



VET-Business Cooperation Structures in the IT Sector

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Prepared by:

Author: P4-Municipality of Vrilissia

P1-Municipality of Nea Smyrni

P2-AKMI

P3-KEK Gaia

Participating P5-Skybridge

Partners: P6-Rinova Ltd UK

P7-Telecast Solutions Ltd

P8-Bridgwater& Taunton College

P9-Aarhus Tech

Approved on behalf of VETIT

Partner: P1-Municipality of Nea Smyrni
P2-AKMI

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Executive summary

The digitalization of the economy remains among the key priorities of the European Union (EU). The benefits and importance of technology-driven developments in growth and employment are equally contemplated across the EU. However, EU member states are still facing challenges in transforming their economies into a more technology-driven industry with severe skills shortages. Vocational education and training (VET) coupled with work-based learning (WBL) which could be the answer to some of the above-mentioned challenges, are encountered with a plethora of defections and institutional inefficiencies, while at the same time, VET systems and WBL are hallmarked by stark variances and dynamics across the EU. In addition to that, gender imbalances in the ICT and technology sector should also be considered as part of the problem.

The project activities and meetings among project partners and other relevant stakeholders brought to light key issues that dominate VET and the ICT sector. Particular emphasis was given in the need to foster soft skills among VET students from the ICT sector. While technical skills are the backbone of the IT-industry, soft skills are equally important and should be taught hand in hand with hard skills. Further to that, the re-skilling of VET teachers, trainers and in-company mentors should be also put high on the VET and WBL agenda. VET trainers, teachers and mentors are the basic mediators between the learner and the workplace, and thus they should be kept skill-updated and be knowledgeable about the transformations that are taking place in the ICT industry and the rapidly changing labour market. While there is a wide consensus about the significance of work-based learning as an effective way to address and tackle labor market skill gaps and shortages, WBL systems across the EU still suffer from quality, governance issues and institutional challenges that hinder them to unfold their full potential and opportunities both for learners and companies.

In the light of these considerations, the present policy paper suggests a set of policy recommendations which could be deployed in order to address and tackle some of the most crucial issues that VET and WBL are currently facing. In particular,

- Build closer ties between VET and IT companies as well as between VET and Higher Education Institutions;
- Enhance communication strategies for school children in regard to IT employment perspectives;
- Career guidance before and during studies for VET students/learners;
- Break the gender stereotypes in the IT sector and encourage young girls to follow IT studies and professions;
- Develop training programs tailored to VET teachers and in-company mentors needs;
- Provide tangible incentives to companies to open more apprenticeships opportunities for VET students from IT sector

Introduction

In 2015, 5.8 per cent of European employees were employed in digital-related jobs, compared to 5.4 per cent in 2011.¹ Digital technologies and skills are ubiquitous as they have penetrated every aspect of our lives, varying from personal use and entertainment, business-related activities and play a key role set for economic growth and employment. In the period 2005 – 2015, jobs in the ICT sector grew by one third. From 2015 – 2025, it is estimated that approximately 10 per cent of growth is expected in the ICT industry which equals 400.000 new job vacancies.² Within this context, the demand for ICT and digital professionals is constantly increasing in all fields of the economy. The high demand for digital skills has received positive feedback since it is linked with economic development, but concurrently it is stretching governments', companies' and employees' capacities to catch up with all this rapid development. To this end, it is of vital importance for ICT professionals to ameliorate their digital skills given that the demand for information and communications technology specialists is growing fast. In the future, 9 out of 10 jobs will require digital skills.³

Economic development coupled with the rapid demand in digital and technology-relevant skills goes hand in hand with education and training of future generations. The right to education and access to vocational and continuing training is well enshrined in article 14 of the EU Charter of Fundamental Rights.⁴ High-quality education and training remain among the main priorities in the European Union and it is considered as the crucial element for boosting the employability and increasing the economic competitiveness across the EU member states. Even though education and training are strictly within the remit of national member state governments to determine, the European Union's role is pivotal when it comes to foster and support cooperation between member states in the framework of education and training. Vocational and education training (VET) besides being a significant component of lifelong learning, equips learners and the workforce with skills and knowledge that are particularly important in several fields of the labour market.

Along the same lines, work-based learning (WBL) lies at the heart of education and training of EU policies. WBL in tandem with VET is considered as promising educational pathways that can help learners to obtain skills and knowledge which are relevant to the labour market. The importance of WBL is recognized by all member states because it contributes to creating job opportunities for young students and employees and facilitating them to make a smoother transition from the classroom into the labour market. Further to that, WBL helps education to be more modern and more responsive to the challenges of the labour market and society in general, and also it is an effective instrument for addressing labour market imbalances and inefficiencies.⁵ Through

¹ Women in the digital age. European Commission 2018.

² Skills Panorama Cedefop 2016.

³ Tallinn Digital Summit Digital Skills in Europe, European Commission. Available at: https://ec.europa.eu/commission/sites/beta-political/files/digital-skills-factsheet-tallinn_en.pdf

⁴ Apprenticeships in work-based learning, Cedefop. Available at: https://eur-lex.europa.eu/summary/glossary/charter_fundamental_rights.html

⁵ Ibid.

‘Rethinking Education: Investing in skills for better socio-economic outcomes’ (2012), the European Commission put forth work-based learning as a major priority. The benefits of work-based learning are well documented.⁶ Through WBL, individuals have the opportunity to learn skills and knowledge directly from the workplace. On-the-job learning brings in better learning experiences for the learner-employee and better outcomes for the employer.

Technological developments and the need for digital skills are completely transforming economies and societies. This is both a challenge and an opportunity that the EU is called to take actions to enhance training in digital skills, make education more relevant to the new technology-driven developments and at the same time harness ICT for learning and the recognition of skills.⁷ Digital technologies are linked with the labour market as they are key factors in achieving high rates of growth, boost innovation and create jobs, mainly for the ICT professionals. The increased demand in ICT-related-jobs however, comes in contrast with the limited supply of employees with ICT skills and knowledge. In 2017, European enterprises reported important challenges and difficulties in recruiting ICT employees.⁸ Cooperation and mutual learning between work and vocational education and training (VET) in the field of ICT are key factors for achieving work-related skills match and boosting the employability.

VETIT project at a glance

The main aim of the **VET- Business Cooperation Structures in the IT Sector – VETIT** project is the development of new, sustainable cooperation structures on WBL and apprenticeships in the IT sector through capacity building, the transfer of knowledge and the exchange of practices and experiences from pioneer countries in the field to less experienced, through the establishment of a partnership consisting of local authorities, VET providers, and IT SMEs from Denmark, the UK and Greece, as well as sectoral/professional organizations.

