Make your way

MYW ROADMAP

Co-funded by the Erasmus+ Programme of the European Union

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	**INnCREASE - Poland**	http://inncrease.eu/
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1 Introduction

1.1 Make Your Way Project

Objectives

MAKE YOUR WAY project intends to support the promotion of work-based learning (WBL) in all its forms by developing relevant collaborations to open further opportunities for young VET students to apply knowledge in practical, “hands-on”, and "real life" workplace situations, at the same trying to enhance their entrepreneurial attitudes, in particular by working in LABs. Thus, the project takes advantages of the concept of “Fab labs”, or LAB, a small-scale workshop offering digital fabrication, proven to boost innovation and entrepreneurship, as they are platforms for learning and innovation: a place to play, to create, to learn, to mentor, to invent.

Such laboratories (FAB LABs) help to connect a community of learners, educators, technologists, researchers, makers and innovators. There is World Bank data confirming that such LABs help multidisciplinary teaching, learning, research, and entrepreneurship, and when there is close collaboration between the educational system and industry, based on the strength of all stakeholders this approach can successfully address local needs. LABs can help strengthen and expand VET-industry partnerships through prototyping joint research or products with digital fabrication machines. Also, access to modern equipment, digital modelling and design tools such as 3D printers and laser cutter soften unleash creative talents.

The project also aims to bring more innovation to VET system by contributing to the continuous professional development of VET teachers, trainers and mentors in both school and work-based settings, with a focus on developing effective digital, open and innovative education and pedagogies, by developing materials that can help those professionals assist young VET learners in taking the most benefit from using LABs and from other WBL solutions, as well as spreading the concept of LABs and promoting their closer collaborations with the VET system, while preparing both sides for such partnerships(VET teachers and LABs staff, who often become VET mentors/trainers).

Results

During the project implementation, the consortium will develop three intellectual outputs which are the core deliverables and which should be communicated and disseminated. These are:

- **IO1 - Practical guide for bringing LABs to life –** The practical guide will consist in a catalogue with best practices of various LABs in Europe that promote both entrepreneurial and technical skills.

- **IO2 – Toolkit of learning materials –** This toolkit will consist of a set of self-study materials, videos, tutorials, practical exercises and assignments, diagnostic tools, tests, etc, which cover 2 areas: entrepreneurial skills and development of technical skills.

- **IO3 - Roadmap MAKE YOUR WAY and guide for mentoring talent – a roadmap** intended to provide guidance to future implementations of the developed learning materials; plus a

comprehensive guide for mentors/trainers/facilitators on pro-entrepreneurial mentoring (mentoring talent).

Targets

The project target is divided by groups according to their role on the project implementation. Direct target groups will integrate the project activities and will benefit from the project products. Indirect target groups represent a second but higher level of implementation, since they will incorporate the elaborated project products into their offer. These target groups are specified as follows:

1. **Direct target groups (primary target group):**
   - VET learners, youngsters aged from 16 up to 26 (who become LAB users);
   - VET teachers, trainers and mentors who are supported in their continuous professional development (to assist young VET learners in taking the most benefit from using LABs and from other WBL solutions);
   - VET providers/institutions and organisations;
   - LABs staff /facilitators - to be better prepared for partnerships/closer collaborations with VET systems/providers and for spreading the concept of LABs further;
   - LABs (their management and staff).

2. **Indirect target group (secondary target group):**
   - Decision makers: municipalities, regional and local authorities (public entities withy responsibilities in school education);
   - Teachers associations and unions;
   - Entrepreneurs (individuals) at local and national level;
   - Training providers (continuous teachers training);
   - Higher Education providers;
   - Business support entities such as: business associations/chambers of commerce; business incubators, business angels at local and national level
   - Partners at EU level from previous and current projects

1.2 IO3 – Make Your Way Roadmap

MYW Roadmap is a strategic plan that includes the major steps needed to implement IO2 - A Toolkit of Learning Materials by the VET providers. It is crucial for the sustainability of the project outcomes and aims to act as a one of the keystones" of new LABs.

In MYW we believe that in a rapidly changing world, access to entrepreneurial and technical skills is essential to all citizens and it needs to be underpinned by easier access to LABs.

In order to better understand the diverse environment of VET schools and develop various scenarios for them, we decided to explore selected examples of vocational education and training systems, their collaboration and links with industry and business as well as challenges and main strengths.

The intention of this document is to cover various models of VET schools in relation to LABs.

- VET schools with own LABs

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- VET schools interested in setting up School LABs
- VET schools dependent on external collaborations

The MYW Roadmap objectives are:

- To present pictures of countries' vocational education and training systems in selected European countries.
- To provide scenarios for the implementation of IO2 The Toolkit of Learning Materials
- To encourage partnerships between VET schools and LABs to promote lifelong learning and to improve the effectiveness of learning.
- To bring innovation to vocational education and training.

With its format, information and scenarios, MYW Roadmap serves not only VET schools but also various information needs, purposes, and other stakeholders.

2 VET realities in different European countries

Vocational education and training (VET) responds to the needs of the economy, but also provides learners with skills important for personal development and active citizenship. VET can boost enterprise performance, competitiveness, research and innovation and is a central aspect of successful employment and social policy.

Initial vocational education and training (I-VET) is usually carried out at upper secondary level before students begin working life. It takes place either in a school-based environment (mainly in the classroom) or in a work-based setting, such as training centres and companies. This varies from country to country, depending on national education and training systems, and economic structures.

On average, 50% of young Europeans aged 15-19 participate in I-VET at upper secondary level. However, the European Union (EU) average masks significant geographical differences in participation ranging from 15% to more than 70%[1]

Therefore, in order to better understand the challenges faced by vocational schools, we decided to analyse the teaching systems not only in the project partner countries but also to show some other examples.

[1] https://ec.europa.eu/education/policies/eu-policy-in-the-field-of-vocational-education-and-training-vet_en

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COUNTRY	POLAND
Age of students	12 - 19
VET provided at the secondary level	In Poland, vocational education and training (VET) has three governance levels: national (ministries), regional (school superintendents, mainly in pedagogical supervision) and county (governing schools). The Ministry of National Education is in charge of VET policy at secondary level. Since September 2017 the Polish education system has been undergoing substantial restructuring, which will be finalised in the 2022/23 school year. Learners can acquire vocational qualifications in the following: ● Three-year sectoral programmes. Graduates can enrol in general education programmes bridging VET and higher education. For graduates of these programmes, the reform foresees introduction of new two-year programmes that will give access to tertiary education from 2020/21; ● Five-year upper secondary technical programmes. Graduates can also acquire an upper secondary school leaving certificate (matura) giving access to tertiary education; ● Three-year special job training programmes for learners with special education needs (SEN), leading to a certificate of job training; ● Work preparation classes, available for SEN learners already at lower secondary level in primary schools at age 15 and above.
Collaboration and links with industry and business	The research on cooperation between vocational schools and business in Poland shows the asymmetry of schools' and enterprises' objectives, and they are regarded as an important barrier to the development of cooperation between the two. ● Employers are set on increasing the number of hours of students' practical vocational training in the workplace. ● They indicate the need to improve workshop equipment at schools, but are reluctant to cover the related costs. ● They rarely express willingness to participate in vocational exams and teachers' training. In general, employers are reluctant to undertake more costly and more demanding forms of cooperation with schools, despite growing recruitment problems. Meanwhile, schools primarily indicate the need to improve their own infrastructure, especially workshop equipment. They already have contacts with employers who provide vocational training, often considering the present state of cooperation with business as satisfactory.

