

## Position Paper

The project „TraWi“ (Transfer of experiences for the creation of an economy-oriented, work-based VET in the structures of school-oriented educational and training systems) pursues the aim of intensifying the cooperation among VET (Vocational Education and Training) and enterprises in the chemistry sector in Poland and Czech Republic. The experiences which underlie the transfer-project find their origin in the structures of the dual VET system in Germany.

### Distinctive features of VET in the Czech Republic

Initial vocational education and training (VET) programmes are school-based. However, practical training and work placement is an integral part of curricula.

General subjects are a very strong component of education in all types of VET programmes. The proportion of general and vocational subjects varies depending on the programme: it is usually 30 % of the instruction time in three-year programmes and 45 % in four-year programmes with *maturita*.

Practical training in three-year vocational school is up to 50 % and up to 38 % in four-year schools.

Upper secondary level vocational and technical programmes are provided by schools offering three- or four-year programmes.

- three-year vocational programmes at ISCED 353/EQF 3 (completed by a final examination leading to apprenticeship certificate) enable graduates to enter directly the labour market and perform manual work and similar occupations (such as bricklayer, hairdresser). They are usually provided by SOU (secondary vocational schools). Graduates of a three-year programme can undergo a two-year follow-up programme (ISCED 354/EQF 4) and pass a *maturita* examination, which opens a path to higher education. SOU may also provide a small number of four-year programmes completed by *maturita* (ISCED 354/EQF 4);
- four-year technical programmes (completed by a *maturita* examination, ISCED 3A/EQF 4) are usually provided by secondary technical schools (SOŠ) and entitle their graduates to apply for higher education or perform mid-level technical, business and other similar jobs (such as civil engineering technician, IT system administrator).<sup>1</sup>

### Distinctive features of VET in Poland

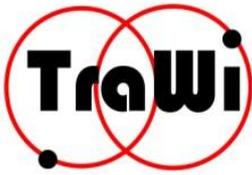
At upper secondary level, students can gain vocational qualifications at a three-year basic vocational school (ZSZ) or at a four-year upper secondary technical school (technikum). Pathways are provided for students to continue education at tertiary level.

Polish VET at technical schools and post-secondary schools is mainly school-based with a share of 50% practical training in VET programmes, while in basic vocational schools the practice and theory proportion is 60% and 40% respectively. Of students at basic vocational schools, 60% undergo practical training in form of apprenticeship organised in small and medium-sized enterprises. It starts after completion of lower secondary education at age 16. After passing external exam(s) confirming vocational qualification(s), students obtain a relevant certificate. Each occupation comprises one to three qualifications. Only after

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<sup>1</sup> CEDEFOP, *Spotlight on VET – Czech Republic*, 2012/13.

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passing exams confirming all qualifications required for a given occupation may a diploma confirming vocational qualifications be issued.<sup>2</sup>

Several European documents lay out a blueprint for improving VET at European level. The **Declaration adopted by the Council of the European Union on 15 October 2013 on the European Alliance for Apprenticeships**<sup>3</sup> is particularly significant for this partnership.

According to the Council Declaration, the attractiveness and effectiveness of the systems of vocational training should be supported by keeping several common principles such as:

- The inclusion of high-quality education and training aimed at the practice as a significant component which should extend the acquisition of certain skills in the workplace by broader, cross-cutting and transferable skills, and to ensure that the participants after completing their apprenticeship training will be able to adapt themselves to the changes.
- Sufficient involvement of employers and the public authorities in the financing of vocational training, as well as ensuring adequate remuneration for trainees and their social protection, the provision of appropriate incentives for the participation of all actors, especially small and medium-sized enterprises, and ensuring a sufficient offers of free apprenticeship places.
- Support for systems of apprenticeship training through awareness-raising campaigns aimed at young people, their parents, education and training providers, employers and the public employment services and highlighting the fact that the apprentice's training is the way to the top professional level, which leads to a richer educational and professional opportunities.