VETIT is designed with a focus on local and regional dimension to produce concrete and sustainable results on the ground, and is thus linked with local and regional policies, while fully conforming to the European Policy Agenda regarding Adult Learning, Vocational Education and Training and the Strategic Framework for European Cooperation in Education and Training (ET2020), which is an integral part of the Europe 2020 Strategy, the Digital Agenda for Europe, the Riga Conclusions, the New Skills Agenda for Europe, the Action Plan of the European Alliance for Apprenticeships, and the European Pact for Youth.

VETIT project brings together local authorities, VET providers, and IT SMEs from Denmark, the UK and Greece, as well as sectoral/professional organizations as associated partners, to develop new,

⁶ OECD Education Working Papers The Cost and Benefits of Work-based Learning. Available at: <https://www.oecd-ilibrary.org/docserver/5jlpl4s6g0zv-en.pdf?expires=1589837013&id=id&accname=guest&checksum=60880EC74F38AEDD8053DC4317EBDCCD>

⁷ Digital Jobs and Skills. European Commission. Available at: <https://ec.europa.eu/digital-single-market/en/policies/digital-skills>

⁸ ICT specialists - statistics on hard-to-fill vacancies in enterprises. Eurostat 2019. Available at: <https://ec.europa.eu/eurostat/statistics-explained/pdfscache/40327.pdf>

sustainable cooperation structures on WBL and apprenticeships, through capacity building, the transfer of knowledge and the exchange of practices and experiences.

Country-specific challenges & opportunities

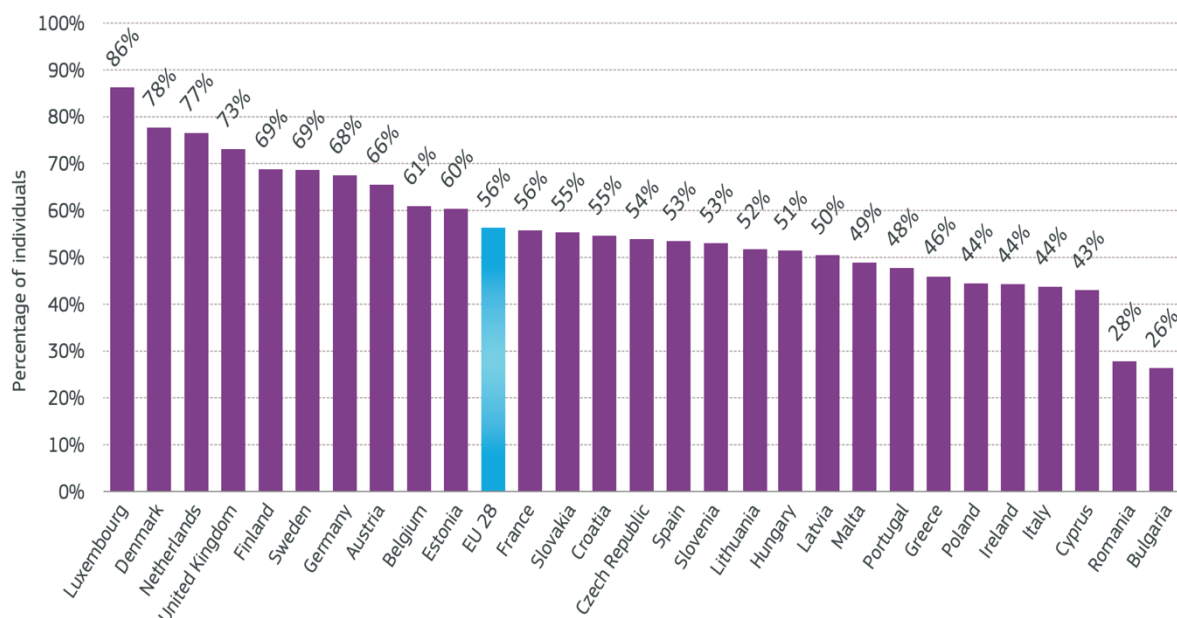
The transformation of the EU Labour market is tightly knit with an increase in digital and IT skills in general. There is a strong link between the jobs that are anticipated to grow in employment for the next decades and the crucial role digital skills will play in these jobs.⁹ It's worth mentioning that besides the mainstream digital and IT jobs that require digital and IT skills, it is forecasted that sectors that traditionally did not require the use of technology (i.e. dairy farmer, machine operator, industrial designer, VET teacher, etc.), soon will be in need to learn how to use ICT skills and bring them in during their work.¹⁰ In other words, because of the rapid technological developments, demand for advanced ICT skills will skyrocket in the next decades. EU member states need to catch up quickly and integrate all those components that will create a modern virtual economy in which new professions will appear related to computers. ICT professionals need to develop specific qualifications that will enable them to, firstly, thrive professionally and, secondary, to promote the European ICT and digital economy.

⁹ Cedefop (2016), 'The great divide: Digitalisation and digital skill gaps in the EU workforce', #ESJsurvey Insights, No 9, Thessaloniki: Greece.

¹⁰ The great divide Digitalisation and digital skill gaps in the EU workforce. Cedefop. #ESJsurvey INSIGHTS No 9. Available at: https://www.cedefop.europa.eu/files/esj_insight_9_digital_skills_final.pdf

Denmark

Basic digital skills in the EU



Denmark is the most digitalized country in the EU. It is on top of the 28 EU member states in Digital Economy and Society Index 2018 (DESI) and it progressed at a higher pace than the EU average.¹¹ Half of Denmark's seniors between 55 and 75 years old are digitally skilled, the percentage for the same group of citizens in the EU is only 34 per cent. Denmark's citizens are very familiar with the use of the Internet, online banking, e-commerce and online shopping and entertainment. Furthermore, Denmark has developed a robust online public service system. Sectors such as public administration, education and health are among the largest employers in Denmark. The Danish labour market is well-known for its high participation rates as women have very high rates of employment compared to the EU27 average (70.4 per cent and 64.4 per cent respectively). Danish economy started to shrink in 2008 and only after 2013 saw signs of recovery.¹² Youth unemployment remains a significant problem for the authorities, which reached 9 per cent in 2019 (even though a significant drop have occurred from 2018 (12.6 per cent)).¹³ Within this context, Danish authorities have placed the decline of youth unemployment as their primary policy goal. Education and training are deployed as the key instruments to contribute toward this aim.

