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Analysing advantages and disadvantages of existing partnership models in Slovenia and Finland

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1 Introduction

The financial and economic crisis has increased unemployment in the EU. However, enterprises in particular regions and sectors cannot meet their labour demand and skill needs. Skill mismatch – the discrepancy between the qualifications and skills that individuals possess and those needed by the labour market[1] – in the EU is increasing. This has manifested itself in terms of both a collapse in demand for low-skilled workers and a greater number of higher-educated people taking up jobs that are not commensurate with their skills and competences.

According to the Cedefop's European skills and jobs survey[2], one out of three European employees is either over- or under-qualified, with the mismatch especially high in Mediterranean countries. The results show that countries with higher-skill mismatches share some common characteristics:

- They tend to have lower levels of public investment in education and training, which might reduce their quality and ability to respond to changing labour market needs.
- They also have lower expenditure on labour market programmes and more rigid and segmented labour markets, as the qualification mismatch predominantly affects younger male workers on non-standard contracts.
- Young people and immigrants suffer more from over-qualification, while ageing workers are more prone to skills obsolescence.

The EU has to overcome this skill mismatch. Adaptation of education and training to the changing requirements is a prerequisite for preventing current and future labour market imbalances. The Bruges Communiqué in 2010[3] urged countries to achieve flexible, high quality education and training systems that respond to the needs of today and tomorrow. Tackling skill mismatch therefore requires demand side policies, such as the European

[1]Definition taken from the European Commission Staff Working Document, Employment and Social Developments in Europe, January 2013. Available at: http://register.consilium.europa.eu/doc/srv?l=EN&f=ST%205571%202013%20ADD%209.

[2] *Matching skills and jobs in Europe: Insights from Cedefop's European skills and jobs survey (2015)*, Cedefop Publications. Available at:http://www.cedefop.europa.eu/en/publications-and-resources/publications/8088

[3]Communiqué of the European Ministers for Vocational Education and Training, the European Social Partners and the European Commission, meeting in Bruges on 7 December 2010 to review the strategic approach and priorities of the Copenhagen process for 2011-2020.

Commission's Employment Package[4] rightly emphasized that more high-skilled jobs are needed to bring the supply of skills in closer alignment with the needs of the EU economies.

1.1 About RAY

Project's idea comes from the above mentioned facts and from real needs they face every day in Nova Gorica (Slovenia) and Satakunta regions (Finland), where Šolski center Nova Gorica and Sataedu (both VET providers) work. They find out that on one side the young generation enrolled in a school needs different challenges, a different pedagogical approach.

Young people live with digital technology. They use digital devices, search for information, communicate through different virtual paths, but they are less critical to the information used, they are less able to link the acquired information and knowledge into a meaningful whole, giving them useful value in the work environment. It also seems that there is a big gap between behaviour and knowledge in their virtual world, and between functioning in a real working environment. They find out that young people hard to find real challenge but have also lack of creativity; they are bored but not so self-initiative, they have wide knowledge but are to so good at accurate and detailed observation.

The questions that schools should ask themselves are what should they do, how could they support young people to be more active, to keep their curiosity and to get more practical experience which would help them to use and concept their knowledge and also to develop skills that will support them searching and doing real work.

Due to globalization, technology advancement, digitalization, complex interactions, we see a strong need for new diversity in VET. Young people lack work experiences in working environment. Millennial generation thinks and behaves different. The

[4]The Employment package (launched in 2012) is a set of policy documents on how EU employment policies intersect with other policy areas in support of smart, sustainable and inclusive growth. It identifies the EU's biggest job potential areas and the most effective ways for EU countries to create more jobs. Available at:http://ec.europa.eu/social/main.jsp?catId=1039.

mismatches between needs of employers and skills of entry-level job seekers are growing. Many opened work positions cannot be filled, although unemployment rate is still high. Young people leave school without appropriate skills, get jobs unrelated to their field of study. The automotive and automation sectors in Nova Gorica and Satakunta regions are the biggest employers and the fastest growing sectors, war for talents has been launched. The companies have started acting as strategic investors in human capital and want to take a direct role in creating skilled workforce and talents they need.

The project aims to establish a reliable and sustainable VET-business partnership in automotive/automation sectors for human resource planning and development, which represents all partners' vision, to: support companies in Nova Gorica and Satakunta regions with qualified, creative and skilled employees; reduce youth unemployment and skills mismatch; enable young people to develop their full potential; give young people opportunities to be an active partner in this partnership and stimulate them for direct networking with company experts, trainers; establish and integrate in educational and working processes constant activities for exchanging professional knowledge/skills between VET teachers and company experts/trainers.
Main project's results represent innovative WBL/APP model and VET teacher-in-company trainer partnership model, with clear definition of partners and targets' roles, responsibilities and activities, which will be integrated into educational and working processes at school and in companies.

Key target groups will consist of: VET students and teachers, WBL organisers, career counsellors, leadership from Sataedu and Šolski center Nova Gorica; and of trainers, HR staff, developers and innovators, leadership from Mahle and Prizztech.
The changes require new forms of collaborative and flexible educational and working environments. The partnership searches for solutions, considering all targets' aspects. The strengthening of VET-business partnership will result in innovative models according to the needs, interests of millennials and demands of global/digital industry and society, which will base on new pedagogical methods and approaches, organisational structures, new definitions of needs and demands, active partnership collaboration in form of work-based learning or apprenticeship.

The RAY project specifically aims to tackle the issue of skills mismatch by establishing reliable and sustainable VET-business partnerships in the automotive/automation sectors in the areas of Nova Gorica (Slovenia) and Satakunta (Finland). These partnerships will involve the main stakeholders in these areas, such as employers and businesses, education providers, human resource planning and development sectors, VET students and teachers, WBL organizers, career counsellors and trainers, HR staff, etc.
As a whole, the vision of the project includes the support to companies in these regions in order to provide with qualified young workforce by identifying the needs and demands of the automotive/automation sectors and through the implementation of WBL/APP in the VET systems in these regions, as well as new pedagogical models and tools. This should lead to an increased employability among young generations in the regions, by reducing the mismatches in the labour market, which, in turn, would enable young people to develop their full potential. The project aims at stimulating direct networking among young people, businesses, companies and trainers/mentors in schools, as well as to design over-arching, integrated educational and training models that would allow for strong and sustainable collaboration among all stakeholders.

Partners:

- School center Novi Gorica, Slovenia, VET provider;
- Satakunnan Kouluskuntayhtyma, Sataedu, Finland, VET provider
- Mahle Letrika, Slovenia, private company;
- RRA Severne Primorske, Slovenia, regional public body, non-profit;
- Center for vocational education, CPI, Slovenia, national public body;
- Prizztech Ltd., Finland, regional representative of working life;

This project is elaborated in the framework of the European KA3 project RAY (Regional Alliances for Youth), 2017-2019. RAY is conducted in transnational cooperation between VET providing organizations and their locally collaborating partners in Slovenia and Finland.
The main task of Vocational Education and Training (VET) is to supply the trades with a competent skilled workforce. At the same time, VET has to balance this task with the society´s needs for self-responsible and self-supplying citizens as well as to promote the

students´ efforts for personal and social development. This balance is an ongoing task on all levels: Solutions are expected from political decision makers, from VET colleges and company managers and on personal level in dialogues between VET teachers, students and in-company mentors.

RAY acts on the questions that emerge from a challenged vocational education and training system, which must meet the topical industrial development and match with young students that are grown up in a heavily digitalizing world.

In this complex and vivid context, RAY wants to develop:

- an innovative model for work-based learning/apprenticeship (WBL/app)
- a partnership model for VET teachers and in-company trainers

Furthermore, RAY will result into the identification of existing partnership models between VET and business, seen in the light of future work trends and the needs of the industry. Operational guidelines and learning materials will be elaborated to promote the intended models of the project.

1.2 RAY Glossary

A range of related terms influence the discussions of work-based learning and apprenticeship. The following overview of terms created a framework that is chosen for the development activities in RAY and for the so-called "WBL/APP model":

Terms	Terms description by country (SI, FIN)	Terms for use in RAY
Work based learning (WBL) SI: Učenje z delom FIN: Työhön perustuva oppiminen	SI: Pridobivanje znanja in spretnosti v procesu izvajanja delovnih nalog - in njihova refleksija - v okvirih poklicnega dela, bodisi na delovnem mestu (npr. usposabljanje v alternaciji) ali v instituciji za poklicno in strokovno izobraževanje in usposabljanje. FIN: WBL is an educational strategy that provides students with real-life work experiences where they can apply academic and technical skills and develop their employability. Student is working in the companies normal work processes. Guidance and monitoring are organized mainly by company. Student learns skills of the profession but also working life rules which are impossible to learn in school.	Work based learning (WBL)
Apprenticeship (APP) SI: Vajeništvo FIN: Oppisopimus	SI: Sistematično in dolgoročno usposabljanje, ki poteka izmenično v šoli ali izobraževalnem centru in na delovnem mestu. Udeleženec izobraževanja sklene pogodbo z delodajalcem in lahko za svoje delo prejme plačilo ali nagrado. Delodajalec	

	prevzame odgovornost za izvajanje usposabljanja, ki udeležencu omogoči, da pridobi znanje za opravljanje določenega poklica. FIN: Student has an employment relationship with company. Student is mostly studying in companies work tasks. Student is studying in school only these parts which are impossible in company. Student is demonstrating his skills in competence-based qualification.	
In/on the job training/ learning, practical training at the workplace SI: Praktično usposabljanje na delovnem mestu FIN: Työssäoppiminen	SI: Izobraževanje in usposabljanje, ki poteka na posameznikovem delovnem mestu v sklopu njegovih delovnih nalog in uporablja delo kot proces, ki omogoča učenje. Omogoča povezovanje dela in izobraževanja in se nanaša tudi na procese praktičnega izobraževanja na delovnem mestu pa tudi na različne oblike usposabljanja, največkrat za opravljanje manj zahtevnih del ali za uporabo novih tehnologij. Poteka lahko tudi kot del procesa formalnega izobraževanja za pridobitev izobrazbe. ali Praktično usposabljanje z delom (PUD) je del praktičnega izobraževanja dijakov v poklicnem in strokovnem izobraževanju, ki se izvaja pri delodajalcih. PUD omogoča predvsem doseganje ciljev, ki jih šola sama ne more v celoti uresničiti, zlasti poklicno socializacijo, razvoj osebnostnih potencialov in	

	poklicnih kompetenc, pomembnih za kakovost dela in obvladovanje poslovnih procesov. PUD se izvaja na podlagi individualne učne pogodbe med delodajalcem in dijakom ali na podlagi kolektivne učne pogodbe med delodajalcem in šolo. FIN: Student is working in the companies normal work processes which are planned in advance and are based on curriculums parts. Guidance and monitoring are organized mainly by company. The periods are before 2018 at least 6 months which can be divided one or more parts. The periods are evaluated by student, in-company trainer and teacher. Studentis demonstrating his skills in vocational skills demonstration which is possible to do company or in school.	
Integrated WBL in a school based programme (labs, workshops, simulations of real business project assignments etc.) SI: Praktični pouk v šolskih delavnicah FIN: Koulun projekteissa harjoittelu	SI: Praktični pouk je namenjen razvoju spretnosti ter omogoča učencem razumeti njihov pomen in uporabo in spoznati, kako stvari (npr. oprema) delujejo. Namenjen je tudi pridobivanju praktičnega znanja in izkušenj. ali Praktično izobraževanje Izobraževanje (usposabljanje), v katerem dijaki dobijo možnost učenja spretnosti, medtem ko opravljajo dejanske ali simulirane delovne operacije. Je del ali faza v procesu poklicnega in strokovnega	

	izobraževanja, ki poteka neposredno v delovnem okolju, v šolskih učnih delavnicah ali v medpodjetniških centrih in je namenjeno pridobivanju praktičnih spretnosti in delovnih izkušenj pa tudi poklicni vzgoji. Poteka lahko kot praktični pouk, delovna praksa ali kot praktično usposabljanje z delom. Je nujni sestavni del vseh programov poklicnega in strokovnega izobraževanja. Pri izvajanju programov za odrasle je ta del navadno skrajšan ali prilagojen že pridobljenim delovnim izkušnjam. FIN: Student is working in schools own workplaces.	
Teacher of general subjects SI: Učitelj splošnih predmetov FIN: Yleisaineiden opettaja	SI: Oseba, katere poklicna naloga je, da podaja in razvija znanje, spretnosti in kompetence dijakov v izobraževalnih ustanovah za poklicno in strokovno izobraževanje in usposabljanje v okviru organiziranega izobraževanja. FIN: Teacher is teaching general subjects for students who are from all professional fields.	
VET Teacher SI: Učitelj strokovne teorije in prakse FIN: Ammatillinen opettaja	SI: Učitelji praktičnega pouka vodijo organiziran proces pridobivanja praktičnega znanja in spretnosti, praviloma v šolskih delavnicah. Učitelj lahko opravlja številne druge naloge, kot na primer: organizacija in izvajanje izobraževalnih programov/tečajev in prenos	VET teacher

	znanja/spretnosti, tako generičnih kot specifičnih, teoretičnih ali praktičnih. FIN: Teacher is teaching special subjects for students his own professional field.	
Teacher – responsible for practical training at the workplace (PTW), counsellor SI: Organizator praktičnega usposabljanjana delovnem mestu FIN: Työssäoppimista ohjaava opettaja	SI: Učitelj odgovoren za organizacijo in izvajanje izobraževalnih programov. FIN: VET teacher who is taking care to organize the on-job learning periods.	
Mentor, in-company trainer, tutor SI: Mentor v podjetju FIN: Työpaikkaohjaaja	SI: Na področju poklicnega in strokovnega izobraževanja in usposabljanja označuje delavce, ki so v podjetjih odgovorni za učence na praktičnem usposabljanju z delom ali tiste, ki na šolah vodijo praktično izobraževanje, kot so organizatorji praktičnega izobraževanja ali učitelji praktičnega pouka. FIN: Worker in company who takes care to organize the students on-job learning period in company.	In-company trainer
Initial vocational education and training (IVET) SI: Začetno izobraževanje in usposabljanje FIN: Valmentava koulutus	SI: Splošno ali poklicno in strokovno izobraževanje, ki se izvaja v okviru začetnega izobraževanja v šolskem sistemu, navadno pred vstopom v svet dela. Začetno izobraževanje in usposabljanje lahko poteka na kateri koli ravni splošnega ali poklicnega in strokovnega izobraževanja (redno izobraževanje v šoli ali	

	izobraževanje valternaciji/izmenično izobraževanje) ali vajeništva. FIN: Education for young students who don´t know which is their professional field. They will be familiar with meny of the professions and then choose one to study more.	
Continuing vocational education and training (CVET) SI: Nadaljevalno izobraževanje in usposabljanje FIN: Jatko- ja täydennyskoulutus	SI: Izobraževanje ali usposabljanje po začetnem izobraževanju ali vstopu v svet dela, ki posamezniku pomaga, da: izboljša, ali posodobi ali nadgradi svoje znanje in spretnosti; pridobi nove spretnosti za napredovanje na poklicni poti ali se prekvalificira; nadaljuje svoj osebni ali poklicni razvoj. Nadaljevalno izobraževanje in usposabljanje je sestavni del vseživljenjskega učenja, ki lahko zajema katero koli izobraževanje (splošno, strokovno ali poklicno, formalno in neformalno itn.) in bistveno vpliva na posameznikovo zaposljivost. FIN: training	
VET Student SI: dijak v poklicnem oz. strokovnem izobraževanju FIN: ammatillinen opiskelija	SI: Vsi, ki so vpisani v programe srednjega splošnega, poklicnega ali strokovnega izobraževanja. FIN:Student in vocational upper secondary education and training	VET student
VET provider; VET school, VET college	SI: Katera koli organizacija ali posameznik, ki izvaja izobraževanje ali usposabljanje. Izvajalci programov izobraževanja in usposabljanja so lahko	

SI: Poklicna oz. strokovna šola FIN: koulutuksen järjestäjä	organizacije, ki so posebej ustanovljene za ta namen, lahko pa to dejavnost izvajajo ob drugi poklicni dejavnosti, na primer delodajalci, ki izvajajo izobraževanje kot del svoje poslovne dejavnosti. Izvajalci usposabljanja so lahko tudi posamezniki, ki ponujajo takšno storitev. FIN: education provider who organizes VET education.	

