

# Educational and digital poverty: barriers to adult education

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This paper, based on data from the INAPP-INDACO Adults 2020 survey, analyses the sociodemographic characteristics and training behaviours of low-skilled adults, with a particular focus on digital skills. The inequalities faced by this subpopulation, accentuated by the pandemic, risk widening further due to increasing digitalisation. Using binary logistic regression models, the study assesses the likelihood of participation in training programmes or unemployment. The findings highlight the urgency of policies aimed at reducing the digital skills gap, supported by the National Recovery and Resilience Plan (PNRR).

*Lo studio, basato sui dati INAPP-INDACO Adulti 2020, analizza le caratteristiche sociodemografiche e i comportamenti formativi degli adulti low skilled, con particolare attenzione alle competenze digitali. Le disuguaglianze per questa sottopopolazione, accentuate dalla pandemia, rischiano di ampliarsi con la digitalizzazione crescente. Utilizzando modelli di regressione logistica binaria, si valuta la probabilità di partecipazione a programmi formativi o disoccupazione. Le analisi evidenziano l'urgenza di politiche per ridurre il divario di competenze digitali, supportate dal Piano Nazionale di Ripresa e Resilienza (PNRR).*

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## Introduction

Analysing the socio-economic characteristics of low-skilled adults and understanding the various factors that contribute to hindering the participation of this target group in education and training, both formal and informal, constitutes an increasingly relevant area of socio-economic investigation. In the context of a changing economy and increasing technological complexity, the role of skills and their updating in determining employability, social inclusion and active citizenship becomes crucial.

The demand for skills from the labour market is constantly evolving and it is affected by global trends

such as technological transformation, demographic ageing – particularly accentuated in Italy – and energy transition.

In Italy, progressive growth in education levels is still very slow and lower than the European average: only 20.1% of the population has completed tertiary education, compared with 32.8% in the EU (ISTAT 2021). Moreover, the performance of educational qualifications appears lower than in other advanced countries. On average, in Italy, highly educated young people who have participated in educational activities do not have an income level that differs from that of their less educated counterparts until

the age of 45; in the United States, the income of highly educated young people already differs from their less educated counterparts from the age of 25 (Angotti and Polli 2016).

Along with education levels, national and international surveys have also long shown a particularly low level of participation in training in our country, with larger differences for the unemployed adult population with low levels of education and/or low basic skills (ISFOL and Di Francesco 2014; Cascioli and Martino 2018). However, a significant percentage is also found among young adults who, despite having completed upper secondary or tertiary education, report very low levels of basic skills, a phenomenon that seems to be more evident in Italy than in other countries. According to the latest OECD PIAAC survey available to date, adults aged 16-65 with low literacy skills account for 27.9% of the adult population, and up to 32% when numeracy skills are taken into account (OECD 2013, Figure 1).

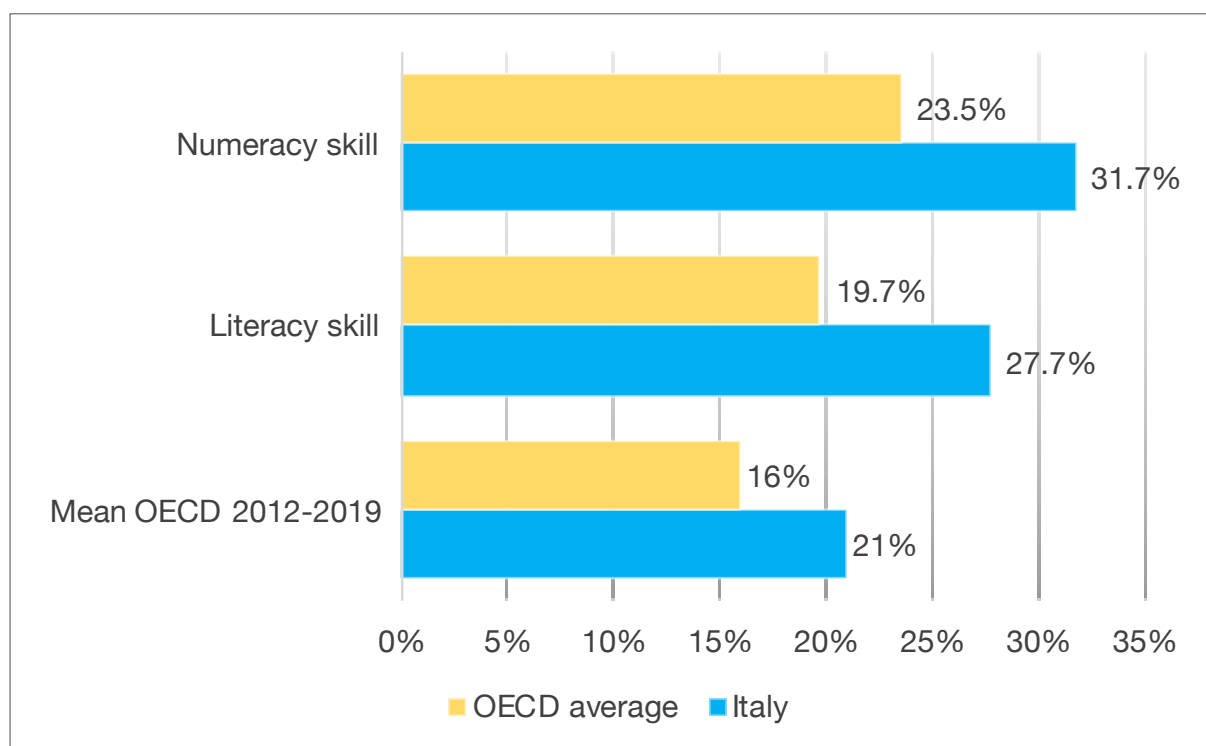
Levels of education and skills possessed constitute distinct but highly correlated dimensions. Research also suggests that the likelihood of an

individual participating or not in training activities is largely influenced by the level of education and basic skills (Cegolon 2015; Angotti 2023). However, skills are also closely linked to the likelihood of spending and using them in work contexts. The strong association between labour productivity and skills indicates that workers with low skill levels are more likely to experience periods of inactivity and unemployment, or to be employed in low-skilled jobs (Hanushek *et al.* 2015; Angotti and Polli 2016).

In particular, as a result of the pandemic shock, the digital skills possessed by individuals have suddenly gained prominence. The rapid digitisation of many areas of economic and social life has increased the risk of exclusion from entire sectors of economic and social life for individuals lacking the necessary skills. Some authors have shown how the impact of the pandemic has fallen mainly on those workers with low levels of education and skills, or on those who were unable to immediately benefit from the development of technology and digitalisation (Dingel and Neiman 2020; Fana *et al.* 2020).

The European Commission has long recognised the

**Figure 1. Percentage of adults with the lowest levels of Cognitive skills**



Note: Percentage of adults aged 16-65 who achieved Level 1 or below in numeracy and literacy.

Source: Authors' elaboration based on OECD data (2013) Survey of Adult Skills (PIAAC)

importance of digital skills<sup>1</sup>. It has been pointed out that 70% of companies cite a lack of staff with appropriate digital skills as an obstacle to investment (European Commission 2021). The Communication 'Shaping Europe's Digital Future' (2020) claims that more than 90% of jobs require 'at least basic' digital skills. However, in relation to the period considered in this study, in 2019 only 29.1% of Italians aged 16-74 had high digital skills, with almost half having low (41.6%) or basic (25.8%) skills. 3.4% had no digital skills at all.

