5 Example from Malta

James Calleja

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5.1 VET system in Malta – an overview

5.1.1 Educational Pathways in Malta

Compulsory schooling in Malta starts at the age of five with primary education. Most parents, however, start sending their children to school as from the age of 3. Government provides nursery schooling for free and is housed within primary schools. Following pre-primary education, primary school consists of six years of education. Primary education is divided administratively into two cycles of three years each. Secondary education follows and involves a further five years of education. The end of secondary school marks also the end of compulsory schooling. Students then have the opportunity to either take the general education or vocational track at post-secondary level. General post-secondary education consists of a two years course leading to entry into University. Vocational courses vary in length and range from two years to a number of years. Vocational education in Malta is provided by the Malta College of Arts, Science and Technology (MCAST), by the Institute of Tourism Studies, the Employment and Training Corporation and the Centre for the Management of Cultural Heritage of Heritage Malta. MCAST in particular, is an umbrella institution which houses all the state vocational institutes and consequently vocational training in Malta.

Students go through a number of defining moments in choosing their career path through their study choices. These are the following:
- End of second year in secondary school: This is when students are asked to make a subject choice as part of their specialisation. This choice will influence the range of career opportunities available to students at a later stage;
- End of secondary education: Students at this point need to decide whether they are to continue with their studies or to look for work. In addition, those who decide to stay on at school have to decide whether to take the general or vocational track and which course to follow;

Thus vocational training in Malta is at post-secondary level and is beyond compulsory schooling age.

Figure 5.1:   *Stages of Compulsory Education and Other levels of Tertiary and Vocational Education levels*

Organisation of the education system in Malta, 2006/07
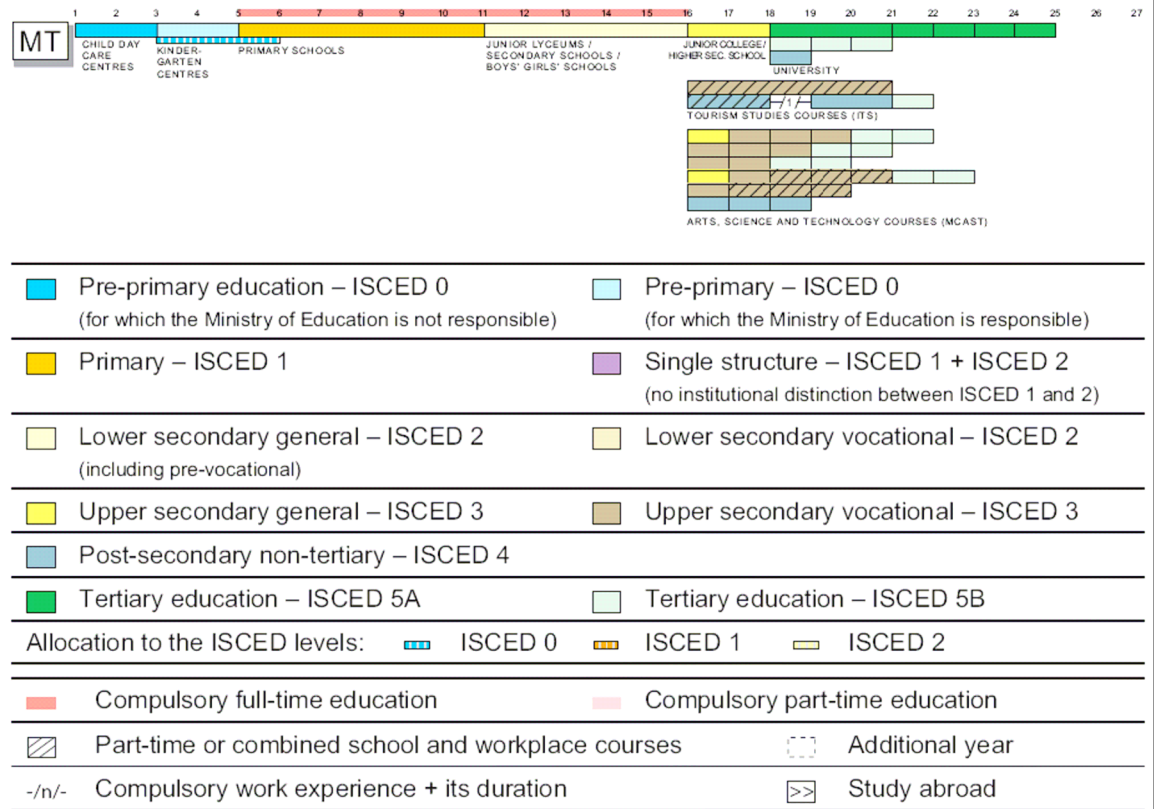
Source: Eurydice.

5.1.2 Description of 'formal' ways from VET to HE

Students in Malta have to decide on whether they want to follow the general education track leading to tertiary education or the vocational track at the end of compulsory education at age 16. Thus, the decision on whether to continue studying is linked to a decision on the type of post-secondary education track preferred. Those students wishing to eventually follow tertiary education go to Junior College or Sixth form colleges at upper-secondary level (ISCED 3 ☐) where they study two academic subjects at Advanced level and another three subjects at Intermediate level. The choice of subjects is such that all students study one science and one language at this level. The end of these two years of study lead students to sit for the Matriculation Certificate examination run by the University of Malta and which, on successful completion leads to entry into tertiary courses at the University of Malta.

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1 http://www.eurydice.org/ressources/eurydice/eurybase/pdf_images/MT_EN_dia.pdf

Students can also choose to opt for vocational courses. These are mainly offered within the Malta College for Arts Science and Technology (MCAST). MCAST houses ten Institutes:

- Agribusiness[2]: This institute offers courses related to agriculture and animal husbandry. It offers courses at Foundation level, BTEC-First Diploma and BTEC- National Certificate and BTEC Higher National Diploma. There are currently 7 courses offered;

- Art and Design[3]: This institute offers training in art and design, offering courses from basic level at certificate level or MCAST Foundation Certificate which provide access to other courses at higher level within the same institute. Courses offered range from a BTEC-First Diploma in printing or in art and Design, as well as a BTEC-Higher National Diploma in the same areas. There are currently 11 courses offered;

- Building and Construction Engineering[4]: This institute offers training in trades related to the construction industry. Courses are offered in skills areas such as painting and decorating, plastering, tile laying, air-conditioning, masonry, and stone construction. These are offered at different levels ranging from Foundation courses which require no qualifications, to Certificate, Diploma and Advanced Diploma and National Diploma. There are currently 20 courses being offered;

- Electrical and Electronic Engineering[5]: This institute offers courses related to electronics, ranging from electrical installations, industrial electronics, computer engineering to electronic engineering. These courses are offered at different levels from Foundation Course, MCAST Certificate and Diploma, to MCAST BTEC National Diploma and BTEC Higher National Diploma. There are currently 11 courses being offered;

- Business and Commerce[6]: This institute offers courses in areas related to business such as insurance, retail, administrative and secretarial studies, as well as applied science. Courses are also offered at different levels, ranging from the MCAST Foundation Certificate to BTEC National Certificate, National Diploma and Higher National Diploma. There are currently 12 courses being offered;

- Community Services[7]: This institute offers training in the service related sector. Courses offered are mainly in hairdressing and beauty sector, child-care services, as well as sport and leisure. Courses are offered at different levels ranging from BTEC and ITEC Foundation Certificate and First Diploma to National Diploma in the different areas of study. There are currently 15 courses being offered;

- Mechanical Engineering[8]; This institute offers training in the area of mechanical engineering, motor vehicle engineering, aerospace as well as motor vehicle repairs. Most of the Certification offered is at City and Guilds, but

2 http://www.mcast.edu.mt/institutes_agribusiness.asp
3 http://www.mcast.edu.mt/institutes_artanddesign.asp
4 http://www.mcast.edu.mt/institutes_buildingandconstructionengineering.asp
5 http://www.mcast.edu.mt/institutes_electricalandelectronicsengineering.asp
6 http://www.mcast.edu.mt/institutes_businessandcommerce.asp
7 http://www.mcast.edu.mt/institutes_communityservices.asp
8 http://www.mcast.edu.mt/institutes_mechanicalengineering.asp

there are also other courses at Certificate level leading to an MCAST Certificate. There are currently 14 courses offered;

- Information and Communication Technology[9]; This institute offers training in the area of ICT. Courses are offered from a very basic level such as Foundation Certificate to higher levels like MCAST-BTEC First Diploma, National Diploma and Higher national diploma in software development and/or ICT systems support. There are currently 6 courses being offered;
- Maritime Institute[10]; This institute offers training to those who are interested in taking up a career in the maritime sector, whether within the Armed forces or as an officer sailing ships. The institute offers courses in National Watch, Engineering Watch, Chief Mate, Second Engineer, Master Mariner, Chief Engineer as well as Probationary Cadet. There are currently overall 7 courses offered in total. Certification is issued by the institution and one can proceed from one course to another, depending on the ambition of job one has.

MCAST also has its Gozo Centre[11] where it offers a range of courses. It offers some of the courses that are also provided by the mainland institutes, thus eliminating the need for students from Gozo to travel to Malta for their studies. This year[12], the Gozo centre is offering 16 courses in total. Four courses are at Foundation Certificate level, one that is general and the other three in business, computing and care. Six courses are at level 2: MCAST Certificate in electro-technical technology; MCAST-BTEC First Diploma level for I.T. practitioners; City and Guilds in mechanical engineering; and MCAST-BTEC First Diploma in electronics, care and construction. There is also one MCAST Certificate in administrative and Secretarial Studies at level 3, an MCAST-BTEC National Diploma also at level 3. At level 4 the courses offered include the AAT Diploma in Accountancy and a Diploma in banking and financial services.

MCAST offers courses at a range of levels, these ranging from lower secondary vocational level –ISCED level 2 ☐ to upper-secondary level –ISCED Level 3 ☐ to tertiary level at ISCED Level 5B ☐ .

Vocational Courses are also offered by the Institute of Tourism Studies which offers courses in the area of Hospitality and Tourism. One of its courses, a Higher Diploma in Hospitality Management, leads to a University of Malta degree in Tourism Studies. The University of Malta also offers some vocational courses in the area of Healthcare.

In the case of vocational qualifications, entry requirements would be in terms of a number of School Leaving Certificate level (SEC) in a number of subjects. The preferred subjects and grade vary according to the courses offered. In the case of vocational education, students can move from one level of qualification to a higher level course within the same vocational area without any problems.

9 http://www.mcast.edu.mt/institutes_informationandcommunicationtechnology.asp
10 http://www.mcast.edu.mt/institutes_maritimeinstitute.asp
11 http://www.mcast.edu.mt/institutes_gozocentre.asp%22
12 MCAST, 2008, MCAST Prospectus, 2008/9.

Mobility from vocational education to tertiary education is limited. This is mainly due to the official entry requirements for entry to tertiary courses at the University of Malta requiring the Matriculation Certificate. However, there are cases where vocational qualifications are being recognised and considered as alternative entry requirements in some particular courses, mainly in the area of engineering.

In addition, the University of Malta has a maturity clause which allows any adult of age 23 years or older to apply to follow courses at tertiary level without necessarily having the usually official entry requirements. In such cases, applicants are considered on an individual basis and their prior qualifications and experiences are considered by an interviewing board. In such circumstances, value tends to be given to applicants from the vocational sector by the interviewing board in deciding whether to accept the applicant to follow the course of not.

5.1.2.1 Types of accreditation of prior learning from VET to HE

The official entry requirements for entry to University are the possession of the Matriculation Certificate which is made up of:
‒ Two subjects at Advanced Level
‒ Two subjects at Intermediate Level
‒ Systems of Knowledge.

This is usually obtained at the end of the general post-secondary education. In addition, courses also tend to have specific entry requirements.

It is currently mainly in the area of special entry requirements that value is given to vocational qualifications and thus allow the accreditation of prior learning from VET for study programmes at HE. The cases where these can be identified, particularly in the area of electrical engineering will be highlighted later on in the document.