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	In the discussion on the determinants of cooperation between vocational schools and enterprises it has also been noted that the employers' limited willingness to engage in the areas of cooperation important for the vocational education stems not only from vocational education system itself, but also from structural features of the enterprise sector in Poland: its fragmentation, poorly developed cooperative bonds between enterprises, and the fact that cooperation with schools is not embedded in the system of values. The limited willingness to cover the costs of dual education is also due to the small scale of recruitment problems during most of the two decades.
Challenges / Main strengths	The main challenges for VET in Poland are: ● increasing employer engagement in organising practical training; ● identifying and forecasting skills and qualification needs in the labour market, and in reviewing VET curricula; ● encouraging cooperation between VET schools and higher education institutions; ● developing guidance and counselling for all age groups, especially in the early stages of schooling; ● VET teacher and trainer access to professional development opportunities by encouraging traineeships for teachers and trainers in enterprises.
Sources	https://www.cedefop.europa.eu/files/4105_en.pdf https://shorturl.at/iqBW2 https://www.cedefop.europa.eu/files/8125_en.pdf "Cooperation Between Vocational Schools and Business in Poland: Schools' vs. Employers' Perspective" Piotr Maleszyk International Journal of Synergy and Research http://ijsr.journals.umcs.pl

COUNTRY	GERMANY
Age of students	15-18
VET provided at the secondary level	Compulsory full-time education begins at the age of 6 and lasts until the age of 9 (or 10, depending on the Federal State). After that, young people who chose not to follow a full-time education programme can attend a (vocational) school for 3 years part-time, alongside their training in the company. Germany is one of the European countries in which learning on the job is a traditional component of the education system: the apprenticeship programme (dual system, with two learning venues: 70% work-based and 30% school-based) is the main pillar of VET. About 1 in 2 secondary school graduates chooses a vocational path, mostly apprenticeship. Progression is possible through various regulated VET

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	programmes provided at post-secondary and increasingly at tertiary level. At upper secondary level there are the following VET learning options: ● general vocational programmes with vocational orientation; ● school-based VET programmes; ● apprenticeship programmes (incl. WBL of ca. 75%); The apprenticeship programme at upper secondary level (EQF level 4) is the main pillar of VET and also attracts upper secondary graduates. Parallel to the apprenticeships are school-based VET programmes at upper secondary level (EQF levels 2 to 4), which differ in terms of access, length, types and levels of qualification they lead to. The most important tool for assessing non-formal learning outcomes is admission to final examinations known as the Externen-Prüfung (examination for external candidates, i.e., those not involved in a formal vocational training programme). Under this provision, people can be admitted to a final examination for a recognised occupation requiring formal training (training occupation) if they provide evidence that they have been employed in the relevant occupation for at least one and a half times as long as prescribed for the period of initial training.
Collaboration and links with industry and business	Dual VET, which is used as a synonym for apprenticeships in Germany, is still very attractive. Particularly owing to how it links learning and work, as well as schools and companies, the system appears to be a successful model for structuring the transition from school to working life. Dual VET is provided in 327 recognised training occupations. A final exam, conducted by the chambers, completes the apprenticeship and apprentices receive a chamber certificate to document that training has been successfully completed. An apprenticeship in the dual system normally lasts 3 years. Apprentices attend a vocational school for 1 or 2 days per week, where they are mainly taught theoretical and practical knowledge related to their occupation. A framework curriculum is drawn up for every recognised training occupation in accordance with the training regulations. The primary aim of training is to enable young people to acquire comprehensive vocational competence. After finishing the apprenticeship, they should be able to fulfil their duties as employees efficiently, effectively, innovatively, autonomously and in cooperation with others. Apprenticeship places are offered in both enterprises and public institutions. Enterprises enter into a contract with apprentices, where they bear the costs of the in-company training and pay the trainee remuneration. This is regulated by collective agreement and increases with every year of training, averaging about a third of the starting pay for a trained skilled worker. The professional competences to be acquired through in-company training are specified in training regulations and included by the training enterprise in an individual training plan. The binding requirements of the training regulations guarantee a uniform national standard.

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Challenges / Main strengths	Main challenges: ● There are fewer young people as time passes and more of them are choosing higher education. This partly explains the high number of unfilled apprenticeship places. ● The share of enterprises in the primary sector providing apprentice placements has decreased in recent years. In the secondary sector, many enterprises provide apprenticeship and this number remained stable in 2016. The tertiary sector offers a differentiated picture: a positive trend in personal services (e.g. medical and nursing services), clearly negative trend in company-related services (e.g. financial and legal services, information and communication-related services) and less negative trend in transport, trade, accommodation and catering services. Main strengths: ● A large multimedia information campaign on apprenticeship was relaunched; early vocational orientation guidance in schools is now widely implemented from grade 7, in general upper secondary schools as well. Online VET portals are addressing specific target groups like young women or university dropouts. ● Since 2015, more than one million asylum seekers have arrived in Germany. Existing programmes addressing disadvantaged groups (such as migrants) extended their focus to include refugees and new programmes were initiated specifically for this group. ● The increase (+2.1pp) in employment of 20-34 year-old VET graduates in 2014-18 was higher than the increase in employment of all 20-34 year-old graduates (+1.5 pp) in the same period in Germany. The share of early leavers from education and training has decreased from 11.1% in 2009 to 10.3% in 2018 and has reached almost the national target for 2020 of not more than 10%.
Sources	Cedefop; BIBB - Federal Institute for Vocational Education and Training (2019). Vocational education and training in Europe: Germany [From Cedefop; ReferNet. Vocational education and training in Europe database]. https://www.cedefop.europa.eu/en/tools/vet-ineurope/systems/germany

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COUNTRY	AUSTRIA
Age of students	14-19
VET provided at the secondary level	At secondary level, learners can choose from various pre-VET and VET options in different occupations/ sectors: ● Different types of 1- or 2-year pre-VET: learners acquire general education, key competences and basic vocational skills preparing them for further school-based VET, apprenticeships and simple jobs on the labour market; ● 3- to 4-year school-based VET: learners strengthen their general education and acquire the respective occupational competences and qualifications to perform medium-level jobs. Those who complete an addon programme or take the Berufsreifeprüfung (exam for people whose initial VET does not automatically qualify them for entry into higher education) also obtain general access to higher education studies; ● 5-year school-based VET: combining theory and practice, these programmes offer high-quality occupation-related training while strengthening learners' general education. They lead to double qualifications for senior positions in business and general access to higher education at the same time; ● Apprenticeships (dual track training) in some 200 occupations and trades for learners from age 15 onwards, after compulsory education. They lead to qualifications at medium level. Graduates can progress to qualify, for instance, as master craftsperson or, following additional exams, access tertiary level training in a related field. By completing the Berufsreifeprüfung or an add-on programme they can also obtain general access to higher education; Training for occupations in the health sector: access to programmes preparing for care and medical assistant professions and other occupations in the health sector requires completed compulsory education, being of minimum age, and/or a specific qualification. Training to become a specialist and general care nurse is being upgraded to bachelor level. This process will be completed by 2023.
Collaboration and links with industry and business	Learners can acquire qualifications in one of the 200 legally recognised apprenticeship programmes with different area specialisations offered at ISCED 354 level (EQF 4). Apprenticeship training takes place at the training company and at vocational school. A prerequisite for taking part in an apprenticeship is the successful completion of 9 years of compulsory education. Learners need to find themselves an apprenticeship place in a company to be able to access this programme. Once a training company is found, leaners need to sign an agreement with the authorised apprenticeship trainer, which is recorded by the apprenticeship offices.

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	There is an Austrian-wide training regulation for every apprenticeship. It includes the job profile, a type of curriculum for the company-based part of training, which lays down the minimum knowledge and skills to be taught to apprentices by companies. The competence profile, which is also part of the training regulation, formulates in a learning- outcome-oriented manner the competences apprentices acquired by the end of their training in both learning sites. The social partners are essentially in charge of taking decisions about what in-company curriculum and/or competence profile an apprenticeship occupation is based on and they exert a decisive impact on the structure and content of apprenticeship training via their work in relevant advisory councils. At the end of the apprenticeship period, every apprentice can take the apprenticeship-leaving examination (LAP), comprising practical and theoretical parts. The apprenticeship qualification can also be acquired via a so-called exceptional admission. For this purpose, relevant periods of professional practice and attendance of relevant course events are credited as a substitute for formal apprenticeship training. Following successful completion of the LAP, graduates have various progression options, such as taking the master craftsperson exam for a skilled craft. Access to HE programmes can be acquired by taking the exam called Berufsreifeprüfung (BRP) during or after the apprenticeship training. Almost 40% of managers in the business sphere have completed an apprenticeship.
Challenges / Main strengths	Main challenges: ● The demographic development towards an 'aging society' will have an impact on the education sector. In order to keep pace with the requirements of the economy, lifelong learning will become imperative. ● Many programmes aiming at vocational further and higher qualifications (such as the engineer qualification, the financial accountant qualification, qualifications obtained in the police force) are offered outside the formal education system and are not included in ISCED. Main Strengths: ● All young people who are not in post-compulsory education and training, or in a job, must participate in mainstream school-based programmes, apprenticeships or other recognised training until the age of 18. ● Because of migration, support structures have been created for the acquisition of German as a foreign language and measures have been taken to make it possible for migrants to complete VET programmes; ● Especially for SMEs, VET that is properly differentiated and adjusted to current and future requirements is very important