It is clear, therefore, that the stratum of the population currently living in educational poverty and at risk of falling into a 'low-skill trap' is growing (Burdett and Smith 2002).

The aim of this study is to highlight the relevance assumed by this heterogeneous target group of individuals, which has been scarcely studied in Italy as regards the dimensions mentioned here, and to outline its main socio-demographic characteristics and training behaviour.

To this end, section 1 provides an overview of the literature on the topic, with reference to the main international classifications on the subject; section 2 outlines the methodology and data used; section 3 presents the main findings; and finally, section 4 articulates the conclusions.

## 1. Literature

### *Participation in training and the role of digital skills*

As major international surveys show (OECD 2013), it is widely known that simply increasing the number of years spent in education, or the level of qualifications, is not sufficient to raise the basic skill levels of the population, particularly the workforce. Cognitive skills, such as literacy and numeracy, are powerful predictors of important life outcomes, including educational attainment, employment opportunities, income levels, and overall well-being (Da Costa *et al.* 2014).

The OECD Programme for the International Assessment of Adult Competencies (PIAAC), which assesses the literacy levels in the adult population, defines literacy skill as the ability to access, understand, evaluate and reflect on written texts in order to achieve one's goals, develop one's knowledge and potential and participate in

society (INAPP 2021), where texts correspond to all types of written information accessible not only in traditional paper formats, which are less and less frequent today, but also those accessible in a digital environment, including the texts we find every day on the web, containing interactive navigational tools such as tables of contents, hyperlinks and other devices (OECD 2021a).

This concept of basic skills, as measured in international assessments, has from its inception highlighted a deep connection between literacy and digital skills. Literacy, in its broadest sense, no longer refers solely to reading and writing but also encompasses the ability to use digital technologies critically and consciously, given their impact in every social and economic sector.

However, digital skills are becoming increasingly central, emerging as a key element on the agenda of scholars, practitioners, and policymakers (Iordache *et al.* 2017), particularly in the wake of the health crisis. The pandemic has accelerated the shift towards an increasingly digital world, widening the gap between those who possess these skills and those who lack them.

The existing literature on digital literacy, which is rich in definitions and classifications, has not yet reached a precise consensus on the different dimensions involved. The ability to effectively use and leverage constantly evolving digital tools and resources requires a diverse set of complementary skills, ranging from basic computer skills to critical thinking, cybersecurity awareness, and, fundamentally, basic literacy (Cedefop 2023; Reddy *et al.* 2023; Ghare 2024).

Crucially, the current era of technological transformation is reshaping not only work processes and content but also the very fabric of education and training. Learning methodologies, materials, delivery modes, and access are undergoing a profound transformation. A direct consequence of this shift is the widening digital divide, characterized not merely by unequal access to technology, but also by disparities in the ability to effectively utilize it for learning and development, according to what has been defined as the *second-level digital divide* (Hargittai 2002).

1 Since 2015, Eurostat surveys measure digital skills through a composite indicator based on different dimensions, digital\_skills\_indicator\_2015\_9979.pdf. See also: The European Skills Index (ESI), a Cedefop composite indicator measuring the performance of EU skills systems, <https://www.cedefop.europa.eu/en/tools/european-skills-index>.

On the other hand, even the channels of access to jobs, opportunities and various forms of economic benefits, are now conveyed almost exclusively through the digital medium, generating new forms of obstacles and barriers that fuel gaps and inequalities. Research by Sostero (2020) underscores this issue, revealing a bias in online job postings towards higher-skilled occupations, while underrepresenting opportunities for low-skilled positions, manual tasks, low qualifications or non-standardised tasks.

Therefore, although an increasing share of the workforce in advanced countries has a university degree, it is increasingly important to have good literacy, numeracy, and digital skills. The return on these skills in terms of higher wages, has been amply demonstrated by many studies which suggest that while they are in high demand, they are relatively scarce (Cherry 2020; Bejaković and Mrnjavac 2020).

Furthermore, while increased and sustained participation in training programmes contributes to increasing the employability of the unemployed and strengthening the position of the employed, the low levels of training participation of adults in Italy, particularly the inactive, are further reduced in the case of adults with low basic skills who are less inclined or willing to engage in formal and/or informal learning activities.

According to the latest available OECD PIAAC data, only 20% of adults with low skills participate in job-related learning or training. The participation of adults with medium-high or high skills is higher (37% and 58%, respectively). For the 2016 Adult Education Survey (AES), only 11.6% of adults with low skills sought learning opportunities, compared to 35.5% of adults with high skill levels.

International findings show that the low-skilled target group is more at risk of experiencing job precariousness and social exclusion, and that these are the people most in need of participation in training. Very often, this group of individuals also has lower levels of digital skills, which is closely associated with literacy and numeracy, whose domains tend to overlap (Kennedy 2023).

The elements mentioned so far lead us to consider digital skills – for the development of which considerable resources have been allocated in the National Recovery and Resilience Plan (NRRP) - *Piano Nazionale di Ripresa e Resilienza (PNRR)*

– as fundamental for full inclusion in social and working life, given the still very low levels among the population. This is why we believe that the analysis of digital competencies plays a central role in a full understanding of the low-skilled condition.

### **Low-skilled adults**

According to the OECD's most recent definition (2019), low-skilled adults are those with a low level of education (ISCED 0-2), and those with low levels of cognitive literacy and numeracy skills, i.e. those who score at level 1 or below in literacy and numeracy on the PIAAC skills survey, or those who can perform at most very simple reading tasks, such as reading short texts on familiar topics and simple mathematical tasks and basic arithmetic operations.

Results from the OECD international survey suggest that formal education remains the main mechanism through which the possession of basic skills, such as literacy and numeracy, is developed and maintained. However, the *cognitive skills* assessed in international assessments are not disconnected from technological skills, if we consider that the administration of the PIAAC assessment tests measuring the population's basic skills, which were previously administered on computers, will, for the second edition (2023-24) take place on a digital medium (tablet) that the subject must be able to use in order to answer the questions.

The dimensions considered by Cedefop (European Centre for the Development of Vocational Training) to identify the low-skilled population include a low level of education, low digital or computer skills, low cognitive skills (literacy and numeracy in PIAAC), and/or a low, medium or high vocational qualification but employed in an elementary occupation. All these elements are considered by the European Centre as a proxy for the obsolescence of skills or loss of skills (Cedefop 2020).

Previously, the European Centre has emphasised the role of *skill mismatch by age, sex and nationality*, at the root of this condition (Cedefop 2017).

Finally, let us also stress the 'mobile' aspect of this condition, as suggested by Mytna Kurekova (2013), who describes low qualifications as a dynamic phenomenon with economic, social and, to a certain extent, also psychological roots considering, for example, long-term unemployment or discouraged workers. It is not a static condition, such as a certain level of education, but a condition

that can be slipped into, especially in the absence of continuous learning in adulthood.