¹¹ European Commission, Digital Economy and Society Index Denmark, 2018, for more information see http://ec.europa.eu/information_society/newsroom/image/document/2018-20/dk-desi_2018-country-profile_eng_B43FFE87-A06F-13B2-F83FA1414BC85328_52220.pdf

¹² Denmark: Unemployment rate from 1999 to 2019. Available at: <https://www.statista.com/statistics/318316/unemployment-rate-in-denmark/>

¹³ Vocational Education and Training in Europe, Denmark, 2016, https://cumulus.cedefop.europa.eu/files/vetelib/2016/2016_CR_DK.pdf

Through the Technology Pact, Denmark has achieved an impressively high percentage of STEM – science, technology, engineering and maths – graduates.¹⁴ The Danish government recognizes the positive correlation between ICT specialists and new STEM graduates for boosting digital and technology-driven growth and innovation in companies. Through pilot programmes in the primary level of education, the authorities are deploying various educational models that try out how to strengthen the understanding of technology from low levels of education. Furthermore, in 2017 an agreement between the government and social partners on adult education and vocational training was also concluded in regard to digital qualifications training. Along the same lines, the new Danish Committee on University Education is also in the same direction and wants to ensure that education addresses digital learning needs. In other words, the Danish authorities are embracing digital technologies and training in all levels and forms of education.¹⁵

Yet, while Denmark is among the most digitalized nations in the EU, one million citizens (age 16-65) still lack basic ICT qualifications. When it comes to more advanced IT skills and professionals with such skills, Denmark faces a critical skills shortage which is steadily growing.¹⁶ More particularly, the Economic Council of the Labour Movement estimates that there will be a shortage of 70,000 workers in the next years.¹⁷ Within this context, the Danish Government launched a plan for 1.000 apprenticeships annually. The objective of the strategy was to increase and motivate young people to participate in vocational education and training and enhance work-based learning.

Vocational education and training is an integral part of lifelong learning in Denmark and it is deployed to meet the technology-driven challenges and opportunities. Through adult education and continuing training human capital is re-skilled and up-skilled. Work-based learning is quite widespread in Danish society and encompasses apprenticeship in private enterprises.¹⁸ However, vocational education and training in Denmark is encountering a decline in enrolments. In 2016, the percentage of students from upper secondary participating in VET fell to 41 per cent.¹⁹ In 2017 the government put forward an agreement aiming to increase enrolment figures and asked from enterprises to offer 8.000-10.000 additional apprenticeship places by 2025 so students have a wide range of VET programmes to choose.²⁰ Denmark creates incentives for enterprises that offer internships to vocational education and training students. Furthermore, between 2017 and 2020, Danish government allocated EUR 17.8 million in VET Centres of Excellence which provide expertise and offer training in rapidly increasing IT fields such as robotics and automation, welfare

¹⁴ Danish Ministry of Industry, Business and Financial Affairs 2018. Available at:

<https://eng.em.dk/news/2018/april/the-danish-government-launches-the-technology-pact/>

¹⁵ Digital Economy and Society Index (DESI) 2018 Country Report Denmark. Available at:

https://ec.europa.eu/information_society/newsroom/image/document/2018-20/dk-desi_2018-country-profile_eng_B43FFE87-A06F-13B2-F83FA1414BC85328_52220.pdf

¹⁶ Digital skills and jobs coalition 2019. Available at: [https://dit.dk/da/Om-Dansk-](https://dit.dk/da/Om-Dansk-IT/Organisationen/Udvalg/Udvalget-for-digitale-kompetencer/Digital-skills-and-jobs-coalition)

[IT/Organisationen/Udvalg/Udvalget-for-digitale-kompetencer/Digital-skills-and-jobs-coalition](https://dit.dk/da/Om-Dansk-IT/Organisationen/Udvalg/Udvalget-for-digitale-kompetencer/Digital-skills-and-jobs-coalition)

¹⁷ Ibid.

¹⁸ Spotlight on VET Denmark. Available at:

https://www.ucviden.dk/ws/files/28088401/Spotlight_on_VET_Denmark.pdf

¹⁹ Education and Training Monitor 2018, Country Analysis. Available at:

<https://ec.europa.eu/education/sites/education/files/document-library-docs/volume-2-2018-education-and-training-monitor-country-analysis.pdf>

²⁰ Ibid.

technology, process technology, craftsmanship and handicrafts, craftsmanship and design, sustainable building and energy-related building renovation, e-business, and database service development.²¹

United Kingdom

The integration of digital skills to the performance of the economy is substantial. The IT sector is one of the most dynamic industries in the UK and as a result, it has led to an exponential recruitment surge for IT professionals. High-calibre technicians are increasingly sought by the IT industry. App and software development is the fastest-growing niche in the digital economy, reaching 17 per cent growth in 2015.²² But while the demand is on the rise, the supply does not follow the same trends. According to a survey carried out by Robert Walters, ‘Solving the UK Skills Shortage – Technology’, 50 per cent of tech employers faced skills shortages in 2018.²³ Almost half of the respondents, (44 per cent) stated that a solid qualification structure and training programmes can play a key role in professionals’ core hard-skills, and can train them to adapt to new technology skills and demands. IT skills and training are both considered essential for the continual development of professionals in a rapidly changing technology landscape.

Although the UK labour market is demand-led, skills shortages exist in sectors such as medicine, health, social work, science, secondary education teaching, IT/computing and engineering. Especially worrisome remains the Brexit impact on the British economy and companies.²⁴ Technology-related companies are struggling to recruit professionals with some specific expertise (i.e. cybersecurity) and many of them worry that hiring outside of the UK will provoke a greater uncertainty about the current skills gaps. In the meanwhile, more and more jobs in the UK are requiring more specialized qualification and education; it is anticipated that it will become even more important to possess specialist skills and higher education in the coming years, to qualify for a more technologically advanced labour market. More precisely, it is forecasted that 90 per cent of jobs will require IT skills within the next two decades.²⁵ At the same time, 12.6 million citizens in the UK lack the rudimentary digital skills necessary for business and one in four of all developers are self-taught: in other words, they have not received a formal education in the ICT field.²⁶ According to a report carried out by the Open University, nine in ten private organisations in the UK (91%) strived to hire employees with the right skills in 2018. The UK has a low percentage of unemployment (4.1 per cent), however, unemployment rates among youth remain high (12.1%).²⁷

²¹ Ibid.

²² Tech nation 2016 review.

²³ The survey gathered responses from 550 high technology professionals across the UK. (2018). For more, access the full report here: <https://www.robertwalters.co.uk/content/dam/robert-walters/country/united-kingdom/files/whitepapers/RW-Solving-the-UK-Skills-Shortage-Technology.pdf>

²⁴ List of ‘shortage occupations’ grows as Brexit looms. Financial Times. Available at: <https://www.ft.com/content/cf741d6a-83d9-11e9-b592-5fe435b57a3b>

²⁵ Digital skills and inclusion – giving everyone access to the digital skills they need 2017

²⁶ Digital skills gap: How to prepare a generation for the modern workplace. Information Age. Available at: <http://www.information-age.com/digital-skills-gap-preparing-generation-modern-workplace-123462000/>

²⁷ OECD, Unemployment rate, <https://data.oecd.org/unemp/unemployment-rate.htm#indicator-chart>

This trend is revealing the importance of more education and training programs and initiatives in the UK.

