



Education and Culture

Leonardo da Vinci



INNOMET II - Integrated human resources development and monitoring system for adding innovation capacity of labour force and entrepreneurs of the metal engineering, machinery and apparatus sector

Comparative Report

Competence Evaluation Methodologies

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Preface

Workers who wish to move within the EU should be able to present the qualifications they have gained in the educational field and professional experience to potential employers in another UE country without encountering problems. It is very difficult to compare education from one country to another, a diversity of approaches and practices exist at European, national, regional and even local level.

European countries have been recommended to improve the transparency of professional qualifications, recognition of vocational qualifications and competences and to improve the quality of teaching and vocational training.

Recent years have seen work done on various 'transparent' documents over recent years: European Qualifications framework; Credits transfer system for VET; The European Credit Transfer and Accumulation System; Europass for Qualifications transparency and competences.

Employers too should have access to clear descriptions of qualifications and professional experiences. The introduction of 'competence' is seen as a possible common language which allows various sub systems to dialogue (education, training and work) between countries too.

Competence management is defined as an important factor for reaching the Eu aim of **'becoming the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion'**.

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1. INTRODUCTION

Have Southern European countries responded to European recommendations? Have they all adopted the competence model?

Our report will show that France was already adopting this model before the EU recommendations, in fact the French system probably inspired EU levels.

Italy and Spain are aligning to EU indications.

This report contains details about the competence model concerning the CAD/CAM area in France Spain and Italy, particularly in Region Piemonte.

We have also included materials about England as they result to be one of the most ambitious EU countries in the area of frameworks.

2. European Policies and Strategies concerning Education and Training

The discussion about competence in Europe began in 1989, facing the problem of certification of competences with an aim to favour mobility of workers and students.

THE LISBON STRATEGY 2000

Over the past few years, the debate on certification and recognition of qualifications gained in each country has been increasing. The objective of the European reforms aim at reorganizing the offer of training and making knowledge and gained experience transparent.

In **1992**, a resolution of the Council of the European Union introduced the strategy of transparency of qualifications as a means to favour free circulation of working citizens. The document proposed to give the opportunity, to those who wish, to present the qualifications gained in the educational field and professional experience to potential employers in the UE countries, and to favour the access of employers to clear descriptions of qualifications and professional experiences.

The European Forum for the transparency of professional qualifications, made up of representatives of Cedefop, of social parts and members of the European Commission, was set up in **1998** from the need to favour mobility of citizens and to make concrete proposals about actions.

With the **European Council of Lisbon 2000** the strategic aim for Europe was defined: "**The Union must become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion**". Here began a long job of cooperation between the countries of the European Union to reach the objective

In **2002** the Education Council and the Commission endorsed a 10-year work programme to be implemented through the open method of coordination: "**Education & Training 2010 work programme**" (see below), stating that by 2010, Europe should be the world leader in terms of the quality of its education and training systems.

Making this happen will mean a fundamental transformation of education and training throughout Europe. This process of change will be carried out in each country according to national contexts and traditions and will be driven forward by cooperation between Member States at European level, through the sharing of experiences, working towards common goals and learning from what works best elsewhere (the "open method of coordination")

Certification appears to have become the key to opening horizons of the labour market to a wider range of citizens; besides certification of training courses, also competences gained in a formal non-formal learning context are recognised and concur in the valorisation of the individual's professional experience. Moreover, the frequency of expressions such as 'spendability' and 'transparency' demonstrate that common principles in the reform of the educational field in European countries exist.

THE "EDUCATION & TRAINING 2010 WORK PROGRAMME"

The Education and Training 2010 work programme is aimed at modernising and adapting education and training systems in view of the challenges of the knowledge-based society, globalisation and demographic changes. It is based on the strategic goals and concrete objectives

of education and training systems in Europe, agreed by the Education Council in 2001, and also integrates the follow-up to the 2002 Council resolution on lifelong learning, which stressed the need for all Member States to develop coherent and comprehensive strategies for lifelong learning. Education and Training 2010 also integrates specific actions for vocational education and training (the “Copenhagen process”) and higher education (including the results of the “Bologna process”), as well as the follow-up of the 2001 recommendation of the European Parliament and of the Council on mobility.

The first progress report – the “Joint Interim Report” of the Council and the Commission, adopted in February 2004, identified the main challenges facing Member States in this field. This report stressed the urgency of reforming Europe’s education and training systems in order to ensure the success of the Lisbon strategy, noting that too little progress was being made against the commonly agreed objectives and benchmarks, despite the efforts being made by Member States, and the different starting positions. Overall, the EU does not invest sufficiently in its main asset: its human resources. The 2004 report identified the three “levers for success” as being:

- focus reforms and investments on the key areas;
- put in place lifelong learning strategies in all Member States by 2006;
- further develop the Europe of education and training, including the European Qualifications Framework (EQF), and other common references such as the Key Competences Framework.

The Joint Interim Report also established a biennial reporting process, based on contributions from the participating countries, and a Joint Report from the Council and the Commission, in order to monitor progress on implementing E&T 2010.

THE BOLOGNA & COPENHAGEN PROCESSES 2002

The **Copenhagen process** was initiated in November 2002 at a meeting in the Danish capital to agree a Declaration on enhanced European cooperation in vocational education and training (VET). This declaration responded to a request from the Barcelona European Council in March 2002 to take action in the field of vocational training, similar to that taken under the Bologna declaration in higher education. The declaration followed a resolution of the Education Council (November 2002) on the same subject, which gives it its legal basis. The purpose of the declaration was to commit the European Economic Area countries not members of the Union, the then accession and candidate countries and the European Social Partners, along with the EU Member States (31 countries in all) and the European Commission, to the priorities and follow-up of the resolution.

The Copenhagen process is an integrated part of the Lisbon strategy in which VET must be developed to play its active and key role in furthering lifelong learning policies and supplying the highly skilled workforce necessary to make Europe one of the most competitive and dynamic knowledge-based economies and societies in the world. The development of a true European labour market – an essential complement to the single market for goods and services, and the single currency – relies heavily on having a skilled, adaptable and mobile workforce able to use its qualifications and competences as a kind of ‘common currency’ throughout Europe. In this respect, the main aims of the Copenhagen process are the development of lifelong learning and the promotion of mutual trust between the key players.

The Copenhagen process is an accelerated measure to improve the quality and attractiveness of VET, which is lagging behind other fields of education, and to raise the parity of esteem between them.

The Main objectives set by the Copenhagen declaration are:

- Single framework for transparency of qualifications and competences;
- Cooperation in quality assurance in VET;
- Credit transfer system for VET - a system that enables individuals to progressively obtain credit points based on the competences they acquire along their vocational learning route, in both formal and informal settings. Common principles for validation of non-formal and informal learning;
- Strengthening policies, systems and practices for lifelong guidance;
- Support to the development of qualifications and competences at sector level;
- Attention to the learning needs of teachers and trainers;

The **Bologna process** in higher education is an inter-governmental process, which also contributes to the achievement of the Lisbon strategy. While Bologna is mainly an agenda for structural reforms (in the architecture of degrees, their internal organisation in credits and outcome-based units and their transparency), Education and Training 2010 mainly concerns higher education policy (in particular funding, governance and attractiveness).

