

# **SKILLSET & MATCH**

CEDEFOP'S MAGAZINE PROMOTING  
LEARNING FOR WORK



MAIN STORY:  
**SETTING THE EUROPEAN  
DIGITAL TRANSITION IN MOTION**

**INTERVIEW:**  
XAVIER MATHEU

**ARTICLE:**  
STUDENTS IN UKRAINE  
COMPARED TO THOSE IN THE EU

**OCCUPATION IN FOCUS:**  
SCIENCE AND ENGINEERING TECHNICIANS

**MEMBER STATE:**  
CZECHIA

ISSUE 26 / **SEPTEMBER 2022**

The **European Centre for the Development of Vocational Training** (Cedefop) is the European Union's reference centre for vocational education and training, skills and qualifications. We provide information, research, analyses and evidence on vocational education and training, skills and qualifications for policy-making in the EU Member States.

Publications Office of the  
European Union, Luxembourg

ISSN: 2363-0183  
TI-AQ-22-003-EN-N  
No of publication: 9174 EN  
**Free of charge**

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**JÜRGEN SIEBEL**  
Cedefop Executive Director

## New beginnings

“ We are still committed to providing you with the type of content you have been enjoying in the pages of our magazine

After more than 8 years and 26 issues, Cedefop’s *Skillset and match* magazine has reached the end of the road. It was initially conceived as a physical publication to sit on people’s desks or side tables, covering everything vocational education and training (VET), skills and qualifications. In keeping with the way media were beginning to be consumed at its launch, it also had a digital edition.

In the past year, the print edition has been discontinued in line with Cedefop’s publishing evolution to digital-only publications and greener practices. And, in response to the continuing development of how readers want their media to be presented to them, we have also decided that a change of approach is needed to ensure we are giving people what they want in the form they want it.

We are still committed to providing you with the type of content you have been enjoying in the pages of our magazine. You will just find it in other places: on our website, in our newsletter, in our videos and our new podcast series, which, incidentally, is also called *Skillset and match*, inspired by the successful brand name.

The editorial team’s hard work, supplemented by the commitment of our experts and the willingness of a variety of guests to give us their views, made *Skillset and match* a valuable source of information on European VET. Some 6 600 subscribers to the electronic and print editions accompanied the magazine throughout its journey. We hope that all of you will continue to use Cedefop media to be updated on our work and informed of the latest VET developments. All you have to do is register

for updates on our website and follow us on social media.

In this final issue, we look back at some of the highlights of this 8-year journey. We also have lots of interesting new stuff: lessons from Cedefop’s 2nd European skills and jobs survey on setting the European digital transition in motion; a comparison of students from Ukraine with those in the EU, based on evidence from PISA 2018; a programme in Greece that brings together employers looking for new skills, professionals who seek upskilling to further their career and training institutions; and more.

### Enjoy!



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## 8 years of Skillset and match: the highlights

“ We certainly tried to provide a simple yet comprehensive account of developments in ‘learning for work’, as the magazine subtitle professes

When we were brainstorming ideas about the title of Cedefop’s new magazine in early 2014, our colleague Steve Bainbridge came up with *Skillset and match*: a pun on tennis terminology (game, set and match). While we do not pretend to have offered our readers in the past 8 years the excitement experienced in top tennis matches, we certainly tried to provide a simple yet comprehensive account of developments in ‘learning for work’, as the magazine subtitle professes.

We interviewed many high-profile actors in vocational education and training (VET) in Europe and beyond, including politicians, social partners and renowned experts, as well as practitioners and learners – those who ultimately benefit from everything Cedefop does. We showcased the vocational talents of young people and adult learners. New projects, surveys, studies and reports on VET, skills and qualifications also made it to the magazine’s pages. And, more than once, we presented opposing views to give readers all sides of an argument.

Regular columns included *Member States*, with VET developments in EU countries, and *Occupation in focus*, which shared trends and challenges of the European labour market with insights into specific occupations.

We also regularly published:

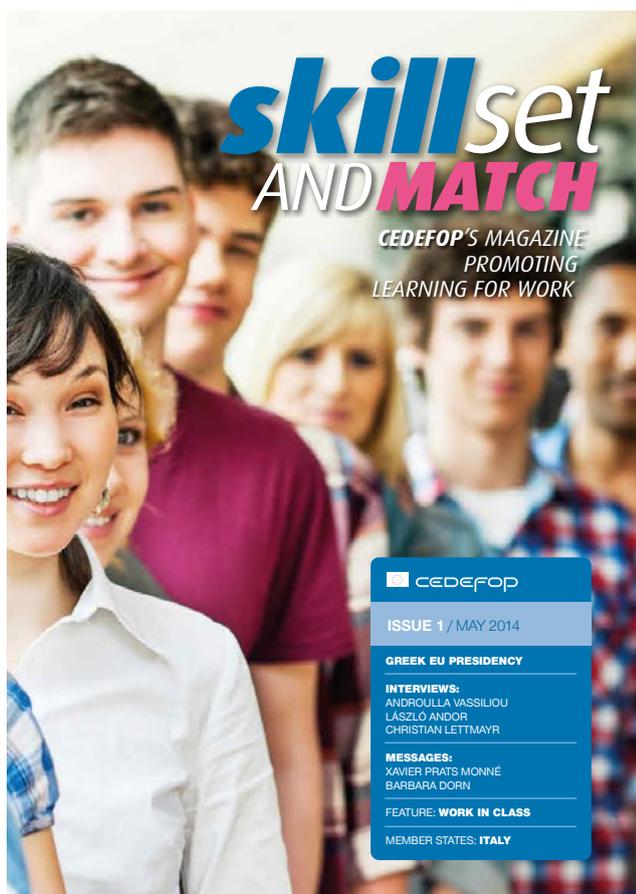
- reports and analysis from major conferences, policy learning forums and seminars, including the

Cedefop Brussels seminars with the rotating EU Presidencies;

- articles on a wide range of topics: from the digital and green transitions, apprenticeships, or validation of non-formal and informal learning to skill mismatch, upskilling and reskilling, microcredentials or helping Ukraine refugees find jobs in the EU;
- presentation of Cedefop’s various online tools and databases, such as the skills forecast, skills OVATE, VET toolkits for tackling early leaving and NEETs, the VET in Europe database, etc.;
- features: on topics such as the next generation skills intelligence, the achievements and challenges of selected vocational schools in various Member States, the annual #CedefopPhotoAward and the European vocational skills week;
- special issues on Cedefop’s 40-year anniversary in 2015 and on VET post-2020.

We scrutinised and explained major European policy initiatives, such as the Commission’s European Skills Agenda, the European Pillar of Social Rights or the first ever Council Recommendation on VET, and the Osnabrück Declaration on post-2020 VET. We also looked at VET in other countries and regions of the world, including Argentina, Brazil, South Africa, and Australia.

We reported on Cedefop’s collaboration with other organisations, particularly its sister EU agencies.



### WHAT THEY SAID

But it was, perhaps, the variety of published interviews that stood out. In total, there were over 100. Here, we selected just a few quotes from the 25 past issues.

In the first issue, in May 2014, then European Commissioner for Education, Culture, Multilingualism and Youth Androulla Vassiliou talked about investing in education and training to get out of the economic crisis:

‘Within sound fiscal policies, we must prioritise investments in our citizens, mainly young people that are going to build tomorrow’s Europe. All investments must be well thought through to ensure that they adequately address local challenges and that they operate effectively and efficiently in the particular national situation. For this, we need to make sure that employers and schools work closer together.’

### A HAPPY ANNIVERSARY

Various Europeans congratulated Cedefop on its 40-year anniversary in 2015. Then European Commissioner for Employment, Social Affairs, Skills and Labour Mobility Marianne Thyssen said:

‘No organisation understands better how Europe’s VET systems are struggling to meet 21st century expectations. Equally, because of its extensive support and the demands upon its expertise, Cedefop knows the effort being invested by the Commission, Member States and social partners to



improve VET systems.’

