.). These programs and projects have been financed using both national resources (mainly state subsidies) and by the European Social Fund (ESF). These projects include ia Digitutor 2018–2020,<sup>48</sup> which aims to improve the digital skills of employees in the mechanical engineering, metal and chemical industries. Similar types of projects have also been launched in the healthcare and social welfare sectors,<sup>49</sup> as well as in the administration and business sector.<sup>50</sup> The Inclusion in E-society 2016–2018<sup>51</sup> project aimed to develop innovative digital learning environments for young people who need special support after finishing basic education, as well as support teachers in this work.

## A focus on digital competence for teachers

### Digital competences for teachers – Denmark

In Denmark, digital competences for teachers are being enhanced. When the existing range of preparatory adult education (whose Danish acronym is FVU) was extended to include FVU-Digital, it was decided that teachers who teach the new subject must meet certain qualifications. The purpose of FVU-Digital is to enable participants to perform the digital tasks that are relevant to their job function; for example, to use relevant digital tools, communicate digitally, search information digitally and organize, structure and manage data. The purpose of the subject is also to strengthen the participants' ability and self-confidence to facilitate the acquisition of new digital skills. Specific new modules in the educational diploma curriculum (Pædagogisk Diplommuddannelse) have been prepared in order to enhance competencies for teachers teaching FVU-Digital. The prescribed qualifications are two modules of 10 ECTS credits each, and the courses are available at the university colleges.

### Promoting digitalization in learning environments – Finland

Parasta osaamista/Bästa kunnande (Best Knowledge) 2017–2019<sup>52</sup> was a Finnish program that included several development projects. One of these focused on promoting versatile use of digitalization in learning environments, mobile learning, and the use of learning materials among teachers in vocational education and training.

48 [digitutor.utu.fi](http://digitutor.utu.fi)

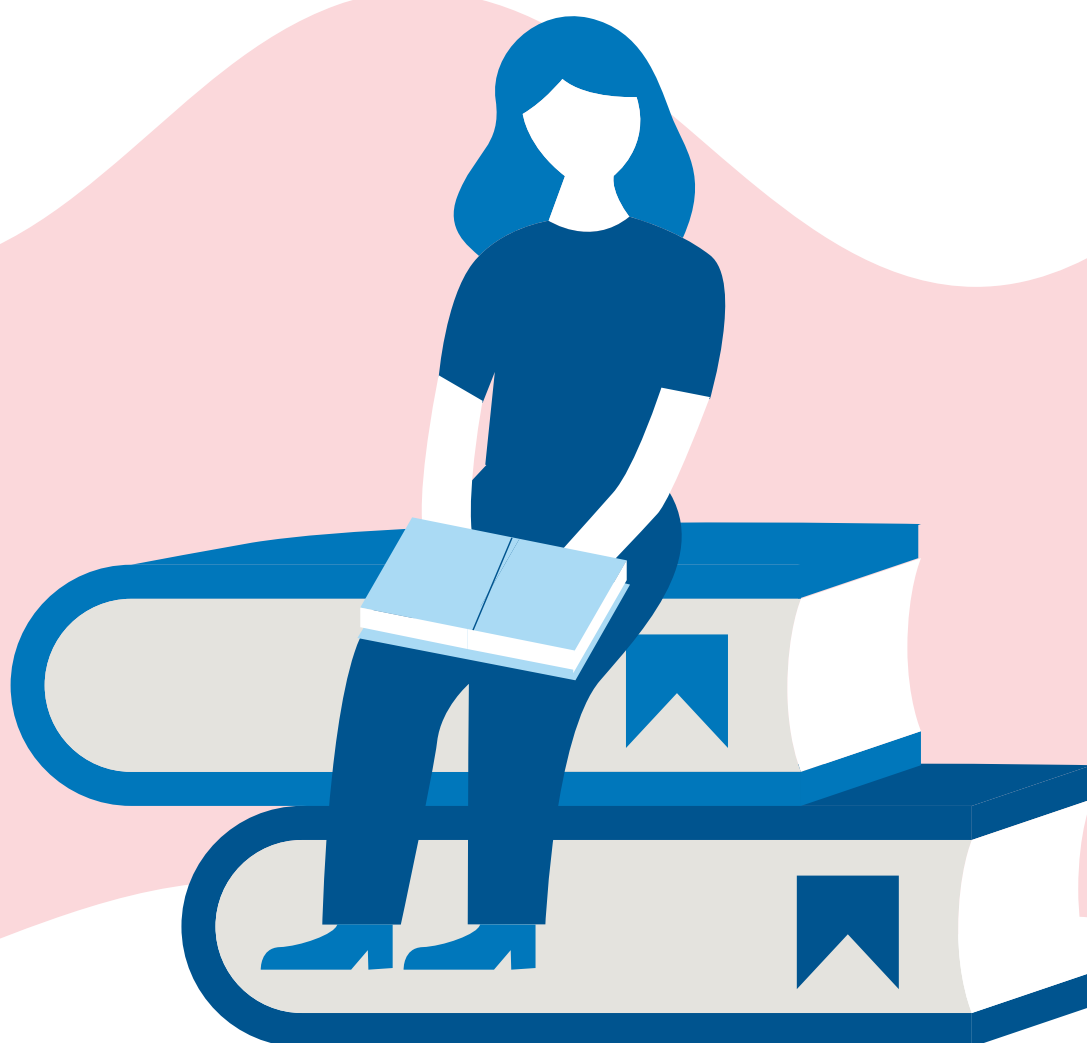
49 [digitaito.fi](http://digitaito.fi)

50 [rosa.utu.fi/tradeict](http://rosa.utu.fi/tradeict)

51 [tamk.fi/projektit](http://tamk.fi/projektit)

52 [blogit.gradia.fi/parasta\\_osaamista](http://blogit.gradia.fi/parasta_osaamista)

# Appendix



# General situation in each of the Nordic countries

## Iceland

Basic skills are the foundation for continuously increasing new knowledge, skills and competences. Adults therefore need opportunities to acquire new knowledge, skills and competences throughout life. The rapid pace of technological development means that anyone who wants to be part of the future labour market must be able to read, write, calculate and use ICT. A lack of basic skills would have major consequences for both the individual and the community.

Adult education plays an important role in ensuring that in the future adults have the necessary basic skills to be able to enter, maintain and develop their roles in the labour market and take part in society in general.

Various surveys (e.g. from Eurostat) have shown that in Iceland public ownership of computers, access to the internet and high-speed connections are among the best in the world today.<sup>53</sup> In 2017, 97% of Icelanders were regular internet users, 86% used mobile devices to access the internet when away from home or work, 83% participated in social networks, 85% made use of the internet for interaction with public authorities and 66% ordered/bought services or products over the internet.

According to the International Telecommunication Union (ITU) Iceland's score was among the highest in the IDI (ICT Development Index) ranking in 2017. Houlin Zhao, the Director of the ITU, says this is especially interesting because of the small population and predominance of rural areas in Iceland. Among the factors examined are accessibility and use, knowledge, policy and environmental factors, and investment. Some 193 countries participate in the ITU, and the survey covers 176 countries. The Nordic countries are all on the list of the 20 top countries.

