Digital skills recommendations: What do we need to know to keep up with today's society?

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1 Introduction

The level of digital competence in Finland is one of the highest worldwide. However, a society building its future will constantly demand more extensive and complex skills from all its members. Everyone needs to be ready to develop their (digital) skills.

One of the objectives of Finland's Digital Compass is that by 2030, Finland will be a digitally developed country, in which everyone has the capability to operate in the digital world and a high level of mutual respect and trust. In addition, its aim is that basic digital skills are among the top in the world and contribute to sustainable social development.

New skills, such as the recognition of digital knowledge and competence levels and the management of competence development, require new ways of thinking. Supporting new skills requires that we identify societal needs as a whole and manage cooperation across administrative branches.

Digital competence or knowledge is not a permanent state; instead, competence must be maintained and continuously developed to match changes in the operating environment. Instead of system-oriented skills, we should describe extensive competence and knowledge needs that are independent of industry. These are the new competences that our future society will be built upon.

For us, as a society, to identify our own competences, we must define what is included in such competences. The definition of the required digital competence and digital education began in autumn 2022, when the Digital and Population Data Services Agency invited representatives of different stakeholders to join a workshop. In the workshop, discussions were held on what constitutes sufficient digital competence from the perspectives of different target groups (young people, working-age people, older people, entrepreneurs). Its result was a list of digital skills.

In spring 2023, these digital skills were first validated in a workshop aimed at the elderly with seven older people and in another workshop for young people with nine similarly young participants. After the workshops, we reviewed the grouping of the digital skills, and the resulting list served as a basis for the survey. The survey was conducted in April 2023 and received 179 responses.

2 Defining critical digital skills

We began to define digital skills in an autumn 2022 workshop, to which we invited representatives from various stakeholders. In the workshop, discussions were held on what constitutes sufficient digital competence from the perspectives of different target groups. The target groups examined in the workshop were, working-age people, older people, and entrepreneurs. The aim of the workshop was to produce a shared framework for defining what critical digital competence and of digital education.

The background material for the workshop was the European Commission's DigComp 2.2 framework, which formulates an understanding of what digital competence and, partially, digital education contain. The framework assesses the digital competence of individuals from five perspectives: digital literacy, digital communication and cooperation, digital content production, digital security and digital problem-solving capability.

2.1 Digital competence and digital education

Functioning in a digital society requires a certain level of digital competence and digital education, which provide is guidance for using our skills as members of a digital society.

Digital competence refers to competences that consist of individual practical skills needed in an ever more digital daily life. Sufficient digital competence makes it possible to act safely and ethically in digital environments. Skills related to digital competence are partly universal, partly variant depending on the target groups and competence needs. The universal basic skills are linked to basic digital skills that are essential for everyday life and inclusion. In addition to them, more specific digital skills emerge in connection with different life events. The required skills are related to services, studies, work, active participation in society, finding and utilising new knowledge and tools, and acting in changing situations and digital environments.

Digital education refers to an ethics, knowledge and society-based understanding of the digital environment and the ability to act on the basis of this understanding. Digital education includes an understanding of the opportunities created by digitalisation and of one's own rights and obligations. It can thus be considered an ability to act in a digital environment, as an active member of it, knowing its rules. It is the ability to be an actor that makes informed choices, whose education grows with their competence. Digital education also includes a healthy critical approach, which enables one to make choices about how much and in what way to utilise digital opportunities. It is based on general education, extended to the digital environment and how to function therein. Its level goes hand in hand with an individual's age-appropriate education. Digital education is not only a characteristic of an individual, but the requirement and framework for developing digital education and digitally civilised activities are born in the interaction of education, technology, regulation and culture.

Digital competence and digital education form a mutually dependent entity – it is not possible to completely separate them from each other. Competence is essential in digital education. Without competence for the digital operating environment, digital education cannot develop. Digital education means that, in addition to competence, you know how to operate in digital environments, the consequences of incompetence and misconduct, and that people gain a broader understanding of how things are connected. Thus, in practice, all digital activities also require digital education and an understanding of the significance of the digital activities.

Digital skills and education grow together. Individual skills increase digital competence, but in addition to skills, what also grows is digital education – understanding of the digital environment and your own role as a part of this environment.

2.2 Results of the definition

The results the workshop produced was a list of the necessary digital skills. These skills were grouped into five different groups

1. Digital civic skills
2. Basic use of devices and applications
3. Problem-solving capability and ability to find help
4. Safety and security skills
5. Media literacy, content production and interaction

In addition to these shared skills, digital skills, based on needs, were identified for young people, working-age people and entrepreneurs. In addition to digital skills, we also defined skills related to digital education.