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	because these companies, as a rule, do not have their own in-house HR (development) and research departments. ● The employment rate of 20 to 34 year-old VET graduates increased from 86.3% in 2014 to 88.6% in 2018; In Austria nearly 70% of all upper secondary education VET learners (ISCED level 3) are enrolled in vocational programmes compared to 47.2% in the EU-28 average (2017).
Sources	Cedefop; ibw Austria (2019). Vocational education and training in Europe: Austria [From Cedefop; ReferNet. Vocational education and training in Europe database]. https://www.cedefop.europa.eu/en/tools/vet-in-europe/systems/austria

COUNTRY	**BELGIUM**
Age of students	12-18
VET provided at the secondary level	Four types of VET options can be distinguished. ● Technical secondary education – more 'technical' courses. After the 6th year the students receive a qualification certificate and a certificate of upper secondary education (CESS) which gives them the possibility to continue their education at a higher level. ● Vocational secondary education – to prepare for working life. This type of education is organised in the second and/or third degrees (years 4 to 6). After the 6th year a vocational certificate is delivered. An additional seventh-year allows students to obtain the CESS which gives them access to higher education. ● Apprenticeships or dual programmes - for 15 year old students who have completed the 1st degree of secondary education or learners aged 16 and up without conditions. Apprenticeships can be either organised in schools or in training centres and are mainly work-orientated. During the week, 1 or 2 days are devoted to theoretical learning at school or in the training centres and 3 or 4 days are devoted to training within an enterprise. There is a signed contract stating the rights and duties of all parties involved (remuneration, holidays, etc.). A qualification certificate is delivered at the end of the 6th year (equivalent to the certificate received in the school-based system). An additional 7th year allows students to obtain the CESS which gives them access to higher education. ● VET for SEN learners - Special VET programmes are offered to learners with physical or mental difficulties in each Community. Learners receive a qualification certificate or a CESS.
Collaboration and links with industry and business	Apprenticeship programmes in the Flemish community are organized either by schools or SYNTRA training centres. In the part-time secondary education system offered by the CDO schools, the council

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	decides whether the learner has passed both the learning part and workplace learning. It also determines the evaluation type. In modular education the evaluation of a module/course can be done at any time of the school year (the dates are decided by the school). In linear education the examination takes place on 30th June. In the apprenticeship scheme offered by SYNTRA training centres, the apprenticeship evaluation is permanent and both parts of the training are evaluated once a year. A final examination is organised at the end of the programme and is assessed by two jury members. In the French-speaking Belgium it is organised by the IFAPME network in Wallonia and SFPME/EFP in Brussels. SFPME ensures that traineeship agreements and dual training contracts are properly carried out in the companies. It is also in charge of developing training standards and teaching tools, as well as managing the 'EFP' training centre and approval of the training businesses. There are examinations on general and vocational theoretical knowledge at the end of each academic year. The vocational accomplishments are continuously evaluated during the apprenticeship, and a practical test before a jury of professionals is organised at the end of the programme. An apprentice who successfully passes all the examinations obtains an apprenticeship certificate. In certain occupations, the apprenticeship certificate is considered equivalent to the VET (nationally referred to as qualifying education) certifications (CQ6 + CQ7) and allows direct access to the 7th years of vocational education, providing access to higher education. In the German-speaking community it is organised by the IAWM. It manages two training centres (ZAWM), in Eupen and Saint Vith, and works actively together with all of the economic forces in BE-DE. The dual system in BE-DE relies on the active participation of sectors, local entrepreneurial workforce and professional associations, all involved in the management committee of IAWM. Consequently, the system is actually supported by the enterprises themselves and has close ties with the business world. IAWM also works with the employment office to integrate labour market trends into its training provision. This system is particularly popular and successful in BE-DE where it has nearly 10 times the number of apprentices found in the other regions (25% of the secondary technical and vocational learners opt for this pathway). It provides the certificate of completion of secondary vocational education at the end of the apprenticeship period as in BE-FL.
Challenges / Main strengths	Main challenges: • Coexistence of 3 official languages: especially for a better integration of newcomers, knowledge of the language of instruction is an important matter within VET. • Coexistence between the different government levels and divides: different legislative frameworks due to policy choices, can cause complications for pupils, students, or employers who are seeking interregional educational mobility.

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	Main strengths: ● The population increased, especially in Brussels (this number correlates with the high number of foreigners). Thus, the education system accommodates more young people, often from various origins, also by establishing special VET providers for specific target groups. ● To tackle the coexistence of 3 official languages in Belgium, each Community/region organise language courses (French, Dutch or German, also as a foreign language targeting newcomers and migrants to facilitate social and economic integration including the access to vocational training). ● Employment rate of 20 to 34-year-old VET graduates increased from 80.3% in 2014 to 83.1% in 2018. The share of early school leavers has decreased from 11.1% in 2009 to 8.6% in 2018.
Sources	Cedefop; Bruxelles Formation (2019). Vocational education and training in Europe: Belgium [From Cedefop; ReferNet. Vocational education and training in Europe database]. https://www.cedefop.europa.eu/en/tools/vet-in-europe/systems/belgium

COUNTRY	ITALY
Age of students	15-19
VET provided at the secondary level	Compulsory education lasts 12 school years and starts at the age of six until 18 years old. It comprises basic education that includes nine years of studies until age 15. It is organised into three cycles; the four-year first cycle and the two-year second cycle constitute primary education, while the three-year third cycle corresponds to lower secondary education. The last two years of compulsory education can be attended either in an upper secondary school or within the regional VET system. The upper secondary school education offers both general and vocational (technical and vocational) programmes. Duration of studies is five years. At the end of the upper secondary education, students who successfully pass the final exam, receive a certificate that gives them access to higher education. At upper secondary level the following VET programmes are offered: ● five-year programmes (EQF level 4) at technical schools leading to technical education diplomas; at vocational schools leading to professional education diplomas. Programmes combine general education and VET, and can also be delivered in the form of alternance training. Graduates have access to higher education;

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	• three-year programmes leading to a vocational qualification (EQF level 3); • four-year programmes leading to a technician professional diploma (EQF level 4).

Collaboration and links with industry and business	In September 2015, at the State-regions-autonomous provinces conference, an agreement was signed for a trial project about the dual system. This trial, which began in the 2015/16 training year, was an opportunity to further develop the Italian dual education system, able to create integration between education/training and the fundamental task of actively combating the notable youth unemployment crisis.
	
	The trial includes two courses of action:
	
	• first course of action: development and reinforcement of the VET providers' placement system;
	
	• second course of action: supporting VET pathways beneath the dual system. This action is aimed at allowing young people to obtain a vocational qualification and/or diploma by following educational pathways that provide for an alternance between school and work experience (400 hours). More specifically, these pathways can be completed by means of:
	
	  ○ apprenticeships to obtain a qualification, a vocational diploma or a higher technical specialisation certificate (i.e. a certificate for completion of higher technical education and training pathway;
	
	  ○ alternance between school-based and work-based learning; simulated business training.
	
	Apprenticeship is one of the main educational instruments used to integrate young people in the labour market. In particular, apprenticeship is a permanent labour contract aimed at training young people and giving them employment and is one of the cornerstones of the Italian dual system.
	
	The apprenticeship system includes three types of contracts, being the Type 1 - Apprenticeship for Vocational Qualification and Diploma, Upper Secondary Education Diploma and High Technical Specialisation Certificate -, the one offered in secondary level.
	