Torlone (2021), in her essay on low-skilled and adult education policies, states that a holistic approach allows the status of the low-skilled to be analysed as the result of a process produced by a multiplicity of factors, and argues that increasing the participation of the low-skilled in educational opportunities is a significant qualitative objective to strive for, one that plays a central role in narrowing social differences.

Research on the access of low-skilled adults to training consistently highlights a higher prevalence of dispositional barriers to participation in adult education within this heterogeneous population. Negative educational experiences during childhood often contribute to lower motivation and perceived usefulness of further learning, thus hindering engagement (Dæhlen and Ure 2009; Desjardins and Rubenson 2013; Illeris 2006).

A complex interplay of individual, social, and systemic factors contributes to low levels of adult skills. These factors often reinforce each other, creating a cycle of low literacy and limited opportunities. As a result, socio-economic inequalities are exacerbated, as those with fewer educational opportunities are less likely to escape educational poverty.

## 2. Methodology and data

The aim of this study is to outline a picture of the main socio-demographic characteristics of low-skilled adults in Italy, and of their training behaviour, through the analysis of data from the INDACO-Adults Survey carried out in Italy by INAPP<sup>2</sup> (2021).

This edition of the survey (2020) was particularly important because it covered the period of the pandemic and made it possible (also through a

specific focus) to study training behaviour in a period of transformational shock.

The first step of the study involved the construction of a composite 'Low-skilled' index, by selecting variables from the data obtained from the INDACO-Adults Survey. For the purposes of the survey, the variables that were most consistent with international classifications were chosen (Cedefop 2020; OECD 2019), and therefore the following characteristics of adults aged 18-64 were selected:

- level of education; adults with low levels of education, i.e. those whose highest qualification is at the lower secondary level (ISCED 0-2), which means they have not completed secondary school;
- qualification level; low-skilled workers in elementary occupations;
- digital skill; i.e. the self-report of individuals with low digital skill constructed in the questionnaire on a 5-point scale. For the reasons set out in the previous paragraphs, digital competence was considered by the authors of this study to be particularly relevant when analysing this population of individuals (see Cedefop 2020);
- literacy skills; i.e. self-declaration of low competence in written and oral communication;
- mathematical skills; i.e. self-declaration of poor mathematical and statistical skills.

Having at least one of these characteristics classified as absent or low was used as a criterion to establish whether a person was low-skilled or had low skills<sup>3</sup> ('Low-skilled').

Next, a number of factors affecting the probability of low-skilled adults participating in training activities were then identified and analysed by means of ten binary logistic regression models.

In order to analyse the aspects related to

2 The Italian Adult Learning Survey (INDACO-Adulti) is a national sample survey conducted in order to reconstruct the picture of the diffusion of adult lifelong learning in Italy. Included in SISTAN's PSN (National Statistical Programme - Piano Statistico Nazionale), it provides an estimate of the participation of adults in formal, non-formal and informal training, both in occupational and non-occupational contexts, self-financed by the individual or shared. With a sample size of 40,000 individuals (universe: adult population aged 18-64 years, 37 million individuals), the survey provides information on: socio-demographic, cultural and occupational gaps in education and learning, occupational status, objectives, motivations and benefits of training, digital competences, cultural participation, co-investment, characteristics and volume of courses, barriers, intergenerational learning, the impact of Covid-19 and remote working.

3 The low qualification or low skills index was constructed from the variables: Education level (Re\_level\_Skill), Job qualifications (skill\_lv1), Digital skills (h6), Mathematical and statistical skills (c2h\_01\_cl) and Effective written and oral communication (c2i\_01\_cl). In order to test the validity and explanatory level of the index for the choice of variables, a Principal Component Analysis was also carried out, and the consistency of the index obtained was compared with the results obtained for the Low-skilled index in PIAAC, and consistent results were obtained.

continuing vocational training and the employment condition of low-skilled Italian adults, in each regression the variable 'Low-skilled' was considered independent, constructed as a summative index of the variables already indicated. Subsequently, the index was dichotomised leaving 'not being Low-skilled' as the reference category.

In models 1 and 2, the dependent variables correspond to 'Non-formal learning' and 'Informal learning' respectively, index variables created from a set of questions referring to these two types of learning. Both are dummy variables, classified as 1 if the person participated in courses or training initiatives in the previous year, and 0 if not.

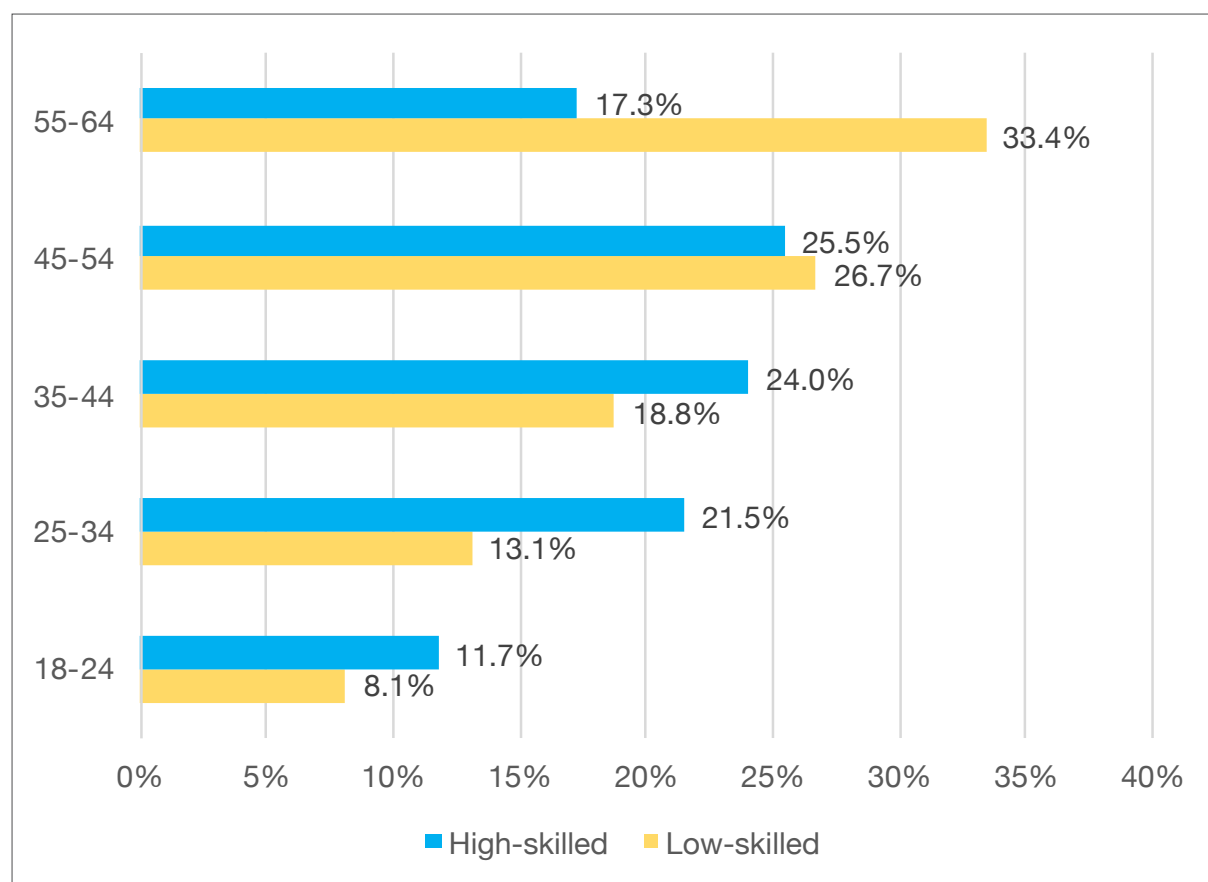
In model 3, the variable to be explained is 'Online courses', i.e. whether (in the previous year) the person took part in online courses independently or with the help of a friend or family member, where 1 corresponds to those who took part in this type of course and 0 to those who did not.