The main reasons for the positive Icelandic score in the ITU rankings are the improvement in mobile-broadband subscriptions and the increase in the average number of years of schooling. In this context, it is important to note that the municipalities have directly participated in this development, and the contribution from the regional funds for the development of high-speed networks has helped the most disadvantaged municipalities.<sup>54</sup>

<sup>53</sup> [ec.europa.eu/eurostat/statistical-atlas/gis/viewer/?config=RyB-2017.json&mids=BKGCNT,C-09M01,CNTOVL&o=1,1,0.7&ch=ITS,C09&center=50.44877,20.07598,3&lcis=C09M01&](https://ec.europa.eu/eurostat/statistical-atlas/gis/viewer/?config=RyB-2017.json&mids=BKGCNT,C-09M01,CNTOVL&o=1,1,0.7&ch=ITS,C09&center=50.44877,20.07598,3&lcis=C09M01&)

<sup>54</sup> [ruv.is/frett/fjarskipti-og-upplysingataekni-best-a-islandi-stjornarradid.is/efst-a-baugi/frettir/stok-frett/2018/04/11/Island-i-1.-saeti-medal-thjo-da-heims-i-upplysingataekni-og-fjarskiptum-/](https://ruv.is/frett/fjarskipti-og-upplysingataekni-best-a-islandi-stjornarradid.is/efst-a-baugi/frettir/stok-frett/2018/04/11/Island-i-1.-saeti-medal-thjo-da-heims-i-upplysingataekni-og-fjarskiptum-/)  
[itu.int/en/ITU-D/Statistics/Pages/publications/mis2017.aspx](https://itu.int/en/ITU-D/Statistics/Pages/publications/mis2017.aspx)  
[itu.int/net4/ITU-D/idi/2017/index.html](https://itu.int/net4/ITU-D/idi/2017/index.html)  
[itu.int/en/ITU-D/Statistics/Pages/publications/mis2017/methodology.aspx](https://itu.int/en/ITU-D/Statistics/Pages/publications/mis2017/methodology.aspx)

On the other hand, there is a lack of information about the ability of adults in Iceland to take advantage of information technology. Since both the government and many companies increasingly digitalize their communication with the public, it is important to know whether adults in Iceland can solve problems and achieve their objectives with the help of information technology.

Iceland did not participate in PIAAC's first round and will not take part in the next round, mainly because of the costs involved and because the PIAAC methodology is not well-suited to scattered areas. As researchers have discovered, PISA results can predict how well a country might do on the PIAAC, which means that Iceland's results would most likely be in line with those of other Nordic countries. As mentioned before, Eurostat data on the use of computers and the internet show that Iceland, along with the other Nordic countries, scores very high from a European perspective.

## Denmark

In 2018, the United Nations stated that Denmark is world leading in providing government services and information through the internet.<sup>55</sup> This is partly because for many years Denmark has invested heavily in introducing public digital solutions and has also implemented efficient policies that obliged citizens to use them. Digitalization strategies have been created at the national, regional and municipal levels, and the strategies are often cross-sectoral, as is the case in the field of education.

Nevertheless, the PIAAC study showed that more than 1 million Danish adults have difficulties carrying out everyday tasks on a computer.<sup>56</sup> Equally large numbers of the population have poor reading and numeracy skills.

In 2017, an expert group established by the government published a report on "New competences throughout life"<sup>57</sup> which, among other things, highlighted the need to: (1) enhance the level of basic competencies in the workforce to ensure good profits from upgrading and competence development; and (2) facilitate the access of more companies to all the advantages of digitalization. The report's findings were part of the tripartite negotiations that took place in 2017, which in the autumn of that year resulted in a tripartite agreement between the government and social partners on strengthened and more flexible adult continuing education. The agreement emphasized that the system for adult continuing education (the VEU system) must support increased efforts to boost the basic skills level of the

55 [publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2018-Survey/E-Government%20Survey%202018\\_FINAL%20for%20web.pdf](https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2018-Survey/E-Government%20Survey%202018_FINAL%20for%20web.pdf)

56 [oecd.org/skills/piaac/Denmark\\_1328-Danskernes-kompetencer.pdf](https://oecd.org/skills/piaac/Denmark_1328-Danskernes-kompetencer.pdf)

57 [uvm.dk/publikationer/uddannelser-for-voksne/2017-nye-kompetencer-hele-livet](https://uvm.dk/publikationer/uddannelser-for-voksne/2017-nye-kompetencer-hele-livet)



workforce in the future to a much greater extent than today in order to meet the companies' needs and demands.

## Finland

According to the European Commission's Digital Economy and Society Index (DESI) report from 2018, Finland is among the most advanced digital economies in the EU.<sup>58</sup> Digital skills remain the strongest competitive advantage of the Finnish economy. In the PIAAC research, Finland ranked second both in proficiency in literacy and numeracy and third in proficiency in problem solving in technology-rich environments (PSTRE). At the same time, it was noted that Finland has a large group of adults aged 16–65 with zero to low levels of PSTRE skills.

## Sweden

The current increase in digitalization and rapid technological development put increased demands on the individual's digital competence in all fields of action: society at large, everyday life and the work environment. Sweden is an increasingly digitalized country and virtually everyone (98%) has access to the internet at home and uses various digital services to a very high degree. There are, however, groups in society who experience digital exclusion. A lack of daily use of the internet is more common among elderly people, rural populations, and individuals with lower household income or lower levels of education. Those who do not use the internet daily also feel less involved in digital society. Sweden scored above average in the PIAAC survey, but it is also the country with the greatest differences between low and high performance. In the Swedish population there are differences in skills between people with more and less education and differences in skills between people born in Sweden and born abroad. These results show the importance of basic skills as a factor in strengthening individual opportunities for education, work and active participation in society.

## Norway

The results from the OECD Adult Literacy and Life Skills (ALL) survey in the mid-2000s led to a debate in Norway about the level of basic skills among the country's adults. Among the measures that were taken was the creation of what is now called SkillsPlus (Kompetansepluss), a program designed to provide grants for courses in basic skills for employees with little formal education.<sup>59</sup>

<sup>58</sup> [ec.europa.eu/newsroom/dae/document.cfm?doc\\_id=52222](https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=52222)

<sup>59</sup> [kompetansenorge.no/Kompetansepluss/](https://kompetansenorge.no/Kompetansepluss/)

The first Digital Agenda for Norway (Digital Agenda for Norge) was presented in 2013.<sup>60</sup> Norway was then (and still is) one of the countries that is most advanced in the digitalization of public administration, labour and society. This provides good opportunities, but involves challenges from a skills policy perspective, since the population must have the skills to make use of new technology and digital solutions. If the work life is to seize the opportunities that digitalization brings, the skills must be strengthened and adapted to the digitalized work life. In order to counteract digital exclusion, digitalization must result in good and accessible services that satisfy the needs of all user groups.