Accreditation of Prior learning
The main accreditation of prior learning outcomes from VET in the context of HE are mainly in allowing students gain entry requirement to follow courses at tertiary level. The current regulations for entry to tertiary courses at University level stipulate that all students must possess the Matriculation Certificate issued by the University of Malta to show successful completion of their studies at general post-secondary level. In addition, each and every course can have its own special entry requirements. These special entry requirements usually state what subjects need to be presented and at what minimum grade. A review of the entry requirements to courses at the University of Malta for the academic years 2008/9 and 2009/10 shows that there are cases where the special entry requirements allow students to present vocational qualifications instead of the general Advanced level qualifications. The instances identified are the following:

Entry Requirements 2008/9 and 2009/10

Faculty: Economics, Management and Accountancy

Course: Bachelor of Commerce

The Certificate in Banking (6 subjects) and an Intermediate Level pass in Pure Mathematics, can be offered instead of Intermediate Level pass in Pure Mathematics and an Advanced Level pass at Grade C or better in Accounting if Accountancy is chosen as a main area of study. There is a limitation in that those providing a Certificate in Banking may only choose 'Banking and Finance', and either 'Economics' or 'Management' or 'Public Policy' or 'Public and Private Sector Management' as their two main areas of study.

Bachelor of Arts (Tourism Studies)

Applicants who are in possession of the Diploma in Hospitality Management awarded by the Institute of Tourism Studies (Malta), or an equivalent qualification, may be admitted to Year 3 of the Course under those conditions as the Board may impose, including that of obtaining up to 12 additional credits for study units which are specified by the Board.

Faculty: Faculty of Education

Bachelor of Education B.Ed.(Hons)- Technical Design and Technology

Official special entry requirements usually ask for passes at Advanced Level at Grade C or better in Engineering Drawing or Graphical Communication and a pass at Advanced Level at Grade C or better in any other subject. Instead five passes at grade 5 or better in the Secondary Education Certificate Examination, including English Language and Maltese, together with a pass in Systems of Knowledge in the Matriculation Certificate Examination at Intermediate Level, and the Advanced Technicians Diploma of the City and Guilds of the London Institute, or a qualification considered equivalent by the University Admissions Board on the recommendation of the Board can be accepted.

Faculty: Faculty of Engineering

Course: Bachelor in Engineering (Hons)

Special entry requirements include: Advanced Level passes at Grade C or better in: Pure Mathematics and Physics. Alternatively, applicants can offer:

Five passes at Grade 5 or better in the Secondary Education Certificate Examination, including: English Language and Maltese; a pass in Systems of Knowledge; and
either
A Higher Technician Diploma of the City and Guilds of the London Institute course no. 8000 in Electrical Engineering, or equivalent as considered by the Board, and a pass at Advanced Level at Grade C or better in: Physics

or
A Higher Technician Diploma of the City and Guilds of the London Institute course no. 8000 in Mechanical Engineering, or equivalent as considered by the Board, and a pass at Advanced Level at Grade C or better in: Pure Mathematics
or
The Diploma in Industrial Electronics, with credit, of the Fellenberg Training Centre and a pass at Advanced Level at Grade C or better in: Physics.

Faculty: Information and Communication Technology

Course: B.Sc.(Hons) ICT and Diploma in IT
Applicants for the courses B.Sc.(Hons) ICT and Diploma in IT can offer the following combinations of qualifications for entry:

Five passes at Grade 5 or better in the Secondary Education Certificate Examination, including: English Language and Maltese; a pass in Systems of Knowledge; and a pass at Advanced Level at Grade C or better in Pure Mathematics; and
either
(1) A Higher Technician Diploma of the City and Guilds of the London Institute course no. 8000 in Electrical Engineering;
or
(2) The Diploma in Industrial Electronics, with credit, of the Fellenberg Training Centre;
or
(3) The Advanced Diploma in Applied Information Technology of the City and Guilds of the London Institute course no. 7235;
or
(4) The MCAST-BTEC Higher National Diploma (HND) in Computing;
or
(5) any other qualification from a recognised Institute considered to be equivalent by the Board.

Institute: Institute of Agriculture

Course B.Sc. (Hons) in Mediterranean Agro-ecosystems Management
The special requirements include (A) Advanced Level passes at Grade D or better in Biology and Chemistry; or (B) the Diploma in Agriculture of the University of Malta.

Diploma in Agriculture.

Entry requirements for the Diploma are two Advanced Level passes in Biology and Chemistry.

However, applicants in possession of either Six passes at Grade 5 or better in the Secondary Education Certificate Examination, including English Language, Maltese, Mathematics, and a Science subject;

or
A diploma from the College of Agriculture of the Education Division with a
Grade of Merit or better may be accepted to join the Foundation Programme as
probationary students:

There have been some rare cases where some students from MCAST who have
been accepted to joining tertiary courses at different levels. Following consultation
with the University of Malta' registrar, it was established that this took place
particularly in the areas of ICT mainly. These were however rare cases and
considered on an individual basis.

5.1.2.2 Obstacles regarding permeability between VET and HE

The main obstacles for permeability between VET and HE have so far been the
entry requirements into tertiary courses. The current situation has been that
although vocational qualifications have been accepted instead of the standard
qualifications, students are still required to present a pass at Advanced level in one
or two subjects. This implies that their studies were not enough to gain entry to the
University of Malta but they must supplement their studies by other qualifications
similar to those who have followed general post-secondary education. Generally
speaking, students from the vocational track would have to do their own
vocational course and in addition, they also have to sit for one or more Advanced
level subjects. This makes it very difficult for young people with vocational
qualifications to move into tertiary education at the University of Malta.

The option open to such young persons would be to wait until they are 23 years
old and to apply for entry into University under the maturity clause. In such case
the interviewing board will consider the academic background of the applicant. In
such circumstance, people with vocational qualifications will stand a good chance
to be accepted on the basis of their vocational qualification.

It is to be said that there have been talks between the University of Malta and
MCAST about the issue of allowing students to move from the vocational track to
tertiary education. This has taken place particularly in the area of engineering.
The process of dialogue which has been taking place over the past two years has
recently encountered a few difficulties, mainly: that the Faculty of Engineering is
to offer four different new courses next October and so its focus is their
implementation; secondly MCAST has announced that it has obtained funding to
run its own tertiary degree. This has resulted in a possible rethinking by the
Faculty of Engineering of whether it is still worth pursuing the dialogue that had
been established.

Thus the main obstacles to permeability from VET to HE can be listed to be:

- The entry qualifications requirements which still demand that students have
  one or more subjects at Advanced level. This punishes those students coming
  from the vocational track as they have to obtain supplementary qualifications
  in order to be admitted to University Tertiary courses;

The changes due to the Bologna Process that many of the Faculties at University are undergoing as a result of restructuring process. This places the acceptance of students from VET tracks at a secondary level of importance as Faculties are currently focusing on the new degree courses that they are offering; and

The statement by MCAST that it will be offering its own tertiary degrees has decreased the need for opening up opportunities at the University of Malta to persons wishing to move from a vocational qualification to a tertiary qualification. While the need to offer openings is now less, it can also be the case that the two institutions may view each other as competitors, and thus stop the dialogue that had started.

5.1.2.3 Needs to be addressed

The current VQTS II project needs to address the need to open up flexible pathways as much as possible such that learners from the vocational track will have the choice to pursue tertiary studies should they want to. It also has to help promote dialogue. Thus the project can help solved the problem through the following:

Promoting dialogue between vocational and tertiary institutions: Historically, in Malta, the vocational track holds a lower status compared to tertiary education. This has resulted in a separate approach between the vocational and tertiary track. Malta is a small country and it cannot afford to have duplication of training as a result of a historical segregation of two sectors. In addition learners should be given the opportunity to continue their studies as they wish through flexible pathways;

It can provide a structure/process for the recognition of studies at vocational level: There is usually a degree of lack of trust between vocational and tertiary institutions which is the result of different status and approach to training between the two. A system which can be used in an impartial manner to identify what learning outcomes graduates from the vocational track possess will help tertiary institutions understand better and give value to the knowledge, skills and competences learnt within the vocational track;

Promote an overarching system of qualifications: Many times, it has been difficult to identify the level of qualifications within the vocational track. This adds to the lack of trust which usually exists between the two educational paths (the vocational and the academic routes). National Qualification frameworks can contribute to reducing this problem by incorporating both types of qualifications within a national framework. The project can thus work to promote the development of National Qualifications Frameworks that cover as wide a range of qualifications as possible and which also allow for movement from one level to another as well as between the vocational and general education tracks.

In Malta there is a great danger that rather than moving the two tracks closer to each other for the benefit of learners that the two institutions grow further apart. Besides not being cost efficient and against the spirit of lifelong learning, citizens are at most risk of suffering the consequences. In a period when all economies

need as much skilled workforce, as possible, permeability form VET to HE becomes of great importance.

5.2 Description of the 'case': Permeability from VET College MCAST to University of Malta - engineering

The case study chosen is the permeability of VET students from MCAST, Institute of Electrical and Electronics Engineering and the Institute of Mechanical Engineering to the Faculty of Engineering at the University of Malta. The Institute of Electrical Engineering and that of Mechanical Engineering offer courses up to the level of MCAST-BTEC Higher National Diploma in Electrical/electronic engineering, while the University of Malta offer tertiary courses leading to a Bachelor in Engineering.

5.2.1 Introduction / general description of the case selected

The University of Malta is responsible for the training of graduate engineers in Malta. This has been so since 1979 when the Faculty of Engineering moved from within the previous MCAST institution to the University of Malta.

The Faculty of Engineering is located on the main university campus and provides instruction and supervision to about 400 students at both the undergraduate and postgraduate levels. The Faculty runs a number of laboratories including electrical power and machines, telecommunications, control, electronics and IC design, metallurgy and materials, CAD, manufacturing, industrial automation, industrial metrology, fluids, mechanics, and thermodynamics[13].

Students following engineering courses are also provided with a higher stipend (financial allowance) than students in other courses. This is a government measure to attract more students to study engineering in view of working towards the Lisbon Targets in terms of science and engineering graduates.

MCAST – The Malta College of Arts, Science and Technology houses a number of institutes offering vocational qualifications. As is declared in the mission statement, MCAST strives to provide universally accessible vocational and professional education and training with an international dimension, responsive to the needs of the individual and the economy[14].

Two of the institutes within MCAST are the Institute of Electrical and Electronics Engineering, and the Institute of Mechanical Engineering fall within MCAST. They are responsible for vocational training in areas such as electrical and

[13] http://www.eng.um.edu.mt/
[14] http://www.mcast.edu.mt/default.asp

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electronics engineering, industrial electronics, and communication technology at different levels. The levels start with a foundations course (level 1) offered by MCAST as well as the BTEC First Diploma (level 2), National Diploma (level 3) and Higher National Diploma (level 4[15]).

The Institute of Mechanical Engineering also offers courses at foundation level, BTEC - First Diploma, BTEC- National Diploma and Higher National Diploma in areas such as mechanical engineering, automotive maintenance and repair, motor vehicle engineering, manufacturing engineering, operations and maintenance engineering, automotive body paint and repair, aircraft maintenance, as well as a technician course.

If one revisits the entry requirements that have been accepted for entry by the University of Malta, these include either City and Guilds or the National Higher Diploma (personal communication since it has yet not been included in guidebook for applicants). However, it can be observed that the vocational qualification is not considered to be sufficient to gain entry, but applicants must also present a certificate in one or more subjects at Advanced Level.

The reason for such requirements is that the Faculty of Engineering does not feel that students coming from the vocational track have enough mathematical skills or physics content background due to their training being more job-oriented. This, however, taxes those within the vocational track as they have to follow courses in general education alongside vocational courses.

As can be noted from the review of the different courses, there are only a few examples where vocational qualifications are accepted. This makes the Engineering Faculty within the University of Malta at the forefront of allowing some form of permeability between VET and HE.

Possible solutions
The possible solution to this situation can only be obtained through dialogue and growth of mutual trust between the Institutes at MCAST and the Faculty of Engineering within the University of Malta. Dialogue can lead to greater understanding by the Faculty of Engineering of what students at MCAST learn and what competences they have developed in the course of their studies and training.

MCAST can learn more about the Faculty's expectations from new students and the skills that they require in order to follow the degree course successfully. Through such dialogue, MCAST may decide to structure (or restructure) its courses such that basic skills and knowledge in mathematics and physics required for University studies are included in their courses. The Faculty of Engineering can learn to trust the quality of the training that the Institutes within MCAST give to their trainees.

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15 The levels are those used within MCAST for all its Institutes and to not refer to the National Qualifications Framework of Malta.