2.2.1 Universal digital skills

Digital civic skills are a necessary foundation without which it can be challenging to implement an engaging membership in modern society.

- Digital civic skills
    - Understanding of what services and functions are available on the Internet, where they can be found, when to use them, how to use them, and why they should be used.
    - Electronic services and strong identification
    - Email
    - Ability to produce multimedia digital content and convey these outputs to others (e.g. sharing a photo you have taken to others or write a resume in a word processor and sharing it during your job seeking, etc.)
    - Ability to join different online forums according to their interests
    - Knows how to participate in joint decision-making on digital platforms
    - Basic use of devices and applications
    - Connecting to a network with your own device
    - Digital payments
    - Managing one's own affairs (online banking, taxes, service reservations, modifications, cancellations – e.g. doctor's appointments, ability to use various other services – e.g. libraries, adult education centres)
    - Data competence: permissions, granting a permit, granting a mandate

In addition, all groups thought it was important to have competence in each of the five areas. The scope and depth of competence are based on needs and partly also linked to personal life events.

- Basic use of devices and applications
    - Basic content production tools (e.g. word processor logic)

  - Touch screens and mice, phone and PC navigation
  - Opening and closing tabs, finding and closing running applications, opening applications, and navigating between applications
  - Knowledge of the most common symbols (e.g. x to close)

- Problem-solving capability and ability to find help
  - Ability to apply one's own competence in a changing situation
  - Ability to handle an issue with a digital device or service independently or to find help to solve the issue
  - Ability to choose a device if you don't have one
  - Knowledge of your device's basic settings. At least one device to use services with
  - Understanding that digital competence is always evolving. Devices must be used regularly to increase and develop competence
  - Ability to help others, within the limits of personal competence
  - Knowing one's own limits when supporting someone else

- Safety and security skills
  - Data protection basics, protecting your data and privacy
  - Your rights and responsibilities when you disclose data to electronic services
  - Ability to act in the event of a data leak
  - Protecting the data of others
  - Protecting the physical and mental health of oneself and others
  - Can identify the most common cyber and information security threats
  - Device protection
  - Identification of data breaches and ability to act in such a case
  - Passwords and authentication data
  - Saving and storing files
  - Understanding the use of cookies
  - Identifying scams
  - Understanding of algorithms, data and data utilisation.

- Media literacy, content production and interaction
  - Searching for and assessing information
  - Critical media literacy
  - Identifying commercial communications (e.g. comparison services, influencer marketing)
  - Understanding the nature of information as current and capable of change
  - Ability to find, interpret, manage, create and share information safely and appropriately in social media using digital technology
  - Ability to interact and express yourself in digital channels
  - In addition to the "digital spaces" created by the public administration, acting in everyday online environments
  - Skills in using communication channels, ability to identify the differences between different channels and adapt to them
  - Lifecycle management for digital content (digital estate)
  - Ability to communicate and interact in their own work, study or leisure networks
  - Transferring data from one platform to another
  - Basic understanding of social media algorithms and search engine operating logic
  - Identifying and intervening in harassment

2.2.2 Need-based digital competence for young people

For young people, digital competence is an ability to act as an active citizen in a digital society, the ability to study, participate, produce content, belong, and to critically evaluate information. It means awareness of personal responsibility and to act correctly, knowledge of safety and security issues, an ability to protect oneself and act in different situations.

In addition to basic competence, digital skills that are particularly important for young people include:

- Digital skills related for students
  - Word processing, spreadsheets, presentations
  - Creating, sharing, and saving data in a different format
  - Mastery of shared and interactive work
- Media skills
  - Media usage skills
  - Media production skills
  - Copyright
- Digital wellbeing
  - Ability to identify how time spent in digital environments affects personal wellbeing
  - Ability to regulate personal digital activities (e.g. time management, ergonomics) and awareness of how to act in a preventive manner
  - Ability to seek support for personal wellbeing

2.2.3 Need-based digital competence for working-age people

Working-age people need good basic digital skills. In addition, they must have the ability to continuously develop their digital skills: acquire new skills when the need arises, monitor and reflect on their personal competence, and develop them to meet business requirements and their own working environment. Digital skills important for working-age people include:

- Digital skills for work
  - Word processing, spreadsheets, presentations
  - Remote work skills
    - Remote participation and technical use of the equipment
    - Hybrid work
    - Self-management
    - Participation in teamwork
    - Safety in remote work
  - Mastery of shared and interactive work
  - Electronic notes
  - Electronic calendar
- Learning skills
  - Development and maintenance of competence
  - Identification of competence needs and proportional response to personal need
  - Understanding the constant change in digital environments
- Digital wellbeing
  - Ability to regulate personal digital activities (e.g. time management, ergonomics) and awareness of how to act in a preventive manner
  - Ability to identify how time spent in digital environments affects personal wellbeing

- Ability to seek support for personal wellbeing

2.2.4 Need-based digital competence for entrepreneurs

Digital skills that are important for entrepreneurs include all digital skills for working-age people. In addition to these, entrepreneurs must be familiar with the digital tools and practices commonly used in their industry, identify the possibilities of digital tools for their business operations, identify the digital capabilities that are important to have in-house at a company and what can be outsourced, and awareness of the expectations and wishes of their customer base and target groups regarding digital services, marketing and communications.

Digital skills that are particularly important for entrepreneurs include:

- Skills linked to the business environment and competitiveness
  - Monitoring and understanding the digital development of your business environment
  - At least the digital tools and skills commonly used in your industry
  - Ability to identify customer expectations for digital services/interaction
  - Digital marketing, online presence for a business
- Skills to do and develop a business
  - Ability to identify the opportunities and benefits of digital tools for one's own business
  - Ability to identify the digital competence that's important to have in your company and what can be outsourced
  - Making use of data generated by your business
  - Competence in digital business communications
  - Competence to procure digital tools
  - Monitoring and development of your personnel's digital competence

2.2.5 Digital education by target group

Digital education describes in particular the skills we need when we participate in a digital society, with individuals and as part of a community. Most aspects of digital education
are the same for all target groups. However, certain digital education matters are emphasised for some target groups.

Digital civic skills are a necessary foundation without which it can be challenging to implement an engaging membership in modern society. This level of digital education, together with digital civic skills, enables participation in digital everyday life.

- Understanding of digital services and where to find them
- Experience of one's own ability, feeling of capability
- Understanding the changing nature of digital environments
- Knowing when to ask for help
- Understanding different ways of communication

In addition, digital education factors that support needs-based, universal digital competence were divided into knowledge-based (what you need to know) and functional education (how you need to act).

- Knowledge-based education

    - Understanding of one's own rights, responsibilities and obligations as an individual and a member of the community in digital environments
    - General understanding of the risks and threats of digitalisation
    - Knowledge of society/service system and ability to operate in it digitally
    - Understanding of your rights and obligations in digital services / in relation to personal data
    - Understanding of what algorithms are and how they are related to using digital services
    - Understanding of how the use of digital devices and applications impacts health and well-being
    - Understanding the sustainable use and recycling of devices
    - Identifying your own perception of time and expanding your perspective on time
- Functional education
    - Digital reputation management
    - Identifying digital services and devices that benefit you
    - Respect, responsibility, understanding the possible consequences of actions taken in the digital world
    - Digital courage, daring to learn through experiments and introducing new or updated digital tools in your everyday life
    - Understanding personal competence and trust in the ability to develop it
    - Critical and creative thinking
    - Reflecting on yourself and your values and identifying your relationship with the future

There are also certain cultural characteristics to entrepreneurship. The operating environment contributes to how well we can use our digital education. For this reason, organisational decision-makers have a special role in promoting digital education in their respective organisations. The continuity of a company's operations also imposes requirements for the digital education of entrepreneurs. The areas of digital education related to entrepreneurship include:

- Promoting digital education in the organisation
- Ability to anticipate and prepare for rapid changes in the digital operating environment
- Ability to see the potential of a changing digital operating environment for business development

2.3 Validation of defined digital skills

The digital skills defined in the workshop were validated in spring 2023. Validation began with a workshop for older people, in which seven older participants examined the skills produced by the workshop. Next, the list of skills was examined in the youth workshop. In this workshop, nine young people (16-25 years old) examined and considered the listed digital skills.

Based on the results obtained from the workshop, we grouped the list of digital skills into slightly new ones, combining skills that seemed to overlap. The resulting list served as a basis for the Everyday digital skills survey. The aim of the survey was to obtain information on which digital skills are considered important in managing everyday matters and remaining an active participant in society. The survey was carried out during 5-26 April 2023. The survey was distributed to the Digital and Population Data Services Agency's digital support networks in the monthly Digital Support newsletter and social media as well as by email to various parties. A wide range of respondents was wanted, which meant that the survey was also shared in personal social media networks. We received 179 responses.