Norway's population has good digital skills compared to other countries, according to PIAAC, but there are significant differences in levels within the population.<sup>61</sup> The groups with weak basic digital skills largely coincide with the groups that are outside the workforce or are at risk of being excluded from it. People with weak digital skills also tend to have weaker literacy and numeracy skills. The strategies used to learn digital skills are complex, but those with weak digital skills use fewer learning strategies than those with strong digital skills.<sup>62</sup> Therefore, training measures adapted to the weak groups, which require more learning strategies, are important.

## Definitions and interpretations

### Iceland

Iceland has not established any specific definition for basic skills or ICT skills, although there are different governmental/policy papers that discuss and describe these issues (see, for example, the National Curricula at [namskra.is](http://namskra.is), and the White Paper on Basic Skills and Reading<sup>63</sup>). Digital competences are included in the national core curricula at all levels from preschool to upper secondary school. In the field of adult education, the involvement of labour market stakeholders has a great impact on the design of preparatory courses for participation in the labour market. The Education and Training Service Centre (ETSC) has developed a method for identifying the competencies required to successfully perform the essential functions of particular jobs, and digital competences have been defined using this method.

<sup>60</sup> [regjeringen.no/no/dokumenter/meld-st-23-20122013/id718084/  
regjeringen.no/no/dokumenter/digital-agenda-for-norway-in-brief/id2499897/](http://regjeringen.no/no/dokumenter/meld-st-23-20122013/id718084/regjeringen.no/no/dokumenter/digital-agenda-for-norway-in-brief/id2499897/)

<sup>61</sup> [kompetansenorge.no/English/Basic-skills/#AdultSkills\\_\\_2](http://kompetansenorge.no/English/Basic-skills/#AdultSkills__2)

<sup>62</sup> [kompetansenorge.no/statistikk-og-analyse/grunnleggende-digital-ferdigheter/hvordan-lare-dig-itale-verktoy-og-tjenester/](http://kompetansenorge.no/statistikk-og-analyse/grunnleggende-digital-ferdigheter/hvordan-lare-dig-itale-verktoy-og-tjenester/)

<sup>63</sup> [namskra.is/courses/59b14c8562933a031d030b52](http://namskra.is/courses/59b14c8562933a031d030b52) and [stjornarradid.is/media/menntamalaraduneyti-media/media/frettir2015/Hvitbok\\_ENSKA\\_O4.pdf](http://stjornarradid.is/media/menntamalaraduneyti-media/media/frettir2015/Hvitbok_ENSKA_O4.pdf)

## Denmark

In the PIAAC study, the term "problem solving in technology rich environments" was applied to the population's ICT skills. Digital skills were defined as "the ability to use digital technologies, communication tools and networks to find and evaluate information, communicate with other people and perform concrete tasks". In Danish, this was translated into "problem solving with IT". In the next PIAAC, problem solving in technology rich environments will not be part of the study; instead, the study will look at adaptive problem solving. The following working definition of adaptive problem solving has been developed for PIAAC cycle 2:

*"Adaptive problem solving involves the capacity to achieve one's goals in a dynamic situation, in which a method for solution is not immediately available. It requires engaging in cognitive and metacognitive processes to define the problem, search for information, and apply a solution in a variety of information environments and contexts."*

## Finland

Digital competences are included in the national core curricula at all levels from early childhood education and care onwards. The Key Competences for Lifelong Learning identified by the European Commission<sup>64</sup> are a crucial part of the content in both general education and vocational education and training (VET). These key competences together with the European Commission's Digital Education Action Plan<sup>65</sup> and the European Commission's New Skills Agenda for Europe<sup>66</sup> constitute a framework for the further development of digital skills in education.

Cooperation with working life is essential when defining the requirements for digital skills. Working life representatives participate in anticipation studies for learning and education needs, in the development of vocational qualifications, and in competence assessments. The National Forum for Skills Anticipation is a tripartite expert body working with the Ministry of Education and Culture (MoEC) and the Finnish National Agency for Education (EDUFI). As part of its ongoing anticipation process (2017–2019) the Forum identifies the future skills needed by specific sectors and occupational groups. The skills survey pays special attention to digital skills, and the European Commission's Digital Competence Framework for Citizens (DigComp 2.0) is utilized in the data collection and analysis.<sup>67</sup>

<sup>64</sup> [eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018H0604%2801%29](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018H0604%2801%29)

<sup>65</sup> [eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018%3A22%3AFIN](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018%3A22%3AFIN)

<sup>66</sup> [eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A52016DC0381](http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A52016DC0381)

<sup>67</sup> [ec.europa.eu/jrc/en/digcomp/digital-competence-framework](http://ec.europa.eu/jrc/en/digcomp/digital-competence-framework)

## Sweden

The concept of digital competence changes over time and as society, technology and various services change as well. The EU's key competences<sup>68</sup> and the Digitalization Commission's description<sup>69</sup> of digital competence have been the starting point for the contents of the Swedish curricula for municipal adult education. These documents recognize four aspects of digital competence:

- 1 Developing an understanding of how digitalization affects the individual and the development of society.
- 2 Developing the ability to use and understand digital systems and services.
- 3 Dealing with media and information in a critical and responsible manner.
- 4 Solving problems and translating ideas into action in a creative way using digital technology.

In this context, documents often refer to an "adequate" digital competence, in order to clarify that the needed digital competence changes over time in line with the development of both types of use and tools, and also to indicate that it is not possible to specify an absolute digital level of accomplishment since digital competence will need to be gradually developed depending on the students' circumstances.

## Norway

The national Framework for Basic Skills is the responsibility of the Norwegian Directorate of Education and Training. The framework is used for the development and revision of curricula for all subjects in schools. The basic digital skills are presented as five different levels of skills: use and understand, find and process, produce and process, communicate and interact, and exercise digital judgment

Based on this framework, more tailored learning objectives (*læringsmål i grunnleggende ferdigheter*) were created for basic skills for adults.<sup>70</sup> These learning objectives can be used to customize training for adults. These digital skills are briefly described as follows:

*"Having basic digital skills means being able to use digital tools and services appropriately and properly. Digital skills also involve developing digital judgment through acquiring knowledge and good strategies for online use. The use of digital tools and services involves solving practical tasks, finding infor-*

68 Europaparlamentets och rådets rekommendation från den 18 december 2006 om nyckelkompetenser för livslångt lärande (2006/962/EG). Texten återfinns på [eur-lex.europa.eu/legal-content/SV/TXT/?uri=celex:32006H0962](http://eur-lex.europa.eu/legal-content/SV/TXT/?uri=celex:32006H0962)

69 Gör Sverige i framtiden – digital kompetens (SOU 2015:28)

70 [kompetansenorge.no/Grunnleggende-ferdigheter/Laringsmal](http://kompetansenorge.no/Grunnleggende-ferdigheter/Laringsmal)

*mation and being able to communicate. Digital skills also affect the way we learn, our way of reading, writing, calculating and expressing ourselves orally."*

The learning objectives are presented in three different levels that describe the progress of using digital skills as tools for different situations. The levels are described for: (1) using ICT systems; (2) searching and exchanging digital information; and (3) production and presentation of digital information. Critical judgment is included as part of all three areas.