5.3 Potential of the VQTS model

The VQTS model can offer opportunities to promote and encourage permeability from VET to HE. The grid used can offer opportunities as well as act as a tool for transparency to the three key stakeholders involved: the student; the Vocational Institution; and the Higher Education Institution:

- The Student: The VQTS provides a map of the skills and competences learnt and developed as a result of the vocational qualification obtained. This provides the student – now certified person, with a detailed explanation of the qualification that s/he holds. This can be particularly beneficial since employers as well as Higher Education institutions tend to be suspicious of qualifications that they are not familiar with and may thus not value the person as much as they should. The qualified person will thus be in a better position to show what /she is capable of doing and the level of qualification obtained;
- The Vocational Institutions: are also in a position to gain from using VQTS. This is so as they can use it to map the knowledge, skills and competences that their students are gaining as an outcome of their courses. They will thus be in a better position to explain to employers what their students are capable to do. They can also explain better to Higher Education Institutions what they are providing in their courses. They can also use it themselves to map what they are teaching. They will also be able to identify which areas of study they may not be giving so much attention to as well as where they need to provide more training in view of their students moving to tertiary education;
- Higher Education Institutions: The University of Malta can use the VQTS model to understand better what students are doing within vocational courses, and thus have greater trust in the quality and level of training being received within the vocational qualifications.

5.4 Conclusion

The review carried out highlights the great need to have more dialogue and promote mutual trust between the Vocational and Higher Education sectors in Malta. This problem with mistrust has historical roots as tertiary education has always been viewed more as 'for the elite'. However, with the changing labour market needs and the greater demands for more and better skilled workers, lifelong education and flexible pathways have become very important indicators that ensure an adequate supply within the workforce.

These new challenges demand that what previously were considered to be separate types of training institutions, to come closer and to implement changes which would allow learners more opportunities for further learning.

The QVTS model can be that tool which can help overcome the sense of mistrust between the two types of institutions. The model allows an objective assessment and identification of what outcomes learners within vocational qualifications gain. This transparent tool can act as that catalyst which provides greater recognition of learning which takes place within vocational institutions in Malta.

6 Example from the Netherlands

Martin Bröcker, Kenteq
Collin Prumpeler, Avans Hogeschool
Peter van Amelsfoort, Koning Willem 1 College

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6.1 General overview of the Dutch education system

Primary and secondary education

Children are allowed to begin school at the age of four, but are not legally required to do so until the age of five. Primary education lasts eight years (of which seven are compulsory), in the last year of which pupils are advised as to the type of secondary education they should pursue.

Secondary education begins at the age of 12 and is offered at several levels. VMBO (preparatory vocational education) programmes (four years) combine general and vocational education, after which pupils can continue in senior secondary vocational education and training (MBO) lasting one to four years. The two programmes of general education that grant admission to higher education are HAVO (five years) and VWO (six years). Pupils are enrolled according to their ability, and although VWO is more rigorous, both HAVO and VWO can be characterized as selective types of secondary education. The VWO curriculum prepares pupils for university, and only the VWO diploma grants access to WO. The HAVO diploma is the minimum requirement for access to HBO. The last two years of HAVO and the last three years of VWO are referred to as the tweede fase (literally, second phase), or upper secondary education. During these years, pupils focus on one of four subject clusters (profielen), each of which emphasizes a certain field of study in addition to satisfying general education requirements. Each cluster is designed to prepare pupils for programmes of study at the tertiary level. A pupil enrolled in VWO or HAVO can choose from the following subject clusters: 1. Science and Technology (Natuur en Techniek); 2. Science and Health (Natuur en Gezondheid); 3. Economics and Society (Economie en Maatschappij); 4. Culture and Society (Cultuur en Maatschappij).

Senior secondary vocational education (MBO)

The percentage of practical occupational training determines the type of learning pathway in senior secondary vocational education. There are two learning pathways: the block (or day) release pathway ('Beroepsbegeleidende Leerweg' = BBL) and the vocational training pathway ('Beroepsopleidende leerweg' = BOL). BBL programmes consist of at least 60% practical occupational training. Participants work approximately four days per week in a company that provides practical training and go to school approximately one day (depending on the programme). Programmes in the BOL learning pathway consist for the major part of school training. The percentage of practical occupational training is between 20% and 60%.

One year of a fulltime programme in senior secondary vocational educations consists of 1600 study load hours. In a BOL programme at least 850 of these credits are contact hours at the educational institute.

The content of programmes in senior secondary vocational education is determined by the attainment targets of the programme.

The senior secondary vocational education consists of 4 levels, which are described in the following scheme:

Level	Training Programme	Duration	Admission requirements	Attainment targets	Transfer
1	Assistant training	0,5 – 1 year	Without a threshold	After the training the participant can carry out simple tasks under supervision	With the certificate of assistant training it is possible to transfer to basic vocational training (qualification level 2)
2	Basic vocational training	2 – 3 years	Diploma preparatory vocational education (VMBO), vocationally oriented learning pathway; Diploma assistant training	The participant develops skills to carry out executive tasks. The participant has his own job responsibility.	With the certificate of basic vocational training it is possible to transfer to vocational training (qualification level 3)
3	Vocational training	2 – 4 years	Diploma VMBO, theoretical, mixed of advanced learning pathway; Diploma basic vocational training	The holder of a vocational training certificate can account for his/her own activities to colleagues and can monitor and and guide the activities of others; he/she works out procedures for work preparation.	With the certificate of vocational training it is possible to transfer to middlemanagement training or specialist training (qualification level 4)
4	Middle-management training	3 – 4 years	Diploma VMBO, theoretical, mixed of advanced learning pathway; Diploma vocational training	The holder of the certificate middlemanagement training has his/her own responsibilities, not in the sense of executive activities, but in the formal and organizational sense; he/she works out procedures	With the certificate of middlemanagement training it is possible to transfer to higher vocational education
4	Specialist training	1 – 2 years	Diploma vocational training; Diploma	The specialist has his/her own responsibilities, not	With the certificate of specialist training it is

			middlemanagement programme	in the sense of executive activities, but in the formal and organizational sense; he/she works out procedures.	possible to transfer to higher vocational education

Competence based qualification structure

The current knowledge-based, dynamic society and the labour market need professionals with more than just specific technical knowledge. The way of working changes, so learning needs to change as well and to prepare future employees for differing requirements, such as working together, planning, entrepreneurship and problem-solving. Radically new teaching methods, programmes and examinations are needed to develop a new structure better matched to modern society. The switch from thinking in terms of knowledge to thinking in terms of competences is central. The concept of competences is a consistent package of knowledge, skills and attitudes. A new qualification structure is being developed with competences for work, learning and citizenship as central issues. This structure gives more freedom to educational institutions to adopt innovative pedagogical and didactical methods.

The new system will be introduced in phases. Initially, each institution operates at its own speed and is free to choose which and how many new-style courses they offer, and the degree of variety and innovation in the mode of delivery. Once the planned legislation (still being drafted) has entered into force (to be set for 1 August 2010), institutions will only be allowed to offer new-style courses leading to new-style, competence-based qualifications.

Higher vocational education

Higher vocational education (HBO) is a more practice-oriented type of higher education. Its main objective is preparation for professional practice and entry of the labour market. HBO is offered at universities of applied science (hogescholen), but the new bachelor/master (bama) structure also enables academic universities to offer HBO education. Educational programmes in HBO last 4 years (240 credits) and are divided into a propaedeutic year (the first year), followed by a main phase of 3 years. Usually in the third year, students perform a mandatory internship approximately 9 months to gain practical experience. On the basis of this internship, they complete a thesis or final project. HBO is offered in 7 sectors: Teacher Training, Higher Education in Agriculture, Higher Technical and Scientific Education, Higher Education in Health Care, Higher Education in Economics and Management, Higher Education in Social and Community Work and Higher Education in Fine Arts and Performing Arts.

Graduates are conferred the degree of Bachelor, stating the professional field in which the degree was earned (Bachelor of Economics, Bachelor of Education). Graduates of HBO bachelor programmes can also still opt for the 'old' titles, namely 'baccalaureus (bc.) and 'ingenieur (ing.)'.

6.1.1 Graphical presentation of the educational system of the Netherlands
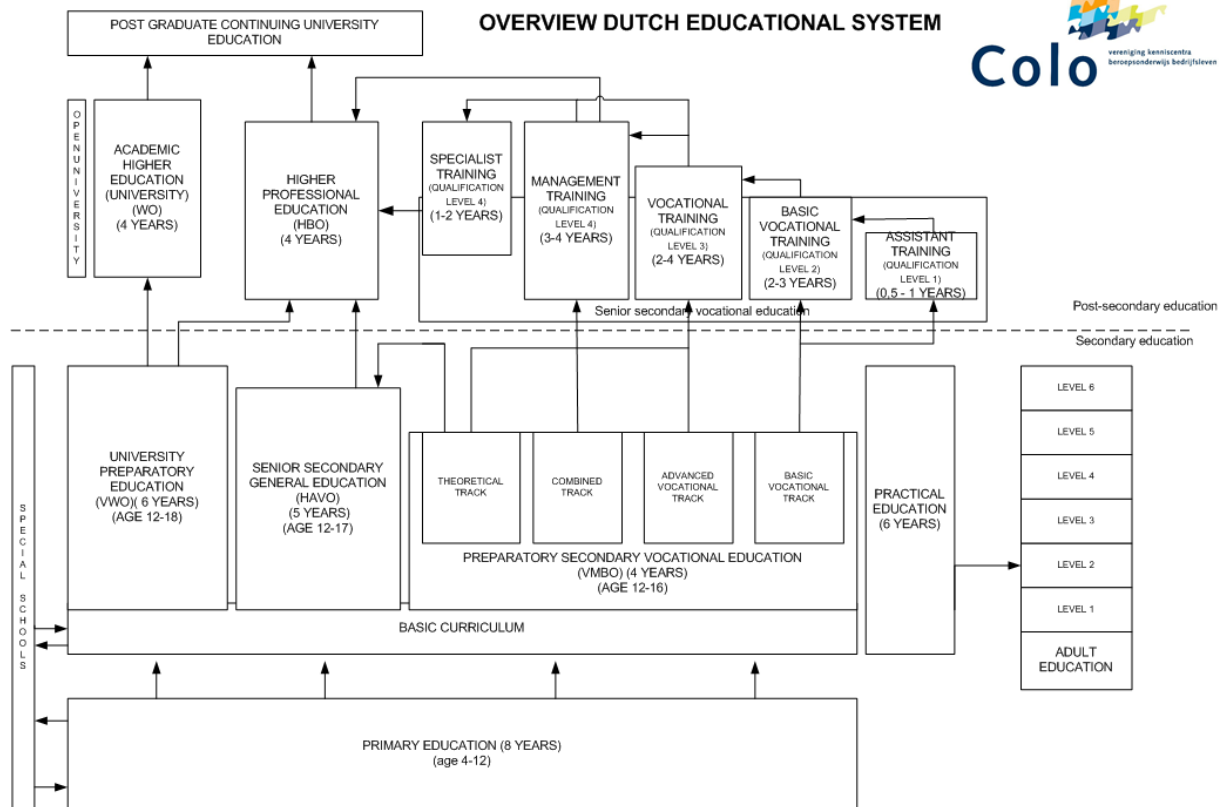
source: webpage OCW

6.1.2 Formal ways for the progression from VET to HE

6.1.2.1 Regular formal pathways for the progression from VET to HE[16]

Applicants wishing to be admitted to higher vocational education must possess:
- a senior general secondary education (HAVO) certificate;
- a middle-management or specialist training certificate at senior secondary vocational education (MBO) level;
- a pre-university education (VWO) certificate.

Applicants possessing any of the above qualifications have in principle the right to be admitted, but additional requirements regarding the subjects studied can be laid down by ministerial order.

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[16] HE: ISCED 5a, 6; EQF 5-8

In addition to educational requirements, institutions may impose supplementary requirements relating to the profession for which the course trains students or to the course itself. For instance, applicants for courses in dance or sport and movement must have the skills specified by the institution in question. These requirements may only relate to matters not covered during the student's previous schooling. Prospective students must first contact the institution concerned, which then decides whether they meet the supplementary requirements and can be admitted.

Admissions policy

Experimental legislation is in force for the academic years 2005/2006 and 2006/2007, allowing entry requirements, variable tuition fees and flexible admissions. Institutions are permitted to admit students who do not hold the qualifications required by law for admission, provided they have acquired knowledge and experience of an equivalent level. A special committee is monitoring these initiatives.

Admission requirements

HBO institutions and universities have a central admissions system. For courses subject to a quota ('numerus fixus'), there is also a weighted draw for places followed by selection by the institutions themselves. Prospective students must apply to the Central Applications and Placement Office (CBAP). Where no restrictions on numbers apply, students are free to enrol on whichever course and at whichever university they wish. Numerus fixus courses are those where the maximum number of first-year students that may be admitted to a particular course and/or institution is restricted (such as university courses in medicine, veterinary medicine, dentistry and life sciences, or HBO courses in journalism and physiotherapy). Places are allocated by means of a weighted draw or by the institutions themselves. The higher a student's average examination grade, the higher his or her chances of gaining admission via the draw.