The Bologna Process is an attempt of the European Ministers responsible for Higher Education to bring some order in the large variety of degrees, to make European Higher Education more compatible and comparable, more competitive and more attractive for European students and also for students and scholars from other continents. Every second year the ministers meet to measure progress and set priorities. After Bologna (1999), they met in Prague (2001) and Berlin (2003). After Bergen (2005) they will meet again in London (2007).

3. The development of the European Qualifications Framework: working for Transparency

One of the major obstacles for people wanting to work or learn in another EU country, or indeed to move between different parts of the labour market, is that their qualifications and competences may not be accepted. This is further complicated by the proliferation of qualifications world-wide, the diversity of national qualification systems and education and training structures, and constant changes in these systems. To tackle these obstacles, the EU has introduced several instruments, aiming at facilitating the transfer of qualifications and competences for academic or professional purposes.

Commissioner Jan Figel' launched the Commission's consultation on the European Qualifications Framework (EQF) at the informal meeting of European education ministers in London on 12 July. The objective of the planned EQF is to create a European framework which will enable qualifications systems at the national and sectoral levels to relate to each other. This reference structure will be used on a voluntary basis and will facilitate the transfer and recognition of qualifications held by individual citizens.

The Commission is consulting the 32 countries participating in the Education and Training 2010 work programme, the European Social Partners, the relevant European associations, NGOs and networks, and the European industry sector associations e.g. ICT, construction, marketing etc. Their responses will be taken into account in establishing the final content and structure of the EQF, prior to a formal proposal in 2006. As part of the consultation, the UK Presidency, in co-operation with the Commission, hosted a conference on qualifications frameworks in Glasgow on 22-23 September.

The consultation closed at the end of December 2005. The Commission and the Hungarian Ministry of Education co-hosted a conference in Budapest on 27-28 February 2006. The conference presented an analysis of stakeholder responses to the consultation and generates discussions which will inform the Recommendation on the EQF. Comments made were that it is necessary to improve levels descriptors and better reflect reality of working life.

The core of the EQF is a set of common reference points – referring to learning outcomes-located in a hierarchy of 8 levels. These reference levels have primarily been designed and written to support the work of policy makers, stakeholders and expert bodies in Member States:

The eight reference levels of the European Qualification Framework defined by learning outcomes

Level	Knowledge	Skills	Personal and professional competence			
			<i>(i) Autonomy and responsibility</i>	<i>(ii) Learning competence</i>	<i>(iii) Communication and social competence</i>	<i>(iv) Professional and vocational competence</i>
1	Recall basic general knowledge	Use basic skills to carry out simple tasks	Complete work or study tasks under direct supervision and demonstrate personal effectiveness in simple and stable contexts	Accept guidance on learning	Respond to simple written and oral communication Demonstrate social role for self	Demonstrate awareness of procedures for solving problems
2	Recall and comprehend knowledge of a field, the range of knowledge involved is limited to facts and main ideas	Use skills and key competences to carry out tasks where action is governed by rules defining routines and strategies Select and apply basic methods, tools and materials	Take limited responsibility for improvement in performance in work or study in simple and stable contexts and within familiar, homogeneous groups	Seek guidance on learning	Respond to simple but detailed written and oral communication Adjust role to different social settings	Solve problems using information provided
3	Apply knowledge of a field that includes processes, techniques, materials, instruments, equipment, terminology and some theoretical ideas	Use a range of field-specific skills to carry out tasks and show personal interpretation through selection and adjustment of methods, tools and materials Evaluate different approaches to tasks	Take responsibility for completion of tasks and demonstrate some independence in role in work or study where contexts are generally stable but where some factors change	Take responsibility for own learning	Produce (and respond to) detailed written and oral communication Take responsibility for self understanding and behaviour	Solve problems using well known information sources taking account of some social issues
4	Use a wide range of field-specific practical and theoretical knowledge	Develop strategic approaches to tasks that arise in work or study by applying specialist knowledge and using expert sources of information Evaluate outcomes in terms of strategic approach used	Manage role under guidance in work or study contexts that are usually predictable and where there are many factors involved that cause change and where some factors are interrelated Make suggestions for improvement to outcomes Supervise routine work of others and take some responsibility for training of others	Demonstrate self-direction in learning	Demonstrate self-direction in learning Produce (and respond to) detailed written and oral communication in unfamiliar situations Use self understanding to change behaviour	integrating information from expert sources taking account of relevant social and ethical issues

5	<p>Use broad theoretical and practical knowledge that is often specialised within a field and show awareness of limits to knowledge base</p>	<p>Develop strategic and creative responses in researching solutions to well defined concrete and abstract problems Demonstrate transfer of theoretical and practical knowledge in creating solutions to problems</p>	<p>Manage projects independently that require problem solving where there are many factors some of which interact and lead to unpredictable change Show creativity in developing projects Manage people and review performance of self and others. Train others and develop team performance</p>	<p>Evaluate own learning and identify learning needs necessary to undertake further learning</p>	<p>Convey ideas in a well structured and coherent way to peers, supervisors and clients using qualitative and quantitative information Express a comprehensive internalised personal world view reflecting engagement with others</p>	<p>Formulate responses to abstract and concrete problems Demonstrate experience of operational interaction within a field Make judgements based on knowledge of relevant social and ethical issues</p>
6	<p>Use detailed theoretical and Practical knowledge of a field. Some knowledge is at the forefront of the field and will involve a critical understanding of theories and principles</p>	<p>Demonstrate mastery of methods and tools in a complex and specialised field and demonstrate Innovation in terms of methods used Devise and sustain arguments to solve problems</p>	<p>Demonstrate administrative design, resource and team management responsibilities in work and study contexts that are unpredictable and require that complex problems are solved where there are many interacting factors Show creativity in developing projects and show initiative in management processes that includes the training of others to develop team performance</p>	<p>Consistently evaluate own learning and identify learning needs</p>	<p>Communicate, ideas, problems and solutions to both specialist and non-specialist audiences using a range of techniques involving qualitative and quantitative information Express a comprehensive internalised personal world view manifesting solidarity with others</p>	<p>Gather and interpret relevant data in a field to solve problems Demonstrate experience of operational interaction within a complex environment Make judgements based on social and ethical issues that arise in work or study</p>
7	<p>Use highly specialised theoretical and practical knowledge some of which is at the forefront of knowledge in the field. This knowledge forms the basis for originality in developing and/or applying ideas Demonstrate critical awareness of knowledge issues in the field and at the interface between different fields</p>	<p>Create a research based diagnosis to problems by integrating knowledge from new or inter disciplinary fields and make judgements with incomplete or limited information Develop new skills in response to emerging knowledge and techniques</p>	<p>Demonstrate leadership and innovation in work and study contexts that are unfamiliar, complex and unpredictable and that require solving problems involving many interacting factors Review strategic performance of teams</p>	<p>Demonstrate autonomy in the direction of learning and a high level understanding of learning processes</p>	<p>Communicate project outcomes, methods and underpinning rationale to specialist and non-specialist audiences using appropriate techniques Scrutinise and reflect on social norms and relationships and act to change them</p>	<p>Solve problems by integrating complex knowledge sources that are sometimes incomplete and in new and unfamiliar contexts Demonstrate experience of operational interaction in managing change within a complex environment Respond to social, scientific and ethical issues that are encountered</p>