Martin Schulz, President of the European Parliament at the time, pointed out:

‘With its impressive network established over all these years, Cedefop is ideally placed to lead the way in reinvigorating vocational training. Its unique forum, through which best-practice exchanges, expert policy advice and advocacy can be developed, is perhaps more important today than ever before.’

### A SKILLS REVOLUTION

In his first Cedefop interview for the May 2020 issue, current European Commissioner for Jobs and Social Rights Nicolas Schmit focused on the importance of data for education and the labour market:

‘Building further on Cedefop’s big data analysis of job vacancies will give us better insight into evolving skills needs at regional and sectoral levels. Analysis of skills supply and labour market outcomes of graduates will complement the information and help to identify skills gaps and trends. Making this information widely available will help individuals and companies, especially SMEs, to take more informed and strategic decisions on which skills to acquire, who to hire or what training to propose.’

European Commission Vice-President Margaritis Schinas, during his joint visit with Mr Schmit to Cedefop in September 2021, talked about a skills revolution in Europe:

‘Cedefop is at the heart of EU efforts to forge

new skills and bridge the important skills gap that the pandemic has revealed, but also one that is created by the growth that is now picking up, the twin transition towards a digital and green Europe that requires a skills revolution for the right mixture of people so that our job markets can cope with shortages and increased competition.'

Digitalisation featured heavily in the magazine stories. In the January 2016 issue, Richard Freeman, Professor of Economics at Harvard University, had this to say on skills for jobs in the era of robots:

'To prevent a small number from ruling the world, we must widen ownership of machines, robots and capital. Future workers will not need to learn foreign languages, but only the languages of computers. Training and skills that work best in the new world are likely to differ from those in the past by being more computer-based.'

### CHOOSING THE BEST COURSE OF ACTION

In the May 2016 issue, Professor Geoff Hayward, Faculty of Education, University of Cambridge expressed caution about the European VET reforms:

'It's an open question as to whether the various reforms that we've seen across the EU over the last 20 or 30 years have produced the outcomes that we wanted them to produce in terms of raising productivity or increasing competitiveness. I've always thought it was a mistake to think you can reform the labour market by reforming the education system. You need policies directed to the labour market to reform the labour market.'

Denise Amyot, then President & CEO of Colleges and Institutes, Canada, maintained that VET compares favourably to university education:

'When I go to universities, unfortunately, I always see students sitting on a chair taking notes. If you visit one of our colleges in Canada, the classroom is not like that at all. They are all doing something. For the students, the fact that you are part of a professional and technical education has a very different connotation. The best example is that you have a large percentage of university students that now come to our colleges.'

But Andreas Kazamias, Professor Emeritus of Educational Policy Studies, University of Wisconsin-Madison, argued in January 2017 that more emphasis should be placed on studies that cultivate the soul, such as humanities and arts:

'To be employed nowadays is not just a question of possessing skills. Employers also want people who are 'cultured'. Schools and universities should not only train people by providing skills for employment; they should also educate them to be democratic citizens and live a flourishing life, a good life.'



## TEACHERS AND LEARNERS

Speaking in the September 2019 issue, award-winning head teacher Antonio Mir Montes from Spain, insisted on the importance of the human factor in education:

‘Teachers and trainers are no longer mere “containers of knowledge” accumulating degrees and certificates. Today, they must be able to create a learning environment where teamwork is essential.’

Una Buckley, adult learner from Ireland, had an inspiring story to tell in January 2017:

‘I returned to formal education at 50 inspired by a line in a book that I was reading, which asked what happened to your childhood dreams and have you done anything about them? I realised that I hadn’t. It was kind of a lightbulb moment. My dream was to be a teacher and, as I had to leave school at 16 because my parents were separated, all my dreams were forgotten.’

## A BROADER PERSPECTIVE

In the January 2020 issue, former apprentice and then judge Elke Büdenbender, spouse of Germany’s Federal President Frank-Walter Steinmeier, talked about a more equitable society:

‘The future belongs to us all – both men and women – and we need to shape it together. This will give rise to equal opportunities and will allow women to break through the infamous glass ceiling. Equal participation makes our society more equitable, improves our political responses and provides our democracy with a solid foundation for the future.’

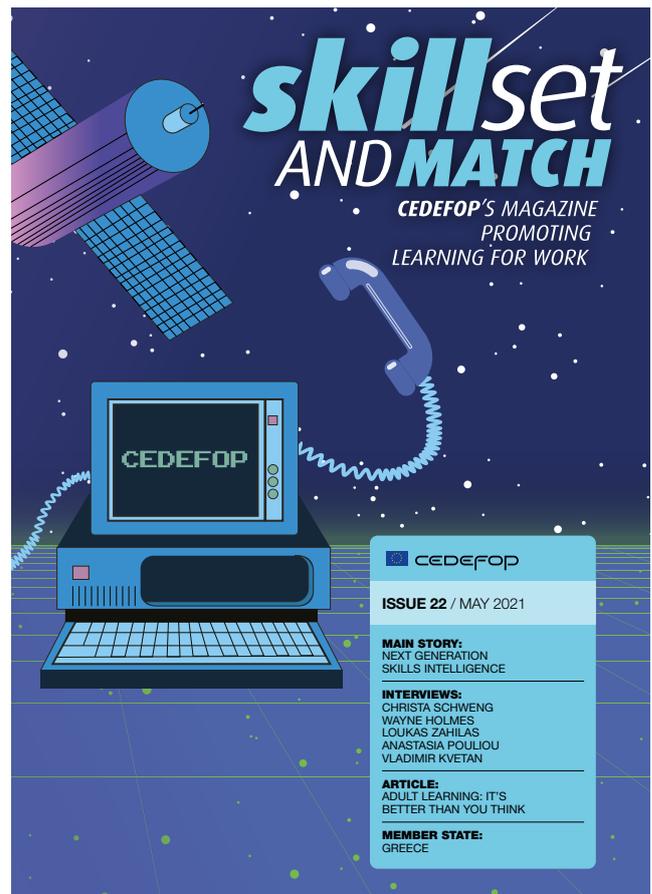
Looking at VET issues from a global perspective, in September 2015, Shyamal Majumdar, Head of UNESCO-UNEVOC at the time, said:

‘Some countries in Asia, South America or Africa regions facing dual economies have difficulty selling TVET to intended target groups given low social image, quality issues and gaps in information between university education and TVET. In a comparison of common challenges, Europe seems to have progressed far better than its counterparts on the global stage.’

## WORKING TOGETHER

Cedefop’s support to Member States was highlighted in September 2020 by Croatian Minister for Science and Education Blaženka Divjak, whose country joined the EU in 2014:

‘This positive cooperation started through Cedefop’s ReferNet network, which is a unique source of information on national VET systems and policies. It enabled us, as a new member, to understand better the legal framework and institutions involved in the development of VET and adult learning in each country and to monitor developments and trends in vocational education policies.’



In the May 2021 issue, European Economic and Social Committee President Christa Schweng noted the EESC’s important grassroots expertise, given that its members represent employers’ organisations, trade unions and civil society in Member States:

‘We particularly support initial and continuous VET, dual learning and apprenticeships, as means to acquire relevant skills and avoid skills obsolescence in a rapidly changing world of work. Social partners have a major role to play in diagnosing labour shortages, developing qualifications and providing career guidance.’

## A CALL TO YOUNG PEOPLE

More recently, in the May 2022 issue, European Commissioner for Innovation, Research, Culture, Education and Youth Mariya Gabriel called on young people to get involved in the European Year of Youth:

‘I strongly encourage our young people to take advantage of the opportunities offered by the EU. Look up the initiatives on the European youth portal, choose those that fit their profile and take part in mobility projects, volunteering or participate in the training and workshops organised throughout the year. There are many opportunities specifically designed for the young, from the European Apprentices Network and the European vocational skills week to Erasmus for young entrepreneurs.’