There are three types of numerus fixus:
- a national quota, where the joint capacity of all the institutions providing a particular course is insufficient for the number of students wishing to enrol on that course;
- a labour market-related quota, which is imposed when the supply of graduates from a particular course exceeds or is likely to exceed demand for a sustained period;
- an institution quota, when there is sufficient capacity within the sector as a whole but insufficient places at one or more individual institutions.

A new system for numerus fixus courses was introduced in 1999. Half of the places are allocated via a draw, and half may be awarded by the institution itself. However, prospective students with an average grade of 8 or higher do not have to take part in the draw and are automatically awarded a place, provided they have the right combination of subjects. Applicants may take part in no more than two draws. Those with an unsuitable combination of subjects are not allowed to take part in a draw.

6.1.2.2 Accreditation of prior learning from VET for study programmes at HE

Prior learning assessment and recognition (EVC)
The Learning and Working Project team funds and steers the Kenniscentrum EVC (Knowledge Centre for Prior Learning Assessment and Recognition). People starting jobs or training courses already have certain competences that they have acquired elsewhere. The centre officially recognises working experience as previously acquired competence. Its aim is to match school curricula more effectively to the world of work and to assess its clients' requirements for on-the-job training.
After the process of EVC a candidate might be awarded an official certificate of senior secondary vocational education and therefore have the possibility to enter into higher vocational education.

Shortening study programmes at HE (e.g. recognition of acquired learning outcomes from VET can lead to a reduction of the study period).
The normal study time of our bachelor curriculum is 4 years. There is a possibility to shorten this study time to 3 years for VET students. They have to have their courses in a related domain. This means to enter courses for a HE degree in electronics they have to have a VET qualification at level 4 in electronics or similar education like Metalelectro at the KW1C. When a VET student holds? qualification at level 4 but in a not related domain he or she is not allowed to start in the 3 year curriculum.

Student older then 21 years old can be allowed in a shortened curriculum on the basis of (working) experience. This is done on the basis of an 'entrance check'.

In the Netherlands there are pilot curricula for the grade of Associate degree (AD). For the normal 4 years curricula this would mean that students can become an AD level after 2 years. After 2 more years they should be able to get the bachelor degree. It is however not possible to just split the curriculum in 2 parts. There are requirements for the AD level that have to be met. For instance, a practical component that is large enough. For VET students from a related domain it should be possible to get the AD degree after 1 ½ years and the bachelor degree after 3 years. the School for engineering and ICT (AI&I) from Avans University of applied sciences is not offering these curricula at the moment yet.

6.1.2.3 Main obstacles regarding permeability between VET and HE. Needs to be addressed. Problems that can be solved by the results of the VQTS II project. Further observations or comments.

A growing number of serious obstacles focussing on fundamental knowledge and skills is being noticed for VET-students that make the next step into HE, independent if they stay in the same sector or make a switch. Changes in the MBO level 4 programmes from 2000 seem to be the cause of this. It mainly concerns the absence of:

___ Knowledge and skills which used to be offered in the 'standard subjects'; for instance mathematics, statistics, modern foreign languages and Dutch language.
___ Practiced skills like language skills (write, spell and summarize) and a certain level of being able to interprete numbers and the performance of elementary calculations with letters and numbers.

Also the limited handling of fomulas and equasions and the inadiquate analysis of graphics and tabels plays a role in the connection of almost all MBO-HBO crossings.

VET and HE institutions both have to see the importance of initiatives to smoothen the crossing from VET to HE. Commitment of both the VET as well as the HE college is essential to motivate lecturers. Commitment from lecturers as well as from management is important.

Curricula change, lecturers leave or have other tasks or not many students take part in the initiative. This can all be reasons that initiatives stop. Continuation of initiatives is difficult.

Students are not always as enthusiastic as you would expect to join permeability programs or activities. They might find it easier to just follow the VET program and see what happens in HE.

Half of the students who have succesfully completed a fulltime BOL training at level 4 continue with a HBO training. Of these HBO-students 57% complete the HBO training succesfully in 4 or 5 years, whereas 52% of the students which enroll in a HBO-training from HAVO succesfully complete the HBO-training in 4 or 5 years.

To support schools with the throughput the MBO-raad (the Netherlands Association of VET Colleges) and the HBO-raad (the Netherlands Association of Universities of Applied Sciences) together agreed on a 'throughput-agenda'. In this agenda actions are written which the two organisations will perform together to come to national frameworks and agreements. One of the subjects on which actions will reflect is the provision of good information on the throughput. The MBO-raad and the HBO-raad will provide the schools with throughput information on national as well as school level. This gives the schools better possibilities to identify and solve bottlenecks in the region. Another subject is the co-operation between VET and HE in general. At the end of 2007 a national co-operation network VET-HE has been started. The MBO-raad and HBO-raad together facilitate this network. Also they yearly choose a policy spearhead at which extra attention will be paid nationally. In the context of the 'throughput-agenda' the MBO-raad and HBO-raad also agree on the competences that a student has to have for a training in HE. This applies to general competences like Dutch language and mathematics as well as to sector related competences.

In January 2008 on request of the Minister of Education, Culture and Science, the 'Onderwijsraad' (The Education Council is an independent governmental

advisory body which advises the Minister, Parliament and local authorities) published an advise titled 'A succesful start in higher education'. The coucil's advise concerns the preparatory phase (general secondary education and secondary vocational eduction) as well as the first period of higher education itself.

For the preparatory phase the coucil advises to have an agreement on the starting levels for students starting in higher education. Via tests on internet students themselves would be able to test if they have the right level. Via summerschool-courses institutes for higher education could provide the opportunity to fill gaps they might have for entering higher education. Also future students as well as their parents should inform themselves better and be better informed about the content of the higher education course so the change of making a wrong discission stays limited.

For the first period of higher education the advise is to further improve the binding of the student with the higher education institute.

6.2 Description of the case

In the Netherlands a lot of initiatives are being undertaken to improve the transfer from MBO to HBO and sometimes as well to reduce the training time of higher education.

An example is the socalled connection-programme of the Noorderpoortcollege and the institue for Law studies of the Hanzehogeschool of Groningen. In this programme students are following special colleges for half a day a week to get accuainted with the culture and discipline within the higher education institute. The colleges are given by teachers of the MBO-school as well as the higher education institute. The programme takes one year and is given in the last year of the VET-programme.

Another example is the continuing training of ROC van Amsterdam (regional training centre of Amsterdam) and the Hogeschool van Amsterdam (the institute for higher education of Amsterdam) in the ICT-field. These two institutes cooperate in different ways to establish a continuing training of 6 years running from MBO through HBO. Amongst other things some students of the HBO do a practical training at the service desk of the MBO and guide MBO-students, students of the HBO give ICT training to level 1 students of the MBO, the last-year students of the MBO follow courses at the HBO-institute and the MBO-college gives CISCO courses to students of the HBO.

The project M3 is another example of cooperation between MBO and HBO. The Fontys institute for higher education and ROC Eindhoven work in a project to improve the progression from MBO to HBO. Currently 12 MBO-students and 12 HBO-students from administrative and financial programmes are working in the project. The coming school-year 80 students will be involved in the M3 project. In the project problems from SME-companies are handled. Every 2 MBO-students and 2 HBO-students together are working on a problem from a SME. This way

the MBO-students get to know the HBO-programmes. The HBO-students get acquainted with leadership via the project.

In the region of The Hague 9 training institutes work together to improve the progression from MBO to HBO. Their website (www.mbohbo.org) lists all kinds of cooperations and agreements between MBO and HBO institutes to improve the progression and to shorthen the HBO-training.

A last good example is the intensive cooperation between the school for engineering and ICT from Avans university of applied sciences and Koning Willem 1 college both located in 's-Hertogenbosch. The School of engineering and ICT works together with 2 departments of KW1C, the department High Tech Metalektro of the Koning Willem I College and the ICT academy. Below this cooperation is being elaborated.

KW1C is the primary partner for AI&I to set up throughput activities. The content of the activities is discussed and set up together with lecturers from KW1C and the activities are scheduled for KW1C students. KW1C does not however exclude student from other VET providers. Sometimes they can join activities and sometimes we schedule a activity on another time for these students especially. However the content is designed for the KW1C students.

This document explains the activities the School for engineering and ICT (AI&I) from Avans University of applied sciences as a higher education institution institution does to promote and realise more student throughput from VET to Higher education. Not included are normal promotion/introduction activities as introduction days, when students can visit AI&I. These days are considered as normal activities, which take place for all potential students. These introduction days are not especially for VET students.

6.2.1 Introduction / general description of the case selected

Example for ensuring permeability between VET and HE
Introduction/permeability course for last year VET students
History: The activity is relatively new for AI&I and metalelectro.

Tuning VET - HE
A Good Practise example: Project Golden Gate
Department High Tech Metalektro Koning Willem I College
with Avans Technische Hogeschool The Netherlands

Students who started High Tech Metalektro in 2003 have had the possibility in their fourth school-year (September 2006- June 2007) of their VET training to take a good look at Higher Education at Avans. In their third school-year a general information session has taken place explaining the different technical HE programmes. As a result of that information a limited number of VET students has done a three-day orientation programme at Avans. The idea was to make the culture of HE more transparent for the students.

As a result of the information and the orientation a number of VET students accepted the offer of Avans to spend some 20 Tuesday evenings on a mathematics course at HE level. It is clear that the contents of these lessons went beyond the curriculum of what is written for mathematics on VET. Each VET student in the fourth year must make a personal development plan. They have the possibility to make HE a part of their fourth year. In principle they must arrange this themselves with HE.
Unfortunately only a few students managed successfully.

The Academy for Industry and Data Processing of Avans and the High Tech Metalektro of King Willem I College then conducted a scheme in which the VET students could go one day per week to Avans. During 20 weeks in the 8th semester of the VET training these students have spent one day per week at HE under guidance of someone from Avans. The goal was to prepare the students as good as possible for the transfer to HE and to create an ongoing learning line.

This has been successful. The HE days for the VET students started with some remedial teaching; checking if the Tuesday evening lessons were understood and the students were offered help with the tasks they had.
The rest of each day was spent on a project at HE level. This method was very good for these students and the complete group has transferred successful to HE. In the evaluation of this working method, it has been agreed to build on this in a way that this structure does not remain restricted to only a group of students. The idea is to organise this for all potential students from VET to HE.

As a result of this good practise, currently there is being negotiated about an extended VET- or perhaps pre-HE course. The result should be that Avans and KW1C can offer education together. The aim is to offer that secondary school-leavers can go through VET to an Associate degree at HE within five or six years.

Activities
1. Always the same contact person for VET students when it concerns HE related activities
2. Occupational information
3. Mentorship
4. Teaching practice for VET and HE student together
5. Second date to start the study in HE
6. Mathematics course

1 Always the same contact person for VET students when it concerns HE related activities: The contact persons for VET students at AI&I are always the same lecturers. This should make it more easy for students to contact AI&I. These lecturers do the presentations for VET students, take part in the last year VET-HE courses, but are also the mentor when students start to study at AI&I. This mentorship should reduce the drop out when starting to study in HE.

2 Occupational information: During various activities VET students are informed about the job possibilities they have. During several of these activities AI&I presents the job possibilities when students have finished HE. This means

that VET student have a better insight, not only what they can study in HE and what the differences are between studying VET and HE, but they are also able to have a better view on what they can do after finishing the HE study.

3 Mentorship HE students for VET students: Avans offers HE students the possibility to act as mentor for VET students. Students get credit points for this activity, so it is part of their curriculum. In this way VET students can have a role model during the VET study. This is not an obligation for the HE students. The experience so far is that non or only a few students are willing to be a VET mentor. This means that we have little or no experience. It is a serious option to make this mentorship a part of the HE curriculum.

4 Teaching practice for VET and HE student together: AI&I has a teaching practice/graduation office. This office organized all teaching practices and graduation projects. All the activities for students take place at a company site. Until recently this office operated without contacting KW1C. In the future we want to make a link between the AI&I office and the teaching practice facilities of KW1C. In this way we can organize projects for VET and HE students together. VET students can see what a HE student is able to do and because of the close contact he has with the HE students he can learn more about what it means to study in HE. We have no experience with this activity yet, but expect a positive result from this co-operation. There are no legal problems to organise this. The VET and HE institution only have to take care that the students learn the required competences on the required level.