Moreover, the project “TraWi” shares the goals of the **EU “Europe 2020” Strategy** to “turn the EU into a smart, sustainable and inclusive economy delivering high levels of employment, productivity and social cohesion”<sup>4</sup>.

In line with this Strategy, “TraWi” wants to contribute to improve the quality of vocational training, in order to improve the employability of all citizens.

This requires to improve the cooperation between VET providers and labour market (school-systems are especially involved). VET programs must contribute to impart knowledge, abilities and competences which correspond to the job profiles requested by the world of work.

## Positions of the partnership

### 1 What VET should be like

- *Focused on practical training and labour market demands*

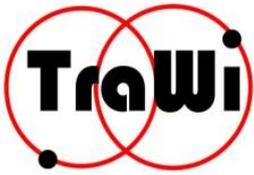
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<sup>2</sup> CEDEFOP, *Spotlight on VET* – Poland, 2012/13.

<sup>3</sup> Council Declaration on the European Alliance for Apprenticeships (14986/13).

<sup>4</sup> Communication from the Commission „Europe 2020 – A strategy for smart, sustainable and inclusive growth“

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In close cooperation with companies, schools should watch labour market demands and adjust their education to their needs. Especially in vocational study programmes (EQF 3) the main emphasis should be set on practical training in companies, so that the graduates are well prepared for work in real working conditions.

- *Work placement in companies*  
Sometimes it is hard for schools to find suitable companies willing to invest their resources to provide internship places. It depends namely on the amount of students and on the regional position of the school (vicinity of chemical industry). This lack can be partially solved by participating in EU mobility projects which enable students to carry out practical training in foreign companies.
- *Minimize practical training at school and focus on practical training in companies*  
For vocational study programmes (EQF 3) practical training in school labs should be minimized and carried out during the first year of study. It should be focused on basic lab skills and basic analytical/technological methods needed for further works in companies' labs. During the further years the practical training should be held directly in companies.
- *Working tasks for working in school labs are formulated in collaboration with companies*  
Students should be acquainted more with examples of particular works which are done at companies (technological processes, analysis, etc.). Real problems commonly solved in companies should be integrated in formulation of working tasks. Thus the students will be better prepared for works in real working environment.
- *More financially supported*  
Schools in general and vocational schools especially are constantly underfinanced. In our present situation, the solution could be to initiate higher support from companies, so that schools can secure practical education in compliance with nowadays trends and needs. Any help (finances, equipment) is essential and very important. Working in well-equipped school labs the students will be better acquainted with commonly used devices and will be better prepared for working with them. Good equipment in schools can also partly substitute work in companies.

## 2 What can be improved

- *Defining job profiles for laboratory profession in collaboration with companies*  
The formulation of job profiles for school laboratories should be based not only on the didactic practice of given educational programmes, but schools should also use techniques that are used in enterprises, in the framework of the possibility given by laboratory instrument equipment technique to use modified procedures provided by an expert laboratory of the enterprise.
- *Improving consistency between study programmes and labour market demands*

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This issue can be fulfilled only by a close collaboration with companies. Schools should have more partners, especially from their regions, to collect more information for evaluation.

Schools should also be flexible in modifying their study programmes according to labour market demands and react fast to these needs.

- *Strengthening interdisciplinary relationships*

In the context of an oral and written assessment of students' knowledge in individual subjects, questions and tasks involving the connection and links to other subjects should be included (interdisciplinary relationships). At theoretical teaching of a certain subject teachers should refer to findings from other subjects.

- *Strengthening teaching of chemical engineering*

Students should have more knowledge as to production equipment, their constructions and functions and also about basic production operations. They should also be more involved in working in production departments to be more acquainted with technological tasks and problems, where they can use their theoretical knowledge in practice.

- *Limiting mere "laboratory" chemistry*

Tasks of laboratory works should be mentioned and shown in a broader context – why such works are carried out, by which procedures, what results can be expected. It is also very important to put an emphasis on right and exact interpretation of results obtained.