For models 4 and 5, questions concerning the lockdown period are addressed, the first using 'Online courses useful to the profession' as the dependent variable. In this case, the question used refers to whether the person took part in online courses or initiatives useful to their profession during the lockdown period, where 1 corresponds to the case in which they took part in them and 0 in the case in which they did not. In model 6, the dependent variable is 'Distance learning course', addressed to those who started or completed a distance learning course during this period, and as in the previous questions, 1 corresponds to having taken it and 0 to not having done it.

Next, in model 7, the variable 'Distance professional learning courses' is used as a variable which, unlike the previous one, refers to the whole previous year, and not only to the lockdown period. In this case, following the same logic as before, it is categorised as 1 if it was done and 0 if it was not.

Regarding the variables referring to employment,

**Figure 2. Low-skilled, High-skilled and Age Group**



Source: Authors' elaboration on INAPP data, Adult Learning Survey in Italy (INDACO Adults 2020)

three new variables were created in reference to the person's employment situation in its current state: 'Employed', 'Unemployed' and 'Inactive'. Each of these variables was recoded, with 1 corresponding to this employment status, and 0 to being in another employment status.

Finally, in model 10, the dependent variable is 'Salary', which refers to how much the person receives as salary per month. In this case, the variable has been recoded, so that it is 1 for those earning more than 1,500 euro and 0 for those with a lower income.

The results presented in the following section aim to provide an overview of the low-skilled phenomenon in Italy and to highlight the fragility of this target group of individuals. In order to better illustrate the difference in the main characteristics of this sub-population, low-skilled adults were compared with high-skilled adults, i.e. adults with at least a tertiary level of education, excluding the 'middle' segment of the data reported.

### 3. Results

#### *Low-skilled and main socio-demographic characteristics*

In terms of gender, we observe a slight prevalence of females among low skilled adults: 57.5% compared to 42.5% of males.

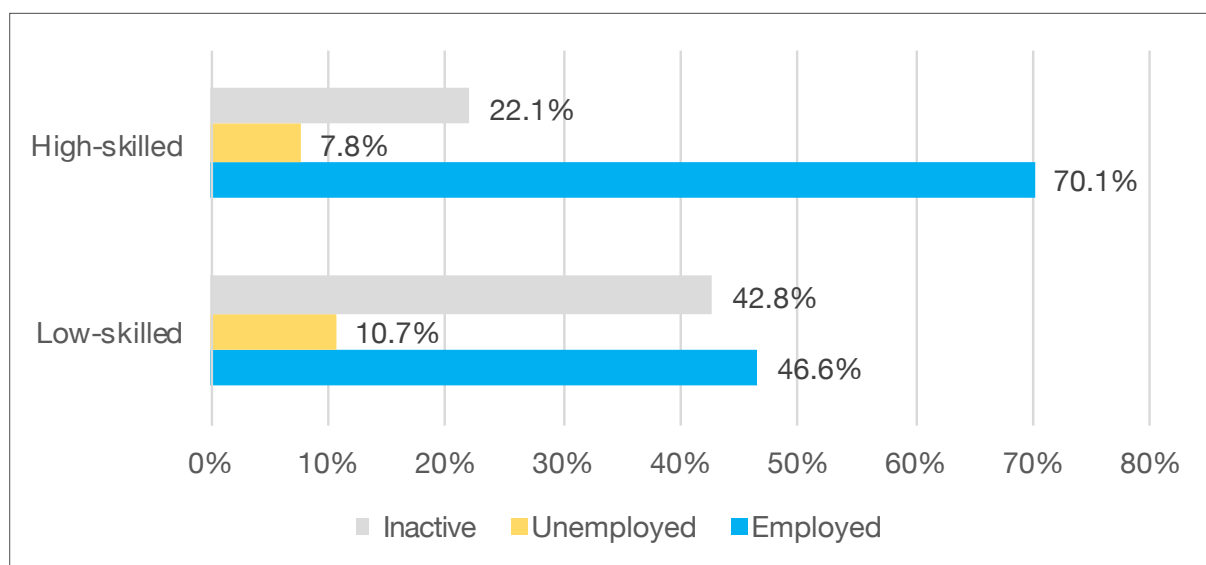
In Figure 2 we can observe the distribution of low-skilled adults and high-skilled adults by age

group. The incidence of low-skilled adults increases with age. Around a third of the low-skilled fall into the 55-64 age group (33%), an age group most affected by skills obsolescence and a low level of human capital. This age group is also the one with the largest difference when compared to the high-skilled population (the 55-64 age group account for 17.3% of the population). The largest share of the high-skilled is in the middle-age groups 45-54 (25.5%) and 35-44 (24%).

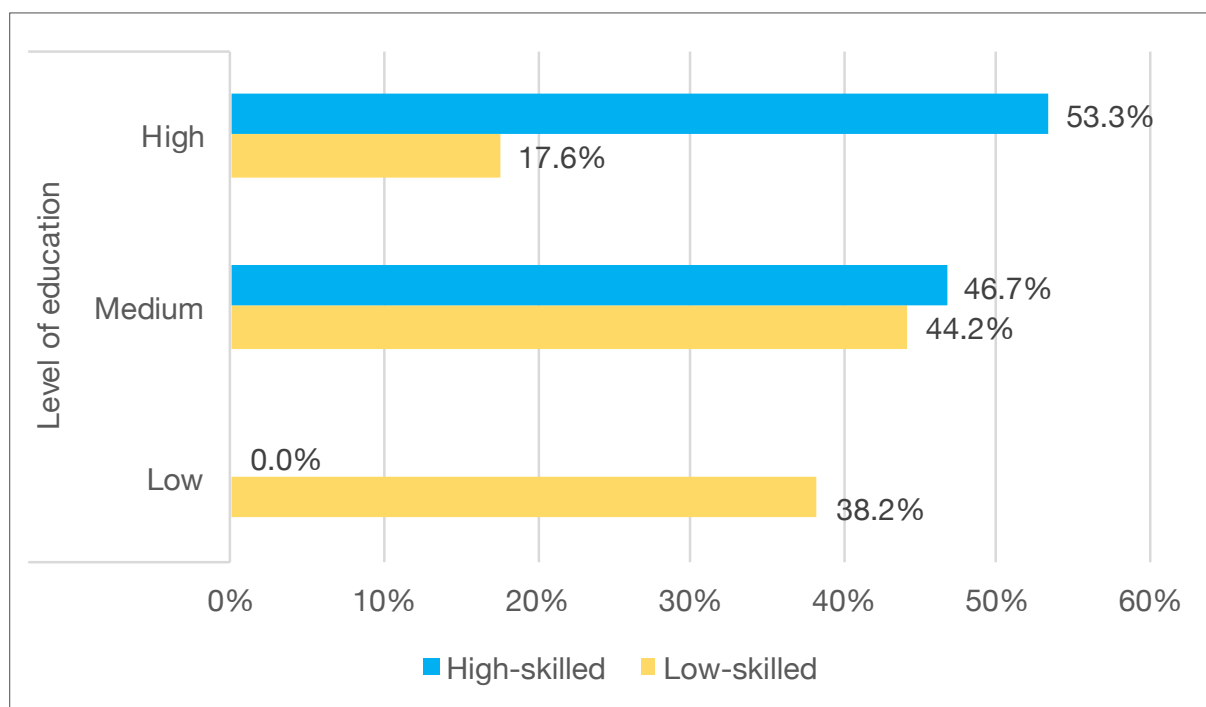
Looking at the data by employment status (Figure 3), the magnitude of the 'discriminating' effect that emerges for the low-skilled condition, regarding the position in the labour market, stands out. The percentage distribution of low-skilled and high-skilled by employment status shows that fewer than one in two low-skilled (46.6%) is employed, 10.7% are unemployed and 42.8% are inactive. Among the high-skilled, on the other hand, more than 70% are employed, and the inactive are only 22.1% (the remaining quota is made up of 'medium-skilled' adults, who are not shown in this example).