5 Second date to start the study in HE: We introduced a second starting date after 1 semester. The best VET students could start during the last year of their VET study. This would result in half a year shortening of the total VET-HE study programme. This would become 3 ½ year VET, ½ year VET-HE and 2 ½ year HE, which is in total 6 ½ year. Normally this would be 7 years. A second advantage of this construction is that VET students who have a delay in graduating can start in February as well.
The programme which starts in February is the same as the programme that starts in September for VET students. Our experience is that VET students are not motivated to work harder to reach the shortening in study time. Most students that start in February have a delay in graduating in VET or are students who change their study programme.

6 Mathematics course: VET students mostly encounter problems with mathematics in HE. Therefore already for a long time we have a mathematic course for VET students in their last year. This is a voluntary evening course, where basic mathematics is learned. The lecturers are HE lecturers who also take care of the content. Most of this content is repeated in the first year of HE. Despite the effort a lot of VET students put in this course, mathematics remains difficult for them.

Guidelines for tuning VET and HE
VET and HE institutions both have to see the importance of the initiatives. To motivate lecturers and take care of continuation it is important to have

commitment of both institutions. HE has to deliver most of the resources. VET institutions play a key-role in informing students about possibilities and motivating students to participate. Not only commitment from management is important. The commitment of lecturers is equally important. They have to bring the message to the students and take care of motivating and inspiring activities for the students.

Commitment from management is also important. It is not always the primary interest for lecturers to set up these initiatives. Management has to motivate people, but also take care of continuation.

Continuation of initiatives is difficult. When VET and HE institutions both want to set up an initiative, this is not very hard to achieve. It is more difficult to continue this over the years. Curricula change, lecturers leave or have other tasks or not many students take part in the initiative. This can all be reasons that initiatives stop. There has to be constant attention from management to start preparations in time.

Students are not always as enthusiastic as you would expect to join permeability programs or activities. They might find it easier to just follow the VET program and see what happens in HE. We have the opportunity for good VET ICT students, to shorten the total VET-HE duration from 7 to 6 ½ years, but almost no students find this interesting.

A reward for the activities stimulates students. It is not enough to only provide an activity for students. There has to be some kind of reward/acknowledgment for the students. This can be in credit points for the VET or the HE curriculum. Activities where students only volunteer to join and are able to step out when they want to, can result in a large amount of drop outs. This is not the case for activities which fulfil the need of students where they expect problems when going to HE. An example of this last case is the introduction course mathematics.

What are the results of all the activities?
There are no statistical data to support success of the activities to improve permeability between VET and HE. There are too few participants in the KW1C and Avans (AI&I) project to get valid data. The experience we have is that almost all the participants start a study program in HE and most of them are successful. However, we do not know if this is a result of the activities, or that the students would have started anyway with in general successful results.

There were no results found on a national level. There seems to be a trend of more VET students going to HE, which indirectly suggests that the permeability activities are successful.

6.3 VQTS model

Competencies that are directly linked to project work and group work, competencies like projectplanning, giving and receiving feedback, etcetera could be recognised by the VQTS model. This could also be done were competencies are concerned with regard to working wiht technical appliances. HE should be able to use the VQTS model and give them the concerning credits.

When VET and HE institution both use the model it is much more easy to develop learning paths for students who want to go from VET to HE. This can be used for PR issues, but also for adjusting the HE curriculum to the curricula to different curricula from different VET institutions.

When VET and HE institution do not both use the VQTS model it is possible to make a translation from the competence set they use separately to the VQTS model. All institutions who use the VQTS model are able to compare their curricula.

The VQTS model can be used for prior learning and assessment and recognition (EVC) as well. When the VQTS model is used, it is possible to assess a candidate not only for HE, but when necessary also for VET competences.

6.4 Sources

www.nlnrp.nl

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Een succesvolle start in het hoger onderwijs – Advies – Onderwijsraad – January 2008

Eurybase; The Information Database on Education Systems in Europe, 2006/07; The Education System in the Netherlands; European Commission; Directorate-General for Education and Culture

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7 Example from Slovenia

Samo Pavlin

Table of Content

A short Summary

VET programmes in the Republic of Slovenia are spit between secondary and post-secondary higher education. In the last decade, the Slovenian educational system has experienced several reforms, the latest of which was the establishment of the National Qualification System and the establishment of (education and no-education) a system for the recognition of prior learning experiences, as a result, a clear need for ensuring permeability between VET and HE has emerged. This paper looks into the case of how an employee who has completed a three year secondary VET programme by obtaining the master craftsman examination enrols into professional or academic higher education, as in Slovenia the admission procedures between VET and HE are centrally regulated and rather rigid because several preconditions need to be fulfilled. Because of these, the formal possibility of permeability between VET and HE education in the majority of cases is concluded with the obtainment of the master craftsman examination. Nevertheless, this case study in the process of establishing a National Qualification Framework in Slovenia aims to bridge (as in all other EU countries) competencies in the world of work and learning outcomes in formal education, and addresses a very important issue: the establishment and development of newer flexible formal structures for the recognition of learning types and professional expertise at the intersection between the world of work and education. In this case a competence model or matrix plays the role of a vital mediator.

7.1 General overview

In the mid 90s, Slovenia embarked on a major reform of the educational system on the basis of new guidelines which were described in the White Paper and new legislation.[17] Support for this reform was provided by the Phare[18] Programme. The aim was to modernise the whole upper secondary sector, especially vocational and technical education, by introducing a system of national occupational standards, reforming the institutions and educational programmes, introducing new 'poklicna matura' (national final examinations) and providing obligatory monitoring. In 1996, Slovenia adopted a set of legal rules in the field of education and training. The acts, such as the Organisation and Financing of Education Act (1996)[19,] the Secondary Technical and Vocational Education and Training Act (1996, 2006)[20], the Adult Education Act (1996)[21] and the Gimnazija Act (1996)[22], completely reformed education and training.

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17 Bela knjiga o vzgoji in izobraževanju v Republiki Sloveniji / White Paper on Education in the Republic of Slovenia, Ministry of Education and Sport, Ljubljana 1995.
18 The Phare Vocational Education and Training Reform Programme 1994, Assessment of the Phare Vocational Education and Training Programme, Centre of the Republic of Slovenia for Vocational Education and Training, Ljubljana 1998
19 Zakon o organiziji in financiranju vzgoje in izobraževanja, Ur. L. RS,12/96, 115/ 03 / Organization and Financing of Education Act, Official Gazette of the RS, 12/96, 115/ 03.
20 Zakon o poklicnem in strokovnem izobraževanju, Ur. l. št. 12/96, 86/04 / VET Act, 12/96, 79/2006Official Gazette of the RS, No. 12/96, 86/04, 79/2006.
21 Zakon o izobraževanju odraslih, Ur.l. RS 12/96, 56/94 / Adult Education Act, Official Gazette of the RS 12/96, 56/94.
22 Zakon o gimnazijah, Ur.l.RS št. 12/96, 59/01 / Gimnazija Act, Official Gazette of the RS, No. 12/96, 59/01.

As shown in Figure 7.1, the supply of different possibilities of education and training in Slovenia has increased. Secondary education and training lasts from 2 to 5 years and there is a choice between vocational training programmes, more technically oriented courses and general education in general, and technical secondary schools. Master craftsmen courses and examinations have been introduced bridging courses like general upper-secondary schools (gimnazije) and vocational courses were introduced. A post-secondary technical non-university education (2 year programmes) has been introduced as a new segment of VET[23] in the educational system. Since then the regulation of VET is based on a social partnership. New bodies, such as the National Council of Experts for VET and the National VET Institute, have emerged.[24]

23 It can be seen that broader notion of VET is being used in Slovenian context. It encompasses VET qualifications at different levels including post-secondary higher VET qualifications.
24 For more information see Pevec Grm, Slava (2008), Curriculum development in Vocational Education and Training in Slovenia, forthcoming publication of the international seminar, held in October 2007 at University of Barcelona.

Figure 7.1: The Structure of the Education System from primary school onwards in Slovenia 2006/07.
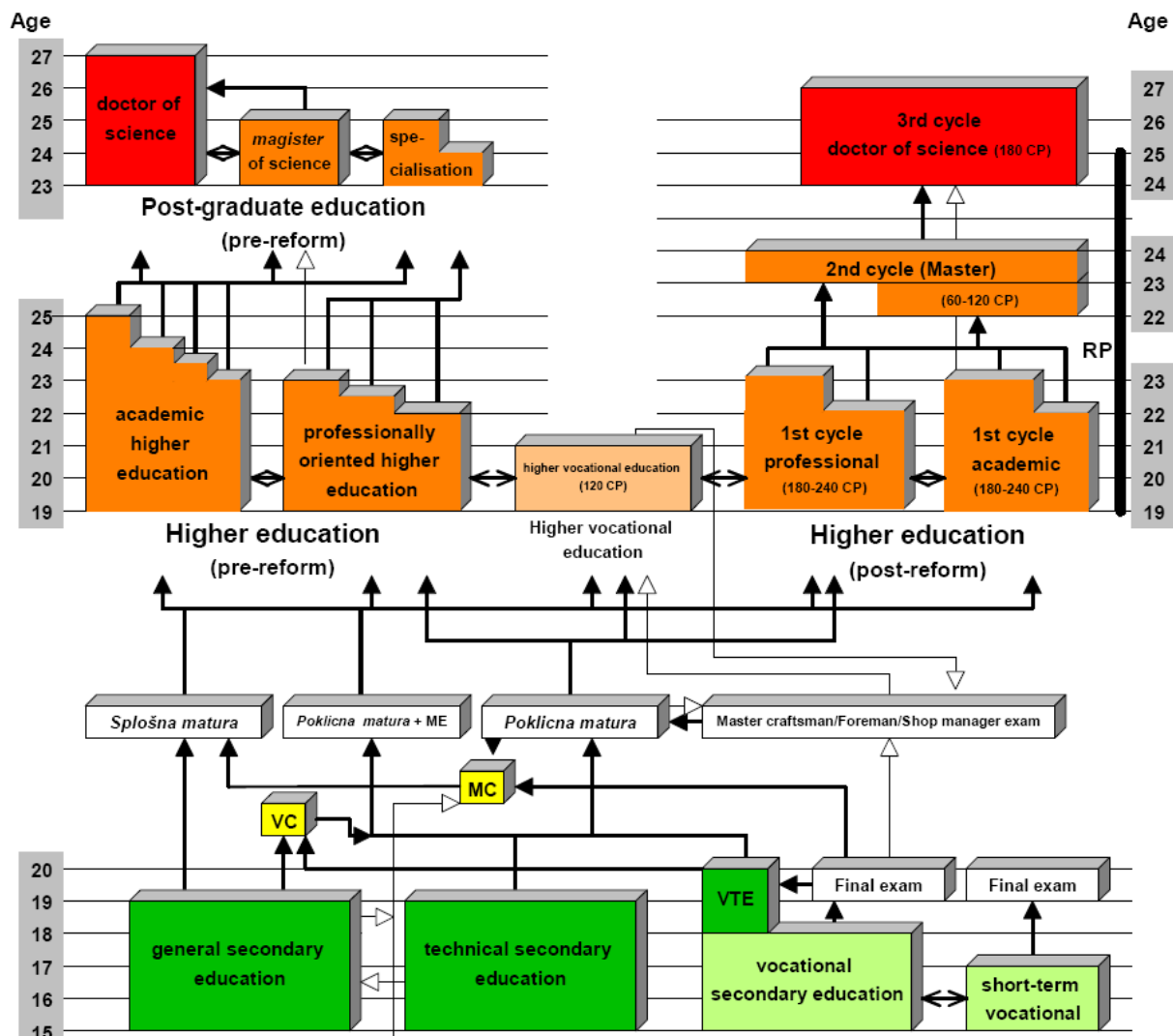
The Slovenian education system starts with organised pre-school education and basic education (a single structure of primary and lower secondary education). Further types of programmes, as indicated in Figure 1, can be divided by a) general and academic programmes on one side, and b) technical/vocational and professional programmes on the other. In the continuation, we aim to describe only those with a technical/vocational and professional orientation as they are primarily important for this study.