In the survey, digital skills were divided into five groups. In addition to the digital skills, each group had an optional field for additional information. The survey allowed participants to select as many options as they deemed necessary. The skills groups presented in the survey were the following:

1. Digital civic skills
    - Ability to choose a device if you don't have one
    - Knowledge of your device's basic settings. At least one device to use services with
    - Understanding of what services and functions are available on the Internet, where they can be found, when to use them, how to use them, and why they should be used.
    - Ability to use tabs and applications: Opening and closing tabs, finding and closing running applications, opening applications, and navigating between applications
    - Knowledge of the most common symbols (e.g. x to close)
    - Usage of email
    - Usage of digital services and strong authentication
    - Usage of digital payments
    - Managing one's own affairs in digital services (online banking, taxes, service reservations, modifications, cancellations – e.g. doctor's appointments, ability to use various other services – e.g. libraries, adult education centres)
    - Ability to produce multimedia digital content and convey these outputs to others (e.g. sharing a photo you have taken to others or write a resume in a word processor and sharing it during your job seeking, etc.)
    - Ability to join different online forums according to their interests
    - Ability to participate in decision-making on digital platforms
    - Ability to handle an issue with a digital device or service independently or to find help to solve the issue
    - Ability to apply one's own competence in a changing situation
    - Basic understanding of digital security and data protection (can identify the most common online threats, able to protect personal devices and data)
    - Basic media literacy (can generally distinguish correct information from false, knows how to verify the veracity of the information)

2. Basic use of devices and applications
    - Can use a word processor, create spreadsheets and presentations
    - Electronic calendar
    - Electronic notes

- Remote work and distance learning skills: Remote participation and technical use of the equipment, hybrid work, self-management, participation in teamwork, safety in remote work
- Understanding of personal competence and trust in the ability to develop it

3. Solving problems and finding help
    - Understanding that digital competence is always evolving. Devices must be used regularly to increase and develop competence
    - Identification of competence needs and proportional response to personal need
    - Ability to identify how time spent in digital environments affects personal wellbeing
    - Ability to regulate personal digital activities (e.g. time management, ergonomics) and awareness of how to act in a preventive manner
    - Ability to seek support for personal wellbeing
    - Ability to help others, within the limits of personal competence
    - Knowing one's own limits when supporting someone else

4. Digital security
    - Understanding of data protection basics and the importance of protecting personal data and privacy
    - Understanding of personal rights and responsibilities when disclosing data to electronic services
    - Understanding and competence to secure devices
    - Competence related to passwords and authentication data
    - Ability to identify the most common cyber and information security threats
    - Identification of data breaches and ability to act in such a case
    - Ability to act in the event of a data leak
    - Identifying scams
    - Understanding of digital reputation management
    - Respect, responsibility, understanding the possible consequences of actions taken in the digital world
    - Competence to protect the physical and mental health of oneself and others
    - Understanding of protecting third-party information
    - Competence to save and store files
    - Understanding the use of cookies

- Understanding of algorithms, data and data utilisation.

5. Media literacy, content production and interaction
    - Searching for and assessing information
    - Ability to find, interpret, manage, create and share information safely and appropriately in social media using digital technology
    - Critical media literacy
    - Identifying commercial communications (e.g. comparison services, influencer marketing)
    - Skills in using communication channels, ability to identify the differences between different channels and adapt to them
    - Understanding the nature of information as current and capable of change
    - Lifecycle management for digital content (digital estate)
    - Ability to transfer data from one platform to another
    - Identifying and intervening in harassment
    - Ability to communicate and interact in their own work, study or leisure networks
    - Ability to interact and express yourself in digital channels
    - In addition to the "digital spaces" created by the public administration, acting in everyday online environments

3 Results

In this report, all the skills marked as necessary experience are ones that nearly all (at least 85%) of the respondents said were necessary. These are skills that also emerged as important skills in the workshops. Both the survey and the workshops found that the development is proceeding at a tremendous pace and that the number of distinct digital skills is very high. New skills appear and the need for old skills decreases, maybe disappearing for good. The necessary skills and their amount depend heavily on personal life events and needs.

> *"The need for digital competence depends on the needs and goals of each person. For example, do you just renew prescriptions, of have you gone completely digital."*

3.1 Young people

Young people highlighted media literacy and especially social media literacy as important skills: what information is reliable and safe to share. In addition, young people emphasised an understanding of wellbeing issues. It's easy to get caught up in the digital world, which will have an impact on both your physical and psychological stress. Young people also highlighted the importance of understanding data security, especially on the cusp of independence. More support and guidance was needed for banking, payments and operating the various services.