**XAVIER MATHEU**  
ETF Director ad interim



## Joining forces for VET and jobs

*“Cedefop and the ETF each work independently with their own stakeholders, but we check regularly to ensure that we can share and learn from one another”*

Developing synergies and complementing each other's work is crucial for European Union institutions aiming to provide maximum value to policy-making and implementation. Cedefop and its sister Agency the European Training Foundation (ETF) have long cooperated on exchanging expertise and jointly carrying out projects on vocational education and training (VET), skills and human development. This cooperation includes monitoring the progress of the Osnabrück Declaration on VET in Europe and on providing refugees from Ukraine with access to the education systems and job markets in their host countries. ETF Director ad interim Xavier Matheu visited Thessaloniki as part of a joint knowledge-sharing seminar between the two Agencies in June, and *Skillset and match* had the opportunity to quiz him on this cooperation.

**This was the first physical meeting between the two Agencies since the coronavirus crisis began. How important is it to interact?**

For quality communication, it is very important to interact physically: there are many aspects beyond just listening to a voice or looking at a face. In this respect, I think it is very important to meet in person. However, something we've learned during this period

is that there are different modalities of communication that perhaps we were not using enough. Technology now allows us to make a combination of different modalities, and this is probably the future, also because it's becoming increasingly difficult to travel due to environmental reasons.

**The ETF and Cedefop have distinct mandates, but in various projects they have been working together. How beneficial do you think this collaboration has been and can be in the future?**

The two Agencies have been cooperating from the beginning, and since 2004, when I started working at the ETF, we've been working together at least every year. These knowledge seminars are the minimum level of cooperation, but they are complemented more and more by working groups that examine different policy areas. There are also projects on which we work together: some flagship projects, particularly on qualifications and the inventory of qualifications, on validation of formal and informal learning inventories. We work on methodology for anticipation and matching of skills, on how to use learning outcomes in curriculum development. Each Agency works independently with its own stakeholders, but we check regularly to ensure that we work with similar approaches and similar tools, so that we can share and learn from one another.



**One of the joint endeavours that the two Agencies have undertaken is monitoring the Osnabrück declaration. This is a major statement of intent for the EU, so how do you think it is progressing?**

We have been on this for quite some time, even before Osnabrück, from the time of Bruges and then Riga. I think this has become something of a tradition, and even the regulations and the declarations mention the two Agencies. We have been working very well together on a technical level to develop national system performance indicators and to follow exactly how the different countries and Member States are sharing objectives; this accepts, of course, that Member States are completely autonomous in employing their own policies to reach those objectives. Currently we are working on developing the instruments. We have to see afterwards if these instruments really are applicable, if we get the information needed, if the information allows us to analyse progress. Comparing this with the previous rounds of the process, I am very optimistic that we can succeed.

**Would it be right to say that the tragic circumstances created by the war in Ukraine have made the ETF's position even more crucial than before?**

Well, it is not the first time we have had to deal with a war in neighbouring countries: we've been working with Syria, Armenia, Georgia, all the countries that have been entangled in conflict. I think the dimension and the geopolitical importance of Ukraine is a particular case. We've been working with Ukraine for years, we've always considered working in that country a priority, and now we're seeing huge numbers of people from Ukraine either displaced

inside Ukraine or fleeing to Member States seeking shelter. Under these circumstances, it is very important to assist these people so that they can find jobs and make their qualifications more visible. It is also important to help EU services and institutions understand what they can do and what is needed in terms of reskilling and upskilling.

**Some of the refugees are ripe for the labour market, others would still need to complete a vocational education pathway...**

Job opportunities must match their skills and competences, perhaps in different sectors from those where they worked in their country. In that sense, there is a more pressing need for upskilling and reskilling. However, I think ways can be found to use the skills and competences people have: not everything has to be developed from scratch. We don't have people coming who are illiterate and without any skills, that is not the case. Most of the people arriving have employment experience, they have skills and competences. Then the issue is to adjust to the needs of a different labour market – which, however, is close to what they knew before. Unfortunately, for everyone, including us, this is work in progress because the war is still going on.



European Training Foundation website



*Skillset and match* podcast: Cedefop and the ETF working together for VET and human development



Cedefop's response to the war in Ukraine



Osnabrück Declaration



# Students in Ukraine compared to those in the EU

**“ The average skills of 15-year-olds in Ukraine are lower than in most EU Member States based on preliminary evidence of educational achievement and expectations from PISA 2018**

The influx into the EU of young refugees from the war in Ukraine has raised questions as to how their education levels compare to those of their EU counterparts. Answers to these questions can help policy-makers provide solutions for young Ukrainians to continue their studies in the EU.

The average skills of 15-year-olds in Ukraine are lower than in most EU Member States, based on the OECD's Programme for International Student Assessment (PISA) which measures 15-year-olds' ability to use their reading, mathematics and science knowledge and skills to meet real-life challenges. Taking the average of reading, mathematics, and science results, Estonia, Finland and Poland had the highest scores in PISA 2018, while the lowest were in Bulgaria and Romania. If we add Ukraine to the picture, it would be in the bottom part but still higher than Bulgaria and Romania. Results in Ukraine are, depending on the subject, comparable to results in Croatia, Greece, Italy, Luxembourg, Malta and Slovakia.

## UKRAINIANS AND MIGRANTS IN THE EU

The picture changes significantly if we compare Ukrainian students in Ukraine to students with an immigrant background (not Ukrainian) in the EU. Ukrainians rank higher than students with

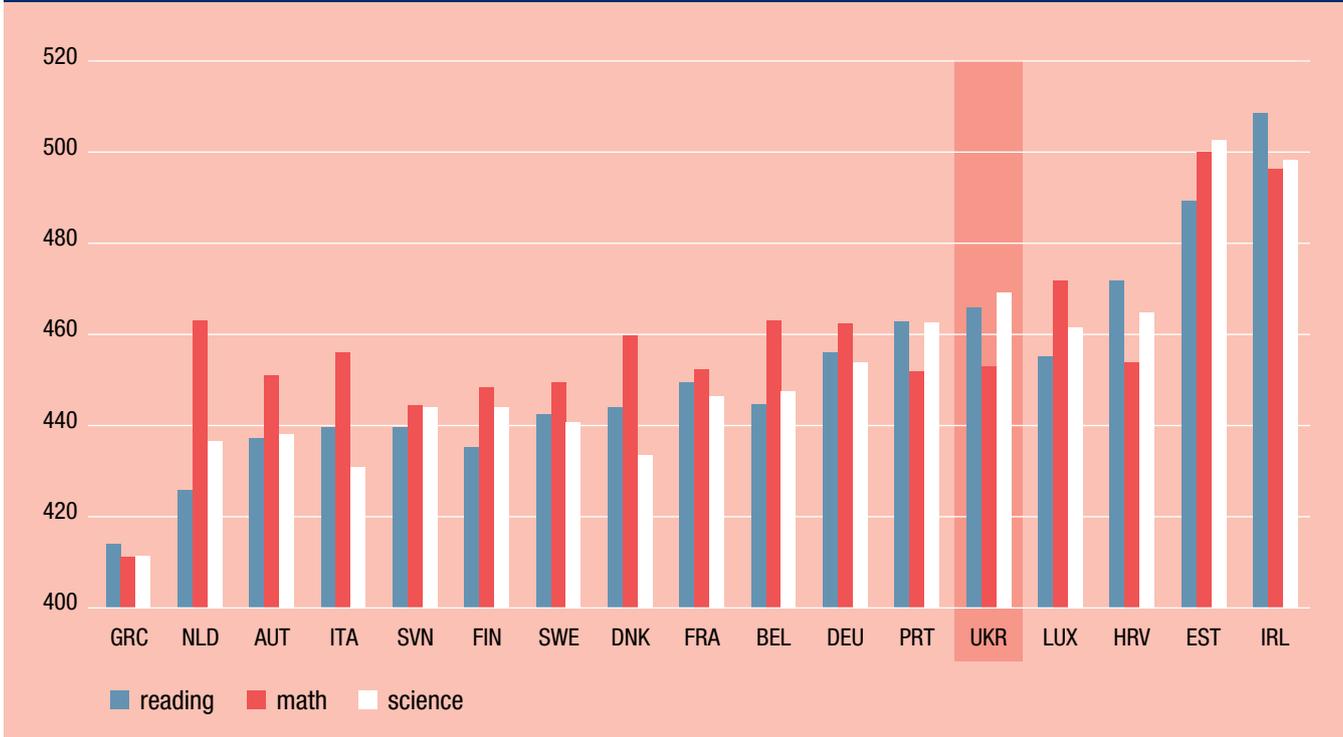
an immigrant background in most EU countries. They are only surpassed by migrant students in Estonia, Ireland, Croatia and Luxembourg, though, in mathematics, Ukrainian student results are more similar to those of immigrant students in most EU countries. This implies that, in terms of supporting student achievement, Ukrainian refugee students do not pose any particular challenges compared to existing migrant groups in the EU.