	Apprenticeship in Italy designates a work contract with a specific training purpose; it includes both on-the-job and classroom training. The apprenticeship contract, which is distinct from other work-based learning, must be drafted in written form, defining the roles and responsibilities of all parties, as well as the terms and conditions of the apprenticeship, the probationary period, the occupation tasks, wage

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	increases, both the entry and final grade levels and the qualification to be obtained. The training programme is an integral part of the contract.
Challenges / Main strengths	Main challenges: ● Italy has an 'aging society' and this will have an impact on the education sector. ● The share of early leavers from education and training has decreased from 19.1% in 2009 to 14.5% in 2018. But it is below the national target for 2020 of not more than 16% but above the EU-28 average of 10.6%. Main strengths: ● The employment rate of 20 to 34 year-old VET graduates increased from 61.7% in 2014 to 66% in 2018; ● The apprentice has a subordinate permanent employment contract with the company even if he/she is entitled to the "double status of student and worker". At the end of the apprenticeship period the employer and the apprentice may terminate the contract. If not otherwise explicitly stated, the apprenticeship contract turns into an ordinary open-ended dependent (subordinate) employment contract. Companies pay apprentices' wages which may be "up to two levels lower than a (correspondent) qualified employee" or a "proportionate percentage in relation to working seniority". In addition to wage, also some apprentice's social security costs must be paid by companies (insurance against job-related injuries and illnesses, ordinary illnesses, invalidity and old age; maternity, family allowance; employment social insurance).
Sources	Cedefop; ibw Austria (2019). Vocational education and training in Europe: Italy [From Cedefop; ReferNet. Vocational education and training in Europe database]. https://www.cedefop.europa.eu/en/tools/vet-in-europe/systems/italy

COUNTRY	PORTUGAL
Age of students	15-20 (at secondary level)
VET provided at the secondary level	Compulsory education lasts 12 school years and starts at the age of six until 18 years old. It is organised into three cycles; the four-year first cycle and the two-year second cycle constitute primary education, while the three-year third cycle corresponds to lower secondary education (although not called like this in Portugal). Upper secondary education comprises general (science and humanities) and VET programmes. These three-year programmes give

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	graduates access to tertiary education but also to post- secondary non-tertiary. Permeability is ensured between both paths. All VET programmes grant double certification (an education certificate and a professional qualification): ● at lower secondary level, education and training programmes targeting those aged 15+ who are at risk of early leaving; they are school-based and include practical training; ● at upper secondary level, there are three types of school-based VET programme combining general or sociocultural training components, science and technological training with work-based learning (WBL).
Collaboration and links with industry and business	Apprenticeship programmes are for young people up to age 25. Programmes include 40% WBL. A training contract between the apprentice and the enterprise (training provider) must be signed. Curricula are organised in training components: socio-cultural, scientific, technological and practical training in a work environment (WBL). A double certification including a professional qualification and a 12th year school leaving diploma at EQF level 4 is granted upon successful completion of the programme. The apprentices who completed an apprenticeship programme and wish to pursue studies have to meet the access requirements established by the legislation. To apply to higher education, in addition to the certificates mentioned earlier, they need a statement with their final rank, converted to a range between 0 to 20, in decimal points without rounding.
Challenges / Main strengths	Main challenges: ● Portugal has an 'aging society' and this will have an impact on the education sector. ● Early leaving from education and training has been steadily decreasing from 30.9% in 2009 to 11.8% in 2018. But it is still above the national target for 2020 of not more than 10% and the EU-28 average of 10.6%. Main strengths: ● High on the policy agenda are the following challenges: ○ further reducing early leaving from education and training and discourage the entry of unqualified young people into the labour market; ○ increasing adult educational attainment by widening access to learning through modularisation;

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	○ improving tutor support to learners and reasserting the value of transferable skills in the curricula, in order to tackle education and training failure; ○ modernising learning provision through new teaching methods and wider variety of VET courses leading to competence-based qualifications; ○ offering initial and continuing VET provision in line with labour market requirements; upskilling vulnerable groups and promoting their socio-professional integration. Policy initiatives have resulted in an increase in upper secondary VET programmes, ensuring that VET programmes lead to double certification, and boosting the RVCC system development. National authorities are also implementing measures for adults through the Qualifica programme and assuring the continuity of lifelong learning policies, through the reinforcement of specialised Qualifica centres, launched in 2016. ● Unemployment is distributed unevenly between those with low- and high-level qualifications. However, the youth unemployment rate of people with medium-level qualifications, including most VET graduates (ISCED levels 3 and 4) is lower than for those with high-level qualifications. Employment rate of recent VET graduates increased from 75.1% in 2014 to 84.6% in 2018. Since 2015, the employment rate of VET graduates has been higher than the one of general education graduates.
Sources	Cedefop; BIBB - Federal Institute for Vocational Education and Training (2019). Vocational education and training in Europe: Portugal [From Cedefop; ReferNet. Vocational education and training in Europe database]. https://www.cedefop.europa.eu/en/tools/vet-in-europe/systems/portugal

COUNTRY	SPAIN
Age of students	Starting from 14-15 to retirement age
VET provided at the secondary level	The Organic Law 5/2002 of 19 June on qualifications and vocational training, established that “VET comprises the set of training actions that enable the qualified performance of the various professions, access to employment and active participation in social, cultural and economic life. It includes the teachings of initial vocational training, actions for the insertion and reinsertion of workers in the labour market, as well as those oriented towards continuous training in companies, which allow for the acquisition and permanent updating of professional skills”

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	The VET system is divided into two training subsystems: • the Vocational Training of the education system (VET degrees), • Vocational Training for employment (certificates of professionalism), The catalogue of vocational training qualifications currently includes 176 qualifications and 5 specialization courses approved by the Central Government. Vocational training qualifications, which are part of the education system, have academic and professional value. They are based on professional qualifications, which ensures their value for the purposes of access to employment, but they also complete their content in technical skills with others of a personal and social nature, which gives them academic value, allowing for continuity in the training itineraries. At secondary level, Spain offers Basic VET cycles. Students must be at least 15 years (or 14 to turn 15 in this school year). Basic degrees belong to 19 different professional families and there are 34 titles to choose from.
Collaboration and links with industry and business	Work-placement in companies is a compulsory module for all VET cycles, at all levels from Basic VET to Higher VET.
Challenges / Main strengths	• the inadequacy of its offer, which is totally under-dimensioned in relation to the real needs of our human capital. • recognition of work experience: there is a high percentage of professionals in our country who, having been trained through professional practice, do not have formal recognition of their professional skills. • low innovation
Sources	https://www.todofp.es/inicio.html https://www.lamoncloa.gob.es/serviciosdeprensa/notasprensa/educacion/Documents/2020/220720-Plan_modernizacion_FP.pdf

COUNTRY	**FRANCE**
Age of students	Starting from 15
VET provided at the secondary level	VET in France aims to assist youth and adults to attain the qualifications needed for private and public sector employment. VET, known in France as *l'Enseignement et la Formation Techniques et Professionnels* (EFTP), is also intended to promote citizenship and to enable individuals to fully engage in social life. VET is supported by Lifelong Learning strategies which call for the development of apprenticeship and VET programmes and the endorsing

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	of experience-based informal and non-formal education (*validation des acquis d'expérience*), amongst other aspects. Lifelong Learning strategies are promoted by a number of Laws. Upon completion of six years of compulsory primary education, and four years of lower secondary level of education (Collège), pupils can choose between three different educational streams; the general, technological, or vocational stream. The Vocational stream lasts either three or four years, depending on the type of qualification attained.
Collaboration and links with industry and business	VET courses include compulsory periods of workplace training, between 3 and 10 weeks every year, depending on the diploma.
Challenges / Main strengths	• To increase the number of youth and adults with qualifications; • To strengthen cooperation between the VET system and the labour market and • To improve the performance of VET students to achieve 80% success in the upper secondary level and limit drop-outs at all education levels.
Sources	https://unevoc.unesco.org/wtdb/worldtvetdatabase_fra_en.pdf https://www.cedefop.europa.eu/files/8097_en.pdf https://www.eqavet.eu/what-we-do/implementing-the-framework/france