	<p>8 Use specialised knowledge to critically analyse, evaluate and synthesise new and complex ideas that are at the most advanced frontier of a field</p> <p>Extend or redefine existing knowledge and/or professional practice within a field or at the interface between fields</p>	<p>Research, conceive, design, implement and adapt projects that lead to new knowledge and new procedural solutions</p>	<p>Demonstrate substantial leadership, innovation and autonomy in work and study contexts that are novel and require the solving of problems that involve many interacting factors</p>	<p>Demonstrate capacity for sustained commitment to development of new ideas or processes and a high level understanding of learning processes</p>	<p>Communicate with authority through engaging in critical dialogue with peers in a specialist community</p> <p>Scrutinise and reflect on social norms and relationships and lead action to change them</p>	<p>in work or study</p> <p>Critical analysis, evaluation and synthesis of new and complex ideas and strategic decision making based on these processes</p> <p>Demonstrate experience of operational interaction with strategic decision-making capacity within a complex environment</p> <p>Promote social, and ethical advancement</p>
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- These reference levels cannot stand alone and would be supported by a range of tools and instruments addressing the need of individual citizens – notably through the implementation and dissemination of an integrated European credit transfer and accumulation system for lifelong learning, the Europass and the Ploteus database on learning opportunities. Following an adoption of an EQF, individual qualifications awarded at national or sectoral level should contain a clear reference to the framework, further strengthening the direct relevance of the framework and the common reference levels to citizens.
- Finally, an EQF would consist of a set of common principles and procedures providing guidelines, developed in the framework of the Education and training 2010 work programme, for the co-operation between stakeholders at different levels – notably in quality assurance, validation, guidance and key competences.

4. Transparency of Qualifications and Competences - The ECTS System

The European Credit Transfer and Accumulation System (ECTS) is a student-centred system based on the student workload required to achieve the objectives of a programme, objectives preferably specified in terms of the learning outcomes and competences to be acquired.

ECTS was introduced in 1989, within the framework of Erasmus, now part of the Socrates programme. ECTS is the only credit system which has been successfully tested and used across Europe. ECTS was set up initially for credit transfer. The system facilitated the recognition of periods of study abroad and thus enhanced the quality and volume of student mobility in Europe. Recently ECTS is developing into an accumulation system to be implemented at institutional, regional, national and European level. This is one of the key objectives of the Bologna Declaration of June 1999.

The key features of ECTS are:

- ECTS is based on the principle that 60 credits measure the workload of a full-time student during one academic year. The student workload of a full-time study programme in Europe amounts in most cases to around 1500-1800 hours per year and in those cases one credit stands for around 25 to 30 working hours.
- Credits in ECTS can only be obtained after successful completion of the work required and appropriate assessment of the learning outcomes achieved. Learning outcomes are sets of competences, expressing what the student will know, understand or be able to do after completion of a process of learning, long or short.
- Student workload in ECTS consists of the time required to complete all planned learning activities such as attending lectures, seminars, independent and private study, preparation of projects and examinations.
- Credits are allocated to all educational components of a study programme (such as modules, courses, placements, dissertation work, etc.) and reflect the quantity of work each component requires to achieve its specific objectives or learning outcomes in relation to the total quantity of work necessary to complete a full year of study successfully.

The performance of the student is documented by a local/national grade. It is good practice to add an ECTS grade, in particular in case of credit transfer. The ECTS grading scale ranks the students on a statistical basis. Therefore, statistical data on student performance is a prerequisite for applying the ECTS grading system.

5. Europass

On 31 January - 1 February 2005, the Luxembourg Presidency of the EU together with the European Commission launched the implementation of Europass: a direct service to citizens that will help them to **make their qualifications and competences clearly understood throughout Europe**. It will therefore facilitate their mobility for both occupational and lifelong learning purposes.

Established by a decision adopted at the end of 2004 by the European Parliament and the Council¹, Europass is one of three complementary instruments supporting mobility within the European strategy “Education and Training 2010”.

Europass is the name given to a coordinated portfolio of documents, which will in particular improve the communication between job applicants and employers, regardless of borders. This will facilitate occupational mobility – between countries as well as between sectors - and will promote and add value to mobility in education and training.

Clear links should be established between the Europass documents and the reference levels of an EQF. Future developments of the Europass portfolio and its component documents should take into account the common reference levels and descriptors of the EQF and are based on learning outcomes.

There are five European transparency documents.

Two Europass instruments can be completed directly by all citizens:

- The **Europass CV**, which is the backbone of the whole portfolio. With a common structure in all languages, it helps people highlight their competences. Citizens can complete it directly through the Europass Internet portal, with the support of online help and examples.
- The **Europass Language Portfolio**, which allows a detailed description of language skills and their development, which in today’s Europe are more important than ever. A part of this document, called the Europass Language Passport, has the form of a simple template and can also be completed online through the Europass portal.

The other three Europass instruments are issued by competent organisations to citizens who have achieved a particular learning experience:

- The **Europass Mobility** is a record of experiences of transnational mobility for learning purposes – in vocational training as well as in higher education. It is completed by the home and host organisations that are involved in the mobility project.
- The **Europass Diploma Supplement** is issued along with a higher education diploma, by the same university or institution. It outlines the student’s educational pathway, making it easier to understand, in particular by potential employers.

¹ Decision 2241/2004/EC of the European Parliament and of the Council of 15 December 2004 on a single framework for the transparency of qualifications and competences (Europass), OJ L 390 of 31.12.2004.

- The **Europass Certificate Supplement** is issued along with a vocational education and training certificate, to clarify the competences acquired by the persons who hold that certificate.

Europass contributes to increasing mobility in the European Union because it makes qualifications and competences easier to understand, which is particularly helpful when people move from one country to another, for either learning or occupational purposes, or from one sector to another. As far as occupational mobility is concerned, Europass makes communication easier between employer and job applicant, as its various elements focus on the competences of the applicant and they have the same format in all languages. **Europass also promotes mobility in education and training**, giving it more value through the Europass Mobility and facilitating communication in admission procedures for people who apply for an education or training initiative.

Furthermore, recognition of qualifications is not in itself an objective of the Europass initiative. **Europass is about transparency, not about legal recognition** – it improves mutual understanding and acceptance in the many situations where legal recognition is not necessary. Europass is therefore a complement to the legislative regime for the recognition of professional qualifications, which should be applied when legal recognition is necessary. As concerns academic recognition, Europass can make it easier, because improving the transparency of qualifications facilitates the work of the authorities responsible for academic recognition.

Europass is an open framework, which in future might include further elements to provide citizens with instruments focusing on specific sets of competences, for instance in relation to information technologies or to a given sector.

6. The Competence Model in Italy - National Standards (ISFOL)

In Italy, the birth of a certification system according to competences, in line with Lisbon objectives and with the Bruges - Copenhagen process has gained concrete dimensions progressively, through the realization of training channels as IFTS courses or courses for adult education, and through the introduction of the Citizens Training Booklet prepared by a technical work group from the Ministry of Labour and Social Policies. The booklet provides a meaningful instrument above all to attest acquired competences and in order to certify training credits gained in traditional contexts of learning (formal) or obtained through training experiences (non-formal) and everyday experience (informal).

COMPETENCES IN ITALY

Competence is defined as the group of knowledge, skills and behaviour.