Most of the vocational education and training can be found in the secondary level of education, even though some qualifications are offered as well in tertiary education. Learners' enrolment in upper secondary vocational education and training in the UK has seen a remarkable increase in the past years (from 35.8 per cent in 2011 to 52.1 per cent in 2017), however, it remains questionable if these positive developments reflect the reality or have occurred thanks to the new methodology of the enrolment data registration.²⁸ The Government aims to increase the participation of companies in the design of qualification for vocational education and training. While the number of apprentices has noticeably increased, it cannot still meet the demand.

Evidence suggests apprenticeships are a win-win situation both for employers and the government: it is estimated that apprentices contribute to net productivity gains for the UK economy with 34 billion annually while at the same time companies can quickly regain the expenditure from apprentices.²⁹ The UK has put forward a set of reforms targeting apprenticeships, excellence centres and the promotion of STEM courses in vocational education and training. One of the most radical changes in vocational education and training in the UK happened with the 2016 Enterprise Act which provided apprenticeships the same legal rights as university diplomas.³⁰ The 2016 Enterprise Act sets out at least 2,3 per cent of workers starting each year in public sector bodies with 250 or more employees in England should be apprentices.³¹

The UK market suffers from noticeable mismatches between education and the qualification that students acquire. In light of these circumstances, the UK government has taken significant steps to address the skills shortages. In 2017, the government launched the UK Digital Strategy (DSP) through which the goals for technology and innovation growth as well as the access to digital services were set out. Further to that, since 2015 a new qualifications framework has been introduced to include academic and vocational qualifications in England and Northern Ireland. Through this new qualification framework, organizations are able to develop and adjust qualifications following the labour market needs.³² Yet, one of the main problems of the UK economy remains the up-skilling of the current workforce, a concern which has been also signified by the Council of the European Union in 2018.³³

²⁸ Education and Training Monitor 2018, Country Analysis. Available at:

<https://ec.europa.eu/education/sites/education/files/document-library-docs/volume-2-2018-education-and-training-monitor-country-analysis.pdf>

²⁹ Economic Impact of Apprenticeships, 2014. Available at: <https://cebr.com/reports/economic-impact-of-apprenticeships/>

³⁰ Enterprise Act becomes Law, Available at: <https://www.gov.uk/government/news/enterprise-act-becomes-law>

³¹ The Institute for Apprenticeships, <https://www.instituteforapprenticeships.org/>

³² Total Qualification Time Criteria For All Qualifications, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/597612/total-qualification-time-criteria.pdf

³³ Education and Training Monitor 2018, Country Analysis. Available at: <https://ec.europa.eu/education/sites/education/files/document-library-docs/volume-2-2018-education-and-training-monitor-country-analysis.pdf>

Greece

The deep economic depression of the past decade created an unfriendly business environment for investments and job creation which resulted in alarming unemployment rates, particularly for the younger population. Even though the Greek economy started to show promising signs of economic recovery and growth in recent years, Greece continues to be the member state with the highest rates of youth unemployment.³⁴ According to Cedefop 2018 Skills Forecasts for Greece, sectors which require advanced skills, such as science and engineering professionals, health and teaching professionals are projected to increase.³⁵ Further to that, it is estimated that more than half of Greek adults lack basic digital qualifications.³⁶

Worrisome remains the fact that the supply of high-skilled workforce will be much higher than the demand in the next following years and decades. At the same time, workers with medium skills are projected to be in a shortage, a situation that will likely generate skills mismatch in the near future. The Cedefop's forecast for Greece has already started to unfold. Almost eight out of ten companies in Greece cannot find workers to fill job positions. Over the past decade, the ICT industry in Greece has seen a rapid transformation of occupational change, driven mainly by the penetration of technologies which have resulted in a demand for new skills, new processes and methods of work. Here again, severe shortages of skilled workforce are already observed in Greece's labour market.³⁷

Greece underperforms the five DESI indicators: a) connectivity b) human capital c) use of the internet, d) integration of digital technology and e) digital public services.³⁸ Even though gradual steps of improvement have taken place, Greece continues to fall short in DESI's dimensions. According to the Digital Transformation Enablers' Index (DTEI) which measures the process of EU member states in regard to their economy's digitization, Greece again falls short as it belongs to the "modest enabling environment" countries. In sectors such as digital technology and IT start-ups investments, Greece has a poor performance. The only DTEI index that Greece's performance is relatively well is the entrepreneurial culture.³⁹ In the meanwhile, Greece is the country that has the fewest ICT professionals in the EU28.⁴⁰ In the OECD - Program for International Student

³⁴ Eurostat.

³⁵ Cedefop 2018 skills forecast EN Greece. Available at:
https://www.cedefop.europa.eu/files/cedefop_skills_forecast_2018_-_greece.pdf

³⁶ Education and Training Monitor 2018, Country Analysis. Available at:
<https://ec.europa.eu/education/sites/education/files/document-library-docs/volume-2-2018-education-and-training-monitor-country-analysis.pdf>

³⁷ Greece: Mismatch priority occupations. Skills Panorama 2016. Available at:
https://skillspanorama.cedefop.europa.eu/en/analytical_highlights/greece-mismatch-priority-occupations

³⁸ DESI 2017.

³⁹ Measuring the economic impact of digital skills in Greece: challenges ahead. (2018). Foundation for Economic and Industrial Research. Available at:
http://iobe.gr/docs/research/RES_01_18032019_PER_GR.pdf

⁴⁰ Cedefop, 2016

Assessment 2018 (PISA), Greek pupils tested in mathematics, science and reading, ranked in the lower scale among the 37 OECD countries.⁴¹

Concomitantly, the mismatch of skills of Greek employees is quite widespread in the Greek labour market. Skills mismatches are the highest in the EU.⁴² According to Eurostat 2018, a significant share of current employees is employed in job positions that do not require their high level of qualifications (43.3 per cent). One in three employees in Greece is over-skilled and works below his/her qualifications.⁴³ That said, in a survey published by McKinsey in eight European countries (Greece included), one-third of companies mentioned the lack of skills as one of the main business challenges with severe implications for their businesses such as quality, time and cost-effectiveness.⁴⁴ Further to that, the economic recession of the past decade coupled with a massive brain drain that took place during the same period has made the need for education and training programs more imperative. Based on data from the Greek Central Bank, it is estimated that almost 427,000 Greeks, among them many young people, have left the country since the 2008 crisis.

The three VETIT partner countries, Denmark, the UK and Greece have developed remarkably uneven education and training policies and practices. As VETIT project results show, Denmark, and to a significant extent the UK, are the frontrunners in vocational education and training and worked-based learning compared to Greece. Stark variations in education and training policies are well-known across the EU. Greece in particular belongs to the countries with poor development of VET systems and WBL and this has resulted in the apathy of young people toward VET. While in the EU employment rates among VET graduates are higher than the rates of graduates with general education, in Greece these rates do not meet the EU's average. Tertiary education remains the first option for students and VET comes only as a second choice among Greeks.