Young people considered several practical digital skills as a self-evident part of normal activities. The skills that young people did not find necessary to highlight as digital skills were:

- Ability to join different online forums according to their interests
- Opening and closing tabs, finding and closing running applications, opening applications, and navigating between applications
- Knowledge of the most common symbols (e.g. x to close)
- Ability to choose a device if you don't have one
- Knowledge of a device's basic settings. At least one device to use services with

The material obtained from young people is in line with the Digital skills for young people survey 2021.

3.2 Working-age people

Of the survey participants, 131 were of working age between the ages of 18 and 64. At least 85% of the working-age population highlighted the following skills in the skills groups (digital civic skills, basic use of devices and applications, and solving problems and finding help in the digital skills of groups) as the most important:

- Usage of digital services and strong authentication (92%)

- Basic media literacy (can generally distinguish correct information from false, knows how to verify the veracity of the information) (91%)
- Understanding of personal competence and trust in the ability to develop it (91%)
- Managing one's own affairs in digital services (online banking, taxes, service reservations, modifications, cancellations – e.g. doctor's appointments, ability to use various other services – e.g. libraries, adult education centres) (90%)
- Basic understanding of digital security and data protection (can identify the most common online threats, able to protect personal devices and data) (89%)
- Understanding that digital competence is always evolving. Devices must be used regularly to increase and develop competence (87%)
- Knowledge of your device's basic settings. At least one device to use services with (87%)
- Usage of email (87%)

From the digital safety and security, media literacy, content production and interaction groups, important skills were:

- Competence related to passwords and authentication data (93%)
- Understanding of data protection basics and the importance of protecting personal data and privacy (92%)
- Searching for and assessing information (88%)
- Identifying scams (86%)
- Critical media literacy (86%)

Based on the responses from working-age people, major differences between levels of education were not found.

Among working-age people, digital skills and their development are considered extremely important for taking part in modern society. The number of digital skills needed in everyday life is considered, at times, too large and burdensome. Support from service providers would thus be needed to ensure that the services are accessible and usable.

> *"Citizens cannot be required to use services independently until service providers are required to provide genuinely user-friendly and accessible services."*

3.3 Older people

Of the survey participants, 47 were over 64 years old. In the digital civic skills, basic use of devices and applications, and solving problems and finding help groups, older people named the following as the most necessary digital skills:

- Usage of email (96%)
- Managing one's own affairs in digital services (online banking, taxes, service reservations, modifications, cancellations – e.g. doctor's appointments, ability to use various other services – e.g. libraries, adult education centres) (96%)
- Understanding that digital competence is always evolving. Devices must be used regularly to increase and develop competence (89%)
- Usage of digital services and strong authentication (85%)
- Usage of digital payments (85%)
- Understanding of personal competence and trust in the ability to develop it (85%)
- Knowledge of your device’s basic settings. At least one device to use services with (85%)

From the digital safety and security, media literacy, content production and interaction groups, the most important skills were:

- Competence related to passwords and authentication data (96%)
- Understanding of data protection basics and the importance of protecting personal data and privacy (89%)

The results of older people varied slightly by level of education (Figure 1. Digital skills highlighted as the most important, older people by level of education.). The clearest difference is in the understanding that digital competence is always evolving. 97% of the participants with a lower level of education saw this skill as important, while 73% of the participants with a higher level of education named it as important. The difference was not as pronounced with other digital skills that were considered important. However, it should be noted that the importance of all digital skills that were found important among those with a lower level of education was slightly higher than among those with a higher level of education.