It is not only the average achievement that is relevant, but also how it is distributed. Reading achievement distribution is narrower for Ukraine than for all EU students: there is a similar number of low-performing students but a smaller share of top-performers, making reading achievement more homogeneous. This is no surprise, as the EU comprises 27 Member States which are very diverse in terms of culture, language, geography and history, but it indicates that fewer 15-year-old Ukrainians are able to achieve the highest reading proficiency.

With maths the picture is quite different. The shape of achievement distribution is similar for both Ukraine and the EU, but maths achievement is much lower in Ukraine at all levels. Fewer Ukrainians have the highest maths proficiency and many more do not master essential knowledge and skills.

Comparing Ukrainians (in Ukraine) with students

## PISA SCORES: EU MIGRANTS COMPARED TO UKR STUDENTS



with an immigrant background in the EU, we find that Ukrainian students are comparable to second-generation immigrants in the EU. Ukrainians and second-generation migrants also have higher scores than first-generation migrants.

### SOCIO-ECONOMIC BACKGROUND

An important factor that determines PISA scores has consistently been the socio-economic background of students. Overall, students from a lower socio-economic background achieve lower scores than those from a higher one, showing that parental and financial background can affect achievement. Ukrainian students have a lower socio-economic background on average than EU students, but still the distribution overlaps with that for the EU.

Looking at country scores in combination with socio-economic background, average science and reading achievement for Ukraine is as expected compared with EU Member States. In mathematics the results are much lower than expected.

Considering only students who have an immigrant background, Ukrainians are similar to second-generation migrant students, but they score lower in mathematics after adjusting for differences in socio-economic status.

Where Ukrainian students are lacking in basic skills, as represented by reading, maths and science, this may pose a challenge as they may have difficulties in following classes in the EU. Emphasis should be put on mathematics, in which they have particular difficulties; mathematics is essentially a universal,

logical language, and appropriate methods are less dependent on spoken language. Reading skills, although lower, show there is no problem in acquiring skills related to language as such, but studying in a foreign language poses a major challenge. The importance of socio-economic background shows that programmes supporting the integration of students, so they can study and live in appropriate and safe conditions in the EU, are key to a successful integration in EU education systems.

### NO LACK OF AMBITION

The situation is far more positive if we look at the ambitions of students. Their educational expectations are particularly relevant, as they give an idea what Ukrainian refugee students may want to achieve in EU education systems, and how long they want to continue their studies. Ukrainian students are very ambitious, and they indicate a much stronger wish to attain tertiary education degrees than EU students on average.

Fewer also want to drop out early from school, which can be explained by the fact that it is obligatory in the Ukrainian education system to finish upper-secondary education. There is a danger that displaced refugee students have a higher rate of drop-out given many adverse factors: not speaking the language of their new host country, socio-emotional and economic difficulties as refugees. But the mindset and ambitions of Ukrainian students favour continuing their studies against all odds.

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# Setting the European digital transition in motion

**“** *Cedefop’s 2nd European skills and jobs survey aims to inform policy-making to make the EU’s ambitious targets on digital upskilling and the twin digital and green transitions a reality*

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Several years before the outbreak of the COVID-19 pandemic, concerns about potential job losses due to automation induced by new industry 4.0 digital technologies were heightened. Cedefop’s 1st European skills and jobs survey had already revealed that 43% of EU adult employees were exposed to new machines and ICT systems at work. Others had cautioned that about half of all jobs in advanced economics may be susceptible to replacement by artificial intelligence algorithms.

The pandemic has since accentuated the long-standing digital transformation of European enterprises, resulting in greater uptake of digital and remote forms of working and learning. It disproportionately impacted some economic industries (e.g. hospitality, transport, arts and leisure) and worker groups, aggravating skill mismatch tensions at micro level. A non-trivial share of EU companies also saw changes in core business activities or had to adapt business operations, with ensuing implications for how they manage staff.

## CEDEFOP'S 2ND EUROPEAN SKILLS AND JOBS SURVEY (ESJS2)



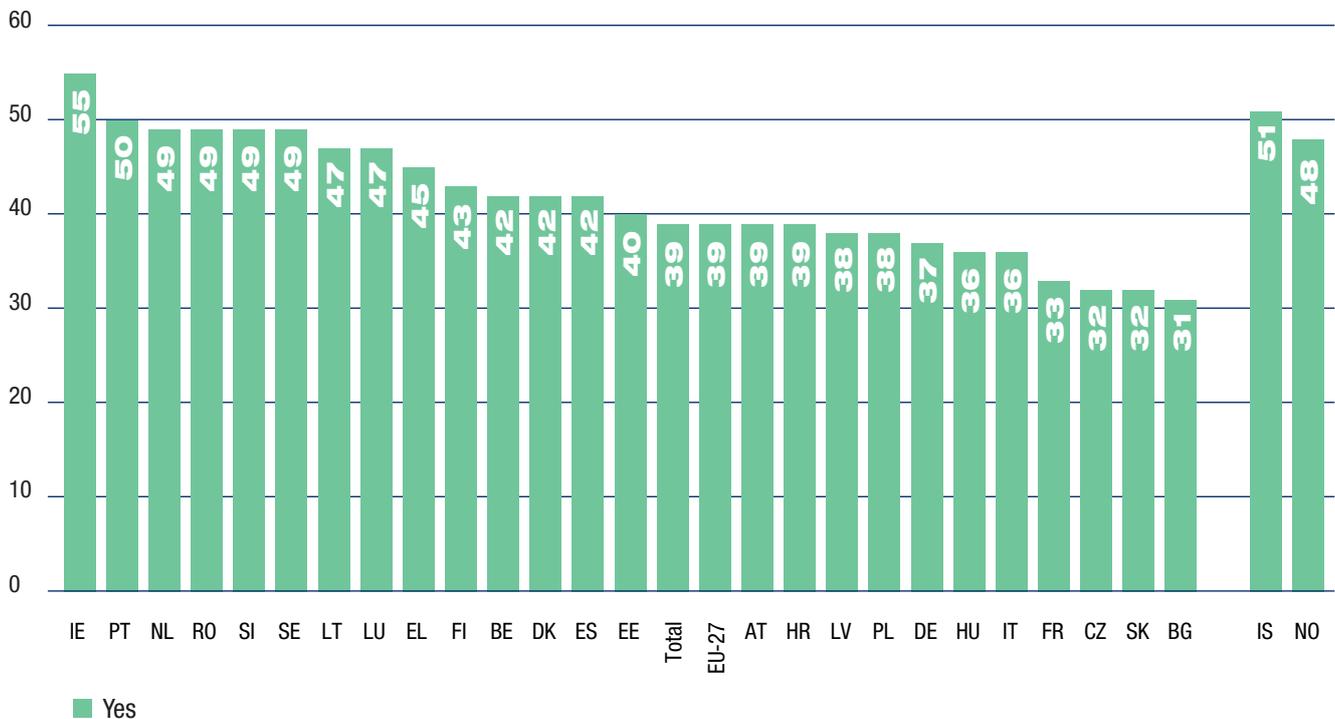
- The ESJS2 is the second wave of a periodic survey collecting information on the job-skill requirements, work digitalisation, skill mismatches and workplace learning of representative samples of European adult workers.
- It aims to inform the policy debate on the impact of digitalisation on the future of work and skills, also in the context of the COVID-19 pandemic.
- Fielded in summer 2021, the ESJS2 collected information from 46 213 adult workers in all EU Member States, Iceland and Norway (EU+). Cedefop has joined forces with the European Training Foundation to carry out the ESJS2 in more than 35 countries by 2023.
- The ESJS2 aspires to become a key tool for evidence-based policy-making in VET. Its design incorporates the growth, sustainability and resilience ambitions of the EU Skills Agenda and the European digital strategy and acknowledges the importance of digital skills in VET put forward in the 2020 Council Recommendation on VET and the Osnabrück Declaration.