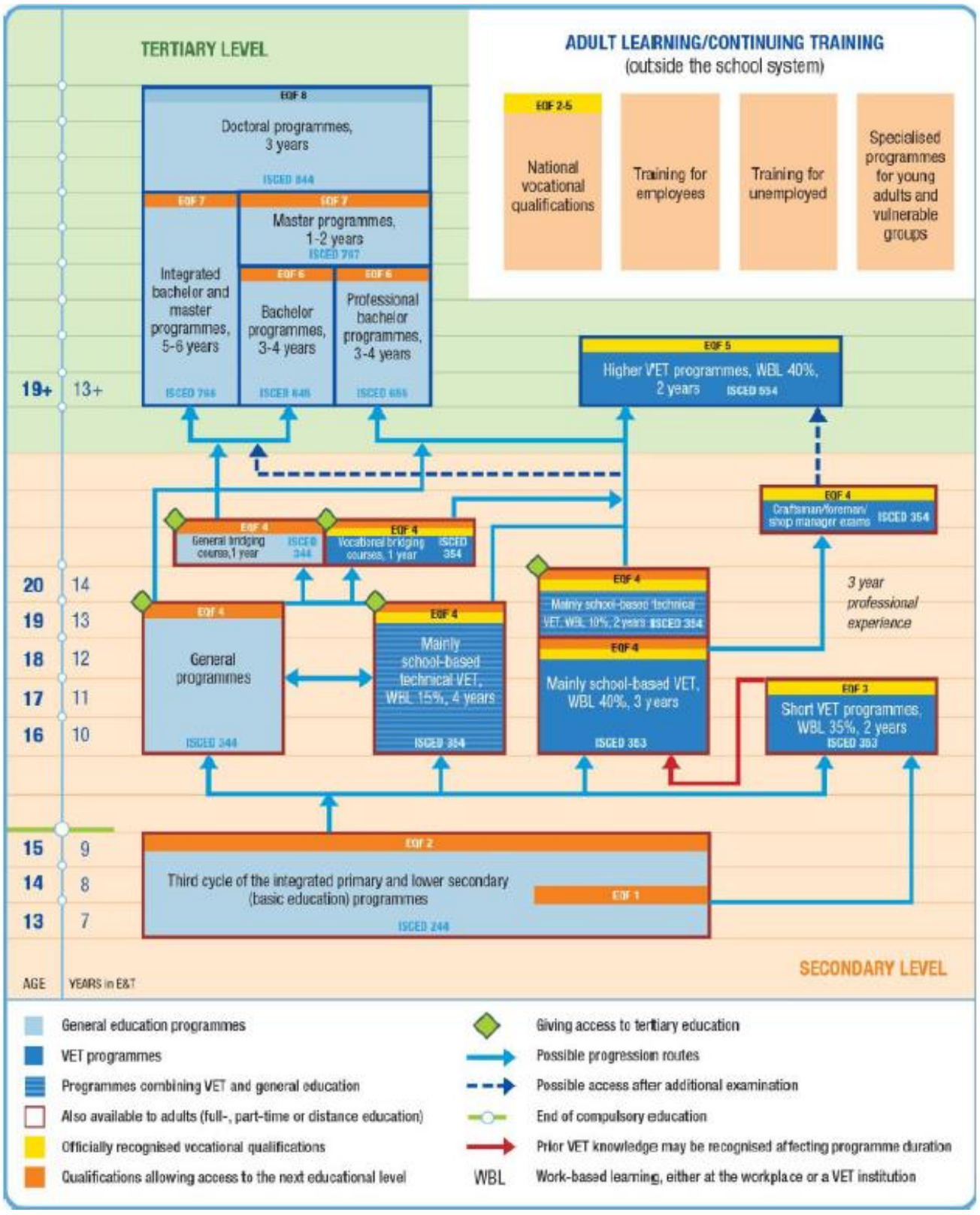
2 Situation that we are dealing with

2.1 Analysing current state/advantages and disadvantages of existing partnerships in Slovenia and Finland (out of questionnaires)

2.1.1 Short description about Slovenia VET system[5]

In the Republic of Slovenia, the education system is organised as a network of mainly public schools. There are some private providers, who have concession to implement officially recognised programmes. The Ministry of Education, Science and Sport (education ministry) is responsible for pre-school education, basic education and upper secondary level. Tertiary education comprises professional and academic programmes and is under jurisdiction of the education ministry. Pre-school education is not mandatory. The compulsory school starts at age of six and lasts nine years. VET starts at upper secondary level, with the first external differentiation after nine years of compulsory basic education at the age of 15, when learners can opt for IVET programmes or general upper secondary programmes, gymnasia (4 years, completed with the matura examination). One type of gymnasium is the so-called professional gymnasium. Despite its title, it provides general education programmes only.

[5] Source: Slovenia: VET in Europe: country report 2016, https://cumulus.cedefop.europa.eu/files/vetelib/2016/2016_CR_SI.pdf.



VET System Slovenia

Description of the types (levels) of VET programmes

The main types of vocational education and training programmes:

- formal upper secondary education that typically involves students between the ages of 15 and 18;
- master craftsman, foreman and managerial examinations;
- and higher vocational education programmes.

Formal upper secondary education that involves students aged 15 to 18.

The Slovenian system of secondary (initial) VET is characterised by four types of education programme:

a) four-year upper secondary technical education comprises 240 credits (ECVET). The programmes are broadly designed (they include 40% general subjects and professional modules and practical training). Candidates obtain a secondary technical qualification and a vocational degree (*matura*) that gives access to higher vocational and higher professional education. The ease of transition to university courses from secondary vocational and technical education is ensured through the possibility of taking an additional subject from the general *matura* examination;
b) three-year upper secondary vocational education prepares students for broader vocational fields. Programmes have practical guidance and include 30% of general subjects; they last three years and comprise 180 credits. On passing the final examination, students obtain a final examination certificate and can continue their education in a two-year programme of vocational/technical education or take employment;
c) two-year upper secondary vocational and technical education serves as a bridging course, building on secondary vocational education, and enables students who have successfully completed secondary vocational education to attain vocational *matura* and secondary technical qualifications. This is the so-called '3 + 2' system representing the alternative to the technical education path. Programmes include 50% of general subjects, last two years and comprise 120 credits;

d) short secondary vocational education (two years) comprises 120 credits. It is intended for students who have fulfilled at least the seventh year of the nine-year elementary programme, or have completed elementary school under an adapted programme. The emphasis is on practical lessons, underpinned by technical and theoretical content: 30% general subjects, 50% vocational subjects, 20% practical training at the workplace. On passing the final examination, students obtain a final examination certificate. They are qualified to pursue less demanding occupations, while at the same time they can continue their education in secondary vocational education programmes.

Master craftsman, foreman and managerial examinations

These are intended for candidates who have completed upper secondary vocational education and have at least three years of relevant work experience. The examination comprises four parts: a practical unit, a specialised theoretical unit, a business and economics unit, and a pedagogical-andragogical unit. On passing the master craftsman, foreman or managerial examination, which tests the ability of the candidate independently to manage a plant or shop, pursue a master craftsman's trade and provide practical instruction to learners, candidates obtain a master craftsman/foreman/shop manager certificate and upper secondary technical qualification. Based on examinations passed in the general education subjects of the vocational matura, candidates can continue their education at short-cycle higher vocational schools and professional colleges. These examinations come under the competence of trade chambers.

Higher vocational education programmes

Higher vocational education is regulated by the Higher Vocational Education Act (2004). It is aimed at students who have passed the vocational or general *matura*, and at candidates who have passed the master craftsman/foreman/shop manager examination, three years' work experience and a test of knowledge of general education subjects at the level required for the vocational *matura* in secondary technical education. These practically oriented programmes based on occupational standards, last two years and

comprise 120 credits (ECTS). On successful completion of the higher vocational programme, students obtain a diploma of higher vocational education. Graduates can continue their education at the first level (first cycle) of tertiary education or can take up employment.

The new Law on Apprenticeship (2017) sets apprenticeship as a form of education in upper secondary vocational education (three-year programmes) and in continuing vocational and technical education. 'Apprentice' can be a person enrolled in an upper secondary vocational education programme that is provided in the apprenticeship form or a person, unemployed or employed, who is enrolled in part-time programme aiming to achieve an upper secondary vocational or further vocational/technical qualification or to get retrained.

Description of WBL models in VET[6]

- Position of WBL in the system

In accordance with the Vocational Education Act (2006) work-based learning is an obligatory part of educational programs in all types of VET programs. This means that work-based learning in companies is obligatory for all participants enrolled in VET programs. Practical training in VET programs consist of practical lessons in school and of work-based learning in companies. Work-based learning takes place as a real work process and is carried out in companies or partially in Intercompany Training Centres. Work-based learning was set as the maintenance of good characteristic and correction of 1996 legislation, in which there were two parallel paths to vocational education: school path and apprenticeship. Two parallel, equivalent ways of VET were introduced by law in 1996. They differed in implementation and jurisdictions of practical training: in the dual form, the provider of VET programme is company, which, together with the school provides an educational program. Enrolled person had the status of apprentice that had some features of the employment (eg, the 50% of the time for practical training is included in length of service)[7].

[6]Source: Report: SWOT analysis of Slovenian WBL system (May, 2016), http://newwbl.eu/SWOTreport_SLOVENIA.pdf, December, 2017.

[7] See: https://cumulus.cedefop.europa.eu/files/vetelib/2016/2016_CR_SI.pdf

- Duration of WBL

The overall length of practical training (practical lessons in schools and work-based learning) is defined by an educational program and varies according to the type of educational program:

- Short vocational upper secondary education (2 years): 35-40% of educational program is intended for practical training, of which 4 weeks (152 hours) for work-based learning in companies.
- Vocational upper secondary education (3 years): 40% of educational program is intended for practical training, of which at least 24 weeks (912 hours) and not more than 53 weeks for work-based learning in companies. All programs have a prescribed minimum length, (24 weeks) of practical training in companies. A student may have an individual agreement with a company that the minimum length of practical training be extended but it must not exceed the limit (53 weeks).
- Technical upper secondary education (4 years): 15% of the educational program is intended for practical training, of which 4 - 8 weeks (152 - 304 hours) for work-based learning in companies.
- Vocational technical education (2 years, after vocational upper secondary program): 10% of the educational program is intended for practical training, of which 2 weeks (76 hours) for work-based learning in companies.

- Learning contract

For the implementation of work-based learning a contract has to be signed. In vocational upper secondary programs, there are two types of learning contract:

- Individual learning contract, between the employer and student (or parents/his legal guardian),
- Collective learning contract, which is more common, between the employer, school and student (or his parents).

Individual learning contract allows for increasing the amount of work-based learning in the company, thereby decreasing the amount of practical training in the school. If the individual learning contract is signed, in the second year pupil will have to pass a midterm test of practical skills.

A learning contract contains the responsibilities and obligations of parties, duration and program of work-based learning. The latter defines competences the student shall develop and acquire in each year and this is prepared by school. If the company can implement only a part of the program due to the narrow area of expertise, the rest shall be carried out in some other company or in the intercompany training centre. It should be pointed out that learning contract are not contracts of employment.

- Terms and conditions of companies to implement WBL

The terms and conditions for companies to be able to sign a learning contract are defined in Vocational Education Act. Verification of a training workplace is provided by the Chambers. After the company submits an application, it is visited by a three-member commission that checks personnel and material conditions. Commissions for every occupation are named by the appropriate Chamber. By personnel conditions we refer to the trainers for who appropriate education, appropriate work experience and pedagogical-andragogical training is a requirement (see below – *'Training of mentors'*). By material conditions, we refer to the material used on the workplace itself as well as equipment, depending on the occupation. If the conditions are satisfied, competent Chamber shall issue a certificate and the company shall be entered in the register of training workplaces.

6 months before the start of the school year, Chambers publish offer or announcement of training workplaces for the next year for vocational upper secondary programs. Announcement of training workplaces is information for young people and their parents about the needs of the labour market. It is included into the Call for application for enrolment in upper secondary programs for each school year.

- Training of mentors

The member of personnel who is suitably qualified for implementation of WBL in a company is a mentor, who has:

(a) passed the Master craftsman/foreman/shop manager examination or

(b) vocational upper secondary education (ISCED 353) and has at least five years of relevant work experience as well as pedagogical/andragogical training for mentors.