COUNTRY	**CZECH REPUBLIC**
Age of students	15-19
VET provided at the secondary level	In Czech Republic VET is optional for students after their 9 years of compulsory full-time education so they start at the age of 15 or 16 and it lasts for 3 year (apprenticeship list) or 4 years (maturity exam) . All schools providing VET are funded by the Ministry of Education, Youth and Sports (MŠMT) via regional authorities, which allocate the resources to individual schools. Private schools included in the school register are funded in a similar way from public resources and only a smaller part of their revenues comes from private sources. The main responsibilities of the MŠMT currently include: • development of national education policy and strategy, primarily in the form of the Long-term plan for the development of education and the education system, and provision of methodology for and coordination of long-term plans for the development of education in regions; • development of curricular policy and care for the quality of education on the basis of the objectives and content of education, set as part of an approved system of vocational education fields and approved

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	national curricula; operation of a system for monitoring and evaluation of student and school performance; ● coordination of public administration and funding in the area of education, including communication with social partners at national level; issuing decrees regulating educational conditions in schools; initiation of developmental and innovative schemes, etc. The main responsibilities of regional authorities include: ● establishing and closing down VET schools and school facilities which must be approved by the MŠMT and ranged into the school register for being eligible for funding from public sources ● appointing directors of the schools set up by them based on appointment procedures and upon MŠMT approval ● allocating resources from the state budget to schools to cover pedagogical staff´ wages and direct educational costs, and checks upon their use. The main responsibilities of directors of schools include: ● implementation of approved curricula ● the quality of pedagogical work and human resources policy ● educational management and efficient use of financial resources In Czech Republic also exists Continuing vocational education and training (CVET) for adults provided by secondary schools and tertiary professional schools under the responsibility of the MŠMT. Adult education provided by higher education institutions (universities)– distance and lifelong learning including the “Third Age University” completely falls within the competencies under universities.
Collaboration and links with industry and business	Access to most vocational occupations is not legally defined with several exceptions, as for example mandatory certificates for electricians and welders. However, employers usually ask for relevant formal VET qualifications. Informal non-mandatory requirements for individual occupations are defined in the National System of Occupations. The National Register of Qualifications (Národní soustava kvalifikací – NSK) was introduced in 2007, also based on the key competencies (soft skills) training system, developed by RPIC-ViP, and used within the Make Your Way project. Tax incentives for employers promoting IVET were introduced at the end of 2014. Direct and indirect funding of secondary and tertiary vocational education by employers is deemed as a tax-deductible expense. The main objective of the measure is to compensate part of entrepreneurs’ costs and motivate new companies to commence cooperation with the schools. There are certain conditions to be fulfilled: the tax-payer – an individual or a legal person – has to conclude with the school an agreement on the contents and scope of practical training and on whose premises is the

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	practical training or a part of accredited study programme implemented, provided that they are authorised to perform activities related to a given field of study or study programme. The other condition is that the individual or legal person must not be reporting financial loss. They also have to prove the attendance of students (class books or attendance sheets).
Challenges / Main strengths	The main challenges for VET in Czech republic: ● increasing flexibility of the education system ● increasing education attainment level of adult population ● generating sufficient numbers and adequate structure of the labour force ● increasing the labour market flexibility ● enhancing strategic management of human resources development
Sources	https://www.msmt.cz/ http://www.nuv.cz/ https://www.cedefop.europa.eu/en/tools/vet-in-europe/systems/czechia

COUNTRY	Ukraine
Age of students	10-18
VET provided at the secondary level	Secondary education in Ukraine is under administration and management of The Ministry of Education and Science. VET institutions are funded by the government budget. VET system in Ukraine is currently going through changes for several years. The country received some subsidies from European funds. The EU will help to modernise vocational training facilities in seven pilot regions. It will also help to set up multidisciplinary centres of excellence. Subsequently, this experience will be extended to other institutions in the country. By law, state and municipal educational institutions are separated from the church (religious organization) and have a secular character. Private educational institutions, including institutions established by religious organizations, have the right to determine the religious orientation of their educational activities. The creation of political party cells and the functioning of all political associations are also prohibited in educational institutions. ● One third of institutions (more than 33%) belongs to educational ● institutions training specialists for heavy industry about 30% for agriculture ● about 17% for construction industry ● just over 7% for services ● less than 6% for trade and public catering ● 5.5% for transport industry ● about 1.3% for housing and utilities ● less than 1% for the telecommunications sector.

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	The number of VET institutions has gradually but in a consistent manner decreased over the recent years. For example, numbers of VET schools through all Ukraine totalled 983 in 2013, 940 in 2014 and 817 in 2015. This is understandable because a part of educational institutions remained in temporarily occupied territories of the Crimea and Donbas, but the essence of processes extended further. The statistics obviously prove so: from 2015, when the number of educational institutions was 817, it decreased to 792 by the time prior to the academic year 2016-2017. The attempts to deal with the matters of vocational education and training in Ukraine make sense only when other problems and challenges faced at the national and global level are resolved: economic, political, educational, demographic, etc.
Challenges / Main strengths	The main challenges for VET in Ukraine: • ensuring the quality of education and the quality of educational, • activities, • to have sufficiently accredited teachers, • ensuring equal access to education without discrimination, • including disabilities, • diversity of education, • transparent and objective admission and evaluation of students, • freedom in choosing the types, forms and pace of education, • educational program, educational institutions, other subjects of • educational activity.
Sources	https://www.inkluzivniskola.cz/ https://mon.gov.ua/ https://www.euneighbours.eu/ https://geekapple.ru/

COUNTRY	**SWEDEN**
Age of students	16-19
VET provided at the secondary level	The education and training system comprises: • preschool education (ISCED level 0); • primary and lower secondary education (ISCED levels 1 and 2, EQF level 2); • upper secondary education (ISCED level 3, EQF level 4); • post-secondary non-tertiary education (ISCED level 4, EQF levels 5-6); • higher education (ISCED levels 5, 6, 7 and 8, EQF levels 6-8); • municipal adult education. From 2018/19, attending pre-school is mandatory for all children from the year they turn six. Compulsory school begins then at age seven and lasts nine years. VET starts after compulsory education before the age of 20. Learners can choose among one of the 12 vocational programmes (yrkesprogram) or six general preparatory programmes for higher education (högskoleförberedande program) in the upper secondary

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school (gymnasieskola). A diploma from completed upper secondary education is placed at EQF level 4.

Adults aged 20 and older, without upper secondary education who wish to change career paths can enrol in upper secondary VET courses in municipal adult education institutions (kommunal vuxenutbildning). If an upper secondary education diploma is achieved, the qualification is placed at EQF level 4.

At tertiary level, there are higher vocational education programmes (yrkeshögskoleutbildningar) leading to first or second cycle VET qualifications placed at EQF levels 5 and 6. This applies to education for professions requiring specific knowledge or certification to work in the profession. Many of these programmes are in health care and agriculture as well as in the education sectors.

There are several VET learning options:

Initial VET at upper secondary level leading to EQF 4 is available in the formal education system as:

- school-based learning for the young and adults;
- work practice (practical training at school and in-company practice) is mandatory in VET for the young, and encouraged through state grants in municipal adult VET;
- distance learning, which is available in municipal adult VET-education.

Municipal adult education is flexible and based on the individual's needs as part- or full-time studies. Learners aged 20 or older can enter municipal adult education directly after graduating from upper secondary education, e.g. to study for eligibility to access tertiary education. A learner may also resume studies after being employed. For some, municipal adult education may be a CVET path; for others, it may be a continuation of the upper secondary IVET or GE-programme.

Formal VET is offered at EQF level 4 to 5. Apart from formal education, Sweden has a long tradition of liberal adult education (folkbildning), a type of non-formal learning which is typified by being ‘free and voluntary’, offered outside the school system. Liberal adult education covers education in folk high schools (folkhögskolor) and adult education associations (studieförbund) that are not restricted to state-determined curricula or syllabuses. Each folk high school or adult education association decides on the content and organisation of their own educational offerings. The folk high schools provide shorter and longer special courses. One- to three-year VET programmes are special courses for specific professions, e.g. journalist, recreation leader, treatment assistant, cantor or sign language interpreter. Both shorter and longer courses in crafts as well as art, music and drama are also common. Some vocational education is at post-secondary level and has special admission requirements, while some is at upper secondary level.