Digitalisation can be a force for good, markedly improving workers' job quality, or bad, resulting in task automation and standardisation and skills downgrading. Cedefop's 2nd European skills and jobs survey (ESJS2) aims to inform evidence-based EU policy-making to make the EU's ambitious targets on digital upskilling and the twin digital and green transitions a reality.

### DIGITALISATION AND COVID-19

The pandemic accelerated the long-standing trend towards greater digitalisation of work in EU economies. ESJS2 data reveal that 29% of EU+ workers engaged in more remote working, compared to the pre-pandemic era. Some 4 in 10 adult employees more often used digital technologies to perform some of their work tasks (Figure 1). About one third (36%) also engaged in more online learning for job-related purposes.

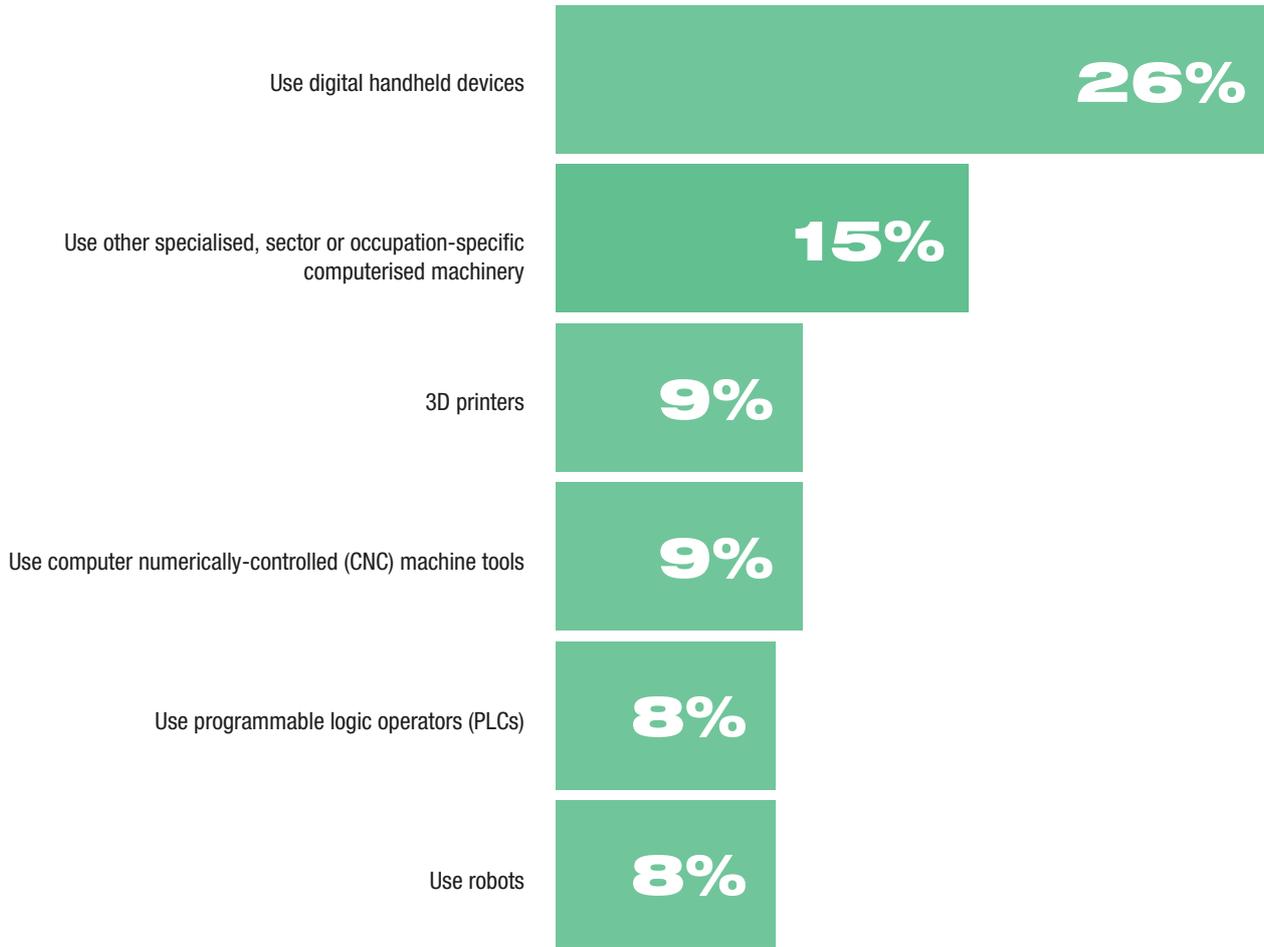
Figure 1: Increasing use of digital technologies in jobs during the pandemic, EU+



NB: % of adult workers in EU+ (no data available for Cyprus, Malta) who had to use digital technologies more often to perform some of their work tasks, compared with the situation before the pandemic; weighted data.

Source: Cedefop's 2nd European skills and jobs survey.

Figure 2: Use of computer-controlled machines, EU+



NB: % of adult workers in EU+ who work with or operate any of the computerised machinery in the last month as part of their main job; weighted data.

Source: Cedefop's 2nd European skills and jobs survey.

**DIGITALISATION IN EU JOB MARKETS**

Given the accentuated digital skill demands due to the pandemic, 35% of EU+ employees had to learn new digital technologies to do their main job in the previous year of the survey. This is accounted for by the one-third of European workers who had to learn new computer programmes or software for their job over the period, excluding any minor or regular updates. Another 10% had to learn to use new computerised machinery for job-related purposes (Figure 2).

**IMPACT ON SKILL MISMATCH IN THE EU**

ESJS2 data reveal that over half of EU+ adult workers need to develop their digital skills further to do their main job even better than at present: a digital skill gap, benchmarked to improved future job performance. What is striking is that this digital skill gap prevails even though about 1 in 2 EU+ adult workers are in jobs of relatively 'low digital intensity'.

Individuals who had to learn to use new digital technologies are more likely to have digital skills deviating from a level required for better job performance. But many in great need of digital training often do not receive it; this includes those with changing digital job-skill demands and digitally low-skilled workers not using computer devices at work.

Only 26% of EU+ workers undertook non-formal education and training activities for further developing the digital skills required by their job between (mid)2020-21. Such digital skills training is mostly pursued by males and urban workers, those with higher education, in larger-sized firms and working in high-skilled occupations.

Industries react differently to addressing the digital skill gaps of their workforce. While the training activities of more than 6 in 10 workers in the ICT sector focus on digital skills, less than 3 in 10 do so in the accommodation and food services sector.