The law stipulates that a master craftsman/foreman/shop manager examination may be undertaken by any individual who has obtained:

A) vocational upper secondary education and has at least three years' experience in the field in which he or she wishes to sit for the examination;
B) technical upper secondary education and has at least two years' experience in the field in which he or she wishes to sit for the examination;
C) higher vocational or first cycle professional education and has at least one-years' experience in the field in which he or she wishes to sit for the examination.

The Master craftsman's examination consists of four parts:

(a) a practical part,
(b) a technical/theoretical part,
(c) a business/economics part, and
(d) a teaching part. This part of the exam covers the following fields: psychological bases of learning, planning and implementation of the learning process, methodology of practical training, monitoring and verifying learning outcomes, and the education system.

So mentors who haves passed a master craftsman/foreman/shop manager examinations have acquired teaching-related knowledge as an integral part of their training.

Where a mentor did not take a master craftsman/foreman/shop manager examination, he or she must get a separate pedagogical/andragogical training for mentors (known as training of student mentors for WBL). The training programme is open to anyone who has: (a) a Vocational or Technical Upper Secondary Education and at least five years' relevant work experience or (b) a Higher Vocational Education and at least two years' relevant work experience.

The aim of this training is to provide future mentors with the basic knowledge and skills important to plan, implement and evaluate mentoring of students in WBL. The programme includes familiarisation with the fundamental features of development during adolescence, with the basic psychological and pedagogical characteristics of learning and teaching, with the importance of communication skills and conflict-resolving skills in work with students, with education and occupational safety legislation, with the

importance of a good organisational culture for successful work, with methods of including students in teamwork and project work and with the preparation of the necessary documentation for effective guidance, monitoring and evaluation of work placement students. The programme consists of 24 contact hours and 26 hours of independent work, i.e a total commitment from a candidate amounts to 50 hours.

- Quality assurance

The Vocational Education Act has strengthened the autonomy and the developmental role of VET schools, at the same time it reinforced the importance of quality assessment and assurance. According to the Act schools are requested to establish a Quality Committee, consisting of a minimum of 5 members: representatives of professional school employees, employers, students and parents. Quality Committee consisting of 5 lecturers and 2 students is also requested by Post-Secondary Vocational Education Act. Quality Committee is obliged to publish a quality report on the school website every school year. For the Quality Committee's work CPI published *Recommendations to schools for the implementation of self-evaluation* that includes scope of work-based learning. From the published quality reports on the school's websites, it is evident that the work of Quality Committees include work-based learning in companies. A questionnaire for companies and students on various aspects of the implementation of work-based learning is a common practice.

In case of an individual learning contract, quality assurance for verified training workplaces in companies is carried out by the Chambers when midterm exams occur. For collective learning contracts, quality of workplaces is monitored by organizers of work-based learning, meaning by schools, as described above. Cooperation with new companies is most often set up at the request of students who would like to do work-based learning in a particular company. Often organizers visit companies while the work-based learning is taking place.

During the work-based learning students fulfil required documentation, i.e. report of work-based learning or diary of work, which is supervised and confirmed by the mentor and reviewed by organiser at school when work-based learning ends. In the case of an

individual learning contract, student must submit report of work before the midterm exam to expert supervisor for all the previous years.

- Assessment

General rules that apply to assessment of the students' knowledge are specified by the Vocational and Technical Education Act, and Rules on the Assessment of Knowledge in Secondary Schools. Schools prepare their own assessment rules on the basis of the above mentioned regulations that are then approved by the head teacher upon prior review by the assembly of teachers.

VET programmes consist of general subjects, vocational modules (vocational theory + practical lessons), and work-based learning at company. Sometimes there are two teachers teaching one vocational module (teacher of theory and teacher of practical lessons), and in that case, they have to agree on the final grade. Teachers assess the students' oral exam and written products, papers, projects, as well as products and services. The compulsory assessment method is specified for each separate subject or technical module with the education programme. The knowledge assessment criteria are brought into line by the school's expert working groups on the basis of national prescribed catalogues of knowledge. The assessment grades are numerical: 1 (fail), 2 (pass), 3 (good), 4 (very good) and 5 (outstanding). Sometimes a part of practical lessons of vocational modules student gain in company. In that case the school teacher and in-company mentor assesses student together. In that case the criteria for grading are the same as for students who gain practical lessons at school (as it is described above).

Knowledge gain at WBL is assessed by employers and the results reported to the school. The assessment grades are descriptive: "pass" or a "fail". The knowledge assessment criteria for WBL are not specified at national level. There is no national prescribed catalogues of knowledge, as in the case of general subjects and vocational modules. Sometimes school prepare the work-based learning program or competences a student shall acquire in the company, but this is not obligatory.

At the end of every assessment period – except in the final year – the students receive a transcription of grades, conclusions, and requirements fulfilled. At the end of each school year, students receive the end-of-year report. If they fail to fulfil all requirements, they receive a notification of their success.

- Final examination

Three-year vocational upper secondary programs are completed with a final exam. At the exam candidates have to demonstrate acquired theoretical and practical knowledge thus proving they are competent for the profession. The final exam board can have one additional member from companies as an observer. The list of additional members is published by National Commission following the proposal of representative Chambers and trade unions. The final exam is comprised of mother tongue exam and practical exam. After passing the final exam, candidates can be employed without further formal education or training (traineeships) or continue education.

After completing four-year (technical VET), students have vocational matura. Vocational matura consists of four exams: two obligatory: *(1) mother tongue – Slovene* and *(2) basic professional – theoretical subject depending on the programme* and two optional *(3) mathematics or a foreign language* and (4) *practical work* (product, service, project work with discussion or seminar) depending on the programme.

2.0.2 Short description about VET in Finland/Satakunta region

Vocational education and training is organized in cooperation with the world of work. Vocational education and training covers eight fields of education, more than fifty vocational qualifications including over a hundred different study programmes.

The scope of vocational qualifications is three years of study and each qualification includes at least half a year of on-the-job learning in workplaces. Vocational education and training can be completed in the form of school-based training or apprenticeship training.

The national qualification requirements have been based on a learning-outcome approach from the early 1990s. Consequently, close cooperation with the world of work has been essential. Vocational qualifications are developed in co-operation with the world of work and other key stakeholders. This is done in order to ensure that the qualifications support flexible and efficient transition into the labour market as well as occupational

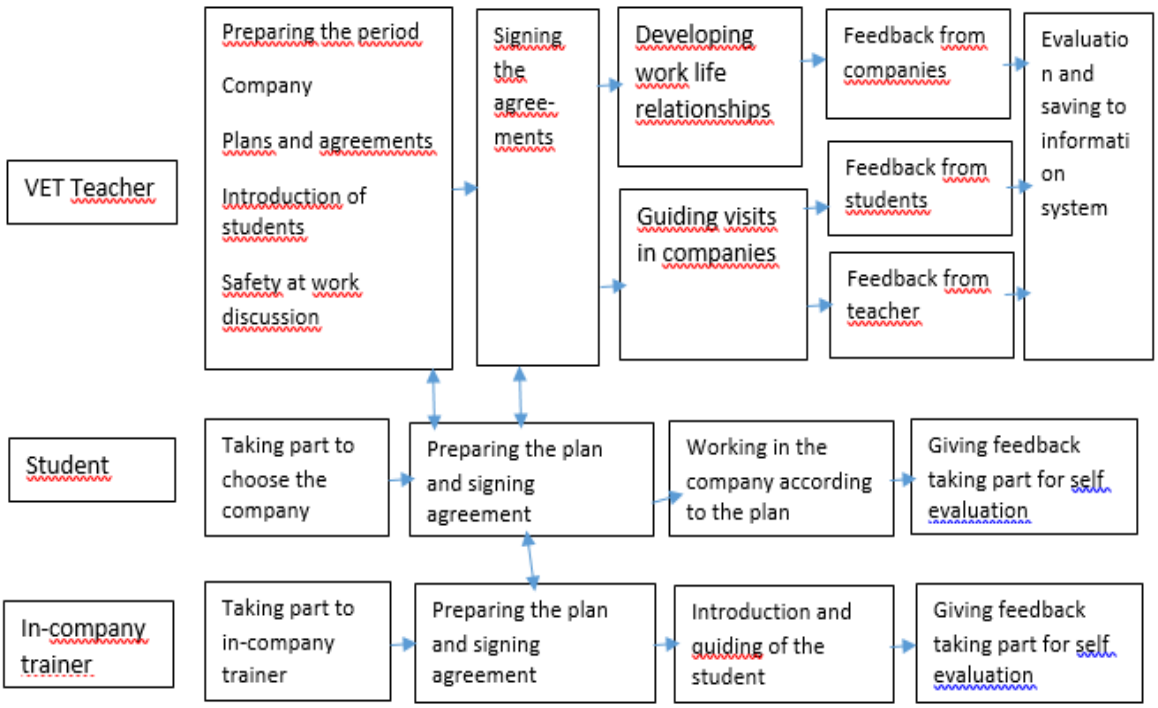
development and career change. In addition to the needs of the world of work, development of vocational education and training and qualifications takes into account the consolidation of lifelong learning skills as well as the individuals' needs and opportunities to complete qualifications flexibly to suit their own circumstances.

The studies are based on individual study plans, comprising both compulsory and optional study modules. The students' learning and competences acquired are assessed throughout the period of study. The assessment is based on criteria defined in the national qualification requirements. One of the main assessment methods are the vocational skills demonstrations. These are work assignments relevant to the vocational skills requirements and are given in authentic settings. Skills demonstrations are designed, implemented and assessed in co-operation with representatives of the world of work.

Competence-based qualifications offer a way to demonstrate prior learning. Competence-based qualifications provide adults a flexible way to enhance and maintain their vocational skills. A specific benefit of this system is that it makes it possible to recognize an individual's vocational competences regardless of whether they have been acquired through work experience, studies or other activities. Representatives of the world of work and business life play an important role in planning, implementing and assessing these competence based qualifications. An individual study plan is prepared for each student taking a competence-based qualification. The candidates demonstrate their skills in competence tests, which are assessed by training experts and representatives from enterprises together with the candidates themselves.

There are two models of WBL in VET used in Sataedu, on-the-job learning and apprenticeship. Behind organizing on-job, learning there is a general agreement between the company and Sataedu. In that, agreement there are agreed all the big lines (insurances, responsibilities and so on). In apprenticeship, there is contract of employment between company and student.

Implementation of on-job learning in Sataedu



2.1.3 Short description about the questionnaire

For the purpose of analyzing current state/advantages and disadvantages of existing partnerships, analyzing the expectations and knowing about future trends (Industry 4.0/5.0, Millennium generation, trends in education, trends in the automotive and automation sector), we created a questionnaire. The title of the questionnaire was *Understanding the future trends*[8].

The questionnaire was divided into four parts. First part is Glossary (which is presented in chapter 1.3 of this document), second part is Basic information about VET system and possibility for cooperation (which is presented above in this chapter), third part was focused on analysing current situation, specially the state of partnership/cooperation between the school (leadership, students and teachers) and companies, and the last part was focused on future (expectations, wishes, ideas and predictions).

2.1.4 Methodology

The questionnaire was prepared for three different target groups. First target group were students from School centre Nova Gorica and Sataedu secondary school. Second target group were pedagogical staff (teachers and school managers) from schools named above. Third target group were companies in Nova Gorica and Satakunta region.

All three groups were fulfilling third and fourth part of the questionnaire. In this parts they were answering the same questions, only difference was that student's questionnaire did not include questions about legal and financial support. First and the second part was intended to companies and schools with the purpose to unify the basic professional terms that they are using whet they are talking about VET system and cooperation (first part) and to gather basic information about the schools and the companies that are involved in The project (second part).

[8]See the annex Nr. 1.

All the questions in questionnaire were open type. At the end of the questionnaire the participants had the opportunity to add their own thoughts, views and ideas about cooperation.

We gathered 27 completed questionnaires from Finnish partner (13 of the questionnaires were completed by Sataedu students, 3of the questionnaires were completed by Sataedu management, 3 of the questionnaires were completed by Sataedu teachers who are organising in-company training, 2 of the questionnaires were completed by the Sataedu teachers who are not organising in-company training and 6 of the questionnaires were completed by the companies Cimcorp, Sataosaajat and Satmatic in Satakunta region where Sataedu students are coming for in-company training).

From Slovenian leader partner we gathered 5 questionnaires (two of the questionnaires were completed by company Mahle in Nova Gorica region where students from SC Nova Gorica are coming for in-company training, two were completed by SC Nova Gorica and one was completed together by 24 students).

We summed up the answers first according to the country and then according to the target group.
In the questionnaire analysis, a descriptive research method was used, which we combined with inductive coding (Vogrinc 2008[9]). This means that at each (central) question, the answers were categorized according to their substantive similarities in related categories.

2.1.5 *Where we are* – categorization about this fields

Analysis about current situation was according to the questionnaire divided into 5 content areas:

1. decision and selection (focus on *entry requirements*) of partners
2. aims of cooperation

[9] Vogrinc, J. (2008). *Kvalitativno raziskovanje na pedagoškem področju*. Ljubljana: Pedagoška fakulteta. Dostopno na: http://pefprints.pef.uni-lj.si/179/1/Vogrinc1.pdf

3. responsibility
4. process of cooperation (*focus on process*)
5. resources

In the first area (decision and selection) the target groups were asked about how they select the partners, how they establish cooperation, what kind of agreements do they make before they start cooperate.
In the second area the questions were about their expectations about cooperation - what is their image of good cooperation and what are their aims. On the other side, we also asked them about the real experiences or real situation.
In the third area the questioned participants were answering about the responsibility in the process of cooperation – who do they feel responsible to and why.
In the fourth area, the questioned participants were talking about implementations of aims, agreements, and expectations in the process of cooperation. What is important for them, how do they see the process, how are they dealing with problems, how do they see their active roll, do they have or see any challenges in the process.
In the last area, we asked the school and companies (students were excluded) about existing financial resources and about legislation.

Here we represent the answers separately for Slovenian partners (SC Nova Gorica and company Mahle) and Finnish partners (Sataedu school and companies Cimcorp, Sataosaajat and Satmatic in Satakunta region).