The two core components of VET, apprenticeships and work-based learning which could be employed to achieve a more efficient match between skills supply and demand, are not properly instrumentalized and thus VET remains an unpopular choice among Greek youngsters. The Greek education system is designed only from the perspective of supply, and thus schools and colleges design the curricula according to their capacities and tutors' expertise rather than the needs and demand of the labour market. As far as the participation in vocational education and training is concerned, Greece had a low rate of about 33.7 per cent in 2014, in comparison with the EU average which was 48.9 per cent for the same year.⁴⁵ A more profound contrast between Greece and the EU average was the employment rates for fresh upper secondary graduates, 38.8 per cent 70.8 per cent respectively.⁴⁶

⁴¹ OECD Country Profile: Greece 2018. Available at: <https://gpseducation.oecd.org/CountryProfile?primaryCountry=GRC&treshold=10&topic=PI>

⁴² Cedefop 2018.

⁴³ Greece: Student PISA performance 2018. Available at: https://www.cedefop.europa.eu/files/4180_en.pdf

⁴⁴ Mona Mourshed, Jigar Patel, and Katrin Suder, *Education to Employment: Getting Europe's Youth into Work*, McKinsey & Company, accessed March, 31, 2016, <http://www.mckinsey.com/industries/social-sector/our-insights/converting-education-to-employment-in-europe>.

⁴⁵ Ibid.

⁴⁶ Ibid.

Vocational education and training systems as well as work-based learning in Greece are confronted with a plethora of challenges and barriers. While part of the imbalances between skills and labour market are to be found in the severe financial crisis of the past decade, Greece should seek for continuous cooperation between education and its labour market. According to the OECD, this could be achieved through established qualifications forecasting which is transferred into education (both VET and higher education).⁴⁷ Despite the efforts that have taken place to promote vocational education and training, the situation remains thorny. IT and communications professions are among the sectors that provide employment prospects,⁴⁸ and thus a better relationship between vocational education and training and labour market should be consolidated. Sectors that require digital skills are anticipated to recruit man-power in the near future and vocational education and training system could be deployed to develop apprenticeships and other work-based learning methods for these sectors.

There is little room for doubt about Greece's shortcomings in vocational education and training and the skills mismatch in the labour market. Greece is in dire need to reform its vocational education and training system and promote a more systematic work-based learning. Although the recent reforms and initiatives to modernize vocational education and training in Greece, the current system continues to be unable to address labour market needs, students and learners' potential and skills of employees.

VET adoption in the technology era

Technology penetration has achieved a profound transformation in our societies and economies. Within this context, the education sector is not immune to these new changes, offering at the same time both opportunities and challenges.

Gender imbalances in ICT professions

ICT is indeed a promising sector and it contributes to economic growth. However, as it is happening in many other economic sectors, technology-related jobs are hallmarked by stark gender dynamics and stereotypes contributing further to the gender gap in employment. While ICT sector specialists are on-demand, the share of Europeans with digital qualifications is decreasing. The decline in ICT jobs and education is more sharply observed among women.⁴⁹ Although the fact that an important share of higher education graduates in the EU is women (57 per cent), they occupy less than one-quarter of the ICT professions. Out of every 1,000 female higher education graduates, only 24 of them follow studies in the ICT-related fields. Of these 24 graduates, only 6 women end up working in the digital industry. In parallel, for every 1,000 male graduates, 92 are graduates in ICT subjects of which 49 of them land an ICT job.⁵⁰ It is estimated that 8 out of 10 jobs from the ICT sector go to men.⁵¹ According to the European Institute for Gender Equality, approximately 17 per cent of

⁴⁷ OECD, 2017a.

⁴⁸ Apprenticeship review: Modernising and expanding apprenticeships in Greece GREECE, Cedefop 2018. Available at http://www.cedefop.europa.eu/files/4160_en.pdf

⁴⁹ Women in the digital age. European Commission 2018.

⁵⁰ Ibid.

⁵¹ European Institute for Gender Equality.

the 8 million ICT professionals are women. The lack of women and girls in the ICT related profession starts from education which later is reflected in the labour market. Women have much lower participation rates in ICT education compared to men. In 2016, of 13 million ICT students in the EU, only 16.7 per cent of them were women.⁵²

There is a paradox in ICT professions and women: on one hand, women are more motivated than men to work inside ICT professions, on the other hand, women have encountered discrimination to a greater extent than male colleagues. Furthermore, men and women face profound disproportions when it comes to the drop-out rates with women to be most likely to drop out a job in the ICT sector (i.e. giving birth, taking care of children). There is evidence to suggest that these discrepancies are not only unfair towards women from the perspective of equal rights and gender equality, but they also have remarkable economic implications that are translated in a loss of 16.1 bln Euro annually.⁵³

In the UK for instance, which is one of the partner countries of the VETIT project, it is more common for girls to follow health, performing arts, social science subjects, art and design studies. Technology, engineering, IT and manufacturing are more common areas of studies among boys. In the General Certificate of Secondary Education (GCSE) in 2016 though, an analysis of more than five million entries found that girls not only performed really well in all subjects such as ICT, computing and science but they also outperformed their male peers.⁵⁴ Yet, in the UK, women still make up a mere 14 per cent of those working in STEM occupations and at the same time, 70 per cent of women with STEM-related background is working in non-STEM related industries.⁵⁵ The same phenomenon is quite widespread across the EU.

The ICT sector is considered a crucial policy area for the future of the EU's economy, development and its knowledge-based economy. But as the EU is becoming more digital, the European workforce needs to catch up with driven-technology trends. The skills shortage, which is present across the EU, including the three member states of the VETIT project, namely Denmark, the UK and Greece, creates an opportunity for bridging the gap between women and men in ICT education and digital and technology industry. By having more women in the ICT industry, it would lead to economic growth (up to 820 billion Euros by 2050) and an increase in jobs (by 1.2 million by 2050).⁵⁶

By keeping women and girls away from ICT professions, it means that the EU is losing a significant share of potential which could be deployed to address the ICT skills shortages. Further to that, digital products and services either public (e-governance, e-banking, etc.) or for private use (entertainment, education, etc.) are equally used by all genders, but the majority of them are

⁵² Girls and women under-represented in ICT. Eurostat. Available at:

<https://ec.europa.eu/eurostat/web/products-eurostat-news/-/EDN-20180425-1?inheritRedirect=true>

⁵³ Women in the digital age. European Commission 2018.

⁵⁴ Women in STEM Technology, career pathways and the gender pay gap. Deloitte. Available at:

<https://www.itu.int/en/ITU-D/Digital-Inclusion/Women-and-Girls/Girls-in-ICT-Portal/Documents/deloitte-uk-women-in-stem-pay-gap-2016.pdf>

⁵⁵ Ibid.

⁵⁶ Ibid.

developed by men and thus are often delivered to customers with unconscious bias and lack of diversity. Since technology and digital products and services are used and bought by all of us, it is also important to integrate into them a more diverse and multi-perspective workforce which will cater for maximizing the well-being of all citizens.