**FEAR OF GOING DIGITAL: FACTS VERSUS FICTION**

With the debate on the impact of digitalisation being dominated by technological alarmism, the ESJS2 provides some insight into the extent to which popular fears of robots or machines taking away people’s jobs are justified by evidence.

About one third of the EU+ workforce believes that new digital technologies in their company or organisation can or will do part or all of their jobs in the medium-term. Some 45% acknowledge the need for upskilling or reskilling due to digitalisation. However, only about 4% of the total EU+ adult workforce eventually did not have to perform some tasks they did before because of newly introduced digital technologies at work.

Workers affected by task automation tend to be lower-educated and typically employed in manual and low-skilled, elementary, jobs. They are mostly found in specific industries, such as agriculture, financial and insurance services and utilities. By contrast, 22% of the adult workforce saw both task destruction and generation, a testament to both the positive and destructive nature of digital technology (Figure 3).

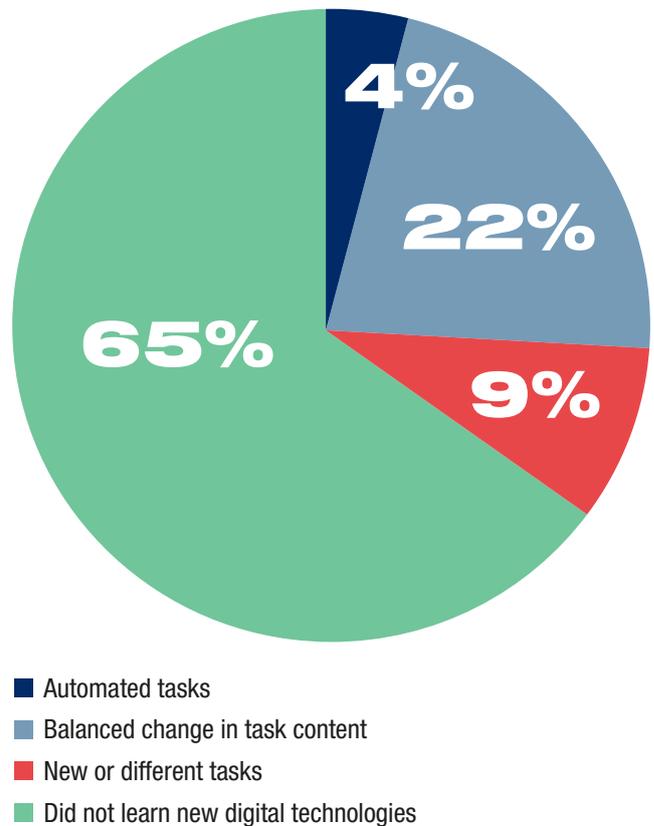
**WAY FORWARD**

The ESJS2 evidence stresses the twin challenge EU policy-makers are faced with. Tailored vocational education and training (VET) provision is required to enable those exposed to technological innovation to mitigate their digital skill gaps and any skills-displacing technological obsolescence in reasonable time.

There is also a need for greater digital investment and reconfiguration towards new digital working methods in EU+ workplaces. Rather than solely speculating about which jobs may or will vanish, digital skills policies should aim to redress in-company managerial and workplace practices, following technology-enabled changes, to ensure positive human-machine complementarities.

VET policy should also focus primarily on the 1 in 8 employed adults who do not use digital technologies at work and the non-trivial share with low use of digital technology at work. Addressing the mismatch between who needs digital training most and who gets it in EU workplaces is paramount. Policy-makers should focus on expanding efforts to reach out to groups of workers most in need, prioritising lower-educated and older workers, females, people in low- or semi-skilled jobs and employees in smaller-sized establishments. Another equally important priority for EU digital skills policies is to promote a human-centred and empowering approach to adopting digital technology.

**Figure 3: Digitalisation and task automation in EU+ jobs**



NB: % EU+ workers with positive answers to ‘As a result of the new computer programmes or software/new computerised machinery you learnt for your main job in the last 12 months, did your job tasks change in any of the following ways? (i) You now do not do some tasks you did before (ii) You now do some different or new tasks.’; weighted data.

Source: Cedefop’s 2nd European skills and jobs survey.

# Science and engineering technicians

Science and engineering technicians comprise a wide range of mid-level skilled vocational jobs in engineering, construction, electrotechnology and life sciences.

As science and technology occupations are central to healthcare and drive the green and digital transitions, they were mostly shielded from the economic impact of the COVID-19 pandemic. This was particularly true for life science technicians, which include jobs in bacteriology, biochemistry and pharmacology, and for engineering technicians, where employment remained stable because of the quick recovery in manufacturing.

Since 2011, the employment of science and engineering technicians soared in countries like Denmark, Ireland, Hungary, Poland and Sweden, while elsewhere it grew more modestly. In Belgium, Germany, Greece, and the Netherlands their employment declined.

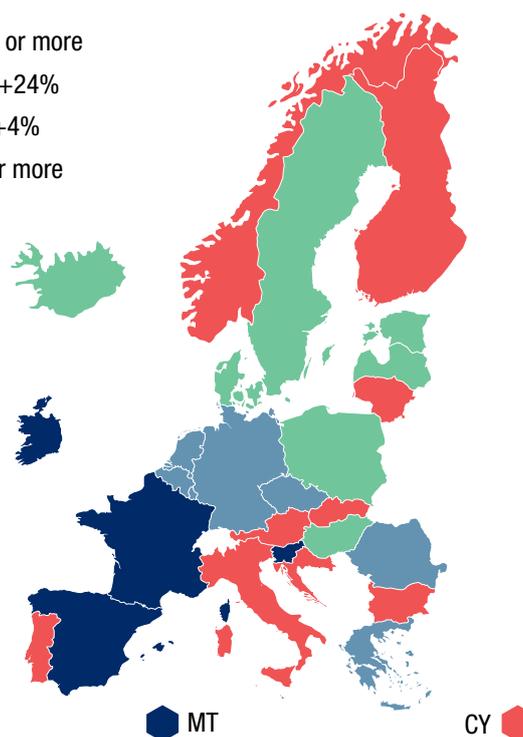
Science and engineering jobs are gradually shifting towards higher qualification needs. In the past decade, employment growth among science and engineering professionals was 5 times higher than at technician level. And while most currently employed science and engineering technicians hold upper secondary VET qualifications, most new jobs require a bachelor or master degree. Cedefop's skills OVATE shows that 2 in 3 new jobs posted online in 2021 required a tertiary level degree.

Apart from rising qualification needs, science and engineering technicians' jobs are also changing in other respects. Being a traditional VET occupation, hard skills remain crucial. However, skills like creative design, working independently, dealing with uncertainty, goal orientation and quality management are becoming increasingly important.

Alongside the increasing importance of tertiary degrees, tasks are becoming more complex. Workplace automation and digitalisation appear to free workers from routine maintenance and process control tasks and give them more autonomy and responsibility to design, lead and manage. In the context of its green work, Cedefop considers science and engineering professionals to be 'thyroid occupations', drivers of green technological and process innovation: while their employment in absolute terms is not that high, their contribution to achieving the green transition is crucial.

## Employment change 2011-20 (in %)

- +25% or more
- +5 to +24%
- -5 to +4%
- -5% or more



## SCIENCE AND ENGINEERING TECHNICIANS

- > **7.6 million** in the EU (2020)
- > **78%** employed in manufacturing, construction and professional services
- > **4.3 million** forecast job openings until 2030
- > **2 in 3** job openings require a high-level qualification



Learn more about science and engineering technicians



More on Cedefop's online job advertisements analysis and the skills OVATE webtool



Listen to our podcast on Skills for green economy

© iStock/Givaga



# New care and nursing study opportunities in Czechia

A pilot programme of tiered educational pathways within the care and nursing sector has just been launched in Czechia, the EU Presidency holder in the second semester of 2022.