2.1.6 SLOVENIAN PARTNERS

2.1.6.1 Answers from students of SC Nova Gorica

2.1.6.1.1 Decision and selection (focus on entry requirements) of partners

According to the answers from Slovenian student, their <u>decision about selection the company</u> is mostly dependent on the *previous information* that they got from others or previous experiences (exam. codes: *recommendation and feedback from others, connections, good experience as a customer, acquaintances, the answer from the work*

placement request, good experience with student work). Some of them also decide according to the *location* of the company or the distance from home or school (exam. codes: *transfer possibilities, close enough*) or according to the interest (exam. codes: *doing interesting things, working on the interesting field*), important point for selection the company are also *future possibilities* (exam. codes: *holiday work, student work, future employment*). They also point out the *economic reasons* (exam. codes: *salary level, financial awards*).

To the question about the needs and expectations from the partnership students were answering that they *expect supportive and trustful relation* between mentors in company and them (exam. codes: *mentor find the time for us, we have time to get to know each other*), *variable working experience* (exam. codes: diverse *project, act as full employee, dynamic work, working on expertise field, gaining business experience*) and the *connection between theory and practice* (exam. codes: *connection between school theory and working practise, transfer theory in practice and test the level of knowledge*).They are also saying they are aware that having trustful relationship is possible only if they would be in company longer, about their needs they are saying that now, in real situation, the period of time being in cooperation is too short. They are aware that having trustful relationship is possible only if they would be in company longer and only in a longer period of cooperation, they would be provided with sufficient support.

About the agreements at the beginning of the cooperation, they do not know a lot about formal agreements, but they miss some sort of certificate, which would show what sort of work is he/she able to do, maybe also to qualify their informal knowledge. They also suggest that they should do some sort of portfolio with description of all the skills and tasks that they were develop at the working process, in cooperation. They also suggest that they should have final tasks every year or that school should follow what they are capable of and what do they know and for what they are talented.

2.1.6.1.2 Aims of cooperation

According to the answer we could say that student have quite clear image of good (desired) cooperation. They are saying that they would like to *work on real and diverse tasks* (exam. codes: *useful products, service, project, invite eg. 5 students for concrete*

work/project, manufacturing smaller amount of series, prototypes, co-workers), that there should be *good cooperation between teachers and company* with the mutual support(exam. codes: *visiting teachers in the company, exchanging information, learning together about specific materials and products, donation from companies for material, equipment… and school sends the student when they need some help*).They also thing that they should get some *more information* before they start the cooperation (exam. codes*: open days – presenting the past common project, company web page – presenting the fields of interest for cooperation and training, visits to the companies, company offer work on specific field and help to educate the students*) and their image is *also longer period of cooperation* (exam. codes*: to have more time for explanations, for following the process*).

Real situation is different from the image. They are saying that the school and the company do not cooperate enough if at all, that the time is too short for any real professional development.

How they define the aims of cooperation? They point out three aims:

- gaining practical skills and experiences,
- achieving better professional knowledge,
- networking and assuring the future, employability .

2.1.6.1.3 Responsibility

Students are saying that there are contract which they sign at the beginning of cooperation with the company (when they start with on work training), but they mostly do not read it. The also know about the legal safety rules which define their responsibility in the field of occupational safety. They also need to write some report about the work and some of them have presentation for teachers or their school mates – what they also define as some sort of legal (better written, fn P.Š.J.) responsibility.

However, as they say, they are aware to be *responsible to themselves* (exam. codes*: to admit and learn out of mistakes, to learn as much as possible*), to be *responsible also to company trainer* (exam. codes*: he gives you time, attention*) and *to the company as a whole* (exam. codes*: expenses with me, deadlines, keep quality*).

2.1.6.1.4 Process of cooperation (focus on process)

About the whole process of cooperation students are answering that they miss *more communication* between teachers, company trainer, also they think they are not enough involved in communication (exam. codes*: PTW teacher very really visit them in company, do not ask them for and opinions, ideas or even how it goes, company trainer do not communicate enough not even by e-mail*). They are also constantly saying that the period of working in the company is too short for *authentic and real communication* which they wish to have (exam. codes : *good relation with teachers, support for every student, human relations according to the work, open communication, treat as real worker*) but now they do not have it. According to the answer, they are also not satisfied with the *knowledge, which* they get in school (exam. codes: *in school not enough professional knowledge, not enouh professional subject too much general subjects and entrepreneurship*). They also miss learning with problem solving, supporting the critical thinking, more project work and presentation.

About their active role in the process of cooperation, they are answering that they are *not really supported to be active* or to cooperate (exam. codes: *teachers don't support or don't like our ideas, no teamwork in school),* mostly they are not planning any common project where they have main role. If they do, it is sometimes out of school or in school as preparation for a competition, but also in this situation ideas and rules are leaded by the teachers. They are also saying that they develop and do some product at home, by themselves or in cooperation with friends– they learn better by themselves on YouTube, and they are saying that they do not get enough knowledge for improvements, suggestions, innovations in school or in company.

Surprise is, that as well as student are looking for challenges outside of the school, they are answering that also possible problems they are solving outside of the school environment, more with friends, relatives, acquaintances , with you tube or sometimes with in-company trainer or other company expert.

2.1.6.2 Answers from company Mahle Nova Gorica

2.1.6.2.1 Decision and selection (focus on entry requirements) of partners

According to the answers from Mahle partners, their decision about selection of the students mostly dependent on the *previous information or connections* and experiences (exam. codes: *Children of employees have priority, recommendation from our employee, summer work),* they also point out the *applications and interview* with the students *(*exam. codes: good presentation of knowledge, work experiences, early application, interview).They point out that it is important for them that student know what company is doing and that he is interested in work and prepared do upgrade their work experience of any kind, but especially technical experience and skills and also to be prepared to except and follow company rules.

To the question about the needs and expectations from the partnership Mahle, partners were answering that they *expect competent students with high motivation and interest (*exam.codes: good *basic knowledge and if possible technical background, genuine interest, motivation to get technical knowledge and experience*).

What they *need* is to get *catalogue of technical knowledge* from school before student start WBL, because this way for them is much easier to plan their WBL. They would also like to have (need) *meetings* with VET teacher and PTW.

2.1.6.2.2 Aims of cooperation

Mahle partners pointed out that their image of good cooperation is mostly connected with *regularity*. They are answering that *"good cooperation should be regular and each partner should pay attention and respond to the needs of the other one. Both partners should be focused on students, how to assure / provide them with as much knowledge as possible. For example, we could inform schools to provide students with basic knowledge we need, so that WBL makes more sense and runs more easily. For example, we could invite teachers of technical subjects to our company for the meeting where we would present what students could learn at our company so they would pay more attention to that topics during the lessons."*

They were also point out the *importance of pre-meeting* before working in company. *"Student`s mentor in the company and at school should meet and should coordinate set goals, tasks and expectations for the student. This goes for on the job training as well as for final thesis that students sometimes write in cooperation with the company. Mentor in the company should know, what kind of experience and knowledge the student already has so that he can adjust the course of on the job training."*

Real situation is different. They describe that there's *not enough communication*, mostly due to time restrictions on both sides they were determine that both systems are too rigid to implement quick changes and that they aware that employees in both organizations are not the same – some are motivated and willing to change and some are not.

For them the main aims about cooperation are:

- *participate in the formation of the educational programme* for students before their arrival to on the job training,
- *raise the level of knowledge* of the students - present WBL possibilities in our company and what we expect from the candidates at the school,
- prepare the *learning (training) centres* within the company,
- assure *personal growth* of the students together with school,
- to be seen as a *company with reputation* that provides the students with a lot of knowledge/skills during WBL and as a preferred employer,
- students should be in the company for *longer periods* of time (1 to 3 months).

2.1.6.2.3 Responsibility

Mahle partners are saying that there is *WBL agreement*, which defines the roles and responsibilities of students, school and company, but in their opinion it is too general. For some programmes they also have additional list of skills and knowledge students should get during WBL (which is helpful), which helps for in-company trainers to aware and to follow the responsibility to develop different skills and knowledge.

To whom they feel responsible to they point out to the student (exam. Codes: *to assure health and safety, to pass on as much knowledge as possible, to teach them basic working habits, to help with socialization within the company, to get to know the production process*).

2.1.6.2.4 Process of cooperation (focus on process)

About the whole process of cooperation Mahle partners are answering that *communication*, open and *trustful relations* are most important for the process of cooperation (examp. codes: p*ersonal communication with teachers, good relationships amongst co-workers in the company, so the student comes into a friendly environment, mentors should be supportive, Responsiveness*). They are saying that "... if there is not sufficient communication, information and ideas get lost. Consequently, students are at loss, because they don`t know all the possibilities and opportunities that the company or the school offers them. «

They also point out that students as well as mentors in the company have *clear and realistic expectations*.

They are saying that now they are having regular contacts with the WBL organizers within the school, some of them also come and visit students during WBL, rarely do they also receive WBL programme from school, so they can inform their in-company trainers about it. They also cooperate in some common projects and initiatives with schools, which aim is to improve the cooperation. But they are convinced, that this is not enough, that they miss continuality of exchange in current process and what they suggest is to connect mentors in the company and at school; to make a list of possible titles for the seminar papers and final thesis and to pass that list to school so the students could find a theme that interests them and could get in touch with the company to start the cooperation.

What they see as one of the obstacles of good cooperation process is the '*overload*' of mentors. They write that " mentors in the company often see students as a burden and additional work, because on top of everything else they have to do, they have to also teach the students, give them instructions, monitor their work etc. It would be better if mentors perceived students as an investment in the future. «

About the active roll Mahle partners are saying that they are open to start some common project, to support students ideas, by regular cooperation they can also identify the needs and possibilities. However, they find out that plans are always wider than what is realized, mostly due to the time restriction.

2.1.6.2.5 Resources

According to the answers from Mahle partners, the existing legislation promotes the cooperation as WBL as a part of the school programme and it is also part of the labour legislation. But on their opinion the legislation is too limited (example written: they can't accept foreign VET students for WBL). In addition, Health and safety legislation is on their opinion to narrow because it does not define well enough which kind of work student can do at WBL and this presents big risk for the company in case of injuries and following lawsuits for possible sustained injuries.

They also write that »*reimbursement of the WBL sometimes has positive effect as the students feel the value of their work, but when the business is not running good, this can also limit the scale of WBL. The same goes for travel expenses for the students, as the ones that are far away are less likely to be accepted.*«

2.1.6.3 Answers from SC Nova Gorica

2.1.6.3.1 Decision and selection

According to the answers from School center NG there are three ways how to establish communication. Firs, most frequent, is that VET student select the company on the base of connections (through parents, holiday work, etc.). The school stimulate student to search the connections by themselves and mostly they can do it by writing an e-mail as application letter. If they cannot do it, PTW teacher give the student a list of company where PTW can be done. What they find as a problem (according to the company findings) is that mostly student have difficulties with writing good application letter to company (to present and to promote themselves). Aware of this they tried to implement the content of learning writing application letter in open curricula, but as they are saying, *"it turned out to be not useful because of the lack of teacher's skills how to do it".*

Second less common way of establishing communication is with a connection of VET/PTW teacher and company experts. As they are saying not many teachers do this, apart from this who already have personal connections. Why is this, they are saying that "*maybe the teachers are just afraid to show they are not that professional as they think they are*" (this is the opinion of one teacher who went to work for 4 months in the company-in the frame of the national initiative of teacher up skilling in the companies). According to

this the school centre helps teachers to establish the connections through school leadership (head of intercompany training centre/ITC, headmasters of the schools, other employees of ITC) or teachers who already have connections and they believe that the situation can be improved also through the new initiative "the national initiative for teacher up skilling in the companies", where the teachers have the possibility to establish, retain and also spread connections with the companies to other teachers. And as they are also pointing out is that "*there are quite a lot of teachers who don't visit companies at all before or during PTW, they just do their work to arrange PTW or follow their students on PTW via telephone or e-mail in their offices-no personal contact. The rest of PTW teachers who do visit the companies before or during PTW, they mostly do the bureaucratic or organisational issues*."

Third, also very common way is to establish communication by meeting leadership of school and company. These meetings are mostly informal and by socialising they are also networking. However, as they point out "*if you want to keep the contact, the rule number one is to maintain it. We put the priorities about the most important contacts according to the positive experiences you have to that company leadership, other staff and common activities: they keep the word about the cooperation if they really share common interests and it results in concrete activities, initiatives and further both sided development. If you want to have a real collaboration school-company, the goals and activities must be set first at the level of school and company leadership. Once they are defined and set, the reliable and sustainable collaboration can start.*"

The main criteria for decision to make partnership they define reliability and trust, previous positive experiences and good references, innovation and "topicality" - companies that use the latest technologies and are competitive in the labour market, and that company have interest to collaborate and finds student development as important.

To the question about needs and demands from cooperation they answered that they would need more skilled teachers (up skilling), more support for the student in form of career guidance, tutoring, project work and networking. What they would also need is material/equipment sponsorship, a larger set of ICT companies, especially companies whose development is based on the development of new software solutions, more open curricula and developing new programs and also implementing curricula in the company.

2.1.6.3.2 Aims of good cooperation

About image of good cooperation teachers point out the need for mutual support, both sided interest, activity of all involved and also having benefit and respect – specially the need and interests of young generation. They write: *"Good cooperation is such that the company dictates the content of the (open) curriculum and provides the school with both hardware and software, especially when it comes to content specific to the company with which the school participates. By learning during the course of the pedagogical process, the contents of the work process can then be easily transposed into the work process. Therefore, students are more competitive in the labour market, and, last but not least, they are more employable*."And another: "*A good cooperation represents a set of certain activities or initiatives which happen and repeat every year, are being evaluated and according to the findings improved, upgraded or introduced new ones. The most important issue is that the students, VET teachers and companies must benefit from those activities."*

As main goals of cooperation, they state:

- supporting student in discovering and developing their own talents/potentials,
- improving the employability of the students,
- networking,
- teacher up skilling,
- keeping up to date information about the changes at labour market,
- the flow of knowledge from companies to schools and vice versa,
- getting to know new technologies,
- transfer of educated personnel to companies.

It is interesting that they point out the awareness of mutual support which helps all students who can develop, companies who can get better skilled employee and teachers who can better understand the need of working process and the need of student preparing for it.

2.1.6.3.3 Responsibility

In school say that they feel responsible to both - the profession and the students. The acquired knowledge needs to be expanded, so that new ideas can be developed. They are warning that responsibility is a matter of all involved actors and that is divided into

various levels: leadership/decision level (maintaining connection and collaboration, evaluating, improving), teachers/trainers/students level (implementation, results, support) and implementation level (what is happening and awarding different roles).
They are saying that in current situation there is not enough responsibility on non of the levels »*We suppose there is not enough responsibility because of lack of time, different opinion of suggested collaboration, or are just the persons who don't possess the ability to feel responsible«* and they believe that teamwork through project-based work is one of the methods that could bring the sharing responsibility back to the surface.