Competences are distinguished in:

basic competences: these are considered as pre-requirement for access to training and considered absolutely necessary in order to find employment and in order to face change positively (ICT, foreign languages, safety and accident prevention, economy, organization, legislative rights).

technical-professional competences: made up of knowledge and skill connected to operating activities required by tasks and production processes. (specific or technical knowledge in a given field of work)

cross-sectional competences (behaviour): include the ability to diagnose, relate, problem solving, decision making, etc and, those personal characteristics that come to be when a worker faces an organizational atmosphere and that are thought essential for transformation of professional knowledge into concrete working behaviour.

Who certifies competence?

Competence is certified by the Regions. The minimum level of competence for each profession is defined at national level. At local level the regions, upon the basis of analysis of professional requirements, programme training offer based on national standards. Competences are registered in an individual training booklet.

THE CAD-ASSISTED DESIGNER IN ITALY

DEFINITION

This professional worker is involved in designing with the aid of computer technologies. The CAD system (Computer Aid Design) is mostly used in order to design, modify and visualize the product, while the CAM system (Computer Aid Manufacturing) is used for programming, controlling and managing operations carried out by the robot-machines that manufacture the product.

TASKS AND MAIN ACTIVITIES

The CAD-CAM Designer makes a complete design of a mechanical piece, of a manufactured article or of a machine, which is assigned to production. The activities carried out may be summarised as follows: inputting the project parameters, intervening directly upon the visualization produced by the computer through modifying and redefining the drawing's coordinates, programming using the computer languages fit for the specific techniques related to the piece, which will be subsequently sent into production. This professional worker is also involved in programming, through CAM system, the machines that manufacture the piece in the production department.

SKILLS

The designer must know how to read drawings and how to reproduce them in graphic form with the aid of computer and of CAD system. In particular, as well as the ability to make mechanical drawings by means of traditional instruments (e.g.: drawing board and drafting machine), the designer will have sufficient knowledge of computer science in order to manage the operating systems, the CAD application pack (e.g.: AutoCAD, labcad, computervision, orcad), as well as the most common programming languages. He/She will also have knowledge of the international regulation of standardization for drawings (UNI standard) and of design and production technologies and techniques. All knowledge required of the designer allows him/her to execute the mechanical drawing in tri-dimensional environment, to achieve the realistic translation of the designed piece, the model's movement, the solving of problems related to the optimal use of the CAD pack. He/She shall, therefore, be able to execute the complete mechanical drawing, to manage basic list of the pieces to realize, to program the technical specifications of the piece, to manage the graphic libraries, to implement the mechanical drawing prior to being sent to the production department.

WORK SITUATION

This professional figure finds employment in small, medium and large mechanical engineering companies, in the planning area, as an employee. Rarely, the drawer may work with a professional studio which collaborates with the company for product design and implementation. In this case the designer works as an employee and continuously, he/she operates inside a work group and, in practising the ordinary activity, reports to his/her direct superior. In the work process, he/she maintains close relations with the production department, as well as with the sales department. In the first case, the relations are that close, so that one may consider this profession as a borderline one, especially due to the aspects related to the programming, to the control and the management of the digitally controlled robot-machines. None the less, the planning department works in close connection with the sales department, too, in order to respond promptly to the product requirements expressed by the client.

The Drawer's activity implies the execution of standard work procedures, with a certain degree of autonomy in carrying out the tasks that require particular specialization for the optimal use of computer technologies and for the possible rectifications and/or modifications to the projects, the production specifications related ones included.

EDUCATION/TRAINING

This professional worker must have a university degree, preferably in an industrial or technical specialization. The training provided by the higher education and the vocational courses organized on a regional level, shall necessarily be completed with a period of assistance by a more experienced employee. This step is essential in the process that allows the designer to develop and investigate the CAD-CAM system utilization techniques, as well as to understand and gain knowledge of the company's products, methods and technologies used in the production line. The natural development of his/her career is that of taking on the role of Planning Manager.

OCCUPATION TENDENCIES

The ever renewing technological innovations, the product diversification and the need of more and more precise detailed drawings means that the designers' presence in both medium to large size companies, as well as in small ones is increasing.

CLOSE PROFESSIONAL FIGURES

Mechanical designer, planning designer, Industrial designer, Mechanical technician, planning engineer

FORMAL PROFILES RELATED TO THE WORKER - ISTAT Codes:

3.1.1.4 "Operating computer engineers"; 3.1.1.6 "Industrial designers and alike".

7. The Competence Model in Regione Piemonte

As previously stated, defining and developing standards for competence is the responsibility of the Regions.

The Piemonte Region has begun a phase of elaboration and testing of on-line flexible operating instruments that allow both description and certification of competences through common methods, and diversification between varying target groups.

The Region Piemonte model is called **COLLEGAMENTI** (www.collegamenti.org) and is based on the following elements:

- Professional profile
- Areas of activities and actions
- Competence and ability

The professional profile is a description of the characteristics that make the profession unique. In Collegamenti these characteristics are 8: who - does what – how - where and when – why - with what limits - with what resources.

Within the **Areas of Activities** the characteristics of each professional outline are identified.

The areas of activities allow for precise descriptions of operating procedures: they highlight which and how many activities belong to each professional outline.

To describe the areas of activities, it is necessary to break them down into a number of **actions**.

This is an example of the standard profile for Cad/Cam technician:

Area of Activities 1: Configure the Cad/CAM system

Action 1: Install the CAD/CAM software to be used

Action 2: Install peripherals (graphic printers, plotters etc)

Action 3: Use peripherals (graphic printers, plotters etc)

Area of Activities 2: Produce mechanic parts using CNC tool machine

Action 1: Transmit data to CNC tool machine

Action 2: Prepare necessary tools

Action 3: Fix the piece to be worked

Action 4: Use the CNC tool machine

Area of Activities 3: Make drawings for mechanical elements

Action1: Prepare bi-dimensional and tri-dimensional models using CAD and CAD/CAM systems.

Action 2: Modify bi-dimensional and tri-dimensional drawings

Action 3: Produce supporting documents for drawings

Area of Activities 4: Carry out tools for elaborating mechanical pieces

Action1: Read the production plan for each piece

Action 2: Set the working parameters for mathematical model

Action 3: prepare tools suitable for production

Action 4: Apply the norms for manufacturing product

Action 5: Prepare the CAM path tool

Action 6: Produce supporting documents for drawings

Through using competences the operative sequences that allow for good management of the AoA of each professional profile.

So competence means 'how a worker organises and manages his/her skills in relation to the areas of activities to be carried out'

To describe in detail this is 'how he/she organises', each competence is broken down into a variable number of **abilities**.

This is an example of the standard profile for Cad/Cam indicating the following areas of competences broken down into related abilities.

Competence 1: Analyse projects for minutiae or mechanical groups

Skill 1: Identify the distinctiveness of the project

Skill 2: Rielaborate a project

Skill 3: Specify the task of the design and of the project

Competence 2: Contextualise projects for mechanical parts

Skill 1: Specify variations/evolution of the original project

Skill 2: Optimize the program for CNC according to the variations made to the project

Skill 3: Prepare the documentation supporting variations

Competence 3: Organise computerised systems for the production of mechanical parts

Skill 1: Prepare the production system

Skill 2: Compare the appropriateness of the computer system with the production study

Skill 3: Optimise the system configuration for simulating the production process

Skill 4: Define the operating systems for supporting production

To make further clearer the relationship between AoA and competences:

The Areas of Activity are the tasks to be carried out

The competences are 'how' these tasks are carried out.

8. The Competence Model in France

During the '80s, a new model developed inside the organizational structures in France: the competence model.