The low-skilled index also includes educational level as one of its dimensions. However, the figure for low, medium and high educational levels is also shown in Figure 4. Of course, there are no high-skilled adults with a low level of education, but it is interesting to point out that 38.2% of the low-skilled adults have a low qualification, 44.4% have

**Figure 3. Low-skilled, High-skilled and Employment Status**



Source: Authors' elaboration on INAPP data, Adult Learning Survey in Italy (INDACO-Adults 2020)

**Figure 4. Low-skilled, High-skilled and Level of Education**

Source: Authors' elaboration on INAPP data, Adult Learning Survey in Italy (INDACO-Adults 2020)

a medium one and less than one-fifth have a high-level qualification (17.6%).

#### **Low-skilled and training behaviour**

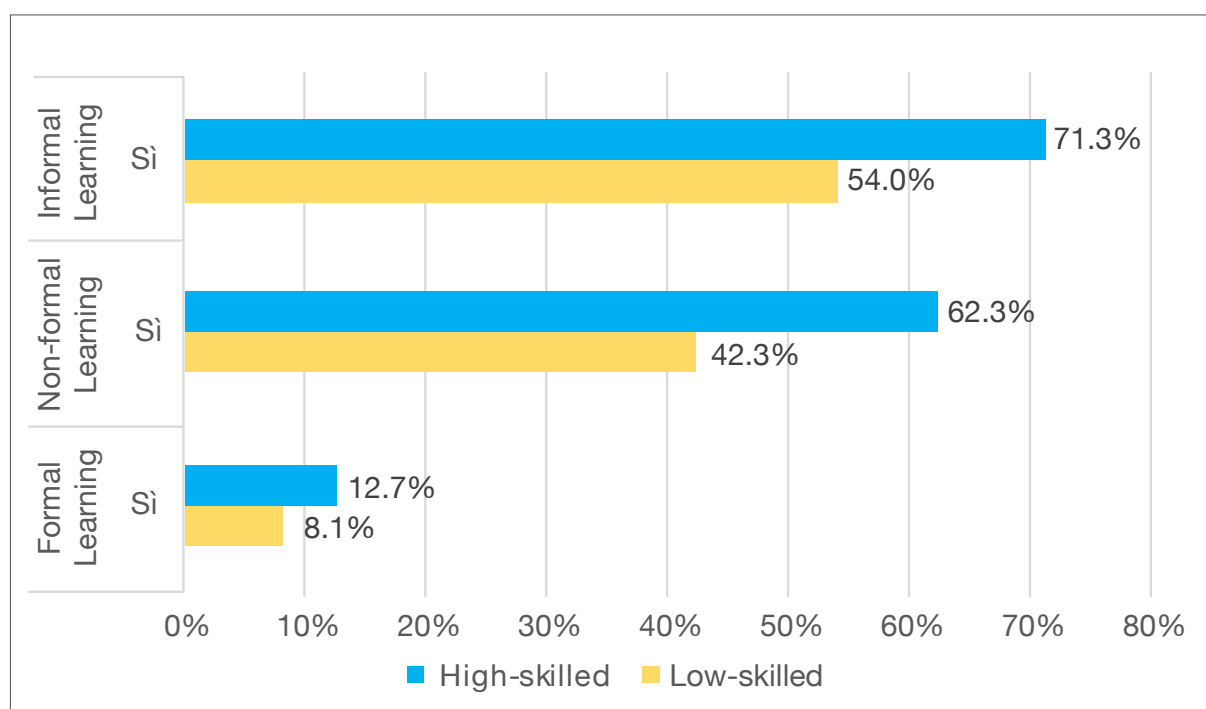
Analysing the training behaviour of the most fragile population in terms of their skill capital is crucial, since, especially in our country, it is precisely those with low skill levels who are the least likely to participate.

In Figure 5 it can be observed that low-skilled adults are less involved in all the types of pathways examined, since only 8.1% of this heterogeneous target group of adults are present in school-based learning, 42.3% in non-formal learning and 54% in informal learning. On the other hand, high-skilled adults show a participation rate of 62.3% in the case of non-formal learning, 71.3% for informal learning, and 12.7% are engaged in formal learning. In other words, the participation gap between the two sub-populations is more than remarkable and ranges from 20% for non-formal learning to 17.3% for informal learning. In line with other surveys on learning behaviour (Adult Education Survey, 2016), informal learning appears to be the most widespread for all targets.

In Table 1 we have examined non-formal learning. Given the same employment status, the high-skilled undertake approximately 10% more non-formal training when they are employed and unemployed; they undertake approximately 17% more non-formal training when they are inactive. This means that, irrespective of their employment status, adults with a higher level of education and skills undertake more training, and this is not only the case in the workplace, where higher levels are known to be more involved, but also seems to occur at a high rate in the inactive condition. This result is an indirect confirmation of the lower value of training for people with low skill levels, regardless of their employment status.

As evidence of this, the low-skilled population declaring their "willingness to use free time for job-related training activities" in the INDACO Adults questionnaire is about 12% lower than the high-skilled population (45% and 57%).