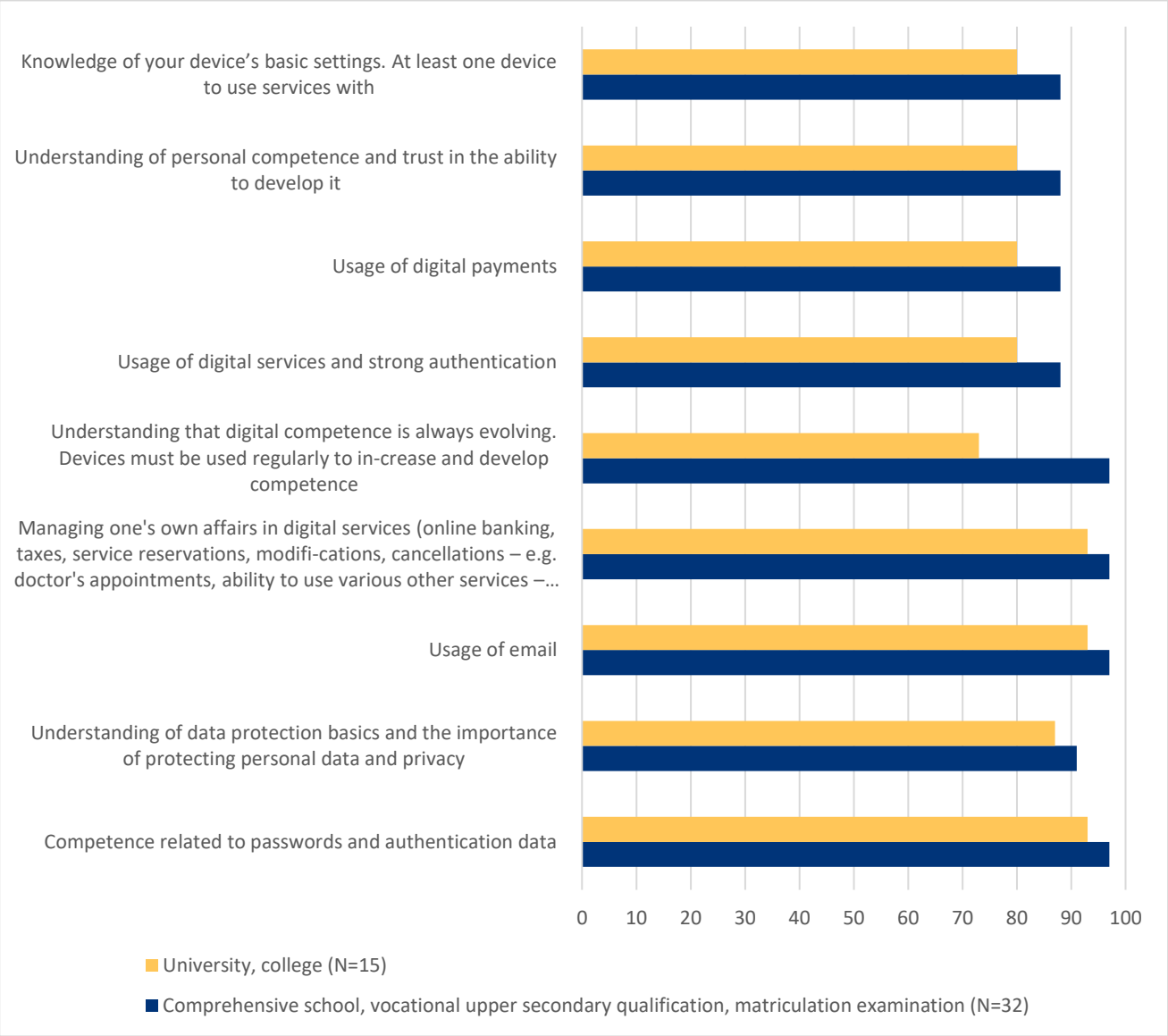

Figure 1. Digital skills highlighted as the most important, older people by level of education.

3.4 Differences between working-age people and older people

The differences between working-age people and older people were particularly in critical medial literacy, information retrieval and assessment of information. In other respects, the differences between people of working age and people were not significant.

- Usage of digital services and strong authentication (working-age 92%, older people 85%)
- Basic media literacy (can generally distinguish correct information from false, knows how to verify the veracity of the information) (working-age 91%, older people 79%)

- Understanding of personal competence and trust in the ability to develop it (working-age 91%, older people 85%)
- Managing one's own affairs in digital services (online banking, taxes, service reservations, modifications, cancellations – e.g. doctor's appointments, ability to use various other services – e.g. libraries, adult education centres) (working-age 90%, older people 96%)
- Basic understanding of digital security and data protection (can identify the most common online threats, able to protect personal devices and data) (working-age 89%, older people 81%)
- Understanding that digital competence is always evolving. Devices must be used regularly to increase and develop competence (working-age 87%, older people 89%)
- Knowledge of your device's basic settings. At least one device to use services with (working-age 87%, older people 85%)
- Usage of email (working-age 87%, older people 96%)
- Usage of digital payments (working-age 71%, older people 85%)

Digital security, media literacy, content production and interaction

- Competence related to passwords and authentication data (working- age 93%, older people 96%)
- Understanding of data protection basics and the importance of protecting personal data and privacy (working-age 92%, older people 89%)
- Searching for and assessing information (working-age 88%, older people 72%)
- Identifying scams (working-age 86%, older people 81%)
- Critical media literacy (working-age 86%, older people 60%)

The differences in the text above are shown in figures Figure 2 and Figure 3.