In the following the main types of VET programmes are briefly described (Ministry of Education and Sport, 2008−):
Short-term vocational education courses are intended for those, who have successfully completed elementary school or at least Grade 7 of elementary school, or those who have successfully completed a special education programme adapted for children with special needs. Courses may last from two to three years

(120 credit points) and end with a final exam. The successful completion of a shorter vocational education course allows candidates to enrol into any other vocational or technical upper secondary education course, during which students strengthen and upgrade their general knowledge and acquire basic vocational competences and practical skills. They become trained to independently fulfil simple vocational tasks, which are carried out in accordance with standardized work procedures and appropriate instructions; or help with more complex work tasks, typical for certain professions with broad profiles.

Three-year secondary VET programmes train students to take on occupations at the level of skilled workers, craft and service sector. Courses last approximately three years (180 to 240 credit points) and end with a final exam. All students have at least 24 weeks of practical training, but it can be extended up to 53 week in dual form in cooperation with employers. At the same time, these programmes have a pronounced general education component as the graduates are in the position to register into additional **two-year vocational and technical education programmes (+2 year programmes)**. These programmes are already at the level of technical/professional education; therefore it finishes with the vocational matura (final examination). The matura enables students to be trained in the occupation at the level of a technician, while at the same time, it also provides for unlimited matriculation into vocational college and higher education programmes while registration into some university programmes is also an option under certain conditions. This is the so-called 3 + 2 system, which represents an alternative to the technical learning path described in the following paragraph. This system serves an important function as it strengthens vertical and horizontal transferability. Those who choose not to continue their education and enter into an employment contract may, after 3 years of work experience, undertake a master craftsman, foreman, or managerial examination, after which they are awarded the qualification of a technician equivalent to the qualification acquired in technical upper secondary education.

Four-year technical upper secondary education courses are intended for students who have successfully completed elementary school. The courses last from 4 to 5 years (240-300 credit points) and end with the vocational final examination (poklicna matura). The vocational matura examination leads to the award of the qualification of a technician, which allows students to enrol into professionally-oriented (1st Cycle professional) higher education courses or higher vocational education courses (short Cycle non-degree). If students pass an additional exam in one of the general matura examination subjects, they may also enrol into academic higher education (1st Cycle academic) courses which support this option. Technical upper secondary education provides learners with basic and technical education. Learners are prepared for their occupation(s), as well as for the continuation of their education at higher vocational colleges and professionally-oriented higher education institutions. Students who complete the course are equipped with technical qualifications for the independent fulfilment of complex, non-standard, technologically more complex work processes and tasks. Despite this difference, education obtained in a 3 + 2 system and technical or professional programmes is equal in status.

There are also **specialist gimnazija (upper-secondary education), which last for four years** and can be divided into:
  __ Technical gimnazije, which offer a range of technical subjects from various technical fields (engineering, electrical engineering, computer science, construction and building, wood engineering, nutrition and agriculture);
  __ Gimnazije specialized in economics;
  __ Gimnazije specialized in arts, which are additionally subdivided to Music, Dance, Arts, Theatre and Drama.

Post-secondary higher vocational programmes are organised in parallel with **tertiary education**. Tertiary education in Slovenia is divided into traditional higher education (ISCED 5A-6) and the newly developed higher vocational education sector (ISCED 5B). The field of **higher vocational education** is administrated by the Ministry of Education and Sport and regulated by the Higher Vocational Education Act (Official Gazette of the Republic of Slovenia, 2004). Higher vocational education is post-secondary vocational education that lasts for two years, ending with a diploma examination. Vocational college graduates are able to enrol in the second year of professionally oriented higher education programmes if the higher education institution providing this type of study allows such arrangements. In 2005, the newly established Ministry for Higher Education, Science and Technology assumed the responsibility for universities and professional colleges. **Higher education studies** include academic university studies and professionally oriented studies. In Table 7.1 the levels of tertiary education are presented in more detail.

In the National Classification system of education and training activities and outcomes (Klasius, 2006), which is one of the formal bases for building a Slovenian eight-level qualifications framework, the levels of tertiary education are arranged as follows:

Table 7.1:   The levels of tertiary education in Slovenia: formal structure 2006/2007.

Level	Bologna cycle	Post 2004-2006 reform programmes	Pre-reform programmes and/or qualifications (prior to 2004)
6.1	Short cycle	Higher vocational programmes	Post-secondary vocational sub-degree programmes and qualifications Short degree studies/diplomas (prior to 1993)
6.2	First cycle	Professional/academic programmes, equivalent to Bachelor	Undergraduate professionally oriented programmes
7	Second cycle	Professional magisterij programmes, equivalent to Masters	Undergraduate academically oriented programmes Postgraduate professional specialization
8.1	Third cycle		Postgraduate academic specialization Research based magisterij of science/art
8.2		Doctorate programmes	Doctorate of science

As indicated in Table 1, the National Classification System of Education and Training provides a three-level structure of higher education: the first level encompasses undergraduate studies, and the second and third levels encompass postgraduate studies. However, decisions about the introduction of a binary system of the first cycle (3 + 2 or 4 + 1) are left to individual HE institutions and state-of-the-art discussions on the relation between the old academic magisterij programmes with new master titles are still expected to remain open for some time.

Summing up, the VET structure in Slovenia is widely spread through the secondary school system and tertiary educational system. School programmes are related to any of the 19 areas, such as electrical engineering and computer science, economics, trade and management-administration services, hair styling services, catering and tourism, chemistry, agriculture, preschool care etc.

In 2000, a new type of qualifications, the so-called national vocational qualifications (NVQ), were introduced through the National Vocational Qualification Act (Official Gazette of the Republic of Slovenia, 2003/2006), which is under the competence of the Ministry of Labour, Family and Social Affairs. The Law governs the procedures, bodies and organisations competent for the adoption of occupational and assessment standards, as well as conditions and procedures for NVQ assessment and awarding. The emphasis is on learning outcomes and not how they were acquired and are thus open for the validation of non-formal and informal learning.

All new VET programmes, including higher VET, are based on national occupational/professional standards, which are developed in close cooperation with social partners through sectoral committees and adopted by Minister of Labour. They form the legal basis for the development of national VET framework curricula and the validation of non-formal learning.

7.1.1 Formal pathways for the progression from VET to HE[25]

As indicated in the Table 1, all students completing the **four-year technical/vocational education programmes** can continue education in higher vocational education programmes. If they want enrol into academic or university types of higher education they have to choose one additional subject from the general matura exam in addition to the vocational matura examination (poklicna matura) and then they can enrol into university-type higher education

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[25] HE: ISCED 5a, 6; EQF 5-8

programmes; with the exception of medicine, law and pedagogical and some humanistic studies.

Before enrolling into further studies,<0} **graduates of three-year vocational education** programmes can first continue education in two-year vocational-technical programmes (the 3 + 2 scheme) and pass a vocational matura examination in order to obtain a secondary technical level of education. From experience, we can see that the majority of graduates from 3-year vocational education (about 60%) continue schooling at 2-year vocational-technical schools. After the completion of education, and after the completion of the final exam or the vocational matura examination, students acquire a qualification which is basically equivalent to the name of the course. In 2006, the vocational matura exam was taken by 5,700 candidates (which is 33% of all vocational graduates in a given year) which had completed the 3-years of vocational education and then continued in the 'plus 2' programmes (Medveš et al, 2008).

When dealing with the transition within the Slovenian education system, we must take into account the transition between general and vocational/technical education. Around 1.7% of the gimnazijas' pupils per year enrol in vocational courses, which last for one and a half years and are fully paid for by the state. The transition form vocational/technical education to the general matura is organised by the matura course, which is also fully paid for by the state and around 7% of the graduates of the general matura come from these programmes every year, and about 6% of graduates of technical education take on an additional subject of the general matura. About 13% of general matura graduates came from the vocational track.[26] We can conclude that the horizontal and vertical transition possibilities at the upper secondary level are very good and that young people use them for their advancement. From the point-of-view of the labour market, there can be some reservations or challenges for future where the so-called 'plus 2 programmes' especially could be organised with the stronger involvement of companies.

Graduates of higher vocational education programmes complete the programme with an internal final diploma exam, and in the case of **university/professional higher educational programmes** most often with final diploma work and public presentation. About 15% of the yearly cohort enrols into higher vocational, 37% into higher professional and 48% into higher academic programmes.[27] In most cases graduates of higher vocational education programmes are allowed to enter a professional higher educational programme (previous non-university type) in the second year or study or they are not required to fulfil some exams. It would be worth exploring the transition from higher VET to higher professional education in more detail, because in the last year the partnerships between VET colleges and universities have developed, which favours the recognition of credits.

A special kind of parallel possibility for adults to further develop educational pathways is given at the Chambers of Crafts and the Chamber of Commerce.

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26 Data based on Medveš, Z. (2008).
27 Based on presentation of Medveš, Z. at the Meeting of Directors General for Vocational education and Training.

After a minimum of three years of relevant working experience adults can re-enter education and obtain a secondary technical level of education by passing the master craftsman's, foreman's or managerial examinations, or they can sit for general subject exams from the vocational matura or they can enrol in the matura course.

7.1.2 Existing possibilities for the accreditation of prior learning from VET for study programmes at HE

There are two main ways to look upon the accreditation of a prior learning from VET for study programmes at HE. The first refers to accreditation of prior or informal learning as a substitute for fulfilment in a traditional school education system and can be obtained by two institutions: a) the master craftsman examination at the Chamber of Craft of Slovenia, or b) the manager and foreman examinations at the Chamber of Commerce and Industry of Slovenia. Such accreditations eventually lead to a very similar or equivalent certificate as obtained via the regular school education curriculum. Those adults who would like to continue with education in higher VET colleges or at university would need to fulfil additional examination requirements: finish mathematics or Slovene language at the level required by the vocational matura during the examination period. This additional requirement as it is organised at present is an important barrier that limits the permeability between VET, the world of work and HE, and is going to be further discussed in our case.

The second way of observing the accreditation of prior or informal learning is related to the HE system itself and is in practice, despite the existing regulation[28], at present very rarely used in the practice. Still two forms of accreditation of prior learning from VET for study programmes can be observed:

*a) Formal education programmes in which accreditation of prior or informal learning **is acknowledged as a part of an examination**. Only individual cases at the moment exist (broker examination, quality assurance examination, entrepreneurial detailed report etc.), but most HE institutions are intent on strengthening and upgrading the system of such recognition. Assessment methods in these cases take into account the consideration of objectives and standards of knowledge to be examined. These rely upon the inspection of certificates and other documents and this can be, in the case of faculty committee, an assessment, upgraded also by the standard examination procedures (however, simplified such as an oral or written exam, discussion / argumentation, interview, argumentation of a seminar paper or a project etc). The Business College in Maribor and Faculty of Management in Koper are among the first currently pioneering such practices. Management experience is that establishing, verifying and validating prior knowledge and skills is a very demanding activity, as the procedures for recognising more personally related competencies and professional skills socially

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28 Articles 14, 16 and 21 of the Post-Secondary Vocational Education Act; Article 6 of the Higher Education Act.

are not clearly stated. This particular field is the one where the VQTS model could be used.

*b) Formal education programmes in which accreditation of prior or informal learning is acknowledged as a **requirement for enrolment**.* This is related only to postgraduate programmes.

Lastly, we should mention that in Slovenia, the accreditation of prior learning also plays an important role in vocational and professional chambers and is related to passing professional examinations, extending and maintaining the licence awarded by certain professional chambers such as the Slovene Chamber of Engineers or the Slovene Chamber of Pharmacy for example. It is also present in large companies and corporations, such as in the automotive industry for example, this however is much more open to international arrangement. This field is also an important potential user of VQTS.

The VQTS matrix would be helpful in developing competency standards which have clear graduation of learning outcomes and mostly cross VET and higher education boundaries. As a tool for strengthening partnerships between providers of both sectors it could help to ease the recognition of achieved credits.

7.1.3 The main obstacles regarding permeability between VET and HE

Universities and faculties are autonomous in designing academic standards and criteria of assessment: these standards highly impact occupational and professional prestige and serve as a mechanism for occupational monopolisation and regulation (Pavlin, 2007). Politicians and HE institutions proclaim that the recognition of VET education and prior working experiences can diminish the status and quality of their institutions: VET schools are particularly exposed in this context. However, diminishing interest in technical studies (Svetlik, 2004) (professional and higher VET), the certification of immigrants' diplomas and the deficit in technical occupations, are all stipulating and establishing the NQF together with the new legislation, Article 6 of the Higher Education Act puts the above mentioned view to a whole new concept and opens new possibilities.