2.1.6.3.4 Proces of cooperation

On the question what is most important for school in current process of cooperation, they are answering that on the level of relationship the most important regularity in maintaining the contact through formal and informal meetings, sharing common interest and mutual trust. On the level of knowledge and competences, they find most important to update constantly professional and general knowledge by the teachers. They notice big gap between what teachers know and what should they know because of the fast changing society and that is why collaboration which contains regular networking, which enables the mutual exchange and sharing of: knowledge, skills, experiences, views, opinions, networks of people is very important to overcome this gap. On the level of learning and support, they point out the importance of preparation before integrating collaboration activities into learning process. They think that *"learning and support should be as a part of curricula content on one hand, and non-formal activities on the other hand. Only formal ways are not enough. If the collaboration will go beyond the agreed formal ways, it means that we achieved our goal."*
On the question how they are implementing these issues they are answering that the are visiting companies, companies are coming to school, the do and attend many non-formal activities, networking events, they invite company experts/in-company trainers/HR staff to school to have workshops with our students, to help teachers to introduce some new technological equipment, very important is also support and engagement of school leadership. They point out some cases of collaboration that are hapening between school and company Mahle:

- simplification of administrative support for WBL process;

- networking and exchanging experiences on WBL between Mahle HR staff and VET teachers;
- annual WBL process evaluation;
- improvements on WBL contents: enable students developing his/her own potential;
- networking meetings for students, in-company trainers, HR staff, VET teachers;
- workshops on automobile industry development & innovation for students, VET teachers, regional SMEs;
- individual professional classes in Mahle company;
- international mobility/on the job training for students in Mahle Germany;
- professional training for VET teachers by Mahle experts in Mahle Slovenia and Germany;
- real, demand-driven projects based on Mahle products and services for students;
- connecting VET students for project work with university students who also cooperate with Mahle and are sponsored by them;
- co-creative workshops "Future of the work";
- sponsorship of technological equipment and learning materials;
- tailor made trainings for Mahle employees.

In the process of cooperation the mostly cooperate by phone, e-mail, but they also have some in-live meetings. They are saying that communication between school leadership, students and teachers happens every day, with every day in-live contacts and conversations. We use also mails and phones for communication, but they wish to to use more social media and other on-line channels for communication, especially towards the students, but as they are saying, the big gap between the generations is still a huge obstacle to implement it. There are some tries to establish more social media communication with the students but very often, it turns out to be only an exercise without sustainability.

On the question how do they deal with the problems in the process, they are answering that sometime, if the problem is professional, teacher search the answers in literature, on the level of cooperation problem, teachers rarely deal with the problems by themselves. They usually ask for the help leadership, which organise face-to-face meetings or group meeting in case of a bigger problems. And what is very often they also post one the

responsibility for solving the problems on leadership. If the student is having the problem, they always organize face-to-face meetings.

On answer, how are they planning common project or developing ideas they are saying that all the actors can and are coming with idea for common project (teachers, students, leadership...). If the school staff is more passive, leadership is the one who is encouraging them to listen ideas of student, to take initiative for collaboration in new project... and when the ideas from different actors come they implement it through 4 stages:

Stage 1: planning together with the social partners

Stage 2: identifying mentors

Stage 3: performance, determination of project control points, conclusion of the project

Stage 4: Presentation of the results of the project - presentation of the product

2.1.6.3.5 Resources

What they thing is that resources need to change in way of dealing with amount and bureaucracy. As they are saying "*Due to almost none adaptation of the legislation, the system does not function well any more. Most of the legislation is also prepared according to the certain lobbies (chambers, private institutions, maybe also some public institutions) and does not follow the needs neither of the society nor of the labour market. The existing lobbies do not consider the needs or interests of individual people*."

2.1.7 FINLAND PARTNERS

2.1.7.1 Answers from students (N= 12)

2.1.7.1.1 Decision and selection *(focus on entry requirements) of partners*

Most students choose the company they find interesting. For some it is important that the company is located nearby, for some that company allow employment after finishing school.

2.1.7.1.2 Needs and expectations from the partnership

Students have different needs and expectations. Most of the respondents expect nice work environment in the company, to gain new knowledge, skills and to gain sense of real work.

2.1.7.1.3 Agreements

Students said that they in general do not make any agreements to fallow their personal and professional development.

2.1.7.1.4 Aims of cooperation

Most of the students are convinced that cooperation between school and company is good and that it is working well. They did not describe any real example of good cooperation and they did not give any idea how this should be done according to their opinion. However, they listed various aims that they want to achieve through cooperation. The most important are: future work place/employment, new knowledge and skills.

2.1.7.1.5 Responsibility

Students did not give concrete answers to this question. They just emphasized the importance of their own responsibility.

2.1.7.1.6 Process of cooperation (focus on process)

Majority of the students answered that the most important thing for them in the current process of cooperation is that everything is going well. What exactly does it mean for them more precisely they have not explained. Good working atmosphere is also important for quite a few respondents.

In general, they do not have any problems with the implementation of described issues or they do not know the answer to this question.

On the request to describe the real process of communication and cooperation in more details, we did not get any concrete answers. They wrote only that the most communication between different actors take place over mobile phones or e- mail.

2.1.7.2 Answers from company: Sataosaajat, Satmatic, Cimcorp (3)

2.1.7.2.1 Decision and selection (focus on entry requirements) of partners

One company said that students are selected on the basis of specified personal characteristics (e.g.: they are brave) or on the basis of their working life rules knowledge.

The other company pointed out that they know each other(company and the school) and that this is all that matters.

To the question about the *needs and expectations* from the partnership, they were answering that they expect good workforce and future employees.

2.1.7.2.2 Agreements

In general, companies do not make any agreements for following student's personal or professional development. They do not have any framework for that either. One company wrote that schools are preparing some kind of personal plans for students, but they did not explain more about those plans.

2.1.7.2.3 Aims of cooperation

Companies did not describe any example of real good cooperation and they did not pointed out any aims that they would like to achieve from it.

For them the main aims about cooperation are:

- to get new workers,
- to get help for basic work tasks in company,
- to educate students/young people.

2.1.7.2.4 Responsibility

To the question:" How do you understand your responsibility for good cooperation and who do you feel responsible to and why?" all three companies replied that they feel responsible to each other. They add that they are responsible to give feedback to the students (e.g.: in which areas they are good and which areas needs some improvement).

2.1.7.2.5 Process of cooperation (focus on process)

About the whole process of cooperation, companies pointed out that open and trustful relations and environmentare the most important for the process of cooperation. If any kind of problems occur, they first try to talk about it. Exchange and development of new ideas, improvements etc. between partners is not described.

2.1.7.3 Answers from schools (teachers)

2.1.7.3.1 Decision and selection (focus on entry requirements) of partners

School did not specify any criteria for decision to make partnership with companies. The choice of a company depends on the students themselves.

2.1.7.3.2 Needs and expectations from the partnership

Teachers did not identify any needs and expectations from partnership with companies. Communication with companies is established mostly by mobile phone, goes through diaries (on the job learning diary) and personal contact.

2.1.7.3.3 Agreements

They did not answer the question about agreements for following students personal and professional development.

2.1.7.3.4 Aims of cooperation

They are convinced that cooperation between school and company is good and that it is working well. They did not describe any real example of good cooperation and they did not give any idea how this should be done (according to their opinion). They listed some aims that they want to achieve through cooperation. The most important aims are: good communication, knowing and understanding each other, mutual interest.

2.1.7.3.5 Responsibility

They said that they feel responsible to one another. Responsibility lies primarily in curriculum.

2.1.7.3.6 Process of cooperation (focus on process)

School answered that the most important thing for them in the current process of cooperation is good personal relations, support and knowledge, skills and competences of all involved. Process of cooperation must be open and trust between all parts needs to be felt.

2.1.7.3.7 Legal and financial support

School thinks that existing legislation promote their cooperation with companies and with students. They also have sufficient financial resources for it. The only obstacle, which sometimes makes cooperation difficult, is time.

3 Summary

According to the differences between Finland and Slovenian WBL system, we are aware that advantages and disadvantage are strongly connected with the length of practical training (especially with the duration of work – based learning in company), with the individualization that is more or less supportive to development of vocational competences and skills of a student. So, that's why probably Finland student don't see so specific problems on the field of cooperation and are saying that for them important thing is that keep it as well as it is, while for Slovenian student period of working in company is too short and they are also disappointed with the knowledge in school which

is to general and not enough connected with skills and competences that is mostly expected in company.

Nevertheless, there are some things that should be considered. On one side student are pointing out on not enough supportive environment (especially in school) for developing their own ideas, allowing learning through experimenting and testing, not enough communication and mutual cooperation, on the other side companies are missing by students their ability for problem solving, critical thinking, higher level of independency and self-initiative while 'in between' school is pointing out that ideas for common project are coming from all actors. Are this different views of the same problem that is connected with supporting creativity in school and also supporting students to develop skills and competences which importance is much aware on paper than develop in supportive environment through experiences?

Fact is that there is high level of youth unemployment and that there is shortage of young people with critical job skills and sometime there is a feeling that school, students and companies are not much together in seeing and experiencing the current situation. As it is written in the McKinsey report[10] "Employers, education providers, and youth live in parallel universes. To put it another way, they have fundamentally different understandings of the same situation…" and the reason for this they see because they are not engaged with each other they do not communicate with each other.
In McKinsey report authors reviewed many successful programs which have surpassed the gap in cooperation and expectation and opportunities for all three actors (school, student and company) . They point out two main features:

- first, education providers and employers actively step into one another's worlds. Employers might help to design curricula and offer their employees as faculty, for example, while education providers may have students spend half their time on a job site and secure them hiring guarantees.
- second, in the best programs, employers and education providers work with their students early and intensely. Instead of three distinct intersections occurring in a linear sequence (enrolment leads to skills, which lead to a job), the education-to-

[10] Mourshed, M, Farell, D. and Barton, D. (2012).Education to employment: Designing the siystem that works. McKinsey Center for Goverment.

employment journey is treated as a continuum in which employers commit to hire youth before they are enrolled in a program to build their skills.

So, we think that many if not all the disadvantages (ex. not knowing enough about before starting, not enough place to share, develop ideas, no motivation by students, separation between technical and practical knowledge etc.) could be solved or reduced with (1) good cooperation and mutual involvement (2) with supporting students with different types of learning and getting experiences on workplace (ex. being supervised, coached, shadowing), which would be the main issue in second and fourth deliverable.

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5 Annex 1: Questionnaire Understanding the future trends

ERASMUS+ project

Regional Alliances for Youth – RAY

Work package 2

Understanding the future trends

Questionnaire

Glossary

A range of related terms influence the discussions of work-based learning and apprenticeship. The following overview of terms will create a framework that will be chosen for the development activities in RAY and for the so-called "WBL/APP model" to be developed. So, please complete the first and the second column. As a result of this survey, final terms will be suggested for the use.

Terms	Terms description by country (SI, DK, FIN)	Terms for use in RAY
Work based learning (WBL) SI: DK: Virksomhedsforlagt undervisning FIN:		Work based learning (WBL)
Apprenticeship (APP) SI: Vajeništvo DK: Elevaftale FIN:		
In/on the job training/ learning, practical training at the workplace SI: Praktično usposabljanje na delovnem mestu DK: FIN:		
Integrated WBL in a school based programme (labs, workshops, simulations of real business project assignments etc.) SI: Praktični pouk v šolskih delavnicah DK: FIN:		
Teacher of general subjects		

SI: DK: FIN:		
VET Teacher SI: učitelj strokovne teorije in prakse DK: FIN:		VET teacher
Teacher – responsible for practical training at the workplace (PTW), counsellor SI: Organizator praktičnega usposabljanja na delovnem mestu DK: FIN:		
Mentor, in-company trainer, tutor SI: DK: FIN:		In-company trainer
Initial vocational education and training (IVET) SI: DK: FIN:		
Continuing vocational education and training (CVET) SI: DK: FIN:		
VET Student SI: DK: FIN:		VET student
VET provider; VET school, VET college		

SI: DK: FIN:		

List of abbreviations

VET	Vocational education and training
WBL	Work based learning
PTW	Practical training at the work place
APP	Apprenticeship
IVET	Initial vocational education and training
CVET	Continuing vocational education and training

1. WHO ARE YOU? BASIC INFORMATION

VET system (Descriptions should be prepared by VET schools)

1.1 VET in the national education and training system. Display it with a diagram/scheme.

1.2 Description of the types (levels) of VET programmes.

1.3 Description of WBL models in VET.

Companies in the automotive/automation sector in Nova Gorica and Satakunta region (Descriptions should be prepared in collaboration between VET schools and companies)

1.4 Display relevant data:

Number of companies, size of companies, number of employees, share of companies that provide practical training at the work place in the sector.

VET provision (Descriptions should be prepared by VET schools)

1.5 Display relevant data for regional level (you can also add data for national level):

Number and types/sectors of VET schools, number of enrolled students for past 5 years in VET programmes, number of students/apprentices on PTW (practical training at the workplace) for past 5 years, unemployment rate for 5 past years, unemployment according to the level of education and industrial sector.

2. HOW DO WE COOPERATE/MAKE PARTNERSHIP?

2.1 Deciding and selecting company partner and making agreement

2.1.1 How do you select company/VET school/VET students (which are the main criteria for decision to make partnership)?

School:
Student:
Company:

2.1.2 Which are your needs and expectations from cooperation?

School:
Student:
Company:

2.1.3 How do you establish communication between VET student, teacher, school, company leadership and in-company trainer?

School:
Student:
Company:

2.1.4 How do you make agreements to follow student's personal and professional development and do you have a framework for that?

School:
Student:
Company:

2.2 Aims of cooperation

2.2.1 How would you describe a good cooperation between school and company? (describe your image and your real experience)

School:
Student:
Company:

2.2.2 List at least three aims you would like to achieve from the cooperation and describe shortly how these are realized?

School:
Student:
Company:

2.3 Responsibility

2.3.1 How do you understand your responsibility for good cooperation? Who do you feel responsible to and why?

School:
Student:
Company:

2.3.2. Do you have any legal document or framework, which defines the responsibilities, roles, commitments and effects? Please describe it.