## Digitalization in the Nordic countries: strategies

### Iceland

A state and local government policy (*stefna*)<sup>71</sup> on "The Information Society 2013–2016" was published in Iceland in 2013. At that time, the population's general computer ownership and online access was among the best in the world (as it still is). The report stated, however, that at that point in time the Icelandic government was not taking advantage of the opportunities offered by information technology to improve services and increase efficiency. This has changed in recent years. In 2013, a national authentication service – Ísland.is – was put into operation. The service is intended to allow individuals and companies to handle their administrative affairs/issues with the government and local governments at anytime, anywhere and without delay. Individuals and companies are also able to find information about their issues and monitor their status.<sup>72</sup> The use of the Ísland.is website by individuals has been increasing, but by 2018 39,9% of Icelanders who were 18 years old or older had still neither heard of nor used the website.<sup>73</sup>

In May 2018, the Icelandic Government decided that digital communication would be the main means of communication with the authorities by 2020.<sup>74</sup> Increasing the focus on using digital communication requires that all inhabitants are competent enough in the use of these tools to be able to fully utilize the service, and the need for training and teaching in this area will therefore increase. It may also entail a change in the definition of competences in the field of information technology, since the skills needed are not the same as 10–20 years ago. This also implies that companies and

71 [stjornarradid.is/efst-a-baugi/frettir/stok-frett/2013/04/16/Ny-stefna-rikis-og-sveitarfelaga-um-upplysingasamfelagid-2013-2016/](http://stjornarradid.is/efst-a-baugi/frettir/stok-frett/2013/04/16/Ny-stefna-rikis-og-sveitarfelaga-um-upplysingasamfelagid-2013-2016/)

72 [island.is/um/island.is](http://island.is/um/island.is)

73 [island.is/media/pdf-skjol-a-island.is-2014/thjodskragallup2018.pdf](http://island.is/media/pdf-skjol-a-island.is-2014/thjodskragallup2018.pdf)

74 [ruv.is/frett/hlaup-med-pappira-verdi-ur-sogunni](http://ruv.is/frett/hlaup-med-pappira-verdi-ur-sogunni)

organizations may need to offer their customers assistance in using the technology to access the services they need. This service is already available in bank branches, where customers are helped to conduct their business digitally, while traditional bank clerks are no longer available to serve the customers. Another example comes from the union sector. Within VR (the Store and Office Workers' Union) the issue of digital skills and increased automation transmission has been debated for some time, and the union has examined how it could possibly respond to these rapid changes. The discussion led to the decision that VR will support its members by helping them make their digital skills visible and by providing information on how to further improve their skills. VR decided to start by translating a website that hosts "the digital competency wheel" (<https://digital-competence.eu>). On the website, which is both accessible and informative, people can take self-assessment tests on digital skills. The results are presented graphically, and this helps the individual to understand what the concept of digital skills entails. Individuals can measure their digital skills and receive feedback from the system. The site is maintained by the Danish company Center for Digital Dannelse (CDD, [digitaldannelse.org](http://digitaldannelse.org)).

## Denmark

In January 2018, the government launched *Strategi for Danmarks digitale vækst*<sup>75</sup> (Strategy for Denmark's digital growth) in order to strengthen Danish digital competencies by means of a number of concrete initiatives, among them some specifically tailored for employees, and others for the unemployed. The initiatives below are part of the effort to ensure that all Danes have the necessary skills and tools to be able to cope with the digital transition.

Teknologipagten (the Technology Covenant) – a collaboration between the government, private companies, educational institutions, organizations and other stakeholders – aims to strengthen the population's competencies in technology, ICT, engineering, natural science and mathematics via various projects and activities.<sup>76</sup> The participating parties work together to enable "citizens to have the competencies to participate in and contribute to the development of the digital society of the future". This is accomplished, for example, by running or supporting projects in the field of continuing education, or by establishing local or industry-specific collaborative actions on continuing education for both employees and the unemployed.

<sup>75</sup> [regeringen.dk/nyheder/strategi-for-danmarks-digitale-vaekst](http://regeringen.dk/nyheder/strategi-for-danmarks-digitale-vaekst)

<sup>76</sup> [teknologipagten.dk](http://teknologipagten.dk)

The Minister of Education launched the "Handlingsplan for teknologi i undervisningen" (Action Plan for Technology in Education) in the spring of 2018 to strengthen the digital skills and technological understanding of children, young people and adults at all levels of education;<sup>77</sup> "stronger basic adult IT skills" is one of the focus areas.

"Voksenuddannelse.dk" ([adult.education.dk](http://adult.education.dk)) is a national website where courses from all publicly supported VEU course providers are announced. The website provides guidance to students on "which way to go", since there are a lot of options and different types of education in the adult vocational system. Finally, and most of all, the website supports student enrolment and financial processes around "VEU-godtgørelse" (VEU-refund, through which companies can receive salary refunds for employees they send on a VEU course).

New course types in the VEU system also support the strengthening of English language skills (FVU-English) and basic digital skills (FVU-Digital). As of 2019 companies can – in most cases free of charge – send their employees on these courses in order to boost their digital skills. These initiatives are included in the tripartite agreement between the government and social partners for strengthened and more flexible adult continuing education.

The VEU system needs to improve its strengthening of the entire workforce's digital skills and its adaption to the rapidly changing needs of the labour market. Therefore, as part of the tripartite agreement, a national strategic effort must also be established for the digitalization of the VEU in order to increase the availability and flexibility of its offerings for adult and continuing education.

## Finland

As stated in the DESI 2018 Report, digital skills remain a priority for the Finnish authorities, in line with the continuing implementation of strategic policies.<sup>78</sup> Digitalization is strongly emphasized in the Finnish Government's Strategic Program (2015–2019),<sup>79</sup> where it is a horizontal issue. It is included in the strategic priorities set by the government, as well as in the 26 key

<sup>77</sup> [stil.dk/it-og-laering/handlingsplan-for-teknologi-i-undervisningen](http://stil.dk/it-og-laering/handlingsplan-for-teknologi-i-undervisningen)

<sup>78</sup> [ec.europa.eu/newsroom/dae/document.cfm?doc\\_id=52222](http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=52222)

<sup>79</sup> [valtioneuvosto.fi/en/sipila/government-programme](http://valtioneuvosto.fi/en/sipila/government-programme)

projects which further define these priorities in a more concrete form. The Program includes the following key projects: digitalized public services, new learning environments, and digital materials for basic education. In addition, digitalization is included in the “New Openings” listed in the Government Action Plan (2017–2019),<sup>80</sup> and these new openings also include an artificial intelligence program. Attention is also focused on the digital dimension of security, cyber security and information security strategies.