About 15% of yearly cohorts enrol into higher vocational programmes and 37% into higher professional programmes. In most cases, graduates of higher vocational education programmes are allowed to enter a professional higher educational programme (previous non-university type) in the second year or study or are not required to fulfil some exams. It would be worth exploring the transition from higher VET to higher professional education in more detail, because in the last year partnerships between VET colleges and universities have developed, which favours the recognition of credits.

To sum up, with regard to permeability in the Slovenian qualification system, two main challenges can be observed: permeability between higher VET and professional higher educational programmes and between school system

qualifications and qualifications that are awarded outside the school system (chambers, NVQ) and take into account non-formal acquired knowledge and competences.

7.2 Description of the case

7.2.1 Introduction

In Slovenia, the admission procedures between VET and HE are centrally regulated. Institutions of **higher vocational education** programmes and **university/professional higher educational programmes** most often place limits on enrolment after enrolling the number of placements that are financed by the government. However, formal criteria for students' enrolment are set up by the government and these rules are quite rigorous. One of the formal and legislative system's solutions that seem at first sight to be more flexible in this regard is open access to tertiary education for holders of the master craftsman examination. This certification mechanism that is run by the Chamber of Crafts is a good example of the accreditation of prior learning experience and is formulated mostly for adults and has run from 1997 onwards.

However, this mechanism contains a disturbing element, the cause of which is that rarely any holders of a master craftsman certificate continue education at the tertiary level: adults are asked to return to secondary school (at the examination period) and pass Slovene language and mathematics/foreign language at the level required for the vocational matura. The very same situation is in the case of managerial and foreman examinations at the Chamber of Commerce and Industry. Both institutions set in this respect a precedence of how to limit the permeability between work experiences in VET and HE.[29]

Argumentation in this report is built on the case from the field of electronics: we intend to study the transition from the master craftsman of electronics (certificate of Chamber of Crafts) to a four year program (Dipl. Ing.) in Electrical Engineering and a 5 year program (University Dipl. Ing.) of Electrical Engineering' (both obtained at the Faculty of Electrical Engineering at the University of Ljubljana). In the continuation we plan to describe the broader vocational domain of electronics as it appears in the world of work in Slovenia. The following sections contain detailed descriptions of the structure of educational programmes related to electronics in Slovenia, the context and a description of the master craftsman examination at the Chamber of Craft of Slovenia and HE programmes related to this field at the University of Ljubljana. We continue the study by discussing the permeability between both educational entities. In the conclusion we provide answers of how to use the VQTS model in this context.

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29 VQTS competence matrix could in this way present a useful tool by which HE institutions could: a) ensure higher permeability from VET system for adults, by defying clear competency standards and graduation of competences, and b) provide a rationale for policymakers to ease the access for adults to HE.

7.2.2 A broader description of industry in the domain of electronics[30]

The broader educational, vocational and branch backgrounds, which are discussed in this case study, extend to the fields of mechanical engineering, electrical engineering, electronics and telecommunications. The abovementioned fields are closely connected, especially in the sphere of education, which was recently demonstrated with the formalization of the educational programme in mechatronics. From the described cases, we will limit the discussion to the field of the electronics industry, around which the formal education system gravitates (Electronics, Electrical Technician, Dipl. Ing. of Electrical Engineering and University Dipl. Ing. of Electrical Engineering with the possibility of upgrading to the M.Sc. and Ph.D. levels).

The electronics industry has a long tradition and is oriented towards production. Numerous companies in Slovenia are technologically at the top on the world scale and are competitive enough to establish companies abroad. Established brands in this field includes Gorenje for example, which is a producer of domestic appliances. Many companies are also specialised in the delivery of products or constituent elements, which are used en masse, for example in the car industry and in the production of domestic appliances (different kinds of electronic motors, condensers etc.).

With Slovenian membership in European Union, some procedures of international co-operation have strengthened or developed anew. These are called technological partnerships. This means for example that manufacturers of intermediate components in Slovenia are not only producers of inbuilt elements built in foreign plants, but are in the framework of new products able to offer their own developmental solutions: this is important for strengthening the role of knowledge in branches and the expectations of companies towards the newly employed, which are emerging from the educational system. This is very important for the existence of companies and work positions since companies, which besides manufacturing their own products also technologically develop their own, need not worry that the company would be ruined by cheaper production in other states.

In Slovenia, the educational programmes offered to young people in the field of the electronics industry, offer numerous interdisciplinary knowledge and broad possibilities in vocational directions. Nowadays all of these fields are connected with information technology, the field of developing new materials and with environmental protection. The next chapter is devoted to a review of formal educational programmes.

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30 Base on Pavlin et al. (2006): Vodnik po poklicih, višjih šolah in fakultetah. Ljubljana: Delo.

7.2.3 Electrical engineering and electronics in formal educational programmes

Official secondary-education programmes in the field of electrical engineering in the secondary education system, which are meant for young people, were modernised and the last generation educated under the old programmes graduated in 2006. VET students who are enrolling in the modernised programmes from 2004 can acquire a different type of education. VET programmes are modularised and competence-based. In short-term vocational education, students can acquire the educational title of Assembler of Electrical Devices and Electrician's Assistant. The duration of the education programmes is between 1 and a half years or 2 and a half years.

Students can also enrol in 3-year educational programmes and acquire the educational title Electronic-Electrician (3 years). The education, gained in the 3-year vocational education program, makes it possible for the students to upgrade their knowledge and competences in vocational-technical upper secondary education, where they can, after 2 additional years of education and the successful completion of the vocational leaving examination, acquire the educational title Technician of Electrical Electronics.

Secondary technical schools are also implementing the educational programme Technician of Electrical Electronics (4 years). Students end this programme with a vocational leaving examination and upon the educational programmes successful completion, they can seek employment or enrol onto professionally-oriented (1st Cycle professional) higher education courses, or higher vocational education courses (short Cycle non-degree). If students pass an additional exam in one of the general leaving examination subjects they may also enrol into academic higher education (1st Cycle academic) courses that support this option.

Students can acquire some knowledge from the field of electrical engineering also in technical *gimnanzija* (general upper-secondary school, 4 years), where students are thoroughly prepared for continuing their education. Students complete technical *gimnanzija* with a general leaving examination, which allows them to enrol into any type of tertiary education courses; therefore, it is not necessary for them to continue education at the faculty in the field of electrical engineering.

In 2007, higher vocational programmes in the field of electrical engineering were implemented in four educational institutions. Programmes from this professional domain are electrical engineering, electro-energetics and mechatronics, and also the more remote programme informatics. The duration of full-time study is 2 years; the duration of part-time study and long distance study are adapted and last 2 and a half years. The educational titles acquired are: Electrical Engineer or Technologist.

Higher education programmes in the field of electrical engineering are implemented in two higher education institutions: the University of Ljubljana, at the Faculty of Electrical Engineering, and the University of Maribor, at the Faculties of Electrical Engineering and Computer Sciences and Informatics. At

the University of Ljubljana, students can choose from the following programmes of university study in electrical engineering: automatics, electronics, power engineering and telecommunications; on professional graduate study: automatics, electronics, power engineering, telecommunications and quality engineering. At the university in Maribor, the programme is slightly more branched. The university study programmes implemented here include: electrical engineering (with the sub-branches automatics, electronics and power engineering and mechatronics), telecommunications, industrial engineering (electrical engineering with the sub-branches of automatics, electronics and power engineering) and media communication (with the sub-branches radio television production and interactive graphical communications). Students can also enrol on a professional graduate study programme of electrical engineering, where they can choose from automatics, electronics, power engineering and telecommunications.

7.2.4 Master craftsman certificates at the Chamber of Craft of Slovenia[31]

The Chamber of Craft and Small Businesses of Slovenia (formerly the Chamber of Craft of Slovenia) has over 150 years of tradition and is active in its present form for 35 years. Its core mission is providing business services, information and representation of its members, and within this domain, conducting master craftsman examinations and certification is an important activity. The Vocational Education and Training Act of 2006 lists the master craftsman examination among nationally recognised examinations within the education system leading to a qualification at the level of technical education.

The examination consists of four parts: a practical exam, with a professional and theoretical part, a managerial and economic and pedagogic parts. Each part is assessed in front of an examination board (the results are evaluated by 3 different examination boards: examination board for I. practical part, II. professional-theoretical part, III. examination board for managerial part and examination board for part IV. pedagogic-andragogical part. By considering an applicant's 3- or 1-year of work experience (depending on the finished educational programme) in the appropriate work field, and his/her passed master craftsman examination, an applicant successfully reaches the level of technical education qualification. Following the fulfilment of additional conditions – which are at the moment for most certificate holders hard to reach and are going to be further discussed in the continuation – it is possible to continue one's education at vocational colleges or in first cycle professional programmes.

However, attaining secondary technical education level is not the only gain of a certificate holder. By passing the master craftsman exam, the candidate gains (OZS, 2006): qualification (educational) conditions in order to perform the craft activity listed in enclosure A for full craft and a certified condition for educating

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31 Accomodated by Pavlin, S., Svetlik, I. (2007): Description of technical arrangements (of recognition of non-formal and informal learning). In Recognition of non-formal and informal learning : OECD activity 2006-2007 : country background report Slovenia / [translation Romana Mlačak, NatalijaVrečar].

and training apprentices. With the master craftsman exam, a person is qualified to transfer his/her practical and professional knowledge to apprentices and co-workers, and master craftsman have the right to be the responsible head of construction work in which he/she has earned the master craftsman title. A person, who has passed the master craftsman exam, earns the title 'Master craftsman' which is an honorary title in countries with a developed craft. The Small Business Act defines that only a person, who has passed the master craftsman exam in a certain field of craft, can use this title.

Currently the Chamber of Craft and Small Businesses of Slovenia certificates 48 master craftsman titles out of which the following five relate to the field of electronics[32]:
- master craftsman of electronics (62)
- master craftsman of general electro-mechanics (52)
- master craftsman of machine installations (91)
- master craftsman for electrical installations (129)
- master craftsman of telecommunications (9)

In the opinion of the management of the Faculty of Electrical Engineering at the University of Ljubljana, all five certificate procedures present appropriate origins to enter the University programme, however, the most appropriate is **the certificate of master craftsman of electronics.**

The most relevant question here is how to up-grade and integrate general competences into the master-craftsmen examination, because key competences in communication, the mother tongue, foreign languages or basic mathematics are becoming increasingly important at that qualification level. The second question is how to validate non-formal acquired general knowledge in a more user friendly way which would better suits adults.

7.2.5 Study programmes at the Faculty of Electrical Engineering (University of Ljubljana)[33]

The University of Ljubljana ranks as a very large university, with more than 63,000 graduate and postgraduate students approximately 4,000 higher education teachers are employed in 22 faculties, 3 arts academies and one university college. More than one half of the study programmes in the 2007/2008 academic year are offered in accordance with the Bologna Declaration. The Faculty of Electrical Engineering (FE) is an academic unit within the University with a rich tradition dating back to 1919 as a Technical Faculty with an electrical-engineering department. In the year 1996 FER was divided in two faculties: <u>Faculty of Electrical Engineering (FE)</u> and <u>Faculty of Computer and Information Science</u>

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[32] In the brackets are the numbers of certificate holders up to the year 2008. See OZS (2008).

[33] Prepared on the basis of FE (2008−): Faculty of Electrical Engineering, University of Ljubljana. Web page. Internet: http://www.fe.uni-lj.si

(FRI). Since then the two faculties have continued to cooperate. The FE and FRI share classrooms and lecture theatres, the library and the publishing department.

At present, the faculty has almost 1,900 students and employs around 300 professors, assistants, researchers and administrative support staff. Up to now more than 8,000 students have graduated at various levels of electrical engineering studies (Ing., Dipl. Ing., Mag. and Dr.). Apart from master and doctoral studies, the Faculty of Electrical Engineering offers two undergraduate educational programmes (FER, 2008):

A four year programme - VSP (six semesters of lectures, 6 months of practice, 3 months of Diploma thesis work), which leads to the degree 'Dipl. Ing. of Electrical Engineering'. The composition of the four year study programme is presented in the table 7.3.

Table 7.2: *Breakdown of a four year higher professional program*

1st year	General				
2nd year	Automatics	Electronics	Power Engineering	Tele-communications	Quality Engineering
3rd year	Automatics	Electronics	Power Engineering	Tele-communications	Quality Engineering
4th year	Practice				
	Thesis				

Source: FE (2008−).