This model distanced itself from an idea of a company that had made its way in the '70s and which was characterized by rigid hierarchic structures, in which the workers occupied limited and well defined professional roles, therefore characterised by limited flexibility in human resources management.

The new organizational model, defined as “organisation apprenante” is characterized by far less limited professional roles, which allow a greater flexibility of organization, as compared to the past.

In such an organization, the competence-based approach may be useful for:

1. Evaluating the needs of training and specialization of the personnel (improvement)
2. Spreading and strengthening an organizational culture
3. Establishing recruiting criteria
4. Evaluating personnel
5. Planning promotion

The use of competence profiles would furthermore prove useful in order to:

- Promote the adoption of a vocabulary common to companies, ministries and training institutions
- Define the needs of competence and the corresponding activities for employee development, with an aim to integrate such competence into the labour market
- Help to orient policies connected to the labour development, such as programmes, services as well as any subsequent measures
- Help establish new roles corresponding to the professions
- Promote the development of work tools
- Provide the training organizations with the necessary elements for adjusting training programmes or developing new ones

Under such circumstances, a professions classification with required skills has been developed.

There are many databases that list trades and their respective competences, and among them, the most reliable are: ONISEP (Office International d'Information sur les Enseignements et les Professions), CIDJ (Centre d'Information et Documentation Jeunesse) and ANPE (Agence Nationale pour l'Emploi).

ANPE, in particular, has elaborated the Répertoire Opérationnel des Métiers et des Emplois (ROME) <http://www.anpe.fr/>, in order to identify as accurately as possible all job offers and requests, so as to compare them and to promote professional mobility by means of defining which professional positions are related.

ROME presents a treelike structure: on the first level the **professional categories** are outlined, singled out by crossing the dominant social status and professional environment one belongs to.

One or more **professional domains** correspond to each professional category.

The professional domains indicate a set of knowledge and technical competences to put to use when carrying out an activity and they can be identified by their function, by the work organization type or by the techniques carried out, by the field involved etc.

Each professional domain corresponds to one or more **jobs – trades**, which consist of clusters of work situations and which are the basic unit of the ROME classification.

This situations combination is given by the likeness or similarity of various jobs – trades activity contents, by the presence of basic skills common to these jobs – trades and by the closeness of the required profiles in order to perform the job – trade.

In the process of this grouping, ROME takes into consideration the fact that, although the classification for a certain trade is identical, the job itself and the real work contexts vary considerably from one organization to another in the same activity field.

Finally, the trades – jobs are characterized by a certain number of specific matters, which take into account the variations of work contexts that a trade – job may undergo on the labour market.

The combination of the above mentioned factors allows for creating job offer and demand profiles, which take into account the type of company organization and the workers' skills.

In this regard, it is important to underline the introduction of **the concept of competence, as the combination of savoir (knowledge), of savoir-faire (know-how) and of savoir-être (know-how-to-be), which result in behaviour.**

This behaviour allows individuals to carry out the tasks to accomplish in a given organization, according to the work situations.

The skills are classified into:

- **Basic technical skills**, skills considered essential to carry out the trade – job
- **Associated skills**, in other words, the skills which are not essential for carrying out the trade – job, yet crucial for the functioning of an organization and which the worker has acquired during previous work experience.

These skills are common to all workers in a company and are usually grouped in relation to related savoir-faire (e.g.: communication, group work ability to cooperate) and savoir-faire related to the organization (e.g.: being independent, having initiative, contributing to progress).

- **Job related skills**, these are the savoir-être required for the practice of the trade – job and are generally given by the use of computer, by knowledge of foreign language or by cognitive and social skills that distinguish the new work contexts.

It is quite important to underline how, in the skill/competence definition, there are both an individual aspect, related to workers' knowledge, abilities and aptitudes, as well as an organizational one, related to the inner structure of the organizations.

The integration of these two aspects is defined as “ability to act”.

CAD area skills: French professional profiles (from Répertoire Opérationnel des Métiers et des Emplois - ROME)

DEFINITION OF THE PROFESSION:

Draws and elaborates diagrams of electrical materials, automatism, electrical installations, starting from various documents necessary for technical functioning of the projects (conditions booklets, general diagrams, materials lists, plans etc.) in conformity with the indications given by research, study or commercial.

Distributes and coordinates the assembly/detailed plans, by ensuring technical or theoretical assistance to drawers.

Gathers information to guarantee the preparation of the execution plan relating to technical standards and costs. The diversification of this profession may lead more towards technical assistance or towards computer elaboration.

Takes part in the definition of costing and timing.

GENERAL CONDITIONS OF THE PROFESSION

The profession is mainly carried out in an office with regular day office hours. Nevertheless in certain occasions it may be carried out on site with the need to move from one place to another and vary working hours.

Training and experience:

List of details about educational level necessary for access to this profession

BASIC TECHNICAL COMPETENCES:

- Study supporting documents (schedules, diagrams, drawings, materials lists) to determine and draw the overall plan (defining drawings, choosing materials).

Distribute and coordinate the overall plans with the designers

Supervise the work in progress to offer technical or theoretical help to prepare final piece-

Supervise during placing of products or electrical installations

ASSOCIATED COMPETENCES:

- Control solid geometry (perspective, descriptive, three-dimensional)

- Understand foreign language, in particular technical English

- understand and apply data processing

COMPETENCE RELATED TO EMPLOYMENT:

*the job requires the ability to:

- follow methodological and rigorous processes

- conform to standards

Exchange and synthesise information within the work environment
- adapt to various technologies

Develop team working abilities

-

SPECIFIC ACTIVITIES:

Continuous activities:

- Writing reports. Assembling prototypes. Working in project team. Measure dimensions.

Technical assistance post manufacture

Equipment used

Computer aided design and drawing (CAD)

Computer aided design and manufacture

Drawing board

Standards used

French electric electronic standards

Automatism standards

Safety requirements EDF

Military standards

Insulation standards

Other standards

Place of exercise of activity

Office

Building site

9. The Competence Model in Spain

NATIONAL QUALIFICATIONS AND VET SYSTEM OF SPAIN

During the Nineties there have been many profound changes in the Spanish qualifications system. The main ideas concerning the **reform processes in VET** have been:

- The creation of a NATIONAL QUALIFICATIONS & VOCATIONAL TRAINING SYSTEM.
- The development of a VET QUALIFICATIONS FRAMEWORK (National Catalogue of Vocational Qualifications).

Many initiatives have been set up with several tools:

- National Catalogue of Vocational Qualifications. **It is organised depending on the appropriate competences for vocational exercise.** It includes associated vocational training, with module structure.
- A procedure of assessment, accreditation and catalogue of vocational qualifications.
- Information and guidance in vocational training and employment.
- Assessment and quality improvement of Qualifications and National System of Vocational Training.

The key terms of this process are:

- Vocational Qualification: set of vocational competences with meaning for employment which can be acquired through module training or other types of training, and also through labour experience.
- Competence Unit: minimum part of vocational competences, for recognition and partial accreditation,
- Vocational Competence: set of knowledge and abilities which make possible the delivery of vocational training according to the requirements of production and employment.

Incuat (*Instituto Nacional de las Cualificaciones* - National Institute for Qualifications) is the official body delegated to the regulation and coordination of the National System of Qualifications and Vocational Training.