School:
Student:
Company:

2.4 Process of communication and cooperation

2.4.1 What is most important for you in the current process of cooperation (on the level of relationships, on the level of knowledge, skills and attitudes, on the level of learning and support, on the level of organization, on the level of personal/institutional/business development)?

School:
Student:
Company:

2.4.2 How are you implementing these issues (values) that you point out above?

School:
Student:
Company:

2.4.3 Describe more in details the process of communication and cooperation (how do you communicate with company leadership, in-company trainer, student, teachers, how do you evaluate the work, the process, how do you realize the on-line needs, which type of communication is most useful for you)?

School:
Student:
Company:

2.4.4 Describe how do you exchange and develop new ideas, suggestions for improvements etc.

School:
Student:
Company:

2.4.5 How do you deal with problems, possible ambiguity etc.?

School:
Student:
Company:

2.4.6 How do you plan common projects, trainings, initiatives, activities etc.?

School:
Student:
Company:

2.5 Legal and financial support

2.5.1 Does the existing legislation promote or limit the cooperation? Please explain.

School:
Company:

2.5.2 Do you have sufficient financial resources for the cooperation?

School:
Company:

2.6 Obstacles

2.6.1 Do you see any obstacles in the processes of cooperation?

If yes, please describe where, on which point (from above) and why?

School:
Student:
Company:

2.7 Good practices

2.7.1 Please describe in detail (length of cooperation (time), place (virtual, in lab etc.) cooperation, resources, methods, integration) one example of your good cooperation. Focus on two elements mentioned or more.

School:
Student:
Company:

2.7.2 Please describe in detail (length of cooperation (time), place (virtual, in lab etc.) of cooperation, resources, methods, integration) one example of good cooperation that you

heard about or read about (in your country or wider in EU). Focus on two elements mentioned or more.

School:
Student:
Company:

1. WHAT ABOUT THE FUTURE?

3.1 Please identify the three most important challenges or trends in the field of automobile (SI)/automotive (FIN) sector that you are facing.

School:
Student:
Company:

3.2 Please identify the three most important challenges or trends in the field of education and work that you are facing.

School:
Student:
Company:

3.3 Please identify the three most important challenges or trends in the field of youth culture that you are facing.

School:
Student:
Company:

3.4 Please identify the needs and demands for the WBL/APP model in automotive (SI) and automation (FIN) sector. Consider the answers in the point 3.1. Make a collection of needed knowledge, skills and attitudes.

School:
Student:
Company:

3.5 Please list and give links of some good examples/practises according to future trends such as digitalisation (AI, IOT, VR, ML, etc.), service design/design thinking, and resources efficiency.

School:
Company:

3.6 Which are your challenges in the field of cooperation/partnership that you would like to develop, achieve in near future? What is your vision for the future?

School:
Student:
Company:

3.7 Do you have any plan, ideas, methodology concept how can you overcome the above mentioned challenges?

School:
Student:
Company:

3.8 What do you need for making your vision real?

School:
Student:
Company:

3.9 What would you propose to change in the field of learning process, process of communicating, process of cooperating, process of financing, process of developing skills, competences, values, etc.?

School:
Student:
Company:

3.10 What would you propose to change in the field of working process and labour market?

School:
Student:
Company:

3.11 Please complete the statements.

School:

Students (youngster) are ...	**Students should be(come) ...**	**Students need ...**
School is ...	**School should be(come) ...**	**School needs ...**
Company is ...	**Company should be(come) ...**	**Company needs ...**

Student:

Students (youngster) are ...	**Students should be(come) ...**	**Students need ...**
School is ...	**School should be(come) ...**	**School needs ...**
Company is ...	**Company should be(come) ...**	**Company needs ...**

Company:

Students (youngster) are ...	**Students should be(come) ...**	**Students need ...**
School is ...	**School should be(come) ...**	**School needs ...**
Company is ...	**Company should be(come) ...**	**Company needs ...**

3.12 Which are in your opinion the future professions in automotive/automation sector?

School:
Student:
Company:

3.13 **Open question**. Do you have any thoughts, ideas or information that you would like to share with us?

School:
Student:
Company:

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6 Annex 2: Danish contributions on questionnaire and description about existing situation in Denmark

(by Regina Lamscheck-Nielsen, Moeve aps, Denmark)

Glossary

Workbased learning	Virksomhedsforlagt undervisning (~ company-placed teaching)	• Free of charge for company • college responsible for learning effects and organizes • typically during basic course of VET or high school or during school-based training (main course) • student must not create additional value for company
	Virksomhedsforlagtpraktik (new term from 1st Jan. 2018): company-placed training	• Free of charge for company • college organizes • company responsible for learning outcomes • during school-based training (main course) • student must not create additional value for company
	Virksomhedsprojekter (company projects)	• Free of charge for company • Project tasks for companies, conducted at college or in company or both • College organizes and responsible for learning outcomes
Apprenticeship	Uddannelsesaftale (education agreement)	• Formal contract between student and approved training company • Salary to be paid by company, according to the trade´s labor market agreement • Apprentices create added value for the company, increasingly over time • Apprenticeship connected with formal learning outcomes for the students to achieve, as a formal part of their educational program • All in all approx. 66-75 % of an educational program conducted in a training company • Training typically fully integrated in the work processes
In/on the job training/ learning,	Second choice and only in case, the training cannot be fully integrated in the ordinary work processes	In certain cases, apprentices may train certain skills at the workplace, but in “protected areas”. Big companies may have workshops for apprentices, if security or customer-

practical training at the workplace		related issues are relevant for this. Can be training of certain machines, or hairdresser students training with puppet heads. Can also be attractive activities in restaurants, such as "today the students are cooking for us" or similar.
Integrated WBL in a school based programme	Praktikcenter (formerly "skolepraktik"): School-based training centers	The Danish VET system has "3 legs": College + training companies + school-based training centers (SB TC) for approx. half of the programs. The SB TCs are a springboard for those students who yet have not achieved an education agreement with a training company. These approx. 8-10 % of all VET students start in a SB TC and learn/work towards their in-company learning outcomes. The college helps them to find a training company, and approx. 90 % of these students also finish their VET in an ordinary training company. The SB TCs are supplied with locations, equipment and work tasks that match ordinary in-company training as much as possible.
	Praksisrettetundervisning (practice-directed teaching)	It is an explicit pedagogical and didactic principle in all educational programs to teach practice-directed. For the college part of VET, this means that all subjects are toned according to business life. the students learn also practical skills at the college, typically in workshops that are equipped with machinery, tools and software from the respective trades.
Teacher of general subjects	Underviserialmene fag; also general teachers are called VET teachers	Teaching in general subjects is toned towards the vocational programs. Thus,for example Danish or mathematics is taught with exercises from the sectors, such as construction, transportation, business and administration, health care, etc. This "toned teaching" takes place both in the general subject lessons and in interdisciplinary projects.

VET teacher	Erhvervsskolelærer	Traditionally, VET teachers have a background as a skilled worker with 2 years of practical experience in the trade, supplemented with a part-time pedagogical further education, typically taken in addition to (having started) teaching. Teachers in general subjects typically have an academic background, with preferably some years of practical experience. Since 2011, the requirements to this pedagogical qualification have been raised to EQF 6 level, conducted at university colleges: Diploma in vocational pedagogy, 60 ECTS points, 3 mandatory modules + 2 optional modules. The new EUX requires higher basic qualifications, and many VET teachers are either up-qualified these days or newly recruited. In some educational sectors, such as social & health, business & administration and ICT, the teachers often come with academic level qualifications.
Teacher – responsible for practical training at the workplace (PTW), counsellor	Praktikpladskonsulent	These consultants can be part-time teachers or fulltime consultants. They are the links between college and training company.
Mentor, in-company trainer, tutor	Praktikvejleder (formal term), also called: Oplærer, læresvend, instruktør, vejleder, mentor, mester, etc. Depending on the trade and local tradition.	In DK, there is no mainstream of the position, roles, titles, rights and duties of in-company trainers. Formal courses for qualifying trainers exist. These courses are not mandatory and only used consequently in some of the trades.
Initial vocational education and training (IVET)	• Erhvervsuddannelse "EUD" • "EUX" (high school VET)	Graphic overview on VET(Ministry of Education) Students with various backgrounds are mixed: a) Young students accessing directly from primary school (longer basic course at VET college)

		b) Students with other experiences after primary school c) Adults with possibilities for merit via recognition of prior learning d) VET combined with gymnasium ´EUX´
Continuing vocational education and training (CVET)	Efteruddannelse ("after education") AMU kursus (arbejdsmarkedsuddannelse): labor marked education [Videregående uddannelse: Further education]	AMU courses are said to ensure the lifelong learning approach for low-skilled and skilled workers. • Short term courses, upgrading within the respective vocational programs to newest standard of knowledge, skills and competences • Conducted at VET college or in companies by skilled vocational workers or low-skilled vocational workers • Subsidized by the state, regulated by the trade committees
VET student	Elev (formal term) Lærling (typically used for apprentices in the technical trades)	Access requirement to VET: Passed Danish and mathematic from primary school on lowest level.
VET provider; VET school, VET college	Erhvervsskole	Approx. 90 colleges in Denmark, all of them self-governing institutions. Encompassing a wide range of size and constructions, from very specialized, small colleges to broadly composed and big VET providers with educational programs on several EQF levels. Read more Danske Erhvervsskoler, det national association covering 89 colleges in 7 types: • Agricultural • Technical colleges • Health care • Business & administration • Merged college types (also including general gymnasia or higher level) • AMU There is an ongoing tendency to merges of colleges.

VET system

It has to be underlined that the Danish VET system is a genuine *dual system*, with a long and proud history, based on the so-called ´Danish model´. The Danish model was invented in the end of the 19th century, as a solution for severe conflicts between employers and employees. The model was later on further developed into the so-called ´flexicurity´ model. Since then and over the decades, the parties of the labour market – the employer organisations and the trade unions – have jointly decided on the vocational programs, for the best of the students and the companies. The Ministry of Education takes part as a counsellor and contributor with the college-based part of the vocational programs, approx. 25 %. This cooperation is run professionally both on national and on local level, and in all cases with formally settled parietal organs and always *consensus-seeking*.

Next to this, the *Danish autonomy of the trades* seems to be quite unique in international context. So-called parietally composed ´trade committees´ are the decision-makers on in-company training as the main part of the vocational programs, each within their trade-specific field. Thus, there has emerged a high degree of practice-based authenticity and engagement, but at the same time also a heterogeneity across the trades. During the last decade, a movement towards an increasing transparency and quality assurance *across* the trades has started and grows slowly but steadily.

Furthermore, the basic principle of *individual study plans and individualized learning*[11]has to be highlighted. Thus, both the VET colleges and the training companies promote *student-centred learning*. In this context, a personal and trustful dialogue between teacher or consultant, trainer and student is one of the most efficient tools for promoting the individual student´s learning progression.

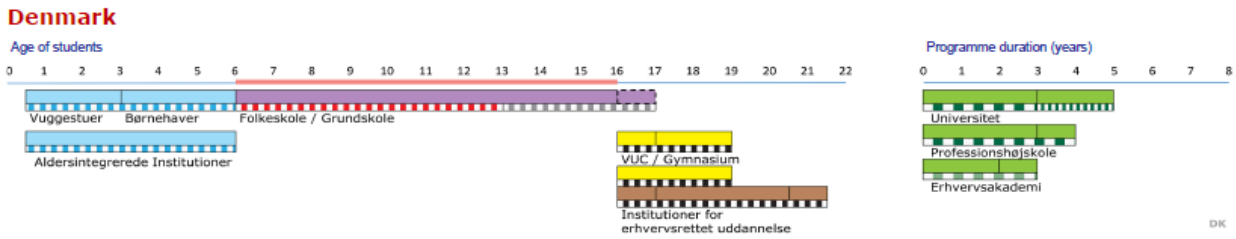
VET in the national education and training system.

[11]Individual study plans were invented in 2000, read more: Quality MAP. Some general examples of individualization:

- On organizational level in colleges, such as with initial procedures for recognition of prior learning, special offers for talented students or students with special needs, with allocation of personal mentors, with personal guidance for training placements, etc. Each student has a "Personal education plan", allowing his/her personal track through the chosen educational program.
- In teaching, as referring to the competence-based regulations: In the subjects there can be various formal levels to achieve. The teacher must be able to differentiate and teach on these various levels, according to the individual students´ needs and preferences. Furthermore, the teacher must differentiate pedagogically, such as with learning styles, scaffolding, use of media and themes, etc.
- Referring to in-company learning outcomes: The college and teachers must relate to the training possibilities of each training company and the learning outcomes, to be achieved and achieved by each student.

In Denmark, students can enter a VET college directly after primary school´s 9th or 10th grade. All together, the Danish VET colleges offer 106 educational programs, and in addition, specializations are possible. In Sept. 2017 66,656 students were registered having an educational agreement with a training company, while another 7,332 were signed up at a school-based training center, as a springboard to an ordinary apprenticeship agreement.

Leaving primary education, which is a uniform school type for all children, the young people have to decide for a youth education. At this stage, VET competes with 4toned gymnasium types[12]: STX (common knowledge), HTX (technical), HHX (mercantile) and HF (shorter lasting, flexible). The fifth gymnasium type EUX is a high level vocational program, conducted at vocational colleges, also leading to a university-access giving diploma.



"The structure of the European Education Systems 2017-18", Eurydice – facts and figures

During the recent 1-2 decades, VET has lost some of its former attractively to the high schools (gymnasium types). Thus, only 18.5 % of a youth cohort have chosen VET in 2017. High schools are the preferred choice, prolonging the period before the final choice of occupation. Some voices blame also the public debate, praising academic skills in a "knowledge society".

Nevertheless, many young people or adults, also unskilled workers, turn towards VET later on in their lives, and thus, the average age of a VET student has increased to 22-23 years. These "educational loops" are seen as a waste of life time and education economy by politicians and society economics.After the global financial crisis of 2007, the politicians and the trades recognized the need to educate more skilled workers in the close future[13]. The government promoted the continued need for Danish industrial

[12]Read more: http://eng.uvm.dk/upper-secondary-education/four-upper-secondary-education-programmes
[13] Denmark will need 25.000 skilled workers in 2025.

productivity, with skilled workers as its main resource. A governmental productivity commissionwas settled in 2012, and a wide range of activities[14] was initiated to attract more students directly to VET.This focus became one of the headlines of a major quality reform[15] in 2014 (implemented in 2015). Other important initiatives support the permeability from VET and EUX to higher education, which has been increased over years, also including a consequent *recognition of prior learning*.