The programme, from the Ministry of Education, started on 1 September with the aim that students, upon completing the relevant part of the educational pathway, achieve not only a qualification but also the corresponding education level.

This objective meets both the current needs in the healthcare sector and the provision of individual learning opportunities. In practice, candidates who enter the first of a four-year study programme in Practical nursing (EQF 4), concluded with the *maturita* exam will, at the end of the third year, have the opportunity to take the final examination and obtain the Carer vocational education and training certificate (EQF 3).

In the fourth year, they will take the *maturita* exam and obtain the Maturita certificate in practical nursing. Subsequently they can continue to a diploma programme in General nursing (EQF 6) at a tertiary professional school. There will be no need for an entrance examination: they will commence their studies in the second year of this three-year programme, concluding with the *absolutorium* exam, which will give them a tertiary level diploma.

## BENEFITS FOR STUDENTS

Obtaining the Carer vocational education and training certificate allows students to perform qualified work in healthcare institutions during their studies, with a higher salary. Shorter studies to obtain a tertiary level of education and the possibility to enter a tertiary professional school after completing the fourth year of upper secondary school, even if they fail the state part of the *maturita* exam, also offer motivation. However, students need to complete the state part of the *maturita* exam by the end of the second year at the tertiary professional school.

The full cycle of pilot testing, which involves 30 upper secondary and tertiary professional medical schools, will be finalised by 31 August 2031. Schools may still join the pilot in the next 4 years.



by REFERNET  
CZECHIA



© Cedefop/Aris Delfopoulos

## #CedefopPhotoAward video winners at Cedefop

“ We had a lot of fun doing this project and showing the world how we try to change our school, by updating the curriculum and the infrastructure

The #CedefopPhotoAward 2021 video winning team ‘NewAgeSchool’, from Poland, visited the Cedefop headquarters in Thessaloniki, in June to receive their prizes from Executive Director Jürgen Siebel.

IT students Łukasz Bełczowski, Karolina Mruk, Jakub Sajda and Aleksandra Dulny, from the vocational school Niepubliczne Technikum im. gen. W. Andersa w Opatowie, accompanied by their teacher Hubert Grześkiewicz, met with Mr Siebel and Cedefop Head of Communication Gerd-Oskar Bausewein.

The 18-year-old students won the video part of the competition with their ‘story of two worlds that simply have nothing in common except school address; a story about students of IT and Stylist technical secondary school; about how we found the bridge allowing them to work together and learn from each other, and finally a true bond was created.’

Opatów is a small town in south-eastern Poland with a population of 7 000. The school has under 100

students, but the number is growing every year.

Karolina and Aleksandra plan to continue to the military academy to become paratroopers. The ambitious young women have already tried parachute jumping and enjoyed it. Jakub, who is President of the school’s student board, aspires to a career as a firefighter, while Łukasz wants to work in IT administration and combine this with journalism, as he already writes for the local newspaper.

### MAKING A MARK

Welcoming the team, Mr Siebel expressed his fascination at how creative young people are and how students from different faculties can collaborate to achieve a great result. He added that vocational education and training (VET) gives people the skills they need and hoped that the young visitors will make a mark on society with their knowledge and work.

Mr Grześkiewicz, who teaches physics and



© Cedefop/Rosy Voudouri

photography at the school, thanked Cedefop for the opportunity to take part in the competition, adding that he is proud of his students. ‘We had a lot of fun doing this project and showing the world how we try to change our school, by updating the curriculum and the infrastructure,’ he noted.

The dynamic teacher is always on the look-out for opportunities to showcase his students’ talents. A wall in the school is dedicated to their projects and awards. ‘My colleagues call it “Hubert’s wall” because I am behind all these activities,’ he jokes.

### CREATIVITY AND PASSION

Mr Bausewein, who showed the visitors around Cedefop, added: ‘It is a pleasure to meet the winners of this year’s category “best video”: young, creative and passionate students, who impressively have proven again that VET is a first choice and not a second option.’

It took the Polish team 5 days to produce the 60-second video, using the latest mobile equipment in the school’s state-of-the-art studio.

The four friends agreed that it was exciting to be involved in this project, which brought them even closer, as Łukasz attests. ‘It was fun to try something new,’ noted Karolina, while Aleksandra enjoyed ‘learning how to operate new professional

equipment.’ Jakub ‘will certainly continue with photography and video as a hobby and, perhaps, professionally.’

Finding out that they had won ‘best video’ was ‘an amazing feeling’ for the young Poles, as was travelling to Greece as part of their prize. For some, this trip was their first outside Poland. It is a memory they will treasure. ‘Being a student gives me a lot of good memories,’ says Łukasz, who values his teachers’ contribution to his education. ‘It’s more important than equipment,’ he argues.

Best video was one of the #CedefopPhotoAward 2021 winning categories. The two winning teams of the photostory award were ‘Cyclades’ from Greece’s, 5th Evening Vocational High School of Patras and ‘ClimateMakeUp’ from Spain’s IES RAMON Y CAJAL. The Greek team came top in the online public vote at the VET Excellence Awards, organised by the European Commission.



Watch the #CedefopPhotoAward 2021 winning video



Read more on the #CedefopPhotoAward 2021 winners



ΠΡΩΤΟΒΟΥΛΙΑ  
**4 SKILLS  
4 JOBS**

© Cedefop/Angelos Zymaras

# Upskilling for business needs and learners' ambitions

“ A programme in Greece brings together employers looking for new skills, professionals who seek upskilling to further their career and training institutions

A full-circle upskilling, reskilling and recruitment pilot initiative is under way in Greece, designed to cater for the growing needs of businesses as well as those of young professionals hoping to improve their job prospects.

The Hellenic Federation of Enterprises (SEV), the country's main employers' association, is implementing Skills4Jobs, a scheme that covers all stages needed for a complete re- and upskilling drive.

- Pinpointing the skills in highest demand among businesses.
- Bringing together firms that are seeking to hire workers with those skills, professionals that are interested in upgrading their skillset and institutions that can provide the necessary training.
- Delivering training courses designed to furnish learners with skills most in demand in the labour market.
- Arranging for trainees to be hired by participating businesses for a trial period that could lead to permanent employment.

SEV Director General Alexandros Chatzopoulos explained the purpose of the project: 'SEV's Skills4Jobs initiative aims to enable our members

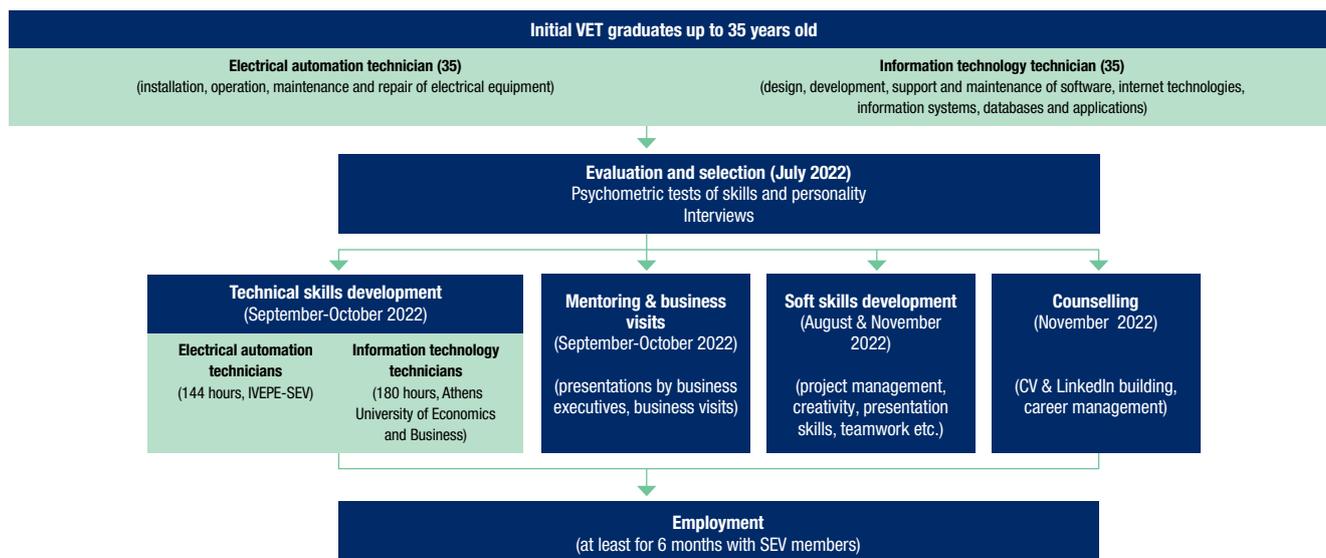
to find employees with appropriate skills, to support young people in Greece by investing in their training and employment, and to contribute in a practical and effective way to the improvement of vocational education and training in our country.'