"The National Institute for Qualifications, is the technical support organism for General VET Council, responsible for defining, creating and updating the:

- National Catalogue of Vocational Qualifications
- and the respective Module VET Catalogue"

SPANISH NATIONAL CATALOGUE OF VOCATIONAL QUALIFICATIONS

Spain is now designing its National Catalogue of Vocational Qualifications, according to a guideline in two dimensions: **qualification** and **sectoral level**. In this Catalogue 26 professional families divided in 5 levels have been defined.

Level 1:

Competence in a narrow group of relatively simple work activities corresponding to normal processes, since theoretical knowledge and practical abilities to be applied are limited.

Level 2:

Competence in a group of well defined work activities, including the ability to use appropriate techniques and tools, above all in practical work which can be autonomous within the limits of those techniques. This needs knowledge of the activity technical and scientific basis and ability to understand and apply the process.

Level 3:

Competence in a group of well defined professional activities, which need a complete knowledge of different techniques and can be autonomously carried out. It involves responsibility in coordinating and supervising technical and specialised work. This requires the understanding of the activity technical and scientific basis and the assessment of both the process components and its economical consequences.

Level 4:

Competence in a large group of complex professional activities, carried out in a wide range of contexts, requesting the combination of technical, scientific, economic or organizational elements to plan actions, to define or develop projects, processes, products or services.

Level 5:

Competence in a large group of extremely complex professional activities carried out in different, often unpredictable contexts: this involves planning actions or conceiving products, processes or services. Great personal autonomy. Frequent responsibility resources allocation, in analysis, in making diagnosis planning, carrying out and assessing activities.

Spanish Professional qualification:

DESIGN OF PRODUCTS OBTAINED BY MEANS OF MECHANICAL MANUFACTURING

General competency

Design of products intended for mechanical manufacturing, respecting the quality, safety and environmental criteria.

Competency units:

- 1: Design of products obtained by means of mechanical manufacturing
- 2: Automation of the products obtained by means of mechanical manufacturing
- 3: Elaboration of the technical documentation for the products obtained by means of mechanical manufacturing

Associated training: (600h)

Training modules

- 1: Product design (260h)
- 2: Product automation (160h)
- 3: Technical documentation for the products (180h)

COMPETENCY UNIT 1: DESIGN OF PRODUCTS OBTAINED BY MEANS OF MECHANICAL MANUFACTURING

Activities

A1: Detail the products obtained by means of mechanical manufacturing, bringing constructive solutions and determining the specifications, characteristics, layout, dimensions and costs of the parts and of the auxiliaries, in the respecting Prevention of Occupation Hazards and of the Environmental regulations.

A2: Accomplishment of the technical calculations necessary for the sizing of the designed products and of their auxiliary systems, starting from previously established data.

A3: Verify that the project execution respects the design specifications, ensuring thus the product's quality, in the respect of the Prevention of the Occupation Hazards and of the Environmental regulations.

A4: Establish the testing programme that allow the verification of the product's endurance level, with the cost optimization of the tests and control procedures, in the respect of the Prevention of the Occupation Hazards and of the Environmental regulations.

COMPETENCY UNIT 2: AUTOMATION OF THE PRODUCTS OBTAINED BY MEANS OF MECHANICAL MANUFACTURING

Activities:

A1: Establish the conditions or the operational cycle of the machines and of the automated equipments utilized in the process of the mechanical manufacturing, in the respect of the Prevention of the Occupation Hazards and of the Environmental regulations and of the established execution times.

A2: Set up the starters and controls type, determining the size of the pneumatic, hydraulic and electric elements and of their combinations, which are to be utilized in the process of the product's automation, in the respect of the Prevention of the Occupation Hazards and of the Environmental regulations.

A3: Complete the potential and command schemas of the pneumatic, hydraulic, electro-pneumatic and electro-hydraulic circuits, in accordance to the established sequence or plan, in the respect of the Prevention of the Occupation Hazards and of the Environmental regulations.

COMPETENCY UNIT 3: ELABORATION OF THE TECHNICAL DOCUMENTATION FOR THE PRODUCTS OBTAINED BY MEANS OF MECHANICAL MANUFACTURING

Activities

A1: Draw up the designed product's schemes, altogether with the materials list, starting from the technical specifications, according to the manufacturing process, obtaining thus the expected quality, in the respect of the Prevention of the Occupation Hazards and of the Environmental regulations.

A2: Draw up the automation schemes, and those for the pneumatic, hydraulic and electric circuits.

A3: Elaborate the product's technical file (instructions of use and maintenance, auxiliaries plans, schemes, spare parts list...), as well as the technical report, in relation to the project feasibility, manufacturing necessities and, if needed, the product's setting.

A4: Maintain the technical documentation necessary to the product's execution up-to-date and well organized

TRAINING MODULE 1: PRODUCTS' DESIGN

Competencies

C1: Analyze the behaviour of the machines' mechanisms, so as to extract their kinetic relations as well as the typological applications.

C2: Design mechanisms or mechanic elements starting from the specifications and the requirements of the project drafts, in the respect of the Prevention of the Occupation Hazards and of the Environmental regulations.

C2: Decide the adjustments, the geometric and size tolerances, as well as the superficial qualities, in accordance to the distinct elements of mechanical manufacturing and to their functioning.

C3: Analyze the impact of the materials and of the lubrication systems on the machines' organs, so as to determine the design and maintenance specifications.

Competencies to be acquired in a real work environment

C1: Analyze in a real work situation the behaviour of the distinct machines' mechanisms.

C2: Select the type of material used for the various machines' organs, according to the specific requirements and to the cost involved in the products' manufacturing.

TRAINING MODULE 2: PRODUCTS' AUTOMATION

Level: 3

Competencies

C1: Establish the functioning sequence and the type of technology (pneumatic, hydraulic, electric) to be used for the manufacturing systems automation, in the respect of the Prevention of the Occupation Hazards and of the Environmental regulations.

C2: Analyze the power elements (starters), normally utilized for the electric, pneumatic, hydraulic automation, so as to determine their behaviour.

C3: Analyze the distinct sensors used for the revealing of the various parameters involved in the manufacturing process (speed, power, potency, space, time, temperature etc.), in the respect of their use in the automation process.

C4: Analyze the possible solutions of command (pneumatic, hydraulic, electric, programmable) of the distinct starters utilized in the manufacturing process, for their use in the automation process.

C5: Explain the opportunities provided by the technologies of the communication between the various units that form a manufacturing system.

Competencies to be acquired in a real work environment:

C1: Analyze the machines or system automation in different processes or contexts.

TRAINING MODULE 3: PRODUCTS' TECHNICAL DOCUMENTATION

Level: 3

Competencies

C1: Draw up on the proper support and by way of conventional and computerized means, the manufacturing plans of the elements, mechanisms or machines, organizing the technical information necessary to their later manufacturing.

C2: Make representations of the pneumatic, hydraulic and electric circuits automation "schemes".

C3: Elaborate the technical file of the designed element, mechanism or machine.

10. The Competence Model in United Kingdom

The Qualifications and Curriculum Authority (QCA) is a non-departmental public body, sponsored by the Department for Education and Skills (DfES). It is governed by a board, whose members are appointed by the Secretary of State for Education and Skills, and managed on a day-to-day basis by an executive team. QCA's mission is to play "a pivotal role in helping the UK to become the most dynamic knowledge-based economy in the world".