The Future Competences Panel<sup>81</sup> is a body nominated by the Finnish MoEC in autumn 2017. One of its tasks was to look at the possible impacts of new technologies (including robotics and AI) on future requirements for skills and competences, and make suggestions accordingly.

At the local level, digitalization strategies are designed and implemented by the municipalities and schools in accordance with state policies and recommendations.

## Sweden

In May 2017, the government approved a national digitalization strategy: *För ett hållbart digitaliserat Sverige*<sup>82</sup> (For a Sustainable Digitalized Sweden). This strategy covers several areas of society and provides an overall picture of how the government's digitalization policy is intended to contribute to competitiveness, full employment and economic, social and environmentally sustainable development. The strategy also describes the government's vision of a digitalized Sweden. To achieve the overall goal, five sub-goals are set which deal with digital competence, digital security, digital innovation, digital management and digital infrastructure.

In October of the same year, the government adopted a national digitalization strategy for the school system that runs until 2022.<sup>83</sup> The government believes that the school system's central task is giving all students the opportunity to develop the ability to use and create with digital technology, and to achieve an understanding of how digitalization affects the individual and the development of society. The overall goal of the strategy is for the Swedish school system to be the leader in using the opportunities of digitalization in the best possible way to achieve high digital competence among children and students, and to promote further knowledge. The government believes that the digitalization of the school system is basically a matter of

<sup>80</sup> [valtioneuvosto.fi/en/implementation-of-the-government-programme/information](http://valtioneuvosto.fi/en/implementation-of-the-government-programme/information)

<sup>81</sup> [minedu.fi/hanke?tunnus=OKM047:00/2017](http://minedu.fi/hanke?tunnus=OKM047:00/2017)

<sup>82</sup> [regeringen.se/informationsmaterial/2017/05/for-ett-hallbart-digitaliserat-sverige---en-digitaliseringsstrategi/](http://regeringen.se/informationsmaterial/2017/05/for-ett-hallbart-digitaliserat-sverige---en-digitaliseringsstrategi/)

<sup>83</sup> [regeringen.se/informationsmaterial/2017/10/regeringen-beslutar-om-nationell-digitaliseringsstrategi-for-skolvasendet/](http://regeringen.se/informationsmaterial/2017/10/regeringen-beslutar-om-nationell-digitaliseringsstrategi-for-skolvasendet/)



democracy: it is important that all students across the country are given the same opportunities to develop their digital skills and take advantage of the knowledge they need for life and in the work environment, which ultimately lays the foundation for the future supply of skills and social development. The strategy contains three focus areas that will be achieved by 2022: (1) digital competence for everyone in the school system; (2) equal access and use; and (3) research and follow-up on the opportunities of digitalization.

## Norway

The Digital Agenda for Norway: ICT for a Simpler Everyday Life (Digital agenda for Norge: IKT for en enklere hverdag)<sup>84</sup> outlines initiatives for digitalization. In this context, one of its five priority points is especially important: *Strengthened digital competence and participation*. This priority applies from basic education onwards and throughout all phases of life. Digital services should be easy to understand and use for everyone. Both parts of this priority are followed up with concrete measures.

In February 2017, the Norwegian Strategy for Skills Policy (*Nasjonal strategi for kompetansepolitikk*)<sup>85</sup> was created using a tripartite cooperative model. It includes a reference to digital skills throughout the workforce. Digital skills are broadly defined as ranging from basic digital skills to advanced technological expertise. A working group consisting of stakeholders from all relevant sectors was set up to follow up and implement measures to improve digital skills.

In formal education, specific digitalization strategies have been developed for primary and secondary education<sup>86</sup> and for the university and college sector.<sup>87</sup> The strategy for primary and secondary education addresses the need for specialized digital skills, but the need for basic skills is also important: *"everyone needs general digital skills that enable citizens to utilize the services that are being developed, perform work tasks using ICT, make secure choices in our digital everyday life, and ensure the individual's privacy"*.

84 [regjeringen.no/no/aktuelt/digital-agenda-for-norge--ikt-for-en-enklere-hverdag/id2484184/](https://regjeringen.no/no/aktuelt/digital-agenda-for-norge--ikt-for-en-enklere-hverdag/id2484184/)

85 [kompetansenorge.no/English/About-Skills-Norway/#WeneedtoimplementourNational-skillsstrategy\\_6](https://kompetansenorge.no/English/About-Skills-Norway/#WeneedtoimplementourNational-skillsstrategy_6)

86 [regjeringen.no/no/dokumenter/framtid-fornyelse-og-digitalisering/id2568347/?q=digitalisering%20av%20utdanningen](https://regjeringen.no/no/dokumenter/framtid-fornyelse-og-digitalisering/id2568347/?q=digitalisering%20av%20utdanningen)

87 [regjeringen.no/no/dokumenter/digitaliseringsstrategi-for-universitets--og-hoyskolesektoren---/id2571085/?q=digitalisering%20av%20utdanningen](https://regjeringen.no/no/dokumenter/digitaliseringsstrategi-for-universitets--og-hoyskolesektoren---/id2571085/?q=digitalisering%20av%20utdanningen)

# Policy implementation

## Iceland

Despite strong internet connections and generally good accessibility, there may be a lack of national policy regarding training in information technology for adults.

In 2014, a Working Group on Information Technology in Education presented a report<sup>88</sup> that contains suggestions for improvements in this regard. The report is the foundation for a policy focusing on the development of ICT in schools, but the main objective of the policy is to build a high level of ICT skills at all school levels and in cooperation with the labour market. This cooperation is intended to ensure practicality, development and creativity in schools, with the interests of both individuals and society as a guiding principle. Six key factors were identified as being important for the promotion of information technology in school activities: the education of teachers, creative learning, cooperation between schools and the labour market, diverse and open digital learning/teaching materials, a technological environment in schools, and research and development. Specific emphases and suggestions for improvements were identified for each of these six key factors.

In recent years there has been an active discussion on the issue of school-based information technology at the pre-, primary and secondary levels. In October 2012, Education Plaza was formally opened, hosted by the University of Iceland's School of Education. The purpose of Education Plaza is to promote and create opportunities for collaborative educational development involving educators, educational administrators, policy makers, the academic community and other stakeholders, working in communities of practice in both online and physical spaces. One community hosted under this program is Digital (IT) Plaza. Its aim is to support the use of information technology in education and teaching, promote career development among teachers and the sharing of information on technical and school development.<sup>89</sup>

There has been little discussion, however, about information technology training for adults who lack an adequate level of basic digital skills. Educators who support this group and offer different learning opportunities for adults have pointed out that many people can utilize information technology to some extent – especially in relation to various social media – but they cannot utilize software like Word and Excel. This challenge has also been mentioned by upper secondary schools.