Main findings from the VETIT design meetings and the Needs Assessment Report

The project foresaw three Design Meetings, in Denmark, Greece and the UK for stakeholders such as employers, employees and students to discuss and share their inputs on issues relevant to the project's objectives.⁵⁷ The process has been proved remarkably fruitful as it drew important conclusions and useful insights for the future of the work-based learning and IT business world. The project foresaw three Design Meetings, in Denmark, Greece and the UK for stakeholders such as employers, employees and students to discuss and share their inputs on issues relevant to the project's objectives.⁵⁸ The process has been proved remarkably fruitful as it drew important conclusions and useful insights for the future of the work-based learning and IT business world. In addition, the consortium partners conducted a thorough and careful research which led to "Needs Assessment Report". The aim of the report was to interpret, identify and document the trends in the skill gaps and training needs of ICT professionals, VET trainers and in-company mentors on WBL. The report stemmed from various resources, including existing sector skills studies that have been commissioned by the European Commission and on the skills intelligence, analyses and studies on the ICT sector provided by EU Skills Panorama and other scientific journals and resources.

This section is focused on the main topics that emerged during the design meetings and needs assessment report in the three VETIT partner countries.

Mismatches between soft and hard skills

The use of technology is becoming more and more vital in the workplace for many sectors, even for those professions that used to be less technology-dependent. Knowledge and proficiency in subject areas such as computers, technology, sciences and maths are in high demand. But technology profession and skills are not enough for the future workforce. As many sectors are making part of their operation to rely on automation, employees are asked to work in collaboration with other colleagues and altogether address complex problems and bring with them a solid understanding of communication and interpersonal skills. Further to that, the service industry is growing and evolving very fast, and while the technology does its part (mainly through automation, robotics and artificial intelligence), humans are those who are in direct contact and interaction with customers.

⁵⁷ Stakeholders who participated in the three VETIT design meetings were VET trainers, professors, business consultants, company representatives, local governments representatives, trade unions representatives, students on apprenticeship year, education manager and curriculum manager.

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The VETIT design meetings brought to the surface one of the most important issues that although it is ubiquitous in the ICT industry, it is often overlooked and underestimated. The participants from the design meetings reported that the main skills mismatches and the training gaps among the newcomers in the ICT-related jobs are mainly the so-called soft skills. While the technical skills and knowledge are the core elements for jobs in the ICT sector, likewise soft skills have been also identified as vital for ICT professions. Among the most remarkable soft skills are considered time management, communication skills, analytical, creativity, organization and planning, critical thinking and teamwork. Both technical endeavors and soft skills have a determinant impact on project performance and outcomes. But soft skills are often overlooked due to the fact that the ICT sector and soft skills are complex. In parallel, it requires a combination of soft and technical skills to understand and solve the problems in ICT jobs.⁵⁹

The importance of soft skills is also recognized at the EU level. A myriad of documents issued by the EU institutions⁶⁰ and researches highlight the necessity of soft skills to be brought in the working environment, particularly for the young workforce entering the labour market.⁶¹ Vocational education and training besides education and the preparation for the workplace, it is also an integral part of lifelong learning, and thus generic skills, soft skills and entrepreneurial skills should be among the core principles of VET.⁶² Attributes such as knowledge, behavior and abilities play a decisive role in the workplace and they empower the individual as a lifelong learner. However, vocational education and training often focuses on technical and hard competencies because VET perceives that this kind of skills are those that are mostly required by industry. Of course, hard skills are the core element of ICT and technology sector, but part of the weakness that occurs in the workplace is not due to the lack of hard skills, but inefficient soft skills.⁶³ The main difference between soft and technical skills is that the former are acquired in different-context (school, family, workplace) throughout the life of an individual. Contrary to hard skills that can be taught within a logic timeframe, learning soft skills is an ever-ending process. The demand for ICT skills is increasing, but hard skills alone are not enough to resolve and address the complicated word that technology is creating. Thus, vocational education and training should also encompass soft skills in tandem with technical skills for their learners.

Role of trainers, teachers and mentors in VET

Teachers and trainers are crucial to ensure the quality and the labour market relevance of teaching and learning in vocational education and training as well as in companies. VET trainers, teachers

⁵⁹ L.F. Capretz and F. Ahmed, "Making Sense of Software Development and Personality Types," IT Professional, vol. 12, no. 1, 2010, pp. 6–13.

⁶⁰ Such as 'An Agenda for new skills and jobs' (2011) & 'Rethinking education strategy. Investing in skills for better socio-economic outcomes' (2016).

⁶¹ Cinque, M. (2016). Lost in translation". Soft skills development in European countries. In Tuning Journal for Higher Education, Vol 3. No. 2. <http://www.tuningjournal.org/article/view/1063/1273>

⁶² UNESCO. Revised recommendation concerning technical and vocational education. Cited in King, K. (2008). A Technical and Vocational Education and Training Strategy for UNESCO: A Background Paper. 2001; Accessed April 07, 2012. Available:

http://www.unevoc.unesco.org/fileadmin/user_upload/docs/A_Technical_and_Vocational_Education_and_Training_Strategy_for_UNESCO_Background_Paper_by_Kenneth_King.pdf

⁶³ Al-Mamun, A. (2012). The Soft Skills Education for the Vocational Graduate: Value as Work Readiness Skills. In British Journal of Education, Society & Behavioural Science. 2(4): 326-338.

and mentors are the mediators between the learner/student and the workplace, and therefore they should also be reskilled and remain updated about the transformations that occur in the ICT industry and the changing labour market needs. The stakeholders from the design meetings highlighted the role of VET trainers to be extremely important, and especially the technical knowledge and hands-on experience they should have. Regarding company mentors, the design meetings' participants concluded that they should have both technical and coaching skills in order to facilitate the learning process for the learners. Therefore, any kind of policy intervention should also encompass the training of the VET trainers and keep their skills and knowledge updated to the changes and transformations that occur in the ICT industry.

Results from the Working Groups

There is a broad recognition across the EU about the importance of work-based learning as an effective way to address and tackle labor market skill gaps and shortages. Young people in apprenticeship are estimated to have higher average rates of employment than the national average.⁶⁴ In countries with a significant share of young people in vocational education and training, such as Germany and Denmark, there is a low unemployment rate among youth.⁶⁵ Particularly for the ICT sector, work-based learning is not just desirable but also necessary for students to learn the technical and digital skills directly from the workplace. Besides the job-related skills, apprenticeships offer to students generic skills such as teamwork, conflict management, critical thinking, exposure to a real working environment, in other words, skills as relevant as technical vocational competences. While work-based learning is widely recognized and put high on the EU education and training agenda⁶⁶, many member states still suffer from implementing good quality work-based learning and apprenticeship schemes.