Description of the types (levels) of VET programmes

All Danish vocational programs are categorized on EQF levels, agreed on by the trade committees and conducted in 2010. The qualification levels refer typically to EQF 4-5. The educational programs are described with each their qualification level as identified by their trade committees. Many of the programs have an "exit possibility" on a lower level (EQF level 3 respectively level 4), after a shorter lasting program and after having conducted a test.

Description of WBL models in VET.

As the Danish VET system is a genuine dual system, the most aspired form of WBL is the´ordinary apprenticeship agreement´, as a formal and fully integrated part of the educational program, with the highest degree of responsibility and commitment from the employers. The ordinary track through a vocational program is dual education, with apprenticeship taking part approx. 65-75% of the given educational program. As a starting point, there are no alternatives, and in spite of many organizational efforts and struggles, apprenticeship is highly appreciated as *situated learning*in *communities of practice*[16]by both students, colleges and training companies.

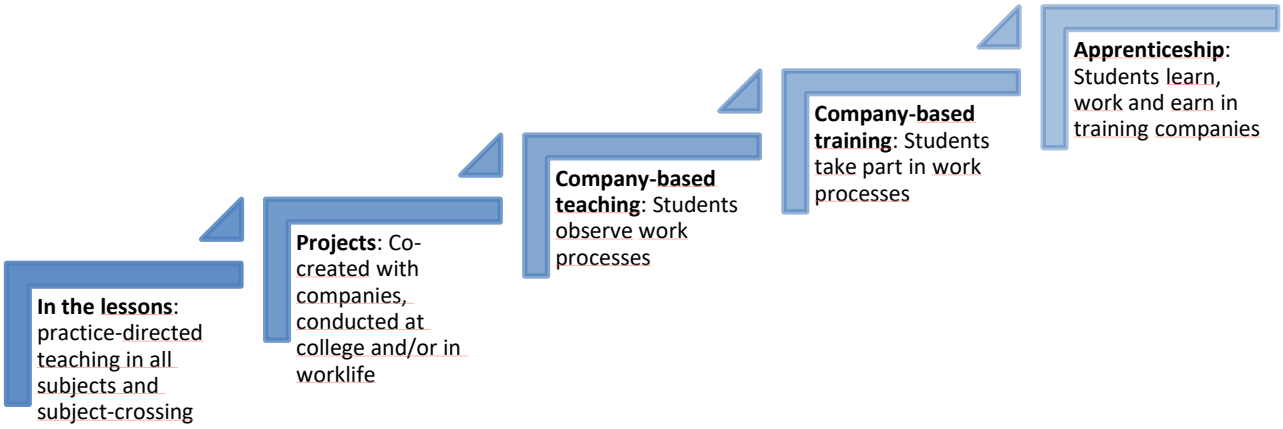
[14]Activities, examples:

- Trade-specific and mostly media-based campaigns initiated by the trade committees
- High promotion with increasing visitor figures of Skills Denmark, local skills, EuroSkills and WorldSkills
- VET colleges improving their cooperation with primary schools, such as the co-called mandatory "bridging courses", introducing pupils to VET

[15] "Improving vocational education and training" (short version of agreement in English): http://eng.uvm.dk/-/media/filer/uvm/english/pdf/140708-improving-vocational-education-and-training.pdf

[16] Leave, Jean; Wenger, Etienne

The following overview outlines roughly categories for work-based and practice-directed teaching and learning. While apprenticeship is standardized in legislation and as an organizational framework, it is up to the teachers to make choices for their design of practice-directed teaching, projects and/or direct company involvement. The formal company-based training only takes part as a substitute for apprenticeship, lasting as short as possible, organized by a school-based training centre. The students cannot deselect apprenticeship for the advantage of school-based activities and would not do so, as apprenticeship is highly appreciated, learning-intensive and well-paid for a student.



Outlined by Lamscheck-Nielsen, 2017

Finally, it may be stressed that the dual system with apprenticeship also pays off for the state, partly as students start earning and tax-paying immediately, partly as the trades to a high degree involve themselves and pay for the education.

Relevant data:

All in all, approx. 23.000[17]companies are formally approved and registered as training companies, offering apprenticeships for training, integrated in work processes. Most of these training companies are small and medium-sized, dispersed irregularly across the trades.

[17](UVM, 2014) from approx. 300.000 Danish registered companies in total, Denmark'sStatistic,www.dst.dk

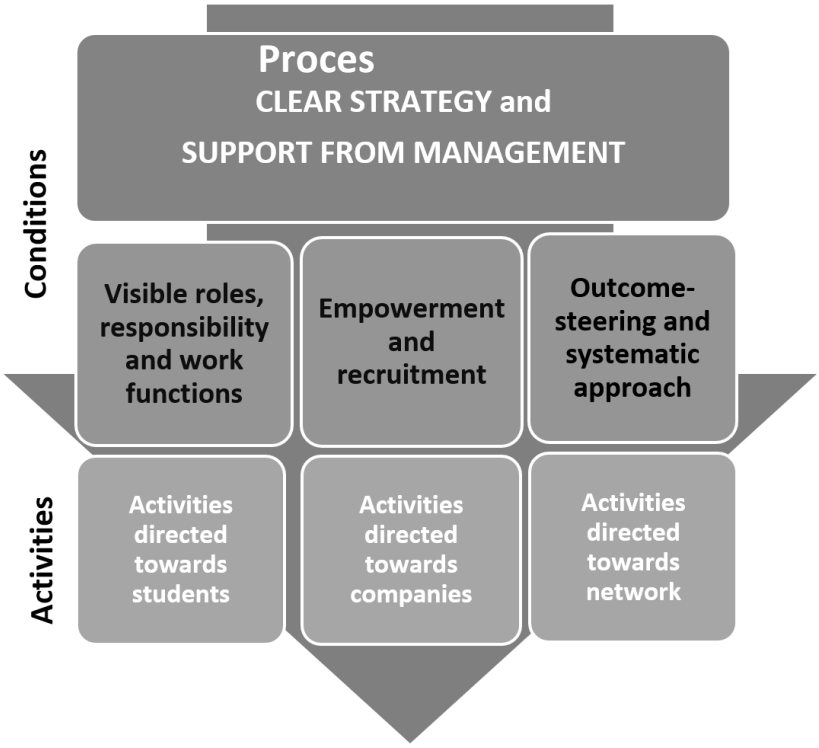
The ministry and the trades promote 33 of the 106 programs as so-called advantaged educational programs (invented in2016) under specific conditions, guaranteeing training placements and very positive job perspectives.Among them the program for automation and process technician can be found. In this programme, 711 companies are approved for in-company training in VET.

Deciding and selecting company partner and making agreement

How do you select company/VET school/VET students (what are the main criteria for decision to make partnership)?

In the following, apprenticeship is chosen for exemplification of cooperation. Apprenticeship is the most preferred variant of company-involvement in VET, and the other versions are seen as preparation to an apprenticeship, as a supplement or as giving an additional (pedagogical) value.

Apprenticeship: As Danish VET in its nature is a company-integrated system, the partnership between college and companies takes place on all organizational levels and is a strategic issue for all colleges. The following model illustrates the areas of action for



Model for "Good practice for acquisition of training placements"[18]training

each vocational college, when acquiring training placements.

On system level, each vocational program on each VET college refers to a local education counsel, *LUU,* with local representatives of the social partners. These LUUs communicate with the local trades about the needs and the potentials of local VET. LUUs play a crucial and formal role to deliver a sufficient number of local training placements.

[18] Ministry of Education "God praksis i den praktikpladsopsøgende indsats - Videns- og inspirationskatalog" (2015); translated by Lamscheck-Nielsen, 2017

Training companies must be approved by the trade committee of the given profession, respectively by VET colleges, if delegated to them. In each trade, there are various formal criteria. In general, the criteria refer to

- *a sufficient professional level and number of skilled workers within the given educational field*
- *professional equipment and physical resources for the applied number of apprentices*
- *reference to the labor marked agreement for the given professional field (salary, safety & security conditions, social taxes, etc.)*
- *the ´training rules´ of the profession, incl. the formal in-company learning outcomes of the given educational program*

The coordination with training companies is allocated to the VET colleges´ own consultants, encompassing both acquisition and counselling. Locally, these consultants take regard to the companies´ and the students´ profiles and needs.

Which are your needs and expectations from cooperation?

All in all, the main expectation from all parties is that the student conducts his/her educational program and passes the final trade test. This means:

- *The employer* expects a motivated and committed apprentice, progressing over time and thus, contributing positively to the work environment and more and more to the turnover of the company.
- *The college* expects reliability, as well as a sufficient level of documentation and communication from the companies to enable the teachers to plan their lessons, according to the students´ needs.

- *The students* typically expect a clear framework, meaningful work/learning tasks and an appreciative approach from the trainers. Students´ preferences vary from trade to trade. Their expectations typically match in one or another priorityhe 6criteria for well-being in the given trade (National Research Centre for Work Environment)[19]: Predictability, appreciation, social support, meaning, challenges, influence.

´The 6 nuggets´, Lamscheck-Nielsen, 2010, based on National Research Centre for Work Environment

How do you establish communication between VET student, teacher, school, company leadership and in-company trainer?

Communication takes place b) via formal documentation and b) in personal dialogues. The communication is typically established by the college´s VET consultant or the student him-/herself. Formal documentation is typically undertaken via the nationwide virtual platform Elevplan (or the college´s own LMS system for this purpose). Personal dialogues are promoted in many ways by the colleges: Systematic 3-part-conversations (teacher-trainer-student), theme evenings for company managers and trainers, cooperation on competitions such as Skills etc.

[19] Transferred to VET: "Elevtrivselerguldværd", Lamscheck-Nielsen and Bjerre (2011)

How do you make agreements to follow student's personal and professional development and do you have a framework for that?

Apprenticeships refer toformal in-company learning outcomes in each of the educational programs. These learning outcomes are part of the regulations. The progression is followed by ticking the LOs off on varying learning taxonomies (such as Dreyfus and Dreyfus) in formal *training declarations*. The training declarations are passed to the colleges, which follows up the individual student´s development.

Aims of cooperation

How would you describe a good cooperation between school and company? (describe your image and your real experience)

In general and seen with internationally comparative eyes, there is an ongoing dialogue and a strong interaction between the local colleges and the local companies. On the other hand and seen with local eyes, this interaction always can be improved, depending on local circumstances and needs. Fora like the *LUUs*frame dialogues on improvement or, or rather said, further development and new visions for the future.

Minor disagreements are typically solved by the VET consultants. In case of severe conflicts regarding the apprentice, the national trade committee intervenes.

List at least three aims you would like to achieve from the cooperation and describe shortly how these are realized?

Responsibility

How do you understand your responsibility for good cooperation? Whom do you feel responsible for and why?

College, company and students have agreed on a committing cooperation, based on a contract and mostly with a long-term purpose. Thus, all parties are aware of their responsibilities and obligations. In most cases, this cooperation works out as intended.

But of course, in practice, there also may occur grievances from each of the parties. Typical complains can be, that the college can be slow in their communication and initiatives, students can be demotivated or exposing an inappropriate youth culture, and companies may focus too much on their turnover rather than on the student´s learning effort.

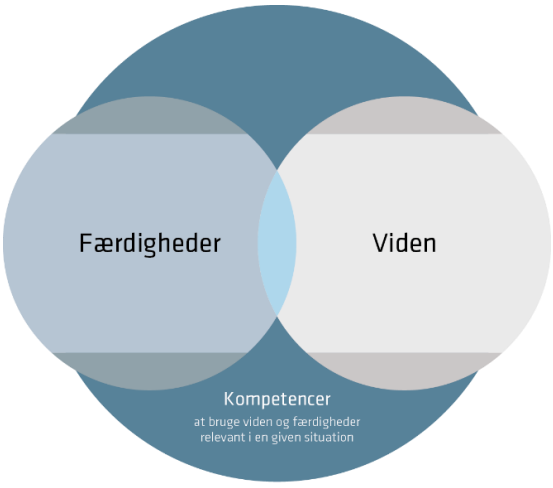
Do you have any legal document or framework, which defines the responsibilities, roles, commitments and effects? Please describe it.

- Educational contract as a legal document (various templates in Danish, Ministry of Education. For examples in English, ask Danish practitioners.)
- Guiding regulations with in-company learning outcomes (free access, in Danish); example automation technician (in Danish)
- Framework: Final trade test as the prestigious examination, involving both the college and the social partners, based on regulation (Ministry of Education)

Process of communication and cooperation

What is most important for you in the currentprocess of cooperation (on the level of relationships, on the level of knowledge, skills and attitudes, on the level of learning and support, on the level of organization, on the level of personal/institutional/business development)?

Knowledge, skills, attitudes



Ministry of Education, guidelines for regulations, 2015

The Danish competence term encompasses "knowledge, skills, competences", where competence means being able to use knowledge and skills in a relevant way in a given situation.

The students are taught and trained to achieve learning outcomes within these fields. Attitudes are allocated among competences.

How are you implementing these issues (values) that you point out above?

These issues are widely implemented in Danish VET, as the system is a dual system, with all parties focusing as much as possible on the individual student´s development. But yet, there are no broad analyses of the quality of in-company training. Most initiatives target naturally the quantity of training placements, as Danish VET would not exist, if there were no training companies.

Some fields to improve could point at the quality aspect, according to the author of this report:

In-company learning outcomes

Not all trades, respectively not all companies in all trades, work focussed, consequently, output-consciously and competent with in-company learning outcomes[20].

Quality assurance of in-company training

Far from all trainers and training managers are formally qualified to train, understood as a vocational pedagogical process. Initiatives and formal courses have existed since 2007, but are only used by some of the trades and by ambitious companies.

Innovation and new technologies in training

As training of in-company trainers only is undertaken sporadically in most of the trades, innovative methods and new technologies depend on personal or local initiative and thus, have not yet entered VET. In this context, the

[20]"In-company learning outcomes – formulation and practice", Regina Lamscheck-Nielsen, conference paper for VET conference Crossing Boundaries in Vocational Education and Training: Social Dimensions and Participation, 16-18 August 2017, Rostock, Germany, published in Conference proceedings "Social Dimension and Participation in VET"

colleges are the drivers of pedagogical innovation, which so far may enter business through the students, who will train themselves in the future.