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Collaboration and links with industry and business	State grants are predominately given to the governing board of education providers, even though the grants are intended to finance support activities in the enterprises. Some state grants, however, are directed to enterprises; examples are the regional funds available to stakeholder organisations to support quality improvement in WBL, or for measures intended to promote an interest in becoming a VET teacher. For employers who are offering work places in the scope of introduction agreements, the public employment services pays employment taxes of 31.42% as well as a compensation of SEK 115 (EUR 11 as of April 10, 2019) per day for the trainer in the workplace.
Challenges / Main strengths	Sweden must strengthen efforts to ease the transition from education to the labour market It is important to provide support for those furthest from the labour market. The government has focused on strengthening the link between education and the world of work, within both upper secondary and tertiary VET. An apprenticeship centre has been established to promote and increase provision of apprenticeships. The government has also adopted regulations on a professional introductory period of employment, including vocational training and the possibility of having an apprenticeship contract when in upper secondary school. Education contracts, agreements between young people, the employment services and the home municipality were introduced in 2015; these encourage unemployed young people aged 20 to 24 to start or return to studies to acquire an upper secondary qualification. Studies within the contract can be combined with work or practical work experience. Investments for quicker introduction of newly arrived immigrants Many newly arrived immigrants have training and experience in occupations in which there is a shortage of trained and experienced labour in Sweden. To reduce the time from arrival to first job entry, the government has started consultations with the social partners, the Swedish public employment service and other relevant government agencies on measures for creating ‘fast tracks’ into the labour market. The initiatives may include, for example, Swedish language training specific to the vocational field, quicker validation of skills and competences, assessment of foreign qualifications, and supplementary training.
Sources	Cedefop; BIBB - Federal Institute for Vocational Education and Training (2019). Vocational education and training in Europe: Sweden [From Cedefop; ReferNet. Vocational education and training in Europe database]. https://www.cedefop.europa.eu/en/tools/vet-in-europe/systems/sweden

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COUNTRY	ESTONIA
Age of students	17-depending on entry age
VET provided at the secondary level	The education and training system comprises: · preschool education (ISCED level 0); · integrated primary and lower secondary education (ISCED levels 1 and 2) (hereafter basic education); · upper secondary education (ISCED level 3); · post-secondary non-tertiary education (ISCED level 4); · higher education (ISCED levels 6, 7 and 8). · Preschool education is not compulsory and is generally provided at childcare institutions (koolieelne lasteasutus) for one-and-a-half to seven year-old learners. Compulsory education starts at age seven and includes nine years of basic education or until a learner reaches age 17. Primary and lower secondary education are usually offered together in basic schools. However, primary education (grades 1 to 6) can also be offered in separate schools, usually in rural areas to ensure better accessibility for learners. General upper secondary education is provided by so-called gümnaasium. This three-year programme gives graduates access to higher education, provided through academic and professional programmes. Professional higher education programmes are not formally considered VET. Professional higher education institutions may also provide post-secondary VET programmes along with higher education. The Vocational Educational Institutions Act distinguishes between initial and continuing VET.
Collaboration and links with industry and business	Wage subsidy and training remuneration Employers are reimbursed by the State for supervising work practice for the unemployed, with a daily supervision rate of EUR 22.24 – eight times the minimum hourly wage (EUR 2.97 in 2018) ([67]) – for each day attended of the first month of training. Reimbursement decreases to 75% of the daily rate during the second month, and to 50% during the third and fourth month. Tax exemptions There is no value added tax for formal training; this includes learning materials, private tuition relating to general education, and other training services unless provided for business purposes

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Challenges / Main strengths	In 2018, 27% of adults aged 25 to 64 had no VET or higher education qualification; the objective is to reduce this share to less than 25% by 2020. Several measures have been launched to encourage adults without a prior professional or vocational qualification to return to formal education. There is a high level of skills mismatch. A labour market needs monitoring and forecasting system (OSKA) was launched in 2015 to improve alignment between education and the labour market. Results are available online and are used in curriculum development, career counselling, and planning of State-funded education. Early leaving from VET is a significant problem. Compared with 11.3% of early leavers from education and training, the rate in the first year of initial VET was 22.4% in 2017 and 23.4% in 2018 ([2]); the goal is to reduce it to less than 20% by 2020. There are career counselling services and several other measures to prevent early leaving. Schools are also expected to take more responsibility in this area. Keeping the most vulnerable learners in VET programmes is a challenge. Participation in lifelong learning increased from 6% in 2005 to 19.7% in 2018. The goal is to increase it to 20% by 2020 and VET has been playing a greater role in achieving this. Age appears to have a substantial impact. The share of people aged 55 to 64 who participated in lifelong learning in 2018 was 10.5%; this is low compared with 28.2% in the 25 to 34 age group. There is a focus on broadening access to non-formal education, training courses for developing key competences, career services, and on facilitating the participation of adults in formal education, aiming to increase participation rates. Participation in apprenticeships has increased since 2016/17 and now accounts for 7% of VET learners. The number of participants started to increase gradually in 2015 following the education ministry´s efforts to develop a functioning and sustainable work-based learning system with stronger employer involvement, including more ESF investments.
Sources	Cedefop; BIBB - Federal Institute for Vocational Education and Training (2019). Vocational education and training in Europe: Estonia [From Cedefop; ReferNet. Vocational education and training in Europe database]. https://www.cedefop.europa.eu/en/tools/vet-in-europe/systems/estonia

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3 Potential scenarios for implementing MYW

3.1 VET schools with own LABs

VET schools that already have a LAB can also benefit from the MYW project. MYW fosters the development of both technical and soft skills, and one of its main aims is to develop and encourage collaborations between VET stakeholders and LABs.

Schools that wish to implement MYW in their LABs can focus on one or several of the different approaches offered by the project:

· **Focus on product design and development.** This approach can be implemented in different study programmes where the main objective is to create or design a product with the help of 3D printers, lasers, CNC, etc. — such as automotive, mechatronics, and electronics. Building on the designs proposed by the MYW toolkit, new designs can be produced in cooperation with companies. In fact, prototyping joint research and digital fabrication machine use at the LABs can expand and strengthen VET-industry partnerships. In addition, LABs offer access to modern equipment, digital modelling and design tools (3D printers, laser cutter), which often help unleashing talent. All participants — both teachers and students — become learners, and students become mentors of their peers.

· **Focus on entrepreneurship.** The LABs can also be used to generate new business ideas. MYW offers the possibility to boost entrepreneurial skills (communication, problem solving, flexibility, planning and organising, stress resilience, and customer orientation). By making use of the tools available, students can create prototypes, take part in product design and collaborate with companies' innovation and development areas. Furthermore, thanks to the knowledge acquired, students can specialise in the innovative field of personal manufacturing, which can create new employment opportunities for them

· **Focus on motivation.** A key factor for the success of a LAB is motivation. LABs are a place to play, create, learn, mentor, invent and help the society. When motivation is the trigger of work, both teachers and students learn — everyone becomes a learner and a mentor at the same time as everyone shares the same objective.

Case studies from the Basque VET system (FP Euskadi)

a) **Focus on product design and development**

Case study: IFPS Miguel Altuna BHI College. https://www.maltuna.eus/

Students must use 3D printers to accomplish the challenges they have to meet as part of the following programmes: industrial automation and robotics; production programming in mechanical manufacturing; mechanical manufacturing design and industrial mechatronics.

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b) Focus on entrepreneurship

Case study: Easo politeknikoa.college. https://easo.hezkuntza.net/eu/inicio

The Ikaslab laboratory is used to generate new business ideas. “business and entrepreneurial initiative” module manages the classroom to guarantee that all Easo Politeknikoa students practice and experiment with 3D printing technologies and then use them for project development.

c) Focus on motivation.

Don Bosco College. https://donbosco.hezkuntza.net/eu/inicio1

A solidarity response. In 2012, students began to work in solidarity projects that could help the wider society, which boosted their motivation. Furthermore, the results of these initiatives could also help the department to link technology and society, promoting human values as an answer to the usually common perception of technology as a dehumanized practice.

3.1.1 Roadmap and guidelines for the scenario

To create a school lab we should follow some steps, and answer some questions. One of the steps we should take in consideration will be STEP 5- Integration of the 3D Lab (MYW) in the curriculum.