While plans include expanding the scheme to many professional fields throughout Greece, this pilot phase of Skills4Jobs, which is financed by private enterprises, is covering the major Athens area and is focusing on two fields that emerged as in highest demand from businesses in the preparatory research stage of the action: information technology technicians and electrical automation technicians.

## WITHIN THE EUROPEAN CONTEXT

SEV has taken inspiration from Reskilling 4 Employment, a programme by the European Round Table for Industry, a high-level forum which brings together CEOs and chairs from a cross-section of 60 European industrial and technology companies. The aim of the programme is to identify how to address reskilling and upskilling needs in the European Union. It sets out to serve as a pan-European hub that stimulates partnerships that provide reskilling opportunities to unemployed and 'at-risk' workers,

## The actions under the Skills4Jobs Initiative



Source: Hellenic Federation of Enterprises (SEV).

so they can find employment in new occupations that are in demand.

The selection process for SEV's Skills4Jobs learners, 35 in each of the two categories, was carried out in June-July and their training will be concluded by early November. Training for IT technicians will be provided by the Centre for Training and Lifelong Learning of the Athens University of Economics and Business (AUEB), while electrical automation technicians will receive their training from SEV's own Institute of Industrial and Business Education and Training.

Professor George Lekakos, Vice Rector of Research and Lifelong Learning at AUEB, says it is exciting to work alongside the leading business and industry federation in Greece, supporting businesses' needs for personnel with contemporary programming skills and young IT professionals' career prospects.

Besides teaching the core competences for each group, hard-skills training includes participation in mini-projects run by SEV member businesses, so learners can familiarise themselves with real-life problems they will be called on to deal with in a business environment.

The offer includes soft-skills training, provided by ReGeneration, a non-profit organisation dedicated to junior talent development and recruitment: project management, presentation skills, teamwork and adaptability are included. There are also talks, panel discussions, online seminars, workshops and a mentoring day featuring senior business executives.

'As true believers of the motto "hire character, train skills", at ReGeneration we continuously invest in soft-skills training and equipping Greek young people with what is necessary to kickstart their careers. We are delighted to have the opportunity to apply our expertise within the Skills4Jobs initiative, helping more young people develop personally

and professionally,' says Katerina Kypreou, ReGeneration's Senior Project Manager and communications lead.

### EMPLOYMENT MATCHMAKING

Moving on to the recruitment phase, those of the 70 participant learners who will complete the training courses successfully will have the opportunity of a 6-month paid employment stint at businesses in the major Athens area that are SEV members. Learner CVs and other data will be made available on an online platform for firms to select candidates. This employment period can be extended depending on employer needs and worker performance.

George Virvilis, Group Talent Director at Titan Cement Co., one of the companies taking part in, and supporting, Skills4Jobs, believes that 'this period is even harder for the young generation to enter the professional world, within a constantly changing and disruptive environment, where the skills needed to succeed are shifting rapidly. It is our promise to young professionals that we will seize every opportunity to accelerate their growth and potential.'

SEV echoes the experience in several other European countries when they point to the difficulties faced by any attempt to expand apprenticeship as a standard practice in Greece, the main obstacle being the limited number of large corporations. Skills4Jobs organisers are optimistic, though, that their pilot programme and its follow-up in more sectors and geographic areas will pave the way for a change of culture that could bring apprenticeship, re- and upskilling to the fore.



Hellenic Federation of Enterprises (SEV)

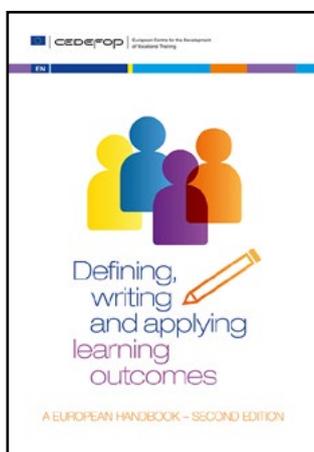


Check out the international programme Reskilling 4 Employment

# Cedefop publications

## IN FOCUS

### **DEFINING, WRITING AND APPLYING LEARNING OUTCOMES** **A European handbook: second edition**



The second edition of Cedefop's European handbook is addressed to individuals and institutions actively involved in defining and writing learning outcomes in education and training. Its ambition is to act as a reference point for cooperation in this area. It offers concrete examples of the use of learning outcomes and provides an overview of existing guidance and research material supporting the definition and writing of learning outcomes. The revised handbook also aims to promote dialogue between education and training and labour market stakeholders, by building on material from different parts of the education and training system and bridging the gap between institutions and sectors.

**Browse and/or download all Cedefop publications at [www.cedefop.europa.eu/publications](http://www.cedefop.europa.eu/publications)**



## OTHER



**Strengthening skills systems in times of transition**



**Comparing vocational education and training qualifications**



**Briefing note: Are microcredentials becoming a big deal?**



**European policies for information and guidance with reference to the international mobility of young IVET learners**



**Apprenticeships for greener economies and societies**



**Built to last: apprenticeship vision, purpose and resilience in times of crisis**



**Spotlight on VET Czechia**



**Working paper: Organisational determinants of training**



**The future of vocational education and training: Volume 1**

# Coming up

## OTHER

### 20-21 OCTOBER

#### VIRTUAL EVENT

Cedefop's Fourth policy learning forum on apprenticeships. The forum will focus on regulatory frameworks, policies and practices in the EU Member States on the role of apprenticeships for adults without or with low qualifications and/or skills.

### 9-11 NOVEMBER

#### THESSALONIKI

Cedefop's ReferNet annual plenary meeting. The network will celebrate its 20th anniversary, look back to work done in 2022 and ahead to its 2023 work plan.

### 16 NOVEMBER

#### VIRTUAL EVENT

Cedefop's Fourth policy learning forum on upskilling pathways: a vision for the future

### 5-6 DECEMBER

#### VIRTUAL EVENT

Future of VET: the way forward – Cedefop conference to discuss the final findings of the future of vocational education and training project

## IN FOCUS

### **POWERING THE EUROPEAN DIGITAL TRANSITION**

#### WHAT CAN WE LEARN FROM CEDEFOP'S 2ND EUROPEAN SKILLS AND JOBS SURVEY?

### **8-14 DECEMBER CONFERENCE (VIRTUAL)**

A true gamechanger, digitalisation and its role in shaping the future of work, skills and learning tops current EU and national policy agendas. Cedefop's 2nd European skills and jobs survey collected information from 46 000 adult workers in all EU Member States, Iceland and Norway about how digitalisation affects them, their skills match to their jobs and their readiness to invest in continuous vocational training to adapt to technological change. The conference will discuss the survey's main findings. Experts and other participants will reflect on the implications of the findings for up- and reskilling, vocational education and training and skills policies.

**For the latest information on what's coming up, go to [www.cedefop.europa.eu/events](http://www.cedefop.europa.eu/events)**





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Publications Office  
of the European Union

ISSN 2363-0183



9 772363 018305