THE NATIONAL QUALIFICATIONS FRAMEWORK

The national qualifications framework (NQF) for England, Wales and Northern Ireland sets out the levels at which qualifications can be recognised.

It helps learners make informed decisions on the qualifications they need, by comparing the levels of different qualifications and identifying clear progression routes to their chosen career.

It aims to:

promote access, motivation and achievement in education and training, strengthening international competitiveness

promote lifelong learning by helping people to understand clear progression routes

avoid duplication and overlap of qualifications while making sure all learning needs are covered

promote public and professional confidence in the integrity and relevance of national awards.

Only qualifications that have been accredited by the regulatory authorities are included in the NQF.

VOCATIONAL QUALIFICATIONS

A wide range of vocational qualifications (VQs) are accredited into the national qualifications framework (NQF). These cover almost every industry sector, and every level of the NQF.

VQs are offered by a large number of awarding bodies. They range from broad-based VQs to specialist qualifications designed for a particular sector. In many cases, suites of qualifications are available, offering progression through the levels of the NQF.

VQs serve a range of purposes in different sectors and at different levels, and consequently vary in terms of size, level and assessments.

NATIONAL VOCATIONAL QUALIFICATIONS

National vocational qualifications (NVQs) are work-related, competence-based qualifications. They reflect the skills and knowledge needed to do a job effectively, and show that a candidate is competent in the area of work the NVQ framework represents.

NVQs are based on national occupational standards. These standards are statements of performance that describe what competent people in a particular occupation are expected to be able to do. They cover all the main aspects of an occupation, including current best practice, the ability to adapt to future requirements and the knowledge and understanding that underpin competent performance.

Within reason, NVQs do not have to be completed in a specified amount of time. They can be taken by full-time employees or by school and college students with a work placement or part-time job that enables them to develop the appropriate skills. There are no age limits and no special entry requirements.

NVQs are achieved through assessment and training. Assessment is normally through on-the-job observation and questioning. Candidates produce evidence to prove they have the competence to meet the NVQ standards. Assessors sign off units when the candidates are ready. The assessor tests candidates' knowledge, understanding and work-based performance to make sure they can demonstrate competence in the workplace.

When new candidates start an NVQ, the assessor will usually help them to: identify what they can do already, agree on the standard and level they are aiming for, analyse what they need to learn, choose and agree on activities that would allow them to learn what they need.

At this point, candidates might take a course if that seems the best way to learn what they need. Or they might agree with their employer or supervisor to do slightly different work to gain the evidence of competence they need.

Candidates compare their performance with the standards as they learn. They look at what they have achieved, how much they still need to do and how they should go about it, until they are assessed as competent for a unit or a whole NVQ. The system is right for candidates who already have skills and want to increase them, but also for those who are starting from the beginning. As the system is so flexible, new ways of learning can be used immediately.

DEVELOPING A MORE RESPONSIVE VQ SYSTEM

QCA is leading a programme of work on the design and use of vocational qualifications (VQs). The objective of the work is to develop a more responsive and flexible VQ system, one that meets the needs of employers and individuals.

The programme of work includes a vision for VQs and seven-year work plan. It is built around the following five themes: National occupational standards, Flexibility in the system and framework, Revised regulation mode, Supportive funding arrangements, Effective communication

CHANGES TO THE NATIONAL QUALIFICATIONS FRAMEWORK

The three regulatory authorities (QCA, ACCAC for Wales and CCEA for Northern Ireland) have revised the NQF as part of a review of the regulatory arrangements. The revised criteria and NQF came into effect on 1 September 2004 and can be found in the *Statutory regulation of external qualifications in England, Wales and Northern Ireland (2004)*. This document replaces the *Arrangements for the statutory regulation of external qualifications in England, Wales and Northern Ireland (2000)*.

The main change is that the number of levels in the NQF has increased to nine (entry level to level 8). This allows for clearer links with the framework for higher education qualifications (FHEQ). Entry level to level 3 stays the same.

The proposed level indicators in the NQF are a guide to the range of qualifications and levels.

They describe the learning and achievement that happens at each level and show how the skills and knowledge relate to job roles. The indicators are not intended to be precise or comprehensive - they are working guides. The level indicators have been designed for: individual learners, parents, teachers/tutors/trainers, careers advisers and employers.

Framework level	Level indicators	Examples of qualifications
Entry	Entry level qualifications recognise basic knowledge and skills and the ability to apply learning in everyday situations under direct guidance or supervision. Learning at this level involves building basic knowledge and skills and is not geared towards specific occupations.	Qualifications are offered at entry 1, entry 2 and entry 3, in a range of subjects
Level 1	Level 1 qualification recognises basic knowledge and skills and the ability to apply learning with guidance or supervision. Learning at this level is about activities which mostly relate to everyday situations and may be linked to job competence.	NVQ 1; Certificate in Plastering; GCSEs Grades D – G; Certificate in Motor Vehicle Studies
Level 2	Level 2 qualifications recognise the ability to gain a good knowledge and understanding of a subject area of work or study, and to perform varied tasks with some guidance or supervision. Learning at this level involves building knowledge and/or skills in relation to an area of work or a subject area and is appropriate for many job roles.	NVQ 2; GCSEs Grades A* - C; Certificate in Coaching Football; Diploma for Beauty Specialists
Level 3	Level 3 qualifications recognise the ability to gain, and where relevant apply a range of knowledge, skills and understanding. Learning at this level involves obtaining detailed knowledge and skills. It is appropriate for people wishing to go to university, people working independently, or in some areas supervising and training others in their field of work.	Certificate for Teaching Assistants; NVQ 3; A levels; Advanced Extension Awards; Certificate in Small Animal Care
Level 4	Level 4 qualifications recognise specialist learning and involve detailed analysis of a high level of information and knowledge in an area of work or study. Learning at this level is appropriate for people working in technical and professional jobs, and/or managing and developing others. Level 4 qualifications are at a level equivalent to Certificates of Higher Education.	Diploma in Sport & Recreation; Certificate in Site Management; Certificate in Early Years Practice
Level 5	Level 5 qualifications recognise the ability to increase the depth of knowledge and understanding of an area of work or study to enable the formulation of solutions and responses to complex problems and situations. Learning at this level involves the demonstration of high levels of knowledge, a high level of work expertise in job roles and competence in managing and training others. Qualifications at this level are appropriate for people working as higher grade technicians, professionals or managers. Level 5 qualifications are at a level equivalent to intermediate Higher Education qualifications such as Diplomas of Higher Education, Foundation and other degrees that do not typically provide access to postgraduate programmes.	Diploma in Construction; Certificate in Performing Arts
Level 6	Level 6 qualifications recognise a specialist high level knowledge of an area of work or study to enable the use of an individual's own ideas and research in response to complex problems and situations. Learning at this level involves the achievement of a high level of professional knowledge and is appropriate for people working as knowledge-based professionals or in professional management positions. Level 6 qualifications are at a level equivalent to Bachelors degrees with honours, graduate certificates and graduate diplomas.	Certificate or Diploma in Management
Level 7	Level 7 qualifications recognise highly developed and complex levels of knowledge which enable the development of in-depth and original responses to	Diploma in Translation; Fellowship in Music Literacy

	complicated and unpredictable problems and situations. Learning at this level involves the demonstration of high level specialist professional knowledge and is appropriate for senior professionals and managers. Level 7 qualifications are at a level equivalent to Masters degrees, postgraduate certificates and postgraduate diplomas.	
Level 8	Level 8 qualifications recognise leading experts or practitioners in a particular field. Learning at this level involves the development of new and creative approaches that extend or redefine existing knowledge or professional practice.	Specialist awards

Currently, qualification titles such as 'certificate' and 'diploma' are not indicators of the level of a qualification.