88 [stjornarradid.is/media/menntamalaraduneyti-media/media/frettir2015/skyrsla-starfshops-um-upplysingataekni-i-skolastarfi.pdf](http://stjornarradid.is/media/menntamalaraduneyti-media/media/frettir2015/skyrsla-starfshops-um-upplysingataekni-i-skolastarfi.pdf)

89 [menntamidja.is/education-plaza/](http://menntamidja.is/education-plaza/), [uttorg.menntamidja.is/sida-2](http://uttorg.menntamidja.is/sida-2)

In the parliamentary resolution on the financial plan for 2019–2023, one of the objectives is to facilitate adult education and professional education for adults who have not completed upper secondary education. The resolution states that it is urgent to promote active social participation by adults who have not completed upper secondary education and to ensure they have access to education and other appropriate study programs (þingsályktun um fjármálaáætlun 2019–2023, bls. 314–315).<sup>90</sup>

## Denmark

One of the concrete proposals in the tripartite agreement was to expand the existing provision for Preparatory Adult Education (Forberedende Voksenundervisning, FVU) with the subjects FVU-Digital and FVU-English. These subjects must be company-oriented courses and targeted to employees who need to strengthen their basic skills in IT and English in connection with their job functions. The academic objectives and content of the subjects must ensure that the skills acquired are generally useful, while the work-based teaching approach relates to the tasks participants carry out in their workplaces. The agreement has resulted in a recent amendment of the FVU law and an executive order.

## Finland

The MoEC and the EDUFI have allocated governmental subsidies<sup>91</sup> to different development programs and projects related to digitalization within the education sector. These include programs for strengthening digital skills in the adult population, the creation of digital learning environments, and the development of digital pedagogy.

ICT competence is one of the transversal competences included in the national core curricula for general education. Teaching and learning of transversal competences are integrated in all subjects; this also applies to basic education for adults. The Matriculation Examination<sup>92</sup> is undergoing a digitalization process that will be finished by spring 2019.

The Finnish VET has undergone a comprehensive reform which came into effect in January 2018. At the same time, a reform of vocational qualification requirements<sup>93</sup> has been carried out. As a result, digitalization has been

<sup>90</sup> [stjornarradid.is/verkefni/efnahagsmal-og-opinber-fjarmal/log-um-opinber-fjarmal/fjarmalaaetlun](https://stjornarradid.is/verkefni/efnahagsmal-og-opinber-fjarmal/log-um-opinber-fjarmal/fjarmalaaetlun)

<sup>91</sup> [oph.fi/finansiering/statsunderstod](https://oph.fi/finansiering/statsunderstod)

<sup>92</sup> [ylioppilastutkinto.fi/en/matriculation-examination/digital-matriculation-examination](https://ylioppilastutkinto.fi/en/matriculation-examination/digital-matriculation-examination)

<sup>93</sup> [eperusteet.opintopolku.fi/#/sv/selaus/kooste/ammattillinenkoulutus?hakutyyppe=perusteet](https://eperusteet.opintopolku.fi/#/sv/selaus/kooste/ammattillinenkoulutus?hakutyyppe=perusteet)

further strengthened and the basic principle is that learning of digital skills must be integrated both in vocational and general units of the qualification requirements. Individual study paths, combined with work-based learning, enable a stronger emphasis on digital skills when needed. Studies Supporting Learning Abilities (OPVA) is a program within VET<sup>94</sup> that is offered to individuals who need to strengthen their language, mathematical or ICT skills at the beginning of vocational qualification education.

In higher education, the MoEC granted a total of 65 million euros for 36 development projects during 2017 and 2018. Many of these projects aimed to support flexible learning and new digital solutions.

Liberal Adult Education has played an important role in improving basic and digital skills<sup>95</sup> in the adult population; this work has been implemented with the help of government subsidies.

## Sweden

The national strategies established are now being implemented in various ways. In the school system, this is being done by strengthening digital competence in the curricula for municipal adult education at all school levels. Programming has also been added as a subject in certain curricula. The amendments took effect on July 1, 2018. The curriculum (SKOLFS 2012: 101) clearly expresses that adult education should contribute to “developing the students’ digital competence”. Education is meant to help all students develop an understanding of how digitalization affects the individual and the development of society. All students are to be given the opportunity to develop their ability to use digital technology. They are also to be given the opportunity to develop a critical and responsible approach to digital technology to be able to see opportunities and understand risks as well as to evaluate information. The curriculum also emphasizes that through this knowledge and through the approaches linked to digital competence, students will develop entrepreneurship and innovative thinking, abilities that are important in both work and social life and for further studies.

The Swedish National Agency for Education has also been commissioned to promote the digitalization of the school system and facilitate schools’ and principals’ ability to take advantage of the opportunities offered by digitalization in teaching and administration. This is being accomplished, for example, through various skills development initiatives.<sup>96</sup> There are also

<sup>94</sup> [finlex.fi/sv/laki/ajantasa/2017/20170531](https://finlex.fi/sv/laki/ajantasa/2017/20170531)

<sup>95</sup> [valtioneuvosto.fi/sv/artikeln/-/asset\\_publisher/1410845/digiaikakauden-taidot-ohjelma-kaynistyy-80-toimijan-voimin](https://valtioneuvosto.fi/sv/artikeln/-/asset_publisher/1410845/digiaikakauden-taidot-ohjelma-kaynistyy-80-toimijan-voimin)

<sup>96</sup> [larportalen.skolverket.se](https://larportalen.skolverket.se)

other stakeholders who work with initiatives related to the population's digital competence, such as the Swedish *digidel* network<sup>97</sup> and the Internet Foundation (IIS).<sup>98</sup>

In January 2018, an agreement was reached between the government and the Swedish municipalities and county councils (*Sveriges kommuner och landsting*; SKL) for SKL<sup>99</sup> to develop an action plan aimed at highlighting the various initiatives and activities needed to achieve the goals set in the strategy. Activities on the action plan started in the spring of 2018 and take place in broad collaboration with the Swedish National Agency for Education (Skolverket), as well as school principals and various actors within the school system.

## Norway

Adults are entitled to training in basic skills provided by the municipality, even if they are not participating in other formal primary education. There are no available statistics to show to what extent this right is being used in practice. *Kompetansepluss* (Competence Plus)<sup>100</sup> has been running since 2006 in parallel with the formal adult education system. This grant scheme for basic skills training includes digital skills and reading, writing, numeracy, oral skills, and Norwegian or Sami language. Businesses and non-governmental organizations can apply for support for courses designed to help adults learn the necessary skills to meet the demands and changes in the workplace. Over 50,000 adults had participated in such digital literacy training up to 2016, with most of them participating in courses including more than one skill.

Several resources and measures have been created for digital skills<sup>101</sup> in connection with the Competence Plus program. The above-mentioned learning goals for digital skills<sup>102</sup> are part of the available learning materials. In addition, tests, self-assessments and e-learning for digital skills are available at The *Test yourself* resource.<sup>103</sup>

97 [digidel.se](http://digidel.se)

98 [iis.se](http://iis.se)

99 SKL has changed its name to Swedish Association of Local Authorities and Regions (Sveriges kommuner och regioner, SKR).