- Set your goals
- Design the space
- Organisation
- Right Tools
- Integration of the 3D lab in the curriculum

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Graphic 1: How to create a school lab? Roadmap

Taking into account the 3 approaches,"business and entrepreneurial initiative" module is an optimal scenario to implement through IKASENPRESA PROJECT developed in the Basque country - Ikasenpresa helps teachers to better build their "business and entrepreneurial initiative" module, by providing them with learning materials, hosting annual events such as the Ikasenpresa fair, and facilitating peer learning.

What is Ikasenpresa?

The Education Department of the Basque Government, through Tknika, coordinates the program called IKASENPRESA, addressed to VET students.

Ikasenpresa is an educational program that is developed around the creation of school companies in the classroom. The aim of this project is to offer an approach to the business world into the classroom, focusing on the development of entrepreneurial skills (creativity, innovation, team work, decision making, initiative, leadership, commitment and determination, negotiation, etc.), to stimulate the approach to other cultures and social realities and to promote the cooperation among schools.

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Goals:

- Create an Ikasenpresa, so the students are conscious of what is entrepreneurship and the steps that it takes
- Develop the student's skills to turn them in good professionals- employable and active entrepreneur and intrapreneur persons
- Sensitize the student about self-employment as another option

Ikasenpresa creates an innovative educational context and uses a practical learning methodology that includes the management of new technologies (e-mail, videoconference, use of foreign languages, etc.), work tools and communication; all of them considered to be essential resources in nowadays information society.

To learn more about Ikasenpresa, please watch the video at:
https://www.youtube.com/watch?v=a6jBMEWuHpo&t=125s

IKASENPRESA CHALLENGES:

1. The adventure of starting up.
2. Discover the idea that can change your life.
3. Let's get to work.
4. Who wants our product?
5. Let's sell.
6. Our adventure ends.

Lesson Plans: https://drive.google.com/file/d/1zbsbq2TvEZlj0V2zN4JEvjTOZO7wtSGm/view

Assessment system: ttps://drive.google.com/file/d/1igeE6M_n_z5pc2UZXJGqMtYehXOF9-lO/view

Handbook: https://drive.google.com/file/d/0B3wld4FawbJibTBhNDNRSlREdEE/view

What is it being done?

Students create a small company in which they carry on all the related business activities, such as corporate image, administration, marketing, buying and selling, etc. All products are real, and students are one in charge of making and selling them. Throughout the school year they have two General Assemblies in which two representatives take part in the meetings. In the first one, each company is presented to the rest and, in the second meeting, students talk about how everything is going. During the first part of these meetings, they take part into workshops related to

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communication and point of sales. During the month of February, a fair takes place in which the students work at the point of sale and offer their products to the general public.

Ikasenpresa project was published as a promising practice by UNESCO UNEVOC.

https://unevoc.unesco.org/pub/promisingpractices-tknika5.pdf

More info about Ikasenpresa:

https://tknika.eus/en/cont/proyectos/entrepreneurial-culture-ikasenpresa-programme/#

3.2 VET schools interested in setting up School LABs

A potential scenario for implementing MYW is the need of setting up a School LAB. However, a reflection is needed beforehand on the following questions:

· **Why do we need a LAB?** A laboratory offers learning opportunities beyond traditional education. It also fosters a more active way of working with a learning-by-doing approach. Therefore, work spaces are needed where students can create, invent and learn actively, improving their entrepreneurial attitudes. Environments are needed where our students can get first-hand experience and learn to work in a team, exploring transdisciplinary connections. In this context, LABs offer a space where synergies can be created by interaction and collaboration while developing a wide arrange of skills – both technical and transversal.

There is no such thing as a mistake — mistakes are learning opportunities. LABs offer a more human learning space where barriers between “knowledgeable people” and “people receiving knowledge” do not exist. Everyone is looking for a solution to the same problem, challenge or project in a collaborative way. LABs act as a tool that strengthens the connection between VET learners, teachers, trainers, mentors, companies and the community.

· **What do we want to achieve?** MYW uses a work-based and experimental methodology. Even if project-based learning is the most common method for LAB work, many alternatives exist — e.g. challenge-based learning, which is one of the core elements that inform the Basque VET system. From introducing a problematic situation and turning it into a challenge to the entire result-achieving process, this method is structured around the technical and specific skills required by each programme, as well as relevant soft skills.

Classes are divided into teams, to whom the problematic situation is presented. The work process must let students experience the situation as a challenge; from this point on, they will have the opportunity to generate knowledge that contribute to find the best solutions. Challenges are based in real-life problems encountered by the society and the companies. They are the source of debate, reflection, interest and collaboration, and students look for solutions to them in the LAB.

· **How are students evaluated?** The evaluation must focus on the process and not on the outcomes, based on observation and the students’ continuous improvement.

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The MYW project provides VET centres interested in setting up School LABs with a toolkit of learning materials so that they can carry out exercises in the classroom. This output includes self-study materials, tutorials, practical exercises and assignments, diagnostic tools, and tests, among others, covering two main areas: entrepreneurship and industry-oriented skills. The former tackles entrepreneurial soft skills and awareness of self-employment opportunities, including knowledge about how to set up a business — e.g. communication, problem solving, flexibility, planning, stress resilience, etc. The latter focuses on technical skills acquired through work-based learning and creativity to boost innovation — e.g. additive technologies (3D-printing), modern equipment, ICT for the industry, techniques and trends in crafts, DIY basics, etc.

3.2.1 Roadmap and guidelines for the scenario

When a professional school intends to create its own LAB to train its students through digital manufacturing laboratories, it is recommended to follow a series of steps toward the evaluation of existing solutions, carry out some benchmarking actions, and define the model that best suits their reality, moving on to the preparation and systematization of the idea in order to be able to seek financing solutions and subsequently implement the laboratory.

The implementation methodology we recommend is based on the following steps:

1. Reading bibliography on digital laboratories: we recommend reading the IO1 - Practical guide to make LABs a reality, of this same project, in chapter 2 - which allows you to get in touch with the concepts, models and equipment of digital laboratories;

2. In a second step we recommend an analysis through the web, starting with the FabLab Foundation website, https://fabfoundation.org/#page-top, where it is possible access the entire Fab Labs worldwide network and then find and study an endless series of laboratories worldwide, with their different models and concepts, but following the minimum requirements to be recognized as such;

3. After this research, we recommend the engagement in benchmarking actions to some of the pre-selected Fab Labs so you're able to evaluate in-loco the working method and organization behind the laboratory;

4. After all this research and acquired knowledge of the concept and models, the time has come to idealize the Fab Lab we want to settle: define the space, model, equipment to purchase and install, and define the utilization rules and management. For this, FabFoundation's guidelines can be followed - https://fabfoundation.org/getting-started/, where you can have a look at the list of equipment, software, and much more other useful information;

5. Find financing for the installation of the Fab Lab: there are several financing options, supported by programs financed by the European Union: regional programs; National programs; Horizon 2020. There are also laboratories financed by private companies, etc;

6. After Fab Lab is installed, place it on the Fab Labs Network of the Fablab Foundation;

7. (Optional) Attend the Fab Academy course, to obtain skills across all areas of knowledge of a FabLab;

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8. Start to develop collaborative work and apply the exercises to train your students.

3.3 VET schools dependent on external collaborations

Where there is no other option than collaboration between the VET school system and the entrepreneur or corporation world the first thing you have to do is to analyse the current state of the relationship between those two separate areas and focus on the future state of this relationship. In some cases, studies and research showed that it was more efficient for students as future employees and companies as their future employers to build relationships while studying.

Some might say that equipping vocational schools with modern technology had negative effects on the cooperation between schools and potential workplaces for the students. Entrepreneurs say that without any competent person working with students in the natural workplace there is a lack of true work experience (situations such as dealing with the customer etc.) and also that teachers sometimes give students misleading information or that some knowledge wasn't taught at all.

The cooperation must be beneficial for both parties so it is important to hear the needs of the other party and try to meet them at least half way. Thanks to information obtained from projects implemented by the Ministry of Education, Youth and Sports of Czech Republic (MŠMT) we now know that the communication between schools and companies is the key factor.

According to the MŠMT documents describing the best practices in this area schools have to have a more hands-on approach even though it can be very time consuming especially for small companies. Also, what some companies see as an issue is that there was no feedback given to them nor from schools nor from students and they felt like they provided some value to students and schools and nobody cared for them after that.