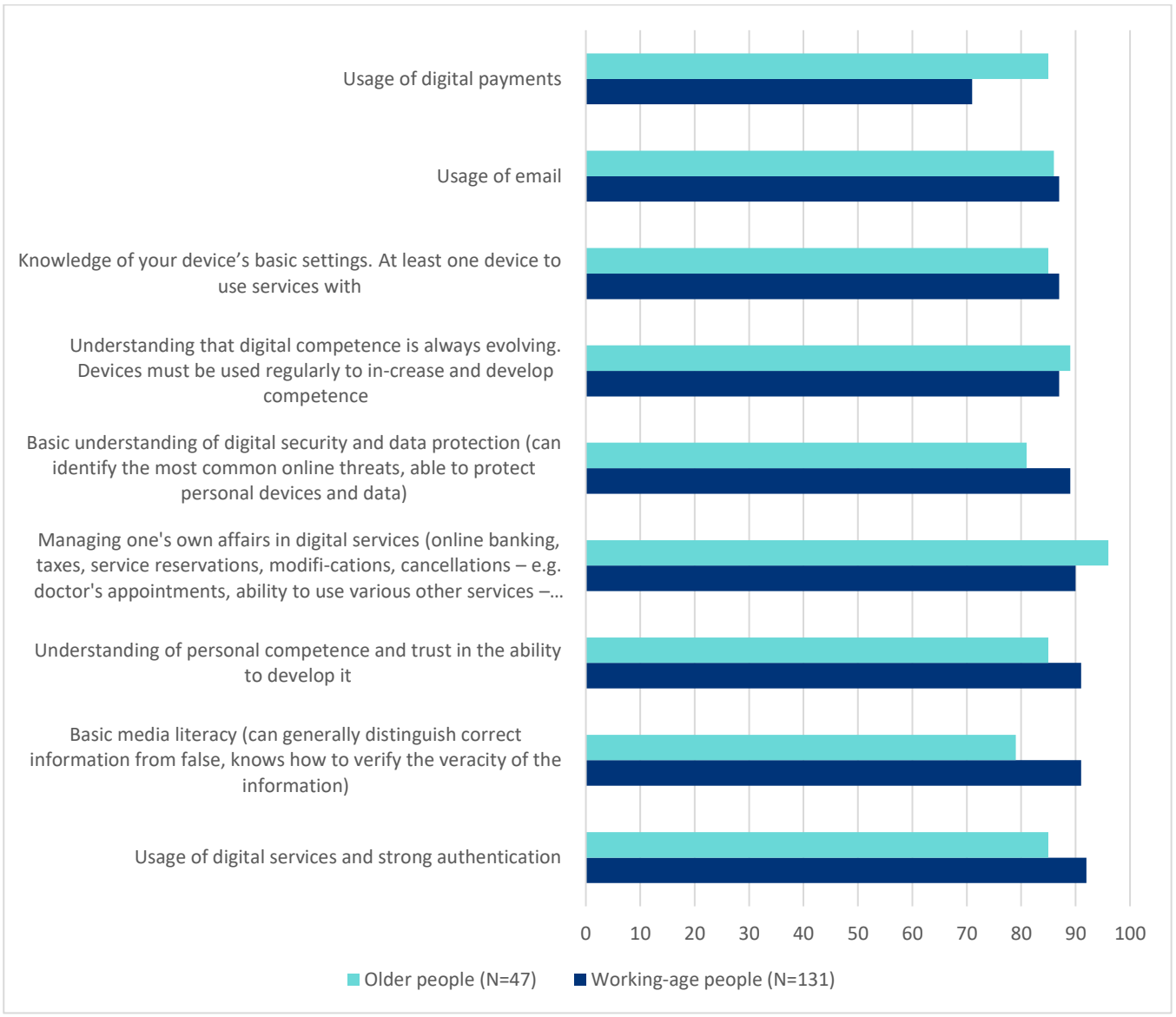

Figure 2. Differences between older people and working-age people: Digital civic skills, basic use of devices and applications, and solving problems and finding help.