The INDACO Adults data of the low-skilled, which refer to the first 2020 lockdown, allowed us to detect the gap between the sub-populations at an early stage. When asked "During lockdown did you follow online initiatives/courses useful for work?", only 8% of the low-skilled responded

**Figure 5. Low-skilled, High-skilled and Learning\***


Source: Authors' elaboration on INAPP data, Adult Learning Survey in Italy (INDACO-Adults 2020)

**Table 1. Low-skilled and high-skilled, employment status and non-formal learning**

Non formal learning		Yes	No
Employed	Low-skilled	61.4%	38.6%
	High-skilled	71.1%	28.9%
Unemployed	Low-skilled	35.1%	64.9%
	High-skilled	44.5%	55.5%
Inactive	Low-skilled	23.4%	76.6%
	High-skilled	40.6%	59.4%

Source: Authors' elaboration on INAPP data, Adult Learning Survey in Italy (INDACO-Adults 2020)

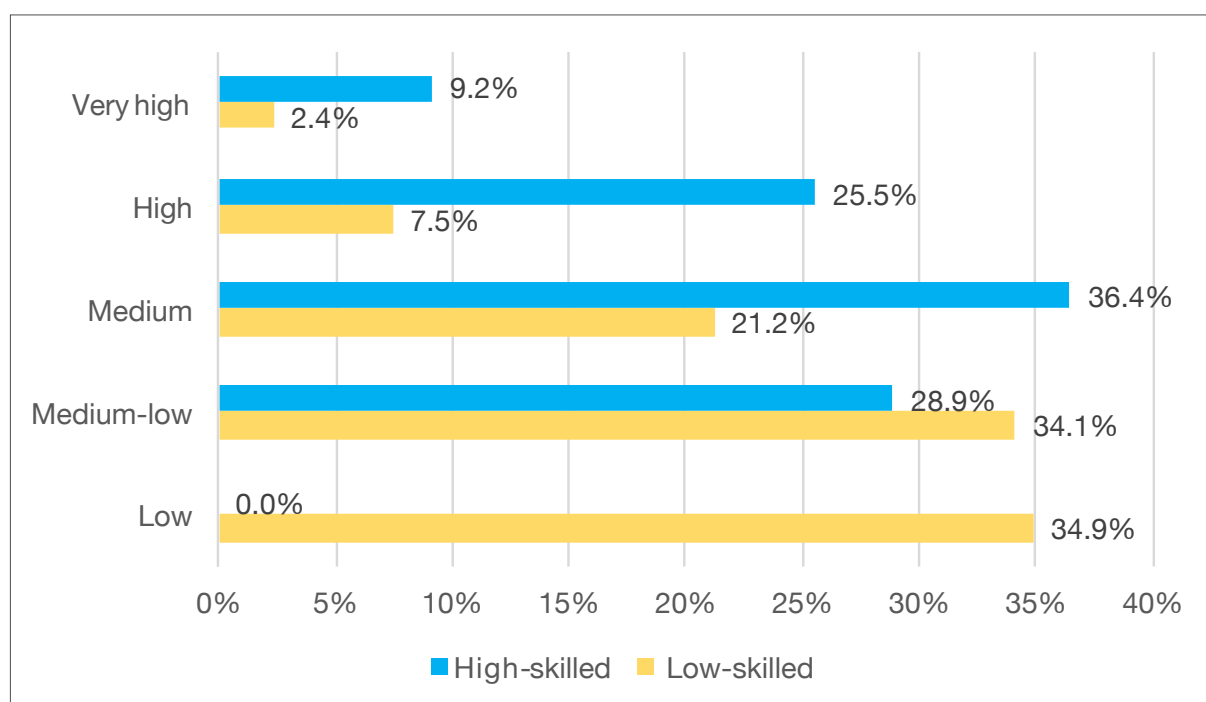
positively, compared to 19.3% of the high-skilled. Furthermore, only 4.5% of the low-skilled responded positively to "During lockdown did you start/complete a distance learning course?", compared to 10.1% of the high-skilled.

### **The role of digital skills**

Given the relevance of digital competencies across the dimensions of this study, in Figure 6 we report the distribution of digital competencies in the target groups<sup>4</sup>: more than one-third of low-

\* Informal training refers to those activities carried out in an autonomous and unstructured manner in everyday contexts, aimed at improving one's knowledge or satisfying a personal interest (e.g. visiting a museum or watching a film in the original language). Non-formal training, on the other hand, is distinguished from the former by a higher level of organisation and planning of the learning pathway, often accompanied by a tutor or teacher, and may lead to a certificate (think of language courses, programming or, more simply, cooking or photography). Lastly, formal education includes any school-based learning course, from primary schools to PhDs, through which a qualification that is at least nationally recognised can be obtained (such as a degree in modern literature or a diploma from a conservatoire).

4 A dimension that, we should remind the reader, was already present in the index.

**Figure 6. Low-skilled, High-skilled and Digital Skills**

Source: Authors' elaboration on INAPP data, Adult Learning Survey in Italy (INDACO-Adults 2020)

skilled adults (34.9%) state that they have digital competencies at the lower end of the skills spectrum. Only 2.4% claim to have 'very high' skills, and 7.5% claim to have 'high' skills.

Those with 'high' skills are about three and a half times more highly skilled than others (25.5% of the high-skilled population), i.e. a quarter of the high-skilled population. The differential between low- and high-skilled individuals is indeed very high, compared with a still very low level for the whole population. In Italy, the percentage of adults with a 'basic or above basic' level of digital skills is still only 42% of individuals, 14% lower than the European average (56%; Eurostat 2019). More than half of the population has an insufficient level.

Age also plays a crucial role in the level of digital skills. Figure 7 compares adults with 'low' digital competencies and adults with 'high' or 'very high' digital competencies and highlights a result we found when comparing the low-skilled and high-skilled, namely how age can play an important role, which is amplified when combined with other conditions such as, for example, labour market position or participation in training. The risk of skills

obsolescence for this age group is certainly high. Essentially, more than half of the adults with low digital skills fall into the 55-64 age group.

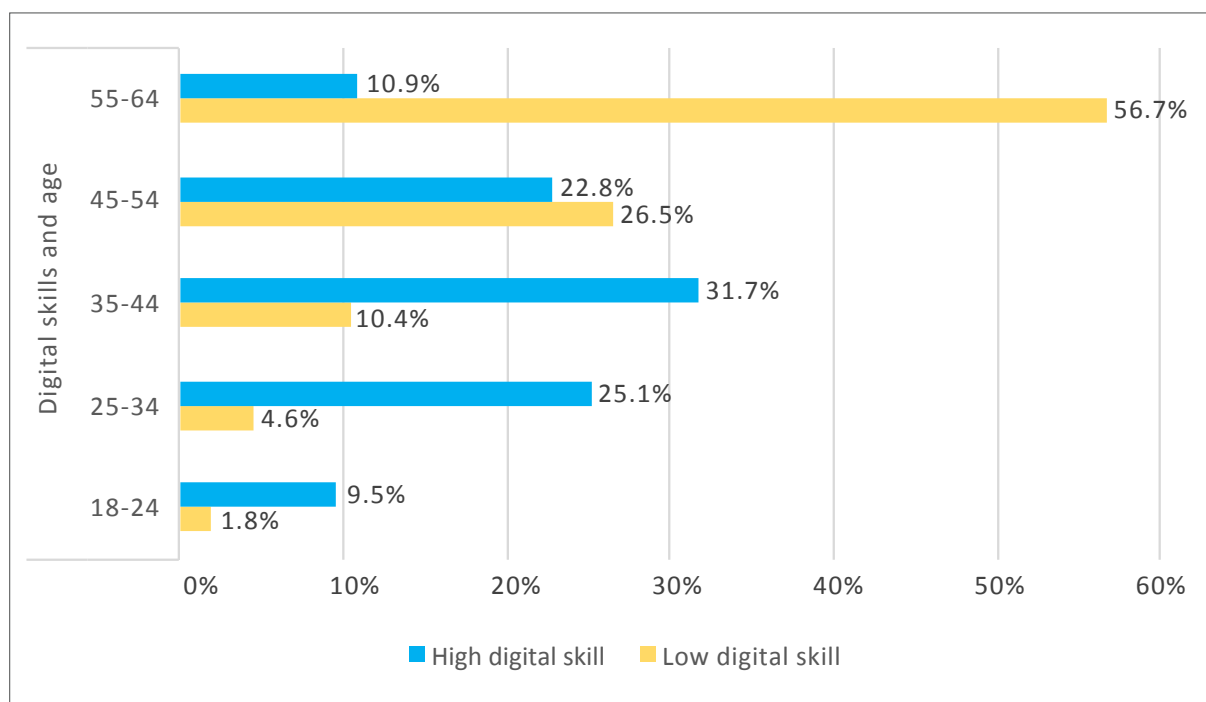
#### **Low-skilled status and likelihood of training**