Within this context, VETIT consortium set up four Working Groups which paved the way for further discussion on the improvement of the WBL implementation model and the engagement in a dialogue on meaningful work experience practices in the VETIT partner countries. The participants came from a diverse pool of professionals varying from IT private companies, VET providers and municipalities and brought to the discussion their different perspectives and expectations for WBL in the three countries of the project. The four Working Groups focused each on one main thematic linked to work-based learning. The themes were as follows:

⁶⁴ International Labour Organization, 2014.

⁶⁵ OECD 2016.

⁶⁶ European Commission: Rethinking Education: Investing in skills for better socio-economic outcomes (2012).

- Quality
- Governance
- Partnerships
- Apprenticeships

Diversity and complexity in regard to quality WBL exist among the EU member states. The working group of quality agreed that the preparatory stages of WBL are vital to ensuring basic aspects of quality for learners. Before participating in WBL, students need to be well informed about the WBL program and how this fits in their professional future goals. Proper guidance is not often available, and students are perplexed about the companies they should select. Theoretically, apprenticeships are open to everyone, but in reality, not all VET systems support career orientation or mentoring during the work-based learning period. In member states such as Greece, career guidance is provided by the internship offices in the VET schools, but rarely by other agencies such as public employment service or career guidance offices. While in the UK, information related to career prospects and work-based learning are provided from both VET school and education services, yet, even in such cases, specialised preparation and guidance are still needed from the employer. The definition of the WBL outcomes and pedagogic goals are also considered as important because they allow the learner to be aware of the learning objectives and also allow the employer to choose the most suitable learner among a pool of candidates. Further to that, WBL qualification standards need to be embedded in a range of knowledge, skills and competences that are anticipated to be achieved through WBL.

The working group of governance brought up the issue of integrating WBL within the national education framework. Here, variances among countries exist as well: the UK offers apprenticeships in the form of Apprenticeship Frameworks, while in Greece apprenticeships are offered only in public vocational training centres and only for certain specialties. Structured apprenticeship schemes can provide guidance, monitor learners' progress and recognise their achievements. All partners agreed that qualifications gained through the completion of WBL should be connected to the existing qualification system with the national education framework. A clear regulatory framework for WBL was also proposed as it was perceived necessary to establish certain responsibilities, rights and obligations both for the learner and the employer. The regulatory framework could also encourage and provide incentives to employers to become more open toward WBL schemes. Particularly for the ICT industry, the engagement of businesses in WBL is of vital importance. By embedding youth learners within a real workplace environment is an efficient way to train the future workforce to the specific ICT skills, but also values and expectations of a particular workforce. Many employers can get back the investment from the training either before the finalization of the apprenticeship or within a short-period of time after the placement.⁶⁷ in parallel, the companies are also rewarded from the apprenticeships by reskilling and/or upskilling their workforce as a result of interaction with VET providers, increasing entrepreneurship skills and exposure to cutting-edge technologies in the workplace.⁶⁸ In that way, both employers and young learners can build sustainable relationships and become aware of each

⁶⁷ International Labour Organization, 2014.

⁶⁸ London Economics, 2011.

other's dependency. The role of VET schools is crucial in establishing long-term relationships and connections between employers' base and their students.

From the fourth working group on the apprenticeships, the selection of employers in the WBL schemes emerged. In this field, the three VETIT countries follow very different patterns. For instance, Danish authorities have to approve the company that will host the learner. However, in the UK and Greece the selection of employers is mostly done directly by the VET providers. This means, that some countries do have to accredit the companies that are eligible for apprenticeships. In such a case, the participant agreed that external accreditation can lead to a high-quality WBL placement. Even though, all VETIT partner countries have introduced national legal framework regarding work-based learning, more action towards specific guidelines should be put in place - founding was one of the main examples brought by the participants of the fourth working group. The discussion about work-based learning and its quality should also encompass the issue of funding. Although the three countries of the project have different levels of funding apprenticeships, the apprentice's salary remains low, and thus this has an impact on the attractiveness of the WBL. In parallel, the participants also discussed incentives of cooperates to participate in apprenticeships as well as to minimize the employers' costs.

Results from the VETIT Campaigns, VETIT Network and Dissemination Activities

The VETIT campaigns and dissemination activities were a catalyst for diverse stakeholders from the three project countries to come together and address some of the most thorny issues and challenges that their countries encounter in regard to vocational education and training in the ICT sector. Stakeholders highlighted the lack of skills, competences and the lack of workplace experience as among the most problematic areas in their countries. It must be pointed out that although Denmark, Greece and the UK are three countries with very different systems of vocational education and training and the technology industry is marked by remarkable variances, stakeholders still identified similar challenges. The imbalance between hard and soft skills in the ICT sector was equally identified by all stakeholders. While technical and job-related skills were put as a priority for the ICT sector, the stakeholders brought the lack of soft skills - including collaboration, problem-solving, critical thinking - of the trainees and fresh graduates from the ICT sector to the fore. Vocational education and training is an integral part of lifelong learning and it should have a more pivotal role in teaching generic skills for ICT graduates and trainees. Besides workforce's soft skills, the education and training of VET teachers, trainers and mentors seem to be another profound matter for the VET and ICT industry. VET teachers, trainers and mentors are the mediators between the learner/student and the workplace, and thus they need to be reskilled and upskilled according to the labour market needs.

Also, the diversity and complexity of work-based learning emerged during the four Working Groups discussions among the different partners that were invited to participate. The participants from the Working Groups highlighted the lack of information among students before starting an apprenticeship and the lack of career guidance. These two put obstacles in what the trainees will learn and how to use this knowledge and experience after their apprenticeship. It is considered as vital importance not only more work-based learning opportunities for learners, but also stronger

alignment during the career exposure of the learner/trainee. Further to that, it was interesting to find out that partners from Denmark, the UK and Greece proposed WBL to be embedded in their national education framework. A regulatory framework for work-based learning was suggested because it is considered as a proper way to consolidate rights and obligations between the learner and the employer. All partners agreed that WBL should become a priority for students and graduates in the ICT sector as it is the best option to learn the job-related skills directly from the real work environment.

Stark variances among the VETIT countries were found in the selection of employers in the WBL schemes, too. In Denmark, the approval for an employer to participate in WBL schemes lies within authorities' competencies, while in the UK and Greece the decision to include or not a company in apprenticeship schemes is taken by the VET provider. Discrepancies also exist when it comes to the accreditation of employers and their eligibility for apprenticeships. While each country is following different systems of accreditation, external accreditation is considered the most suitable as it can enhance and improve the quality of the apprenticeships. In regard to the national legal framework that should be put in place, project partners signified the need for more action towards specific guidelines. In this regard, the founding was one of the main matters that emerged as it is considered highly important for the quality of the placements. Lastly, VETIT partners concluded that employers and their companies should be provided with incentives that will encourage and enable them to create more placements for students and fresh graduates.