100 [kompetansenorge.no/Kompetansepluss](http://kompetansenorge.no/Kompetansepluss)

101 [kompetansenorge.no/Grunnleggende-ferdigheter/Digitale-ferdigheter](http://kompetansenorge.no/Grunnleggende-ferdigheter/Digitale-ferdigheter)

102 [kompetansenorge.no/contentassets/1b6e2c7cb20e4609997b1f28f6f7df39/laringsmal\\_digitale\\_ferdigheter.pdf](http://kompetansenorge.no/contentassets/1b6e2c7cb20e4609997b1f28f6f7df39/laringsmal_digitale_ferdigheter.pdf)

103 [kompetansenorge.no/test-deg-selv](http://kompetansenorge.no/test-deg-selv)

# Results

## Iceland

The government, through the Ministry of Education, Science and Culture, has considered the possibility of Iceland participating in the PIAAC study, but as mentioned before, has decided against it. Other possibilities for a minor study have also been discussed.

When the Education and Training Service Centre (ETSC; [www.frae.is](http://www.frae.is)) was established at the end of 2002, the educational status of the target group was low: about 30% of people active in the labour market had not completed upper secondary education, a situation that was unchanged in 2010.<sup>104</sup> The current situation, however, is better: in 2017, according to Statistics Iceland, 22.9% of adults aged 25–64 had only completed compulsory education.<sup>105</sup>

There are no formal data on ICT skills learning programs for adults, but ETSC has developed ICT modules that are included within other courses, and also special ICT learning programs for adults.<sup>106</sup> During 2009–2017, 686 adults attended these courses at LLL centres around the country. There are also many computer schools that teach various types of courses for adults,<sup>107</sup> and unions and workplaces have widely hosted such courses as well.

## Denmark

The tripartite agreement on FVU-Digital has led to the development of curriculum and teaching guidance for the program. The new FVU Executive Order,<sup>108</sup> which contains provisions and curricula for different subjects, came into effect January 1, 2019.

<sup>104</sup> [stjornarradid.is/media/menntamalaraduneyti-media/media/frettir/EducationAtAGlance2012\\_samantekt-MMR.pdf](http://stjornarradid.is/media/menntamalaraduneyti-media/media/frettir/EducationAtAGlance2012_samantekt-MMR.pdf)

<sup>105</sup> [px.hagstofa.is/pxen/pxweb/en/Samfelag/Samfelag\\_\\_skolamal\\_\\_5\\_menntunarstada/SKOO0002.px/table/tableViewLayout1?rxid=5b532c84-b72e-41a3-b257-0ffa4b80f9a0](http://px.hagstofa.is/pxen/pxweb/en/Samfelag/Samfelag__skolamal__5_menntunarstada/SKOO0002.px/table/tableViewLayout1?rxid=5b532c84-b72e-41a3-b257-0ffa4b80f9a0)

<sup>106</sup> [frae.is/wp-content/uploads/2017/10/SterkariStarfsm\\_761249251.pdf](http://frae.is/wp-content/uploads/2017/10/SterkariStarfsm_761249251.pdf)

<sup>107</sup> [tv.is/course\\_schedule?controller=coursebook&content\\_id=184](http://tv.is/course_schedule?controller=coursebook&content_id=184)  
[and.promennt.is/is/namskeid/almenn-tolvunamskeid/byrjendur-og-60](http://and.promennt.is/is/namskeid/almenn-tolvunamskeid/byrjendur-og-60)

<sup>108</sup> [retsinformation.dk/Forms/R0710.aspx?id=205753](http://retsinformation.dk/Forms/R0710.aspx?id=205753)

The purpose of FVU-Digital is to enable the participants to perform the digital tasks that are relevant to their job functions; for example, to use relevant digital tools, communicate digitally, search information digitally, and organize, structure and manage data. An additional goal is to strengthen the participants' ability and motivation to acquire new digital skills.

The content of the teaching is based on the individual participant's work function, personal needs and possible future education. It is possible to customize the concrete courses with a prioritization of the goals that are especially sought in a specific company.

## Finland

As a result of PIAAC, the gap in the basic skills levels of the adult population has been clearly brought to public attention. There is also a stronger focus on digital skills and on the digitalization of Finnish society in general. A wide variety of programs and projects<sup>109</sup> aimed at specific target groups (teachers, trainers, specified vocational sectors, migrants, the unemployed, etc.) have been launched in recent years. In addition, development work on digital learning materials has been carried out. The projects have been financed through resources from the European Social Fund (ESF) and through national resources, mainly state subsidies.<sup>110</sup> Strengthening of individual digital skills is now a priority at all education levels.

## Sweden

As a result of the national digitalization strategy, several measures have been created at the national, regional and local level that are aimed at implementing the agenda through programs and projects. As mentioned earlier, the Swedish municipalities and county councils (*Sveriges kommuner och landsting*; SKL) have worked on an action plan which aims to highlight the various initiatives and activities needed to achieve the goals set in the strategy. The plan has now been presented to the government and contains 18 different concrete proposals that are to lead to the fulfilment of the goals. SKL continues to work on the action plan and next in line is the production of a digital process support system for educational providers. This system will show providers how to plan, prioritize and allocate resources, thus supporting them in their efforts to achieve the goals of the digital agenda (#skoldigiplan).

109 Skills Programme "Taito" 2014-2020; Bästa kunnande 2017-2019; Inclusion in e-society 2016-2018; Digitutor 2018-2020; [oph.fi/sv/finansiering/beviljade](http://oph.fi/sv/finansiering/beviljade)

110 [oph.fi/finansiering/statsunderstod](http://oph.fi/finansiering/statsunderstod)

## Norway

As a result of the Digital Agenda, several measures have been taken. The [Digidel.no](https://digidel.no)<sup>111</sup> website is available to anyone who offers courses or training in basic digital skills. These courses can take place in libraries, in networks for seniors, under the auspices of the municipality, in voluntary work, private businesses or in other similar environments. Materials are free to download and use, and the resources are customizable. In addition, users can share their presentations with others. All resources on [digidel.no](https://digidel.no) are free of charge.

[Digihjelpen.no](https://digihjelpen.no) is a website that focuses on counselling relative to basic digital skills. It is a low-threshold service adapted to local needs and aimed at helping municipalities provide adequate counselling services. The *Digidel.no* resource is linked to [Digihjelpen.no](https://digihjelpen.no).