In order to analyse aspects linked to the continuing vocational training and employment situation of low-skilled Italian adults, in this section, we have constructed 10 binary logistic regression models<sup>5</sup>, within which the independent variable corresponds to 'Low-skilled', constructed as a summative index of the variables already indicated. Subsequently, the index was dichotomised leaving 'not being Low-skilled' as the reference category.

As far as learning is concerned, it can be reported that the likelihood of a 'low-skilled' person participating in 'non-formal' or 'informal' training courses or initiatives is significantly lower than that of a person with a higher level of skills; no significant differences are observed between the two types of learning (0.51 and 0.56, respectively).

This result is also evident when looking at the results for 'distance learning courses' (taken during the lockdown) or 'distance professional learning

<sup>5</sup> Camila Javera Cid contributed to the econometric analyses.

**Figure 7. Digital skills and age**


Source: Authors' elaboration on INAPP data, Adult Learning Survey in Italy (INDACO-Adults 2020)

courses' (taken during the previous 12 months). In addition, it should be mentioned that for low-skilled adults, no greater differences are observed in the propensity to undertake courses in vocational training than for those that are carried out independently (0.52 and 0.51, respectively). Whereas it is observed that the probability of continuing one's own education decreased marginally during lockdown, with an odds ratio of 0.43 for "online courses useful

for the profession" and 0.49 for "distance learning courses" in general.

Regarding the employment situation of individuals, the risk of being unemployed or inactive is clearly higher for those with low skills than for those with medium or high skills (1.11 and 2.13, respectively).

In addition, the probability of earning an income over 1,500 euro is significantly lower than for those with higher skills (0.60).

**Table 2. Logistic regression models (Odds ratio and SE) - (N = 3085) (aged 18-64 in Italy 2020)**

	Learning						Employment						Salary							
	Non-formal learning	Informal learning	Autonomous online courses	Distance professional learning courses	Professionally useful online courses (during lockdown)	Distance learning (during lockdown)	Being employed	Being unemployed	Being inactive	Earning over 1,500 euro										
	Exp(B)	S.E.	Exp(B)	S.E.	Exp(B)	S.E.	Exp(B)	S.E.	Exp(B)	S.E.	Exp(B)	S.E.	Exp(B)	S.E.	Exp(B)	S.E.	Exp(B)	H.E.		
Low-skilled	0.51***	0.02	0.56***	0.03	0.51***	0.03	0.52***	0.03	0.43***	0.04	0.49***	0.05	0.48***	0.02	1.11*	0.04	2.13***	0.03	0.60***	0.04
Constant	1.43***	0.01	2.09***	0.02	0.53***	0.01	0.27***	0.01	0.21***	0.02	0.10***	0.03	1.80***	0.01	0.11***	0.02	0.35***	0.02	0.80***	0.02

\*p < 0.10; \*\*p < 0.05; \*\*\*p < 0.01

Source: INAPP elaborations on INAPP data Adult Learning Survey in Italy (INDACO 2020)

### Concluding remarks, policy recommendations and future perspectives

The issue of the low-skilled has gained centrality in the debate on training policies, due to the significant role of skills in ensuring people's full citizenship but also in promoting their employability and, more generally, their social inclusion. It is no coincidence that European policy on adult learning is based on the assumption that an increase in qualifications favours people's participation in the labour market, reduces the possibility of unemployment and thus creates the conditions for income security. Various analyses have highlighted the benefits of increased qualification for individuals (employability, income and health), for society (political participation), for employers (higher productivity) and for economy as a whole (GDP growth) (Di Castro 2024).

Compared to other European countries, the basic skills of the Italian population are on average low, in a general context made very complex by the contextual action of structural dynamics that can influence the evolution of labour qualification (Angotti 2019). Among these factors, an important role is played by the spread of information and digital technologies, which can generally lead to an increase in the demand for highly qualified labour but also, depending on the characteristics of the production system, to the replacement of quotas of workers performing repetitive tasks requiring medium and low-level skills. The spread of digital technology has also affected an increasing number of economic sectors and social life, moving away from the correspondence with the IT (Information Technology) sector and becoming transversal. Other relevant factors are the ageing population and the pandemic crisis, which have had an impact, especially on workers with low levels of education and skills.

In such a context, the condition for a balanced and equitable development of digital processes consists in raising the level of basic skills and digital competencies of the adult population, as is being done by public initiatives in several European countries, mainly in Northern Europe. If this does not happen, there is the risk that new inequalities and gaps will emerge.

To contrast these scenarios, active labour policies, and in particular continuing vocational training, are today called upon to play a broader role than in the past, combining the task of responding to the adult population's need to update and develop skills

with the need to reach vulnerable categories with a targeted offer of new opportunities for growth, so as to rebalance their fortunes. Among these categories, an increasing space is now occupied by the low-skilled target group.

The aim of this study is to outline an empirical picture of the socio-demographic characteristics of low-skilled adults in Italy and of their training behaviour, highlighting the risks of multiple penalisations to which this target group is exposed as a result of the development of digital processes, ageing and the pandemic crisis.

A first penalising factor that emerges from the analysis of the INDACO Adults data is indeed ageing: the data analysis confirms the large presence of low-skilled adults in the oldest age groups, those most at risk of skills obsolescence (Angotti 2024).

A second discriminatory factor is the position in the labour market, if it is true that among the employed, the low-skilled make up only 10.7%, while 42% of low-skilled adults are inactive.

A third penalising element is the low participation of the low-skilled in training, while we have observed that high-skilled adults show significantly higher rates of access to training, even under conditions of inactivity (*ibidem*).

However, the factor that seems to play the biggest role is the possession of digital skills, also given the close relationship between literacy and the ability to use digital technologies, a factor that has acquired absolute centrality since the start of the pandemic.

In this respect, the analysis of the INDACO Adults data highlights a dramatic situation: among low-skilled adults, only 7.5% possess 'high' level skills and just 3.5% 'very high' level skills. Those with high skills are also more than three times as likely to have 'high' digital skills.

The link between the low level of digital skills, functional literacy, educational level and low qualifications determines the risk of multiple discrimination: low digital skills, for example, play a relevant role when combined with other conditions such as, for example, age, position on the labour market or territory. The risk of skills obsolescence for this age group is high if it is true that more than half of the adults with poor digital skills are in the 55-64 age group. Finally, the territory may represent a further factor of multiple discrimination, especially when

added to other conditions such as the role of the family of origin or belonging to a deprived urban context or living in the outskirts of a metropolitan area.