For further information:

NATIONAL REFERENCE POINT FOR VOCATIONAL QUALIFICATIONS - UK NARIC

Email: info@uknarp.org.uk

Web: <http://www.uknarp.org.uk>

11. REFERENCES

EU Publications

Maastricht Communiqué “on the future priorities of enhanced European co-operation in vocational education and training (VET).” (Review of the Copenhagen Declaration of 30 November 2002). (Maastricht, 14 December 2004). -

http://europa.eu.int/comm/education/news/ip/docs/maastricht_com_en.pdf

European Commission, Eurostat: **Education in Europe: Key Statistics 2000/01**, Statistics in focus (Theme 3, 13/2003). (Office for official publications of European Communities: Luxembourg, 2003). ISSN 1024-4352

European Commission, Eurostat: **Education across Europe 2003** (Office for official publications of European Communities: Luxembourg, 2003). ISBN 92-894-5783-X

European Commission, DG Research: **Key Figures 2003-2004. Towards a European Research Area: Science, Technology and Innovation** (Brussels, 2003). -

http://europa.eu.int/comm/research/era/pdf/indicators/benchmarking2003_en.pdf

European Commission, Eurostat, **European Social Statistics: Continuing Vocational Training Survey (CVTS2)** (Office for official publications of European Communities: Luxembourg 2002). ISBN 92-894-4330-8

The Copenhagen Declaration: Declaration of the European Ministers for Vocational Education and Training and the European Commission on enhanced European co-operation in vocational education and training. (Copenhagen, 29/30 November 2002). -

http://europa.eu.int/comm/education/copenhagen/copenhagen_declaration_en.pdf

Commission Staff Working Paper: **New Indicators on Education and Training** SEC (2004) 1524 (Brussels, 29 November 2004). -

http://europa.eu.int/comm/education/policies/2010/doc/indicators_en.pdf

Joint Interim Report of the Council and the Commission: **“Education & Training 2010:” the success of the Lisbon strategy hinges on urgent reforms**. Outcome of the proceedings of the European Council on 26 February 2004. 6905/04 EDUC 43. COM (2003) 685 F (Brussels, 3 March 2004). -

http://europa.eu.int/comm/education/policies/2010/doc/jir_council_final.pdf

Commission Staff Working Paper: **Progress towards the Common Objectives in Education and Training. Indicators and Benchmarks** SEC (2004) 73 (Brussels, 21 January 2004) -

http://europa.eu.int/comm/education/policies/2010/doc/progress_towards_common_objectives_en.pdf

Proposal for a decision of the European Parliament and of the Council on a **single framework for the transparency of qualifications and competences (Europass)**. COM (2003) 796 F (Brussels, 17 December 2003) - http://europa.eu.int/eur-lex/en/com/pdf/2003/com2003_0796en01.pdf

Communication from the Commission to the Education Council, **European benchmarks in education and training: follow-up to the Lisbon European Council** COM (2002) 629 F (Brussels, 20 November 2002) -

http://europa.eu.int/comm/education/policies/2010/doc/bench_ed_tra_i_en.pdf

European Commission: **Detailed Work Programme on the follow-up of the objectives of education and training systems in Europe**, adopted by the Education Council and the Commission on 14 February 2002. OJ C 142 (Brussels, 14 June 2002). -

http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/c_142/c_14220020614en00010022.pdf

Communication from the Commission to the Council and the European Parliament: **The e-Learning Action Plan: designing tomorrow's education** COM (2001) 172 F (Brussels, 28 March 2001) - http://europa.eu.int/eur-lex/en/com/cnc/2001/com2001_0172en01.pdf

Communication from the European Commission: **Teaching and Learning – Towards the Learning Society** COM (1995) 590 - <http://europa.eu.int/comm/education/doc/official/keydoc/lb-en.pdf>

Others

CEDEFOP, **The value of learning**. (Luxembourg, 2005).

CEDEFOP, **Vocational education and training - key to a better future**. (Luxembourg, 2005).

CEDEFOP, **European approaches to credit (transfer) systems in VET**. (Luxembourg, 2005).

CEDEFOP, Synthesis of the Maastricht Study, **Vocational education and training – key to the future. Lisbon-Copenhagen-Maastricht: mobilising for 2010**. Manfred Tessaring and Jennifer Wannan. (Luxembourg, 2004).

CEDEFOP, **Lifelong learning: citizens' views in close-up. Findings from a dedicated Eurobarometer survey**. Lynne Chishom, Anne Larson, Anne-France Mossoux. (Luxembourg, 2004).

IEA, **Citizenship and Education in Twenty-Eight Countries: Civic Knowledge and Engagement at Age Fourteen** (Amsterdam, 2001).

OECD, **Education at a Glance** (Paris, 2004).

OECD, **Learning for Tomorrow's World: New OECD PISA results** (Paris, 2004).

OECD, **Knowledge and Skills for Life – First Results from PISA 2000** (Paris, 2001).

Others (Italian)

AUTERI GIANFRANCO, DI FRANCESCO GABRIELLA, **La certificazione delle competenze. Innovazione e sostenibilità**, Milano, Franco Angeli, 2000

CONFINDUSTRIA, **La fabbrica delle competenze. Rapporto della Commissione Confindustria per la Formazione Professionale**, Roma, 2000

DI FRANCESCO GABRIELLA, **Approcci per competenze: confronto dei modelli di classificazione nelle diverse filiere e piste di lavoro**, "Professionalità", 21 (2001), n. 63, pp. 23-30

DI FRANCESCO GABRIELLA, **Trasparenza, certificazioni e validazione competenze comunque acquisite nel dibattito comunitario e nelle prassi europee**, "Professionalità", 20 (2000), n. 59, pp. 24-80

ISFOL, DI FRANCESCO GABRIELLA (a cura di), **Contesto normativo sui temi della certificazione e dei crediti formativi**, Roma, 1999

ISFOL, DI FRANCESCO GABRIELLA (a cura di), **Unità Capitalizzabili e crediti formativi. I repertori sperimentali**, Milano, Franco Angeli, 1998 (Strumenti e ricerche, 72)

ISFOL, DI FRANCESCO GABRIELLA (a cura di), **Unità Capitalizzabili e crediti formativi. Metodologie e strumenti di lavoro**, Milano, Franco Angeli, 1998 (Strumenti e ricerche, 73)

ROSSI ALESSIA, **Documentare le competenze. Metodologie e strumenti a portafoglio**, "Professionalità", 22 (2002), n. 68, pp. 7-15

RUSSO SALVATORE, **Il bilancio delle competenze: una storia europea. Dal trasferimento delle pratiche alla certificazione**, Milano, Franco Angeli, 2001,

Web Sites

www.eu.int

www.isfol.it

www.welfare.gov.it

www.isfol.it

www.tecnostruttura.it/integform/competenze.

www.orientamento.it/or1m.htm

www.regione.piemonte.it

www.indire.it

www.cncp.gouv.fr

www.mec.es/educa/incual/

www.uknrp.org.uk/

www.qca.org.uk/