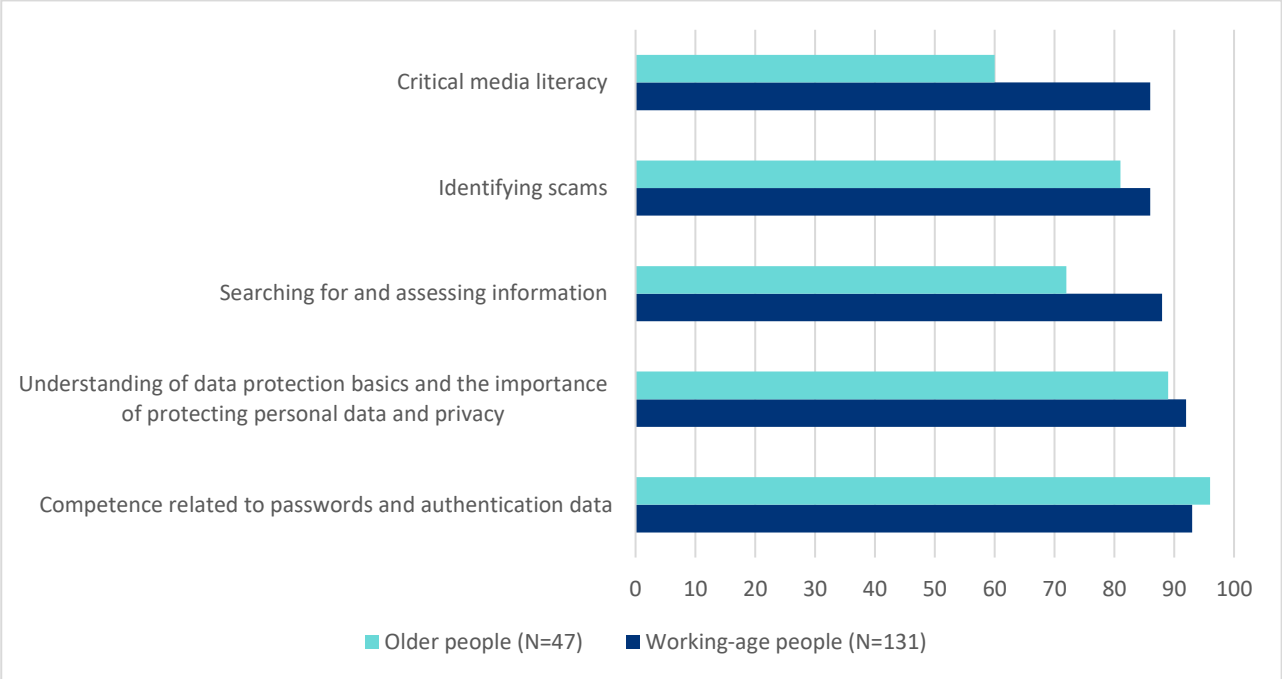

Figure 3. Differences between older people and working-age people: Digital security, media literacy, content production and interaction.

3.5 Skills that not everyone feels are necessary

The five least important digital skills among working-age people are:

- Ability to join different online forums according to their interests (33%)
- Ability to participate in decision-making on digital platforms (42%)
- **In addition to the "digital spaces" created by the public administration, acting in everyday online environments (42%)**
- **Understanding of algorithms, data and data utilisation (45%)**
- Ability to produce multimedia digital content and convey these outputs to others (e.g. sharing a photo you have taken to others or write a resume in a word processor and sharing it during your job seeking, etc.) (47%)

The six least important digital skills among older people (over the age of 64) are:

- **Understanding of algorithms, data and data utilisation (26%)**
- Understanding of digital reputation management (30%)
- Lifecycle management for digital content (digital estate) (38%) and **In addition to the "digital spaces" created by the public administration, acting in everyday online environments (38%)**

- Ability to act in the event of a data leak (40%) and competence to protect the physical and mental health of oneself and others (40%)

Both working-age people and older people feel that among the least important digital skills are In addition to the "digital spaces" created by the public administration, acting in everyday online environments as well as Understanding of algorithms, data and data utilisation.

4 Summary

Digital skills recommendations bring together skills that every Finn living in the digital age should have a command of. The recommendations are based on a study conducted by the Digital and Population Data Services Agency in the autumn and winter of 2022–2023 on what digital skills are essential for people of all ages. Key skills include usage skills, such as using e-mail, managing one's own affairs in digital services and managing passwords and identification in services.

In addition, all age groups felt that it was essential that they understood their own skill level and could rely on their ability to develop their own digital skills. Older respondents emphasised the understanding that one is never done learning digital skills. Younger respondents, on the other hand, recognised that there are quantitatively many essential skills and that their need is determined according to one’s life situation. Young people particularly emphasised the importance of wellbeing skills and media literacy.