In 2019, a new governmental program was set up to establish more flexible models for further education in digital competence.<sup>112</sup> A tripartite cooperative body has also agreed on a joint competence program to deal with digitalization and new technology in the industry and construction sectors, and in the sector of municipal health and care services.<sup>113</sup>

## Challenges

### Iceland

Since Iceland will not participate in the next round of PIAAC, the main challenge may be to analyse the data we have – for example from PISA – in order to draw conclusions about the status of adults in terms of basic skills. We could also use the powerful network of Lifelong Learning centres around the country to accomplish this. It is important to ensure that all adults have access to the appropriate training in ICT skills based on their needs and in accordance with government policy. To achieve this goal, a greater number of professional teachers in ICT are needed, as pointed out in the report from the Working Group on Information Technology in Education.<sup>114</sup>

111 [digidel.no](https://digidel.no)

112 [kompetansenorge.no/nyheter/20-millioner-til-fleksible-videreutdanningstilbud-i-digital-kompetanse](https://kompetansenorge.no/nyheter/20-millioner-til-fleksible-videreutdanningstilbud-i-digital-kompetanse)

113 [kompetansenorge.no/nyheter/sikrar-kompetansen-for-framtida-med-nytt-bransjeprogram](https://kompetansenorge.no/nyheter/sikrar-kompetansen-for-framtida-med-nytt-bransjeprogram)

114 [stjornarradid.is/media/menntamalaraduneyti-media/media/frettir2015/skyrsla-starfshops-um-upplysingataekni-i-skolastarfi.pdf](https://stjornarradid.is/media/menntamalaraduneyti-media/media/frettir2015/skyrsla-starfshops-um-upplysingataekni-i-skolastarfi.pdf)



## Denmark

Studies have shown that a good level of basic skills leads to better opportunities for maintenance and development of both these and other skills.<sup>115</sup> Adults with low levels of qualifications, elderly people, the unemployed, immigrants and employees who choose not to participate in continuing education are over-represented in the group of those with insufficient levels of basic skills. Some of these groups are not reached by the new FVU-Digital offering as it is aimed at people in employment, where the employer is prepared to support the employees' competence development directly or indirectly.

## Finland

According to the PIAAC survey,<sup>116</sup> around 30% of the Finnish adult population still has insufficient skills in PSTRE. One out of five with low levels of basic skills is a first-generation migrant. Digital skills scores<sup>117</sup> are lowest among adults aged 55–65. In the older age groups,<sup>118</sup> which fall outside the PIAAC survey, a large percentage of individuals do not use the internet at all. At the same time, more public and private services are being digitalized. Identification of individuals with weak basic skills and subsequent outreach remain challenging tasks for the future.

Digitalization in education has proceeded at different speeds at the different school levels<sup>119</sup> and has varied from school to school, being the most advanced in the universities of applied sciences. The surveys show there is a need for more technical and pedagogical support for teachers. Furthermore, more digital learning materials<sup>120</sup> are requested by teachers in both general and vocational education.

Requirements for media literacy and source-critical utilization of data<sup>121</sup> on the internet are growing in our digital society. Finland is at the vanguard in cyber security preparedness and in its implementation. The Implementation Program for Finland's Cyber Security Strategy for 2017–2020<sup>122</sup> addresses both the Finnish MoEC and EDUFI with tasks aimed at strengthening skills related to both multiliteracy and cyber security. Strengthening of cyber security will remain a challenge.

115 PIAAC, 2013, [uvm.dk/publikationer/uddannelser-for-voksne/2017-nye-kompetencer-hele-livet,](http://uvm.dk/publikationer/uddannelser-for-voksne/2017-nye-kompetencer-hele-livet,) og Danmarks Evalueringsinstitut, *It-færdigheder på et digitaliseret arbejdsmarked* (2017), [eva.dk/voksen-efteruddannelse/it-faerdigheder-paa-digitaliseret-arbejdsmarked](http://eva.dk/voksen-efteruddannelse/it-faerdigheder-paa-digitaliseret-arbejdsmarked).

116 [julkaisut.valtioneuvosto.fi/handle/10024/75272](http://julkaisut.valtioneuvosto.fi/handle/10024/75272)

117 [oecd.org/finland/Building-Skills-For-All-A-Review-of-Finland.pdf](http://oecd.org/finland/Building-Skills-For-All-A-Review-of-Finland.pdf)

118 [stat.fi/til/sutivi/2017/13/sutivi\\_2017\\_13\\_2017-11-22\\_kat\\_001\\_fi.html](http://stat.fi/til/sutivi/2017/13/sutivi_2017_13_2017-11-22_kat_001_fi.html)

119 [oaj.fi/ajankohtaista/julkaisut/2016/oajn-askelmerkit-digiloikkaan](http://oaj.fi/ajankohtaista/julkaisut/2016/oajn-askelmerkit-digiloikkaan)

120 [oph.fi/fi/tilastot-ja-julkaisut/julkaisut/digitalisaatio-ammattillisessa-koulutuksessa](http://oph.fi/fi/tilastot-ja-julkaisut/julkaisut/digitalisaatio-ammattillisessa-koulutuksessa)

121 [turvallisuuskomitea.fi/kodin-kyberopas-ohjeita-digitaaliseen-araan](http://turvallisuuskomitea.fi/kodin-kyberopas-ohjeita-digitaaliseen-araan)

122 [turvallisuuskomitea.fi/en/implementation-programme-for-finlands-cyber-security-strategy-for-2017-2020](http://turvallisuuskomitea.fi/en/implementation-programme-for-finlands-cyber-security-strategy-for-2017-2020)

## Sweden

In its first progress report from May 2018,<sup>123</sup> the Swedish Digitalization Council presented an overview of digital competence in Sweden. The Council points out that although Sweden has long been at the forefront of digitalization, there are many people who are outside the process and/or in danger of exclusion. The report points out that Sweden cannot afford to ignore groups that are left behind, and it emphasizes the need to safeguard and promote the development of digital competence. The Council's recommendations to the government include the need to increase digital participation, the need to meet the demand for cutting-edge expertise in connection with labour market changes and the need to include lifelong learning in the future labour market. It also points out that further support for learning while working needs to be initiated. A similar finding appears in the OECD's *Going digital in Sweden*<sup>124</sup> report, in which the OECD points out in its recommendations that Sweden needs to work at increasing digital participation and digital competence among target groups currently using ICT to a limited extent, such as individuals with low levels of education or low income, or those living in sparsely populated areas.

## Norway

Strengthened digital competence is needed among teachers in adult education; at present, there are few competence requirements in this respect.

Studies show that adults with weak digital skills experience less subjective need to strengthen their skills. People in this group use fewer learning strategies than people with stronger digital skills. Measures should therefore be taken to effectively reach out to these groups and meet their needs.

Skills related to digital security are increasingly important. The ability to handle digital tasks within the boundaries of information security, and to cope with the challenges presented by different kinds of fraud and other types of cybercrime are necessary both in private life and in the workplace.

There is also a challenge related to ethical issues, to how citizens behave in the online community. It is important to raise awareness about social interaction, about how individuals respond, what they share and with whom, how to cope with negative responses, harassment and threats via digital services, how to identify fake news, and how to learn to critically evaluate information sources.

<sup>123</sup> [digitaliseringsradet.se/media/1213/lagesbild\\_digitalkompetens\\_slutversion\\_utanappendix.pdf](https://digitaliseringsradet.se/media/1213/lagesbild_digitalkompetens_slutversion_utanappendix.pdf)

<sup>124</sup> [oecd.org/sweden/oecd-reviews-of-digital-transformation-going-digital-in-sweden-9789264302259-en.htm](https://oecd.org/sweden/oecd-reviews-of-digital-transformation-going-digital-in-sweden-9789264302259-en.htm)