Sometimes there are external barriers such as law which says that company can't choose student for the internship but student can choose the company which may lead to doubts if they should take interns at all because they might invest time and money to someone who is not interested in working with them in the future or does the internship for the wrong reasons (to please parents, to have good grades etc.) and this scenario is frustrating for any entrepreneur or company manager.

Outputs of Make your way project could change the whole conception of external collaboration between schools and business areas, it might provide a new perspective and lay the groundwork of a successful system preparing students for the real thing they want to do in life in a right way.

3.3.1 Roadmap and guidelines for the scenario

Vocational and vocational schools that do not want to create their own learning labs, but intend to develop this training methodology

When a vocational school does not intend to develop its own LAB to train its students through digital manufacturing laboratories, it is also possible to do so by establishing collaborative partnerships with existing laboratories, and applying the training methodology tested in this project. We

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recommend that you follow a series of steps to better understand the concept of digital laboratories, which you can develop there and, later, choose the best collaboration option:

The implementation methodology we recommend is based on the following steps:

1. Reading bibliography on digital laboratories: we recommend reading the IO1 - Practical guide to make LABs a reality, of this same project, in chapter 2 - which allows you to get in touch with the concepts, models and equipment of digital laboratories;

2. In a second step we recommend an analysis through the web, starting with the FabLab Foundation website, https://fabfoundation.org/#page-top, where it is possible access the entire Fab Labs worldwide network and then find and study an endless series of laboratories worldwide, with their different models and concepts, but following the minimum requirements to be recognized as such;

3. After this research, we recommend the engagement in benchmarking actions to some of the pre-selected Fab Labs so you're able to evaluate in-loco the working method and organization behind the laboratory;

4. Subsequent to the research work and knowledge of the concept and models, the time has come to define the Fab Lab with whom we want to work, and to articulate a collaboration protocol with that laboratory;

5. Establish a collaboration protocol with Fab Lab that defines the guidelines: usage days, usage costs, obligations, schedule, etc.;

6. Start to develop collaborative work and apply the exercises to train your students.

4 Conclusions and final recommendations

In terms of sectoral VET priorities, Make Your Way is mostly linked with the promotion of work-based learning in all its forms and developing relevant partnerships and collaborations to open further opportunities to apply knowledge in practical projects/"real life" workplace situations, in particular in the LABs. MAKE YOUR WAY project aims to support and promote FAB LABs and the ideas behind those laboratories that is, among others, enhancing WBL approach, developing entrepreneurial skills of students, connecting and enabling cooperation of learners, educators, technologists, researchers and innovators. What is more, the project intends to develop professional skills of VET teachers, trainers and mentors in order to make a VET system more innovative. The project's objectives are met by developing three intellectual outputs: Practical guide for bringing LABs to life, Toolkit of learning materials and Roadmap (together with guide for mentoring talent). The recipients of those outputs are, among others, VET learners, VET teachers or VET Organizations (direct target group), but also decision makers and entrepreneurs (indirect group).

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The Make Your Way Roadmap is an important document directed to the VET providers that contains a strategic plan of IO2 Toolkit implementation. This document is crucial in order to assure sustainability of the outcomes, as it explores selected examples of vocational education and training systems, together with presentation of its collaborations and relations with industry, its strengths and weaknesses. The document presents an overall picture of VET system functioning in different countries and, by providing scenarios of IO2, encourages promotion of VET systems.

The document explains comprehensively the realities of the VET system in different European countries. Altogether, it presents diversity of participation in this way of education referring to twelve European countries: Poland, Germany, Austria, Belgium, Italy, Portugal, Spain, France, Czech Republic, Ukraine, Sweden and Estonia. Analysis of the teaching systems of various countries includes the following information: age of students, VET provided at the secondary level, collaboration and links with industry and business, challenges and main strengths. Those information are necessary in order to better understand the challenges faced by vocational schools.

Three different scenarios can be found in schools when implementing Make Your Way. VET schools with their own LABs; VET schools interested in setting up School LABs, and VET schools dependent on external collaborations. The Project presents roadmaps and guidelines for each scenario and implementation methodology. We recommend reading the IO1 - Practical guide to make LABs a reality, which allows you to get in touch with the concepts, models, and equipment of digital laboratories; IO2- Use Toolkit of learning materials in the implementation; and IO3 the Guide proposed for mentoring talent which the aim is a comprehensive guide for mentors/trainers/facilitators on mentoring talent.

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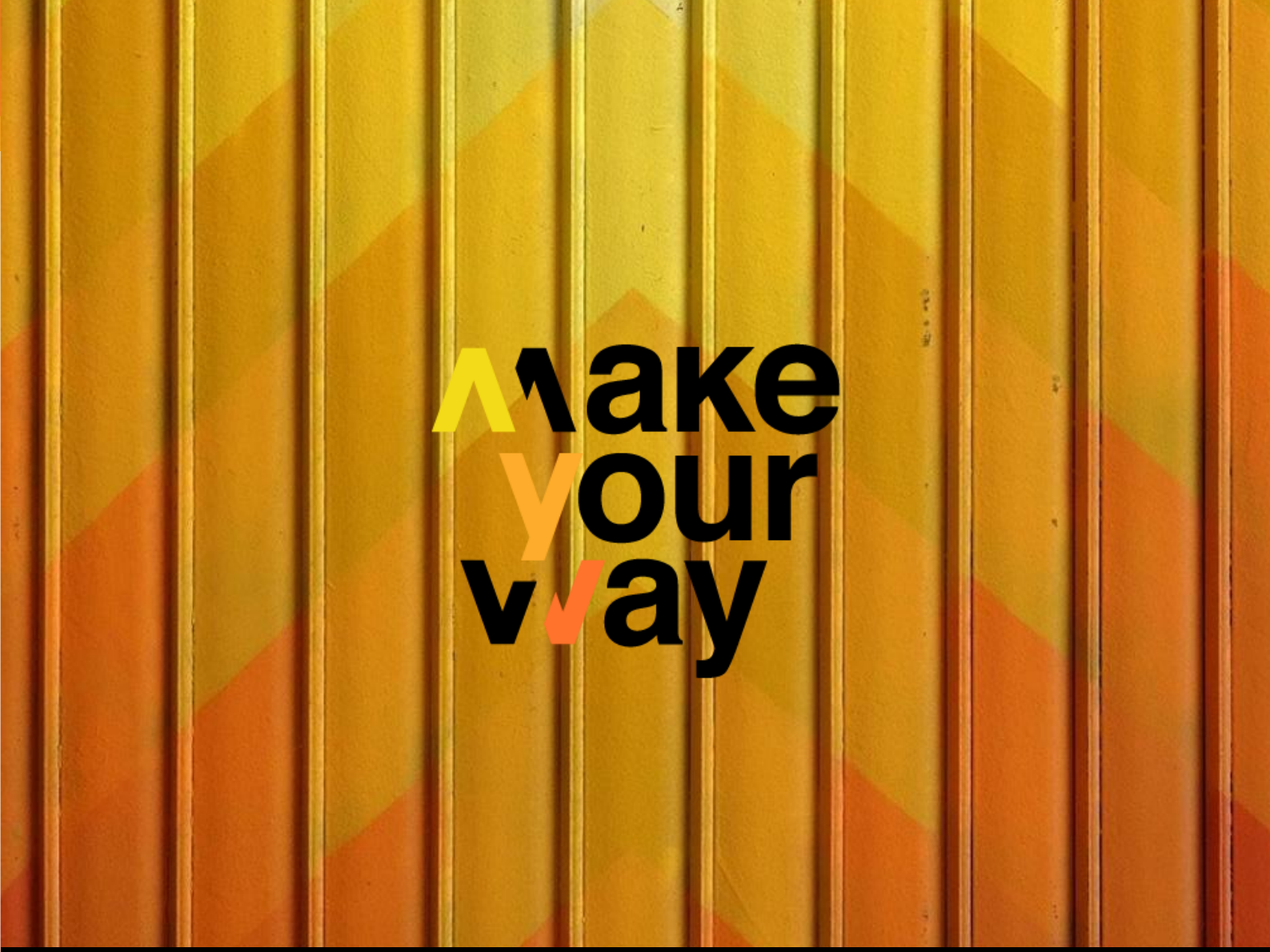

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