Inputs from the VETIT Study Visits

The project foresaw three Study Visits that took place in the three countries of the project. The Study Visits were designed to create a space for collaboration and knowledge exchange among the project partners and transfer know-how from the experienced partners to the less experienced ones in the field of vocational education and training in the ICT industry. The Study Visits were attended by several participants from the project's organizations, including VET teachers and staff, municipality staff, employers and in-company mentors. The diversity among the Study Visits' participants gave impetus to different perspectives, ideas and aspects to emerge. The Study Visits were a unique opportunity for project partners to visit programming classes and discuss with VET teachers and students. Further to that, the participants were introduced to WBL offices and consultants and altogether identified and addressed some of the most crucial issues that shape and hinder work-related learning. Among others, the Study Visits focused on topics such as the IT apprenticeship schemes and procedures that can support both learners and employers in WBL. The Study Visits were also an opportunity for the curricula team to meet and delve into curriculum development, content and requirements. The project partners became familiar with the challenges and stark variances that each country faces in their vocational education and training systems as well as the shortages in the ICT sector in their respective countries.

The Study Visits brought to the surface the rapid change the ICT sector is undergoing, and the efforts companies have to put in order to be able to keep their employees updated with the relevant IT skills that are required by the labour market. Even though there is a general skepticism about companies and apprenticeships in their premises, it's noticeable to mention that the VETIT

Study Visits revealed an increased interest among companies in encompassing placements for students and recent graduates. Study Visits have been supported by thorough research related to the impact that placements or other work-related apprenticeships can have when it comes to helping fresh graduates to achieve a smoother transition from school, vocational education, and finally in the real world of work. When compared to Higher Education, VET remains a less attractive option both for young people and their parents who often have a tremendous impact on the professional matters and career choices of their children. In parallel, this is also translated into a more inclusive policy intervention in regard to increasing the attractiveness of VET, with parents to be placed at the center of the policy since they are the key actors in determining and influencing their children career options.

The presentations, discussions and Study Visits brought to the surface some of the most crucial issues in the VET systems and WBL in the consortium countries:

- Non-alignment between labour market needs and skills
- Lack of soft skills among trainees and graduates in the ICT sector
- Lack of companies' interest to participate in apprenticeships programs
- VET teachers/trainers/mentors are often not upskilled or/and reskilled and thus they often lack the necessary skills

Conclusions & Recommendations

The EU and national governments have realized the potential and the opportunities that are able to arise from the technology-driven industry. The ICT sector across the EU is following very different patterns, with some countries being frontrunners in the digital sector, such as Denmark and the UK, while other EU countries, such as Greece, are facing profound challenges in their transition from the traditional economy to a more technology-oriented one. Besides the discrepancies in the ICT and technology sector, EU member states are hallmarked by stark variations of their vocational education and training systems and work-based learning. Again, countries such as Denmark and the UK have developed their VET and WBL systems toward a more demand-led labour market. Greece in contrast is suffering from long-term mismatches of skills and labour market needs. Although the fact that Denmark and the UK are more advanced in all matters that this report addresses, they also face similar challenges such as skills imbalances in the ICT sector, while their vocational education and training is not attracting the right numbers requisite to meet the labour market demand. Furthermore, no policy interference could be relevant without encompassing the gender perspective. The ICT sector is among the economy's sectors that it is dominated by men and gender imbalances are easily tracked. In parallel, men alone are not able to face and offer a solution to the skills shortages. To this end, the EU's policies should place at the centre of their intervention the inclusion of girls and women both in STEM education and ICT - related workforce. Below is a set of recommendation which addresses all the above-mentioned challenges.

- Vocational education and training providers should seek for closer ties, partnerships and synergies with stakeholders from the IT and digital sector and conjointly design education

and training programs and curricula. In addition to that, permanent information and communication channels should be established so VET providers, employers, learners and employees are kept updated about demand/supply and current labour market trends. Especially, EU member states such as Greece should work more efficiently toward this goal.

- Establish a genuine system of communication in schools in regard to the increased demand for IT graduates and professions in each member state. School children should start being aware of the benefits of ICT sector both at personal (i.e. employment opportunities, and high salaries) and societal level (how technology and ICT industry can contribute to tackling poverty, achieve equality, offer better public services and making people's lives much easier by the penetration of technology).
- Integrate work-based learning into vocational education and training programmes to tackle the high unemployment rates, and concurrently to bridge the skills gaps (for the Greek labour market) and address the skills shortages (for Denmark and the UK).
- Vocational education and training centers should work systematically to communicate efficiently the employment prospects that derive from the IT professions and skills and provide incentives to students and employees to register for their VET programmes.
- Vocational education and training should in cooperation with enterprises establish continuing training for IT employees who seek to foster the acquisition of new skills and new ways of working. In addition, policymakers should put efforts to bridge the gap between education and the world of work in order to share common values, increase revenue and productivity by upgrading the ICT skills of young people and the general workforce.
- IT degrees as well as STEM education are often portrayed as difficult subjects and male-oriented, keeping girls and women away from entering the field. Such stereotypes and misunderstandings should be eliminated through education. Further to that, introduction of approaches and innovative methods should be employed to enhance diversity in the digital sphere and make it more female-friendly (i.e. more female co-workers, female role models and the dismantling of gender stereotypes and bias in the workplace).
- Both education and training should be placed at the heart of the EU strategies which aim to achieve gender equality in the digital era.
- Greek authorities should foster the attractiveness of vocational education and training by re-orienting fresh graduates from the public sector towards the private sector and provide them incentives in following VET.
- Bridge the realms of VET providers and higher education institutions (HEI). Encourage HEI to seek collaborations with VET and exchange knowledge and expertise. For instance, VET could help universities in developing more technical skills among their students (this goes particularly for ICT field of studies), while universities could contribute to soft skills and theory learning. Instead of operating like two different education providers, universities and VET work could be complementary to each other.
- VET teachers and trainers should receive appropriate guidance for developing their ICT skills and ensure they are digitally updated.
- Vocational education and training should become more flexible and offer education and training to a more diverse student population (women, refugees and other minorities).

VET providers should start becoming more agile to meet the rapid transformation and changes that occur both in the labour market and society overall.

- While the three countries that participate in the project have remarkably diverse WBL systems and schemes, they could still create a common point of reference which could help them to ensure high-quality, transparency and coherence in their VET systems.
- VET WBL schemes should introduce an enterprise-embedded model of apprenticeship where both young learners and employers will have received clear and concrete guidelines about the objectives and the expectations from the program.
- Advocate for the qualification recognition of apprenticeships and their integration within the national education system.
- Create tangible incentives for employers to incorporate WBL schemes in their enterprises, particular effort should be put for incentives in SMEs.
- Allow and provide freedom to employers to be involved in the entire apprenticeship lifecycle (before, during and after).
- In regard to financing WBL, more financial support should be received in the funding schemes of apprenticeship.