- *Implementing employers demands into study programmes*

To modify study programmes according to the requirements of employers by extending the content of existing programmes and the implementation of new programmes according to possibilities of the school facilities.

### 3 How we can contribute to it

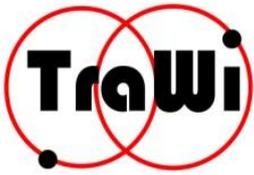
- *Cooperation of teachers with specialists from industry*

Teachers and experts from the industrial world should cooperate in form of consultations, lectures, updating of curricula on the basis of expert materials recommended by the staff of the company, and teachers' participation in professional seminars. Then, acquired knowledge should be used when updating study programs. Schools' personnel should be given the possibility to take part in addressing the challenges and problems in companies or in public administration together with experts from the industry.

- *Internships of teachers and students in companies abroad*

Schools can conclude agreements with foreign firms or companies with foreign participation on allowing work placement/internship of teachers and students in the relevant departments. Both target groups will get to know other approaches to work

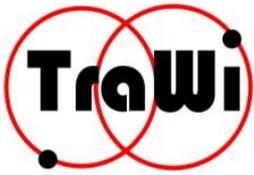
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and solving problems, foster their independency, self-esteem, language skills and develop professional competence.

- *Strengthening cooperation with companies (projects supported by European Commission, ESF)*  
A high quality VET requires close collaboration with employers both in theoretical and in practical teaching. At present, possibilities of being employed in other European countries require to be prepared for it. International projects aimed at students and teachers mobility abroad are very suitable for this task and quality school should have a team for foreign cooperation.
- *Emphasis on function of chemical plants machines*  
A verbal interpretation of the function of the equipment in chemical industry should be complemented with basic schemes of real machine-technological equipment and this should be used during the presentation of the process animation.
- *Emphasis on independent students work*  
For fostering an independent students' work, schools can prepare case tasks for students with alternative options of solutions and to require a justification of the proposed solution by the student. Let students work according working instructions with a minimum of help of teachers or mentors.
- *Strengthening practical training*  
To extend the number of lessons of practical training and to take advantage of possibilities of teaching in well-equipped workplaces in companies.
- *Implementing new ways of teaching*  
For teaching, in particular the practical one, new methods such as cooperative learning, flipped classroom, heuristic method, research method can be used. These methods enable students to understand subject matters better and more.
- *Using specialists from industry as part time teachers at school (both theory and practical training) or as a didactically prepared trainers in companies*  
Schools should take in consideration the possibility to prepare and implement professional lectures in cooperation with experts from industries, which will complement and extend the curriculum to present new knowledge from the field, to demonstrate new laboratory procedures and problems associated with it.
- *Choosing high quality workplace with a quality mentoring and monitoring*  
In the region of schools to prioritize cooperation with businesses which are highly recognized by the professional public, whose products are of premium brands and which have their own development departments with the staff willing to cooperate.
- *Providing feedback from work placement*  
For obtaining feedback from the workplace several methods can be used: roundtable discussion, assessment of students at the workplace or a questionnaire method.

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- *Teaching students to follow the work procedures according to working instructions*  
In the framework of practical training, it is useful to prepare work instructions for students, to make them acquainted with these instructions and explain to them consequences if they are not well followed. In the course of carried out works, to monitor compliance with the working instructions and draw attention to deficiencies.
- *Problem solving teaching*  
To reach this aim, it is useful to prepare for the students a defined problem and ask them to use their knowledge and competences to reach the solution and to select tools and methods for a solution according to the nature of the problem.
- *Supporting autonomous work of students*  
To support an independent and autonomous work of students one of the most effective instruments is the research learning method. It can be realized for example when entering searches, databases, studies, reports, etc.
- *Teaching soft skills*  
During the VET programmes a particular attention to the development of soft skills (punctuality, team-working, problem solving, communication, ability to learn...) should be paid.

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