There is now a wide range of learning options for individuals, including short courses for specific skills, some of which are also available online. However, navigating the many offers can be confusing, particularly for low-skilled adults. It is these individuals who most are most in need of support in identifying their learning needs and the type of training that is most appropriate for them. Furthermore, they need personalised support and guidance to overcome barriers relating to cost, time and location of training and to make informed choices about their learning path.

Clearly, such a situation would require the adoption of a broad strategy to address it. In Italy, the recently approved '*Piano strategico nazionale per lo sviluppo delle competenze della popolazione adulta*' (*National Strategic Plan for the Development of the Skills of the Adult Population*)<sup>6</sup> is complemented by the financial instrument envisaged in the PNRR, the '*Piano Nuove Competenze*' (*New Skills Plan*), which allocates substantial funding to the GOL programme (*Garanzia Occupabilità dei Lavoratori – Guaranteed Employability of Workers*).

However, pending the launch of such policy initiatives, the already low levels of educational participation of adults in Italy, especially of the inactive, are currently further reduced in the case of adults with low basic skills who are less inclined or willing to engage in formal and/or informal learning activities. It turns out that individuals with low skill levels are precisely those with the lowest levels of participation in education. Moreover, while only 42% of low-skilled adults report having engaged in non-formal training activities, compared to 62% of high-skilled adults, the latter declared a 12% greater willingness to use their free time for job-related training than low-skilled adults (45% and 57%, respectively).

It is therefore clear that a low level of training participation exposes the low-skilled at risk of suffering greater employment insecurity and social exclusion, since it is clear that participation in training helps people to strengthen their skills and to find, keep and further develop their jobs. On the

other hand, empirical research in recent decades has confirmed that the workplace is the preferred place for adult learning, in which informal learning plays a central role (Billet 2002; Rapanà 2021). Increasing the level of participation in training and educational activities in adulthood is a crucial challenge.

Moreover, in the medium to long term, digitisation, automation and artificial intelligence will significantly change many of the jobs held by low-skilled adults or displace them entirely, and occupations requiring little or no education are at the highest risk of being automated.

Finally, as digitalisation today also affects processes, content, tools and access to training, the lack of digital skills becomes a key factor behind further inequalities, generating a 'second-level digital divide' that no longer concerns only access to technology, but the very process of learning to use it effectively (van Deursen and van Dijk 2019).

Technological and digital knowledge, therefore, is now fully considered a transversal social knowledge, and for this reason, it is important to monitor the evolution of the levels of digital skills among the low-skilled, with the consequent need for targeted training interventions involving especially the low-skilled, with a view to the lifelong learning of this group of adults, whether employed or not.

Effective policy interventions to address the current low-skills situation require a clear understanding of who the low-skilled are and what risk factors lead to deskilling. If the digitisation of entire sectors of the country's economic and social life is not accompanied by an increase in the level of basic and digital skills of the adult population, new inequalities and gaps will inevitably emerge.

In order to improve the skills of the low-skilled adult population in Italy, it would be important to promote the widespread adoption of practices for assessing the skills already possessed by adults, in order to identify gaps and personalise training pathways. These pathways need to be flexible and aimed at improving key skills such as literacy, numeracy, and digital skills, to meet individual needs and adapt to adults' commitments (Cedefop 2024). They should also be implemented through 'Intergenerational Learning' practices, which

<sup>6</sup> See <https://www.lavoro.gov.it/temi-e-priorita/orientamento-e-formazione/focus-on/Formazione/Documents/Piano-adulti-ver-sione-def.pdf>.

promote a reciprocal exchange of knowledge, skills, and values between people of different generations in the workplace, thereby fostering continuous learning and personal development (see the results of the INDACO-Companies survey in INAPP and Anpal (2024)).

Another crucial element is the validation and certification of acquired skills, which allows adults to formally demonstrate their abilities, thereby improving their employment opportunities. Awareness and guidance are fundamental to identify groups that can benefit from training services and actively involve them, with particular attention to vulnerable groups. To improve accessibility, it is proposed to expand and make the educational offer more flexible, including workplace learning opportunities and the use of innovative technologies.

Furthermore, it is recommended to increase the number and effectiveness of guidance services and outreach activities, to support adults in their search for learning and job opportunities. It is also essential to implement a system of continuous monitoring and evaluation of policies and programmes, ensuring that initiatives are effective and adaptable to the emerging needs of the adult population.

However, to ensure the effectiveness of educational policies, active coordination is required between public bodies, non-governmental organisations, employers, and other stakeholders, ensuring an integrated and synergistic approach that is not always currently present (Angotti *et al.* 2023).

These recommendations aim to create a favourable environment for lifelong learning, enabling low-skilled adults to access training opportunities and improve their skills, building an inclusive social model that supports continuous learning and addresses the weaknesses associated with low skills.

Digital skills and participation in training for low-skilled adults have significant long-term implications, affecting not only individual well-being but also a country's economic competitiveness and social cohesion. In a rapidly evolving global context, where digitalisation and automation are transforming the labour market, it is crucial for adults to acquire the appropriate skills to face future challenges.

Firstly, acquiring digital skills enables adults to improve their employability. As the demand for highly skilled workers increases, individuals with digital competencies are better positioned to access

job opportunities and adapt to ever-changing roles. Countries such as Germany and the Netherlands, which have invested heavily in continuing vocational training and the development of digital skills, show higher employment rates and a more resilient workforce. Conversely, in countries such as Italy, where participation in training is limited, there is an increase in unemployment among low-skilled workers or in low-quality employment with inadequate wages and poor social security coverage (especially in sectors such as tourism and hospitality, where recent employment growth has been most pronounced). This highlights the importance of active policies to promote lifelong learning.

Secondly, digital skills promote social inclusion. Adults participating in training programmes can access online services, networking opportunities, and educational resources, thereby improving their quality of life. This is particularly relevant in an era where many social and professional interactions take place online. A lack of digital skills can lead to social isolation and increased economic vulnerability, creating a vicious circle of exclusion. Sweden and Finland have implemented digital inclusion strategies, demonstrating how access to digital skills can reduce inequalities and foster a more cohesive society.

Furthermore, participation in continuing training is essential to address the challenges posed by digital transformation and automation. Adults need to be able to adapt to new tools and technologies, and training provides them with the opportunity to update their skills. In a context where remote work and new work modalities are becoming the norm, the ability to use digital technologies is fundamental. Countries such as Estonia, which have invested in digital training programmes for adults, are reaping the benefits of a highly skilled and adaptable workforce.

Finally, digital skills have a direct impact on economic growth. A well-trained and digitally competent workforce can contribute to increased productivity and innovation, supporting a country's global competitiveness. Investments in training and digital skills not only improve individual prospects but also have positive effects on the economy as a whole. Denmark has seen increased productivity and sustainable economic growth following targeted investments in continuing training.

In conclusion, digital skills and participation in training for low-skilled adults are crucial to tackling

future challenges. Investing in these areas not only improves the life prospects of individuals but also contributes to a more inclusive society and a more resilient economy. It is essential for governments and

educational institutions to collaborate in developing effective strategies that meet the needs of the labour market and local communities, ensuring that no one is left behind in this process of transformation.

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