Describe more in details the process of communication and cooperation (how do you communicate with company leadership, in-company trainer, student, teachers, how do you evaluate the work, the process, how do you realize the on-line needs, which type of communication is most useful for you)?

The preference for certain types of communication varies between the trades and the companies. Some trades, such as the construction sector, are more unformal and havemore "old-school" principles. They may prefer personal contact and phone calls. Other trades are highly specialized and use the most modern technologies for the students´ applications or the consultants´ coordination. The ICT sector naturally uses advanced social media, blogs or other platforms for dialogues and archiving. In retail & administration, students´ video applications are becoming a new trend. The public sector typically has their own procedures and structures to be followed by the colleges. Finally, there always are innovative company managers, who invent new technologies on their own, and this may make them differ from other companies in their sector.

These days, Denmark experiences a trade- and sector-crossing megatrend, as rarely seen before: A radical digitalization og basically all processes and structures in the society.

The digitalization is not only promoted by trendsetters in business, by stakeholder organisations, the government and each ministry, but also by students and professionals in schools, colleges and universities.

If not yet done, roughly said, all VET colleges are elaborating digitalization strategies these days, prompted by the ministry and the trades.

In the light of this megatrend, also communication structures are questioned, and new solutions are found. Thus, also virtual conference systems, smartphone apps or videos have become widely used communication tools. The potential of this field is far from fully exploited, and a lot of experiments are going on.

Describe how do you exchange and develop new ideas, suggestions for improvements etc.

How do you deal with problems, possible ambiguity etc.?

How do you plan common projects, trainings, initiatives, activities etc.?

The initiative for joint projects and other activities together with training companies typically comes from the colleges. Companies experience many requests from various public stakeholders: Different school types, job centres, universities, social associations, sports clubs, etc. As company involvement has shown to be have motivating impact on, briefly said, "any (young) person with any need", all these stakeholders try to make agreements with companies. Many of them offer "free work force" as internships to the companies.

Thus, VET competes with a range of attractive and also much cheaper stakeholders. VET must position themselves being able to keep on "selling" apprenticeship or other joint activities as an added value for the company. Relationship management plays a role, as well as co-creation does, rather than "smart quick fixes".

Legal and financial support

Does the existing legislation promote or limit the cooperation? Please explain.

The Danish VET law and its main regulationis based on apprenticeship and not only promotes the cooperation, but conditions it on all levels.

Do you have sufficient financial resources for the cooperation?

The financial resources for the cooperation are limited. The services of the VET consultants as the "connecting gear-wheels",is covered by the colleges´ "taxameter" income. This taxameter income is conditioned by the number of students entering and conducting a vocational education at college.

During recent years, all Danish public institutions are exposed to systematic financial shortings, according to the recent liberal government´s policy since 2015. For VET, this means 2% shortingsforevery year over 5 years. There has been allowed some reliefs, but still VET is under major pressure, combined with the task to invest into the attraction of more students.

Related to the cooperation between companies and colleges, this means, there are very limited resources for time-demanding personal meetings or for expenses to be spend on events etc.

Obstacles

Do you see any obstacles in the processes of cooperation?

According to the financial limitations at the colleges, there are limited time resources in the companies. Daily operation typically overrules, especially in small and medium-sized companies. Two different rationales influence the cooperation: Companies have (and must have) their focus on their bottom line, while colleges have (and must have) their focus on the quality of learning. These rationales are not necessarily opposing, but must be aligned in each single case.

Other obstacles can be young students´ behaviour and expectations, which not necessarily match the companies´ code of conduct for behaviour and their expectations. The VET consultants usually can mediate.

Good practices

Please describe in detail (length of cooperation (time), place (virtual, in lab etc.) cooperation, resources, methods, integration) one example of your good cooperation. Focus on two elements mentioned or more.

The apprenticeship model is regulated for each educational program, regarding duration, learning outcomes, resources etc. Previous examples from good practice can be found on the following platforms:

- TraenerGuide.dkapprenticeship in its "ordinary" version (~ 90 % of all educational contracts): About recruitment and employment, apprentices at the workplace, the vocational program, training, learning, quality assurance. TrænerGuide was invented in Denmark in 20007 and transferred to 5 other European countries: http://trainerguide.eu/
- emu.dk: National platform for learning materials and good cases from practice, also regarding the interaction between VET colleges and training companies.

- skolepraktik.dk: Results from the implementation process of school-based training centers (2013), containing innovative work/learning tasks, organizational set-ups, infrastructure for datasharing, etc.

Please describe in detail (length of cooperation (time), place (virtual, in lab etc.) of cooperation, resources, methods, integration) one example of good cooperation that you heard about or read about (in your country or wider in EU). Focus on two elements mentioned or more.

A model, that is not practiced in Denmark, are the Finnish skills demonstrations (SD)[21]. These SDs have a formative evaluation purpose and partly also a summative evaluation function. While the Danish final trade tests have a high prestige and recognition, there nevertheless is no tool according to the SDs, facilitating the learning process and supporting adjustments during the educational program and in the companies. The Danish *training declarations* scoring the achieved in-company learning outcomes, do not meet this Finnish ambition level.

A disadvantage of these SDs is their cost-intensive realization, gathering teacher, trainer and student for a joint evaluation process at the company. Some of the elements in a SD can take part virtually, but this is not possible in all cases.

[21] "Skills demonstrations", Lamscheck-Nielsen (2009), Metropolitan University College

Please identify the three most important challenges or trends in the field of automobile (SI)/automotive (FIN) sector that you are facing.

Please identify the three most important challenges or trends in the field of education and work that you are facing.

Please identify the three most important challenges or trends in the field of youth culture that you are facing.

With reference to the following sources, the three most remarkable trends for VET are individualization, digitalization and the increased possibilities and speed in our society. These trends of course also are interlinked.

- Danish Centre of Youth Research: Research-based knowledge center, with publications such as on the motivation of young people[22].
- PractitionerMorten Blichfeldt Andersen, VET college Niels Brock, managerofdigitalizationstrategy
- Søren Schultz Hansen[23], researcher in youth and media, University Copenhagen Business School. See graphic diagrambelow, published at the national media provider Danmarks Radio, 2016.

New learning trends follow the paradigm of youth *Generation Z.* This "iGeneration" is grown up with the new technologies or has not experienced a reality without. They cannot really understand older generations´ reservations, do not differ between offline/online and expect things working digitally.

Generation Z practices learning styles with a high degree of independency. They appreciate peer learning and ongoing feedback, also via media. A part of the learning process is cooperation and co-creation. This approach challenges the traditional educational thinking and requests much more co-design and influence of teaching.

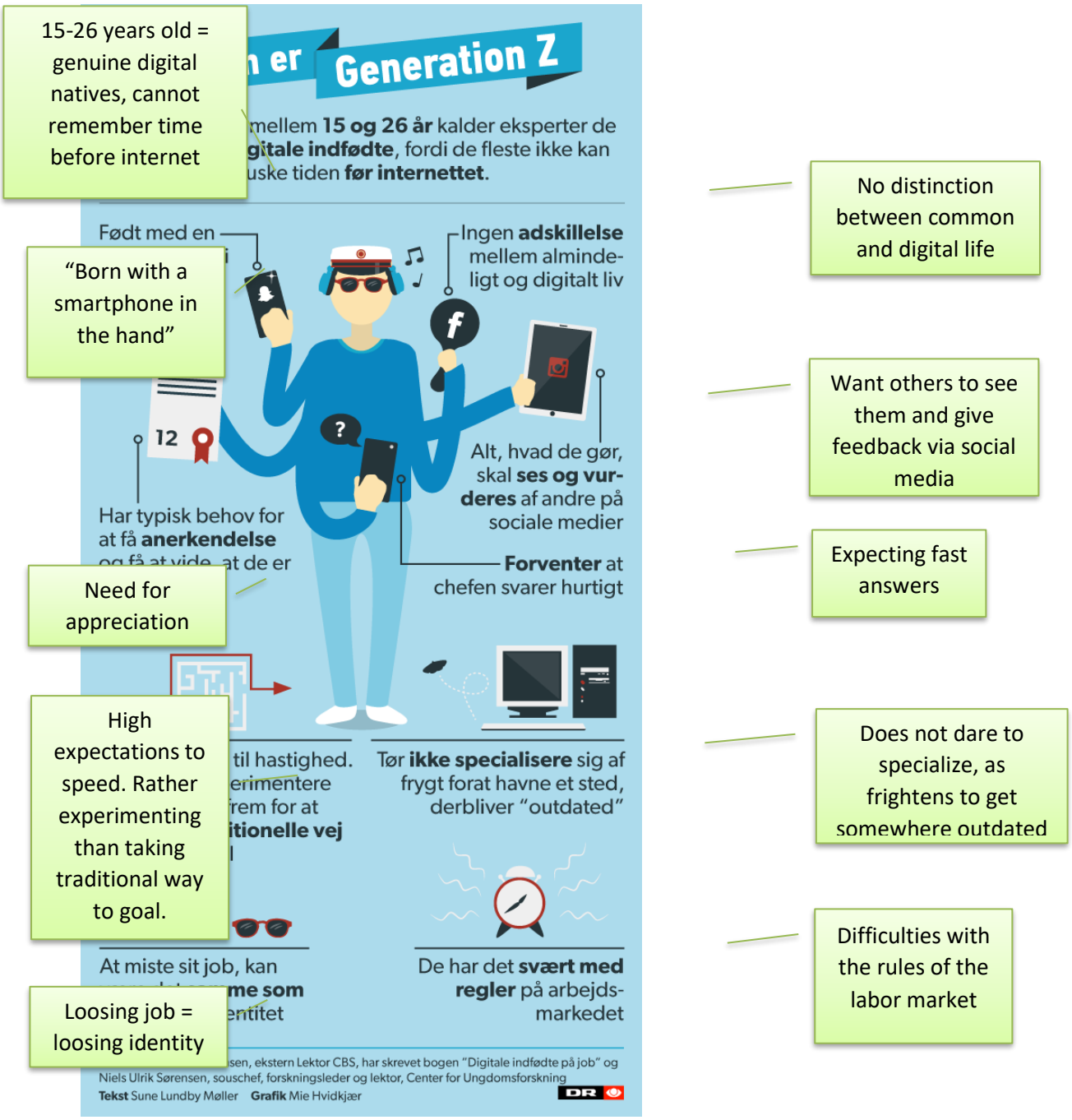
Generation Z also has high expectations to *accessing* learning and knowledge anywhere, anytimes and in multiple ways: *Learning on demand*. Answering slots of 24 hours are outdated and so is week-longwaiting for examination results. By Examinations without

[22] "Unges motivation og læring", Sørensen et alt., 2015;
[23] "Digitale indfødte på job" (2015)

access to the Internet are a debate because of the possibility to betray, but there seems to be no way back to "closed examinations".

The generally increased speed of our society and the tendency towards multi-tasking is a condition that many young people live and learn under. This tendency has shown up not necessarily to increase productivity or learning efforts, but solutions for how to tackle the opposing paradigms, are rare. Thus, it is an ongoing discussion on whether to integrate smartphone and/or social media into teaching or whether to shut down for devices and platforms.

Finally, all this combined with the formally individualized approach in Denmark means student-centered learning in an even higher degree than ever. The teacher role has changed and is still further developing from expert-centered to facilitating, consulting, coaching, guiding the students. How far all this is practiced in Danish training companies, is not researched on.

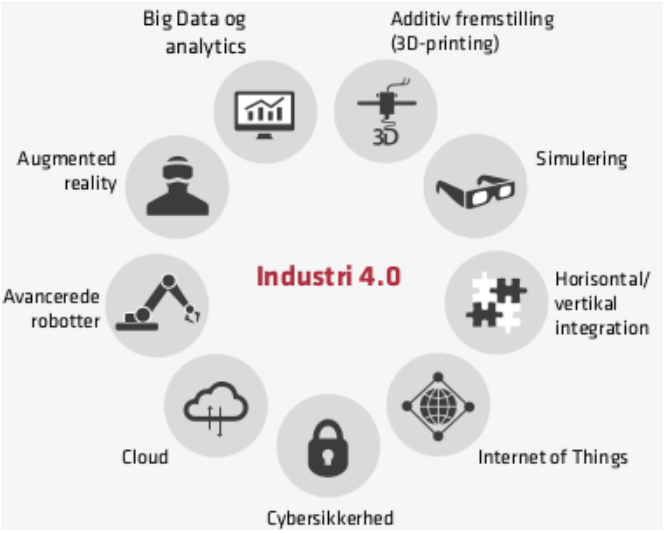


Please identify the needs and demands for the WBL/APP model in automotive (SI) and automation (FIN) sector. Consider the answers in the point 3.1. Make a collection of needed knowledge, skills and attitudes.

Please list and give links of some good examples/practises according to future trends such as digitalisation (AI, IOT, VR, ML, etc.), service design/design thinking, and resources efficiency.

For industrial production companies, industry 4.0 is the main trend to refer to. Industry 4.0 goes hand and hand with intended full automation (or as full as possible) in many of these companies. Full automation is connected to quality assurance, efficiency and competitiveness on a global market.

Relevant technologies[24] are:



Also with reference to sources and results from a recent qualitative survey in 19 companies in Southern Denmark on exactly this subject (Lamscheck-Nielsen, 2017).

A future generic trend encompasses the necessary mind-set for all these technologies. Education on all levels, incl. primary level, will pick up *Computational Thinking*[25], also promoted by the government´s "Digital Growth panel"[26]. This includes coding and programming. Dialogues on implementation of CT are started on education policy level.

Which are your challenges in the field of cooperation/partnership that you would like to develop, achieve in near future? What is your vision for the future?

In general, the digitalization has caused a paradigm shift and influences the design of education. We are just in the beginning of rethinking education and training. But already now researchers point at the *"Paradox of specialisation"*, which is one of several paradoxes in digitalisation[27].

[24]"Kortlægning af Industri 4.0 i Region Syddanmark", Syddansk Vækstforum, 2016
[25] Caspersen and Novak, 2013
[26]"Digitalt Vækstpanel", Erhvervsministeriet, 2017
[27]"Digitaliseringens paradokser", Schultz Hansen and Horsager, 2017

OECD has pointed at the danger of educating too specialized in Denmark, but at the same time we have never needed so much specialization as now. We just cannot predict, which kind of specialisation! A solution is not given (yet) on this paradox, but it indicates that a close interaction, exchange and co-creation between business and education is more