A five year 'university programme': UNI (nine semesters of lectures, 6 months of Diploma thesis work), which leads to the degree 'University Dipl. Ing. of Electrical Engineering'

Table 7.3:   Breakdown of a five year university programme

1st year	Common Curriculum							
2nd year	Common Curriculum							
3rd year	Automatics			Electronics	Power Engineering			Telecommunications
					EE	ST	KT	
4th year	Automatics			Electronics	Power Engineering			Telecommunications
	PA&IS	RO	CM		PS	ST	CT	
5th year	PA&IS	RO	CM	Electronics	PS	ST	CT	Telecommunications
	PA / IS							
	Diploma Thesis							

PA - Process Automation		PS - Power Systems
IS - Intelligent Systems		ST - System Technology
RO - Robotics		CT - Construction Technology
CM - Cybernetics in Medicine		

The four year programme is more application oriented, while the five year programme offers more extensive and in depth theoretical knowledge and is in this respect more difficult to complete. Graduates of the five year programme can continue with MSc. or PhD. study, while graduates of the four year programme can continue with specialisation study (FE, 2008): both undergraduate programmes have a general core-curriculum which consists of mathematics, physics, fundamentals of electrical engineering and computer engineering. After the first year of the four year programme, and after the second year on the five year 'university' programme, students must choose one of the available fields of study.

7.3 A path to higher education from electrical engineering at the University of Ljubljana using a master craftsman of electronics certificate

Conditions for **applying for a master craftsman** examination of electronics are the same as for any other master craftsman examination. To repeat, the application is open to every individual who (OZS, 2008−):

____ finished vocational school (of any field) and has at least three years of experience in the field where he/she wants to enter the master craftsman exam, or;

____ has finished technical secondary school (of any field) and has at least two years of experience in the field where he/she wants to access the master craftsman exam, or;

____ has at least a higher professional education and at least one year of experience in the field where he/she wants access to the master craftsman exam.

Assessment catalogues define expected learning outcomes for all four parts, assessment criteria and minimal standards for acquiring the master craftsman qualification.

The examination procedure is the following. The Chamber of Crafts publishes a public tender for taking master craftsman examinations each year. Applicants are expected to submit an application: upon application they receive learning material, and they may also wish to attend preparatory seminars. As indicated in the previous chapter, the examination is composed of 4 parts (Pavlin, Svetlik, 2007): the practical part includes a working test which is performed in school workshops and lasts up to 8 hours, as well as the master craftsman examination which is taken at the applicant's operation facility and lasts up to 100 hours. Professional and theoretical, and the managerial and pedagogic part are composed of written examination units. Master craftsman examination work ends with a competition of a product or a service and its duration depends on the certificate specifics. Other features of master craftsman exam include the following (OZS, 2008):

____ Each part of master craftsman exam can be performed on the basis of a free time schedule and in different examination schedules.

____ Every candidate has the right to attend each part of the exam three times.

____ The candidate has to finish all examination demands within three years from the day of application.

____ The annex to the application form must be a copy which confirms the payment of a part of master craftsman exam.

____ 7 days before the exam, the candidate can cancel his/her participation in exam. This must be done in written form.

____ Concerning the success of each exam, the candidate is informed in written form with the conclusion of the committee within at least 15 days after the exam.

Official entry requirements to the HE programme at the Faculty of Electronics at the University of Ljubljana are difficult to pass for the holders of craftsman of

electronics certificate quite. The examination procedure doesn't take into account non-formal acquired general competences and the examination procedure and examination tools are not made 'fit for purpose'.

The applicants already find the examination procedure stressful as they come from the work environment, and then examiners at the national level might state that their competence is not adequate (Pavlin, Svetlik, 2007). Therefore, for the vast majority of these adults it is almost impossible to imagine that they will return to formal secondary school at the examination period and complete Slovene language and mathematics/foreign language at the level required for the vocational matura in the same way as youth in the formal education system.

Data and experiences from the Chamber of Crafts and the Chamber of Commerce reveal that most applicants are in the age group from 35 to 50, and have on average 10 years of work experience. These individuals encounter greater difficulties in written or oral forms of knowledge examinations when returning to school after more than 10 years, and are consequently less successful in technical and theoretical content. They are less skilful in taking written and oral examinations in comparison with students who are still in the process of education. In accordance with experiences from the Chamber of Industry and Commerce:

> *'These applicants experience difficulties in reading the task and understanding the written content of the problem, as well as in expression which the commission duly considers in its deliberations. This phenomenon has been especially observed with the applicants from other republics of the former Yugoslavia. They require more time to resolve problems and formulate the answers. It came as a surprise that they do not make use of prohibited resources and instruments when taking written examinations, there were also no visible signs of copying and cooperation between applicants. In a nutshell, they are extremely disciplined and every applicant takes the test completely independent (Quoted interview of Žemva, Š., independent consultant at the Chamber of Commerce and Industry of Slovenia).' (Pavlin, Svetlik, 2007: 65)*

7.3.1 Proposed solutions to increase permeability

In this section we aim to open the question of how to increase the permeability of the Chamber of Crafts Certificate holders to the University of Ljubljana. The discussion is primarily built upon the master craftsman of electronics and the four and five year programmes at the Faculty of Electrical Engineering at the University of Ljubljana, but key messages are significantly relevant also for the transition of all systems in the domain of recognising prior learning (equivalent to secondary school level) to higher education. Firstly, we present the view of the Chamber of Commerce and then the view of the management at the Faculty of Electronics.

The Chamber of Crafts is highly interested in increasing permeability between the certificate holders and higher education[34]. They admit that currently only individual cases exist in which certificate holders decided to complete the Slovene language and mathematics/foreign language matura examination and enter the higher vocational programme, but there is not a single case so far by which the certificate holder would enter any of the programmes at the university. In their opinion, interest in their student population does exist, however the adults who posses these certificates are reluctant to apply for two matura examination as the stress and attitudes to formal learning are too great (see previous chapter).

This is the reason why they propose two solutions. In the first, the possibility would be to omit formal examination requirements entirely and each certificate holder would have the direct possibility to enter higher education programmes. The programme would itself exclude those who do not have the proper linguistic and mathematical skills. In the second solution, the examination procedure should be adjusted to certificate holders (adults). This examination procedure would be conducted in a more user-friendly manner and would include interviews, portfolio recognition, seminars, projects etc. rather than oral or written examinations. The examination procedure could be run by the Chamber of Commerce in collaboration with secondary schools and universities or the National Examination Centre.

The view of the management of the Faculty of Electronics[35] is no different. They too are interested in enrolling certificate holders and highly respect their practical experiences, seeing them as very useful in the curriculum. In the past they have already run the special programme for adults (study in addition to work) and have experienced a very high level of motivation of the attendees. However, the way the school curriculum was conducted had to differ from regular study and needed to be more practically oriented – only 4-year programmes would match this category in their complexity. Their opinion is that people who had worked in a field for a long time do not need to return to secondary school in order to pass the linguistic and mathematical matura examination.

This is the reason why they would be very interested in organising the special curriculum and syllabus for the broader group of master craftsman certificate holders related to the field of electronics, such as a master craftsman of general electro-mechanics, master craftsman of machine installations, master craftsman for electrical installations and master craftsman of telecommunications, but they see the master craftsman of electronics as the most compatible certificate.

Within the developing NQF, which is aimed at supporting lifelong learning, access, permeability and recognition of non-formal learning, this case will be closely examined and studied and a solution based on the outcomes of this project will be prepared and presented to policymakers.

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[34] Source: Pavlin, S. (2008a): Interview at the Chamber of Crafs with Mrs. Nataša Štirn and Janja Meglič (29.5.2008).
[35] Source: Pavlin, S. (2008b): Interview at the Faculty of Electrical Engineering, University of Ljubljana with vice dean prof. dr. Andrej Žemva. (30.5.2008).

7.4 Conclusion: Contributions to the VQTS model

When discussing the issue of accreditation of prior learning and the permeability between VET and HE, one should bear in mind an important message from the theory of sociology of professions. Its functional paradigm claims that the work of certain occupations or professions is so demanding that it urgently needs to be backed up by HE programmes. Research (Cedefop prognosis on medium term skill needs) also shows that the demand on different types of higher qualifications will increase due to transition to the knowledge-based and market economy. Following this way of thinking, the VQTS project may have an important contribution ensuring the permeability among VET and HE, building on clear competency standards.

However, its critical theoretical paradigm claims that the education system above all ensures stratificational selection, or as the mechanism for ensuring a monopoly which is what certificate theory discusses in particular. The theory claims that the education system mostly functions as an inspection over access to the career market and as a generator of the consolidation of social bonds. This means that the selected education systems do not originate in society's desire to resolve a specific service, but in the desire of the occupational group involved.

With the VQTS project in Slovenia we could addresses two main challenges outlined above. They are the drivers that are behind the establishment of the National Qualifications Framework. To name a few, these include the following (Pavlin, Svetlik, 2008):
- harmonization with policies and economic guidelines of the EU. Slovenia is confronting Community pressure to reform educational policies;
- a need to quickly respond and adapt to employees in the labour market;
- the possibility to certificate new knowledge and competences which have not yet been incorporated into formal educational programmes;
- the possibility of quickly obtaining formal qualifications necessary for employment;
- the possibility for the certification of adults' knowledge who have already left the education system and require an increasingly individual approach;
- the integration of the education and certification system offering a possibility for adults to return to the education system by way of horizontal and vertical upgrading;
- a relatively low rate of population completing post-secondary vocational and higher education programmes;
- the involvement of employers in examination and awarding procedures;
- an increased employability, self-employment and employment abroad;
- the possibility for knowledge certification for individuals with low employability.

In this respect, research projects such as VQTS for example, provide a functional rationale for ensuring permeability between HE and VET. In this way the VQTS model and competence matrix can be used as a valuable tool to develop competency standard as a reference point for the validation of non-formal learning

and promoting access to higher education, adjusting curricula and strengthening the partnership between VET and higher education institutions.

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8 Conclusions

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8.1 Aspects to be considered when adjusting VET and HE

One basic aspect important for adjusting VET and HE is their legal status. Relevant legal regulations can be considered as fundamental issues for cooperation between VET and HE providers or, in many cases, for the HE accreditation of VET learning outcomes. Some countries have relevant laws; for example, the Austrian FH Study Act or the Czech new Education Act No 561/2004 Coll.

Apart from this legal aspect, the institutions themselves must be involved. VET and HE providers must show their commitment to enhance permeability and recognize the importance of such initiatives. The basic attitude necessary is supporting, instead of selecting, students. The directors of VET and HE institutions must inspire all actors involved (lecturers, students) to ensure that relevant initiatives continue.

Trusting students' abilities and advising students on the appropriate educational track are crucial factors in enhancing permeability between VET and HE.

Pilot projects can help to build experiences, to promote dialogue between institutions, and to develop mutual trust. These experiences can be exchanged with other VET or HE institutions so that they can learn from each other. Such projects can include cooperation activities between VET and HE institutions. Examples could be training on both sides as in the 'dual studies' in Germany or the 'Golden Gate' project in the Netherlands, VET teachers who are also lecturers in HE institutions such as in the Austrian case or institutional partnerships such as in Slovenia.

Finally, tools to support the adjusting of VET and HE can be developed, tested and disseminated. The VQTS model offers such tools with the competence matrix and the competence profiles. The relevance of the VQTS model in enhancing permeability between VET and HE is described in the last section.

8.2 How can the VQTS model be used in this context?

The VQTS model can be used as a tool to enhance transparency and thus help develop trust in the accreditation process. With the VQTS tools, curricula can be 'translated' and compared, and one can identify equivalences and differences of learning outcomes. Recognising prior learning from formal, non-formal and informal learning can also be enhanced with the VQTS tools.

Establishing and strengthening partnerships between VET and HE providers can be supported with the VQTS tools – they can be the starting point for developing competency standards, adjusting curricula, and developing learning paths for students progressing from VET to HE.

Different opportunities can be identified for key stakeholders:

For **policymakers**, the VQTS model provides a rationale to ease HE access for persons with relevant skills.

Learners can, with the competence profile for individuals, show their competences and their level of qualification. They can also receive credits in HE for learning outcomes acquired outside HE or even for learning outside educational institutions.

VET providers can show the capabilities of their graduates or their institution and the level of qualification obtained with the competence profile for institutions. This information helps potential students, potential employers and HE providers. VET providers can also compare competence profiles and adjust training programmes; for example, to provide relevant learning outcomes required for HE admission or to reduce the length of HE studies.

HE providers can better understand VET students' competence profiles. The VQTS model helps them to compare competence profiles, to adjust training programmes or to decide on credits for learning outcomes obtained outside HE.